FOR CONTRACT NO.: 01-262004

INFORMATION HANDOUT - PART 5

PERMITS

5-1. UNITED STATES ARMY CORPS OF ENGINEERS, 404 PERMIT

5-2. STATE OF CALIFORNIA, DEPARTMENT OF FISH AND GAME
STREAMBED ALTERATION (1600)
AGREEMENT NO. 1600-2010-0044-R1

5-3. STATE OF CALIFORNIA, DEPARTMENT OF FISH AND GAME
INCIDENTAL TAKE PERMIT(2081)
NOTIFICATION NO. 2081-2010-007-01

5-4. CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
NORTH COAST REGION, 401 PERMIT
BOARD ORDER NO. 2003-0017-DWQ
WDID NO. 1B10019WNME

5-5. APPLICATION FOR STATE OF CALIFORNIA, DEPARTMENT OF FISH AND GAME, STREAMBED ALTERATION

5-6. APPLICATION FOR UNITED STATES ARMY CORPS OF ENGINEERS

5-7. APPLICATION FOR CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, NORTH COAST REGION

ROUTE: 01-MEN-101-R69.4/78.9

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

REPLY TO

FEB 16 2012

Regulatory Division

SUBJECT: File Number 1991-194740N

Mr. Charlie Fielder
District 1 Director
California Department of Transportation
P.O. Box 3700
Eureka, California 95502

Dear Mr. Fielder:

Enclosed are two copies of a Department of the Army (DA) permit to construct a new segment of U.S. Highway 101 (U.S. 101) that will bypass the City of Willits in Mendocino County, California (Willits Bypass Project). The Willits Bypass Project would result in the permanent fill of approximately 51.07 acres of waters of the United States. The Willits Bypass Project begins at Post Mile 43.1 on U.S. 101 and terminates at Post Mile 45.6, City of Willits, Mendocino County, California.

The proposed project entails construction of a four-lane freeway segment of U.S. 101. Each lane shall be 12 feet wide with a 22-foot median separating the northbound and southbound lanes. The proposed freeway shall bypass the City of Willits with several bridges spanning creeks and local roads, a viaduct spanning the floodway, and interchanges on either end of the bypass. The interchange ramps shall be single-lane. The project shall be constructed in two phases: Phase I of the project shall be the two southbound lanes. However, Phase I shall function as an interim facility upon which northbound and southbound traffic shall travel until construction of Phase II. Upon completion of both phases, traffic shall be separated via a median and two viaducts.

You are advised that the Corps has established an Administrative Appeal Process, as described in our regulations at 33 C.F.R. Part 331 (65 Fed. Reg. 16486; March 28, 2000) and outlined in the enclosed flowchart and Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) form. The following two options are available to you in your evaluation of the enclosed permit:

1) You may sign and date both copies of the permit on the line designated for "Permittee". Your signature on the permit indicates that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions. Both copies of the permit must be returned to this office for final authorization. We will

then forward one copy of the fully executed permit for your records, at which time you will be authorized to commence work.

2) You may decline to sign the permit because you object to certain terms and conditions, and you may request that the permit be modified. If you decline the permit, you must return the permit to the District Engineer and may not proceed with your project until notified by the District Engineer. You must outline your objections to the terms and conditions of the permit by completing Section II of the NAO-RFA form. Your objections must be received by the District Engineer within sixty (60) days of the date of this letter, or you will forfeit your right to request changes to the terms and conditions of the permit.

Upon receipt of the completed NAO-RFA form, the District Engineer will evaluate your objections, and may: (a) modify the permit to address all of your objections, (b) modify the permit to address some of your objections, or (c) not modify the permit, having determined that the permit should be issued as previously written. In any of these three cases, the District Engineer will send you a final permit for your reconsideration, as well as a second NAO-RFA form. Should you decline the final proffered permit, you can appeal the declined permit by submitting the completed NAO-RFA form to the Division Engineer. The NAO-RFA form must be received by the Division Engineer within sixty (60) days of the date of the second transmittal letter, or you will forfeit your right to pursue an appeal.

If you fail to sign and return both copies of this permit or fail to request a modification of the permit within sixty (60) days from the date of this letter, your permit application may be withdrawn pursuant to our regulations at 33 C.F.R. Section 325.2(d)(5).

Should you have any questions regarding this matter, please call Jane Hicks, Regulatory Division Chief at (415) 503-6771. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter.

Sincerely,

Torrey A. DiCiro, P.E., PMP
Lieutenant Colonel, U.S. Army
Commanding

Enclosures:
Department of the Army Permit (2)
Notification of Appeals Process

Copies Furnished (w/out encls):
Attn: Mr. David Kelley, Caltrans, Marysville, CA
US EPA, Region 9, San Francisco, CA
CA RWQCB, Santa Rosa, CA
US FWS, Arcata, CA
NFMS, Santa Rosa, CA
CA F/G, Redding, CA

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

REPLY TO

DEPARTMENT OF THE ARMY PERMIT

PERMITTEE: Mr. Charlie Fielder, District 1, California Department of Transportation

PERMIT NO.: 1991-194740N

ISSUING OFFICE: San Francisco District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate District or Division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below:

A. **PROJECT DESCRIPTION:** Construct a new segment of U.S. Highway 101 (U.S. 101) that will bypass the City of Willits in Mendocino County, California. The proposed project entails construction of a four-lane freeway segment of U.S. 101. Each lane shall be 12 feet wide with a 22-foot median separating the northbound and southbound lanes. The proposed freeway shall bypass the City of Willits with several bridges spanning creeks and local roads, a viaduct spanning the floodway, and interchanges on either end of the bypass. The interchange ramps shall be single-lane. The project shall be constructed as depicted in drawings prepared by Caltrans, dated February 1, 2012, titled "Caltrans 03-Design East, District 01, County Mendocino, Route 101, Kilometer Post Total Project R69.4/R78.9: Figures L-1A through L-36A."

The project shall directly affect a total of 82.05 acres of wetlands and other waters of the United States, (streams such as: Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks and their related tributaries), of which 51.07 acres shall be permanently filled and 30.98 acres shall be temporarily filled during project construction, (as depicted in drawings prepared by Caltrans dated February 1, 2012 and titled: Figures B-1 through B-60 of Appendix B, Willits Bypass Sensitive Biological Resources Impact Maps, of the "Willits Bypass Project Mitigation and Monitoring Proposal").

The project shall be constructed in two phases: Phase I of the project shall be the two southbound lanes. However, Phase I shall function as an interim facility upon which northbound and southbound traffic shall travel until construction of Phase II. Upon completion of both phases, traffic shall be separated via a median and two viaducts.

The Phase I interim facility shall be comprised of two lanes and have wider roadway shoulders to safely accommodate the travelling public. Also, the Phase I (interim facility) viaduct shall be one foot wider than the future Phase II viaduct. This design feature shall be to allow safe passage of northbound and southbound traffic on a singular viaduct until construction of the Phase II viaduct to separate northbound traffic from southbound.

Phase I shall include constructing all four north and southbound lanes from the southern end of the project at Post Mile 43.1 on U.S. 101 to Post Mile 45.6. Phase I shall also include the construction of a southern interchange at Post Mile 43.7 near Haehl Creek, and a northern interchange that includes a roundabout-type intersection with local roads at Post Mile 48.2 near Upp Creek.

Phase I construction shall permanently fill 42.76 acres of waters of the United States and temporarily fill 22.91 acres of waters of the United States.

Phase II shall consist of construction of the two north-bound lanes. Phase II construction would permanently fill 8.31 acres of waters of the United States and temporarily fill 8.07 acres of waters of the United States.

Note: "temporary fill material" is a fill discharge that would be in place for the duration of active construction (likely up to 5 years).

PROJECT LOCATION: City of Willits, Mendocino County, California

PERMIT CONDITIONS:

GENERAL CONDITIONS:

1. The time limit for completing the work authorized ends on December 31, 2022. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

7. You understand and agree that, if future operations by the United States require the removal, relocation or other alteration of the structure or work authorized herein, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, you will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

SPECIAL CONDITIONS:

1. The Permittee shall mitigate for permanent impacts to 42.76 acres and temporary impacts to 22.91 acres of waters of the U. S. associated with Phase I of the Project, through restoration (rehabilitation) of 344.63 acres and establishment of 49.58 acres of wetlands and the rehabilitation of 19.03 acres of other waters of the U.S. as described in the final mitigation plan: "Willits Bypass Project Mitigation and Monitoring Proposal" (which includes Appendices A, C, D, E, F, G, H, I, J, K, L, M, and N), dated January 2012, (and also includes Appendix B, dated February 1, 2012), prepared by Caltrans (MMP). The Permittee shall fully implement this final mitigation plan concurrently with impacts to waters of the U.S. Delays in the mitigation implementation schedule (Figure 7-1 of the final mitigation plan) may result in the requirement of additional mitigation to compensate for the temporal loss. According to the final mitigation plan, responsible parties would be as follows: a) Implementation: Caltrans; b) Performance: Caltrans; c) Long-term management: Mendocino County Resource Conservation District. The

Permittee retains ultimate legal responsibility for meeting the requirements of the final mitigation plan. Detailed mitigation objectives, performance standards, and monitoring requirements are described in the above final mitigation plan.

2. The MMP documents are not complete without this permit and its accompanying special conditions. A notation to this effect shall be annotated on the cover and title page of the MMP prior to distribution. This permit, including the special conditions, shall be attached to all distributed copies of the MMP.

3. A performance bond, other Corps-approved financial assurance mechanism, or alternate mechanism, such as a formal, documented commitment from Caltrans or a public authority, must be in place within ninety (90) days following permit issuance or prior to commencing the permit activity, whichever is sooner. It must ensure a high level of confidence that the compensatory mitigation will be performed and maintained, in accordance with 33 C.F.R. § 332.3(n) and the Institute for Water Resources White Paper, *Implementing Financial Assurance for Mitigation Project Success*, June 2011.

4. The fee title holder and the conservation easement holder shall not be the same entity.

5. The Permittee shall record a Conservation Easement (CE) in a form approved by the Corps, which shall run with each off-site mitigation parcel, obligating the Permittee, its successors and assigns to protect and maintain the mitigation areas (parcels indentified in Tables 6-2, 6-4, and 6-5 of the MMP, and as shown in Figures L-1 through L-34 of Appendix E ("Design plans for Offsite Mitigation") dated February 1, 2012) as natural, unmanaged, wetland and other waters in perpetuity. Each CE will identify that the mitigation parcels shall not have any agricultural or management activities that may reduce or diminish successional vegetation development, without prior approval from USACE. Each CE must include a 3rd party easement holder qualified to hold easements pursuant to California Civil Code § 815.3 and Government Code § 65965. Each CE must also identify the Corps as a 3rd party beneficiary. The Permittee must provide monies in the form of an endowment (as specified in Chapter 13 of the final mitigation plan) for the purposes of fulfilling the 3rd party easement holder's responsibilities under the CE. Each CE shall abide by and fulfill all requirements of the "Willits Bypass Project Mitigation and Monitoring Proposal," dated January 2012, and prepared by Caltrans (Willits Bypass Project MMP). Review of Conservation Easement will include review of title reports all off-site mitigation parcels with maps depicting any recorded easements. Conservation Easements shall have as an exhibit the Willits Bypass Project MMP, and reference this document's adaptive management plan and long-term management plan. Each CE shall preclude establishment of fuel modification zones, paved public trails, drainage facilities, walls, maintenance access roads and/or future easements, except as provided in the Project Description (described in this permit). Further, to the extent practicable, any such facilities outside the CE shall be sited to minimize indirect impacts on the avoided, created, restored and enhanced wetland and non-wetland waters of the U.S. Prior to its execution and within six months of issuance of this permit, the Permittee shall submit drafts of each CE to the Corps for review. The Permittee shall not execute or record any CE until it has received written approval from the Corps. No later than 30 calendar days after receiving Corps approval of the final draft CE's, the CE's shall be executed and recorded and a recorded copy furnished to the Corps.

6. Any proposed changes to the final mitigation plan, the Willits Bypass Project MMP, including changes to the performance standards and any proposed adaptive management actions, shall be submited in writing to the Corps at least 60 days prior to implementation. Caltrans shall not implement the proposed changes prior to receiving written approval from the Corps.

7. This permit may require modification if the final, revised project plans and/or impact maps differ from those used to develop the temporary and permanent impact assessments for the MMP dated March 15, 2011. Prior to construction of the project, the permittee shall provide the Corps with the final revised project plans, corresponding maps showing final project footprint and location of each temporary and permanent impact to wetlands and other waters, and a detailed spreadsheet itemizing the areal extent of each temporary and permanent impact. The final, revised project plans and corresponding impact maps shall be reviewed and approved by the Corps in writing. Any temporary or permanent impacts that occur on areas not evaluated for the presence of wetlands and/or waters of the U.S. in the initial development of the impact assessments for the MMP shall require verified jurisdictional

determination and an assessment of those impacts. For example, impacts occurring on the parcels Garman (APN038-020-21), Burton (APN 038-020-09), Shrabel (APN 038-020-46), (Pellegri (APN 038-040-07), Lamb (APN 038-040-05), and King (APN 038-040-08).

8. Within 45 calendar days of installation of each mitigation area, the Permittee shall submit to the Corps a memo indicating the following:

   A)Date(s) all mitigation was installed and monitoring was initiated;
   B) Schedule for future mitigation monitoring, implementation and reporting pursuant to final, Corps-approved mitigation plan;
   C) Summary of compliance status with each special condition of this permit (including any noncompliance that previously occurred or is currently occurring and corrective actions proposed to achieve compliance);
   D) One copy of "as built" drawings for all mitigation sites (all sheets must be signed, dated, to-scale, and no larger than 11 x 17 inches)

9. Performance Standards must be met each year for each mitigation action on each mitigation unit. The Permittee shall submit annual mitigation monitoring reports to the Corps by December 31 each year. Annual sampling documentation, as part of monitoring reports, shall include maps showing locations of sampling points/transects and photos representative of sampling locations. Reports should provide quantitative data and other information necessary for the Corps to verify the site conditions and whether the compensatory mitigation project is meeting its performance standards. Such information includes, for each site, field data forms (raw data) and summary tables of the following: relative cover by wetland plant species, percent change in relative cover by wetland plant species over baseline conditions, relative cover of target native wetland plant species, percent change in relative cover of target native wetland plant species over baseline conditions, species richness (including a list of species), and absolute percent cover by invasive plants. If a performance standard is not met, Caltrans shall propose possible remedial actions for USACE review and approval.

10. For determining the mitigation treatment units and types of treatments, Caltrans shall submit the proposed Baseline Study required in the Willits Bypass Project Mitigation and Monitoring Proposal" (dated January 2012, and prepared by Caltrans), at least two months prior to its implementation for USACE review and approval in the winter of 2012. A site visit may be required for approval of the proposed Baseline Study.

11. For vegetation sampling of mitigation treatment units, the Permittee shall propose a sampling strategy for Corps to review and approve in writing at least three months prior to its anticipated implementation. On homogenous rehabilitation treatment areas, random sampling of vegetation is acceptable. On heterogeneous rehabilitation treatment areas, stratified random sampling or an equivalent is required. Vegetation sampling shall not commence until the Corps has approved the strategy in writing. The number and location of the transects will be sufficient to adequately represent the mitigation unit's plant species composition (measured by a species diminishing curve) and plant species distribution (i.e. percent cover).

12. Caltrans shall submit proposed hydroperiod reference sites and method of measurement of hydroperiod (ie. ground water measurement or surface ponding observation) of adjacent wetland areas for each off-site establishment (Group 1 and 2) at least three months prior to its implementation for Corps review and approval. For Group 2 wetland establishment areas, a ground water measurement well will be situated at the highest elevation of the established wetland area for each treatment area. A minimum of one well will be installed for every 2 acres of Group 2 establishment.

13. The footprint (total acreage) of the rehabilitation treatment areas are described in Table 6.4 of the MMP. If it is determined by the Corps that adjustments are required to treatment areas, the total wetland rehabilitation credit amount as stated in Table 6.4 (61.29 acres of credit) shall not decrease.

14. All measurements for percent cover of wetland species, targeted wetland species and native plant species (herbaceous and woody) shall be in relative percent cover. Measurement of invasive plant species shall be in absolute percent cover.

15. All references in the MMP for target species, target wetland species, and target hydrophytic species refer to the list of plant species found in Table 7.5 of the MMP.

16. The Permittee shall clearly mark all areas of Corps jurisdiction, and any associated riparian vegetation, that are not to be removed or otherwise adversely impacted during project implementation with cyclone-type fencing. Markers and/or barricades shall be clearly located to restrict access and ensure all movement of equipment and personnel will occur within the authorized construction/impact areas.

17. The Permittee shall disclose all proposed temporary impact areas, including temporary access routes and staging areas, located within wetlands and other waters of the U.S to the Corps a minimum of sixty (60) days prior to any project construction. All Phase I temporary impact areas shall have the temporary fill removed within 60 days following Phase I construction completion (by approximately the year 2016). All temporary impacts to waters of the U.S. must be restored to pre-construction conditions and still meet the definition of jurisdictional wetlands/waters of the U.S.

18. This Corps permit does not authorize you to take any threatened or endangered species, in particular the threatened northern spotted owl (*Strix occidentalis caurina*), Northern California steelhead (*Oncorhynchus mykiss*), Southern Oregon/Northern California coho salmon (*Oncorhynchus kisutch*), or California Coastal Chinook salmon (*Oncorhynchus tshawytscha*), or adversely modify its designated critical habitat. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g. ESA Section 10 permit, or a Biological Opinion (BO) under ESA Section 7, with "incidental take" provisions with which you must comply). The USFWS and NMFS BOs (EA 01-262000 dated June 22, 2010, and #2011/06217 dated January 19, 2012, respectively) contain mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the BOs. Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached BOs, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BOs, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. The USFWS and NMFS are the appropriate authorities to determine compliance with the terms and conditions of their BOs and with the ESA.

19. The Permittee shall allow Corps representatives to inspect the authorized activities at any time deemed necessary to ensure compliance with permit terms and conditions.

20. The Permittee (Caltrans) is not authorized to commence fill or construction activities associated with Phase II of the Project until after the Corps has provided a written notice to proceed with Phase II. Design-level drawings for Phase II shall be submitted to the Corps a minimum of two years prior to the anticipated commencement of construction. In addition, a draft mitigation plan in accordance with the requirements of 33 CFR § 332.4(c) must be submitted to the Corps to address Phase II Project impacts. The draft submittal must allow two (2) years of development and review such that the final mitigation plan is developed prior to the proposed start of Phase II construction. The draft mitigation plan shall address the 8.31 acres of permanent and 8.07 acres of temporary impacts to waters of the U.S. associated with Phase II through restoration/establishment/enhancement of waters of the U.S. and shall ensure that there will not be a net loss of aquatic resource functions and services resulting from Phase II. The Phase II final mitigation plan will be submitted for public review and comment via a Public Notice, and the Permittee shall adequately respond to all comments prior to Corps approval of the plan. No work in waters of the U.S. associated with Phase II is authorized until the Permittee receives, in writing, Corps approval of the final mitigation plan and Corps acknowledgement of the receipt of the Phase II design-level drawings. The Permittee shall fully implement this Phase II final mitigation plan concurrently with, or prior to, Phase II impacts to waters of the U.S.

21. The Permittee shall disclose all proposed temporary impact areas, including temporary access routes and staging areas, located within wetlands and other waters of the U.S to the Corps a minimum of sixty (60) days prior to any project construction. All Phase II temporary impact areas shall have the temporary fill removed within 60 days

following Phase II construction completion. All temporary impacts to waters of the U.S. must be restored to pre-construction conditions and still meet the definition of jurisdictional wetlands/waters of the U.S.

22. Your responsibility to complete the required compensatory mitigation as set forth in Special Conditions 1 through 17, 20 and 21, will not be considered fulfilled until you have demonstrated compensatory mitigation project success and have received written verification of that success from the U.S. Army Corps of Engineers. Failure to fulfill your responsibility to fully compensate for impacts to 82.05 acres of waters of the U.S. will result in a requirement of additional compensatory mitigation, as determined by the Corps.

FURTHER INFORMATION:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 403).
(X) Section 404 of the Clean Water Act (33 U.S.C. Section 1344).
( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. Section 1413).

2. Limits of this authorization:

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability: In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate. (See Item 4 above.)

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 C.F.R. § 325.7 or enforcement procedures such as those contained in 33 C.F.R. §§ 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 C.F.R. § 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Charles Fields — Feb 17, 2012

(PERMITTEE) (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Torrey A. DiCiro — FEB 21, 2012

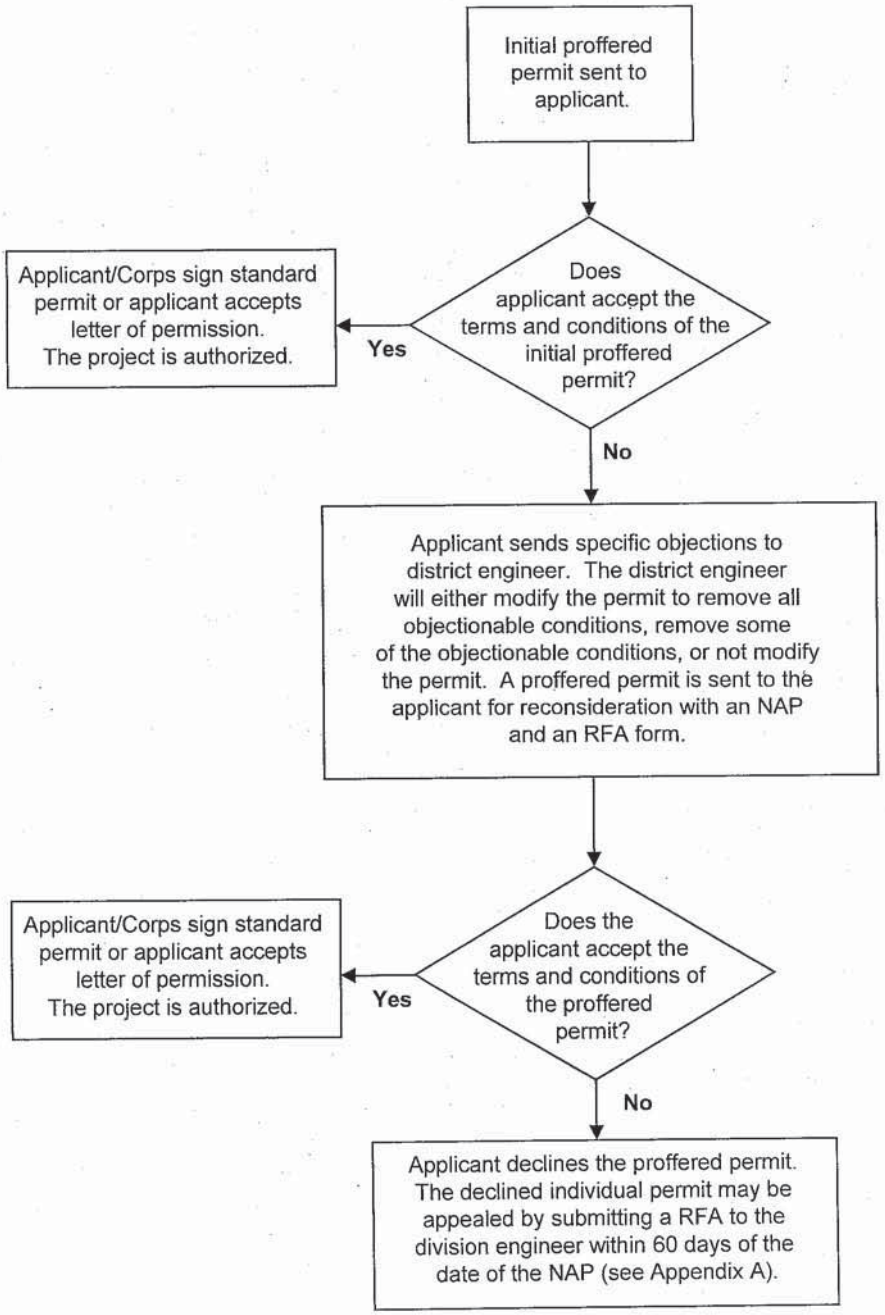
(DATE)

Torrey A. DiCiro, P.E., PMP
Lieutenant Colonel, U.S. Army
District Commander

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) (DATE)

Applicant Options with Initial Proffered Permit



Appendix B

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Mr. Charlie Fielder, CALTRANS	File No. 1991-194740N	Date: 02-16-2012
Attached is:		See Section below
X	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the DISTRICT ENGINEER for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this Notice and return the Notice to the DISTRICT ENGINEER. Your objections must be received by the DISTRICT ENGINEER within 60 days of the date of this Notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your NOTICE, the DISTRICT ENGINEER will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the DISTRICT ENGINEER will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the DISTRICT ENGINEER for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this NOTICE and sending the NOTICE to the DIVISION ENGINEER. This Notice must be received by the DIVISION ENGINEER within 60 days of the date of this Notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this Notice sending the Notice to the DIVISION ENGINEER. This Notice must be received by the DVISION ENGINEER within 60 days of the date of this Notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this Notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this Notice and sending the Notice to the DIVISION ENGINEER. This Notice must be received by the DIVISION ENGINEER within 60 days of the date of this Notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Laurie A. Monarres, Chief, North Branch, Regulatory Division U.S. Army Corps of Engineers, San Francisco District 1455 Market Street, 16th Floor, Attn: CESPN-R-N San Francisco, CA 94103-1398 Tel. (415) 503-6774 FAX (415) 503-6690	If you only have questions regarding the appeal process you may also contact: Thomas J. Cavanaugh, Appeal Review Officer U.S. Army Corps of Engineers, South Pacific Division 1455 Market Street, 20th Floor, Attn: CESPD-PDS-O San Francisco, CA 94103-1399 Tel. (415) 503-6574 FAX (415) 503-6646

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

Notice of Determination

TO: ☒ Office of Planning and Research

For U.S. Mail:
P.O. Box 3044
Sacramento, CA 95812-3044

Street Address:
1400 Tenth Street
Sacramento, CA 95814

FROM: Department of Fish and Game
Northern Region
601 Locust Street
Redding, CA 96001
Contact: Craig Martz
Phone: (530) 225-2281

LEAD AGENCY (if different from above):
Department of Transportation (Caltrans)
2800 Gateway Oaks Drive, #100
Sacramento, CA 95833
Contact: Jeremy Ketchum
Phone: (916) 274-0621

SUBJECT: Filing of Notice of Determination pursuant to § 21108 of the Public Resources Code

State Clearinghouse Number: 1990030006

Project Title: Lake or Streambed Alteration Agreement No. 1600-2010-0044-R1 for the Willits Bypass Project

Project Location: U.S. Highway 101 from Post Mile R43.1, approximately 2.0 miles south of Willits, to Post Mile R49.0, approximately 1.9 miles south of Reynolds Highway, Mendocino County; T18N, R13W, Mt. Diablo Base and Meridian.

Project Description: The Project proposes to construct a new four-lane freeway bypass to the east of the City of Willits, with crossings of Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks, tributary to the Eel River, Mendocino County.

This is to advise that the Department of Fish and Game (DFG), acting as ☐ **the lead agency /** ☒ **a responsible agency** approved the above-described project on the date signed below and has made the following determinations regarding the above described project:

1. The project ☐ **will /** ☒ **will not** have a significant effect on the environment. (This determination is limited to effects within DFG's jurisdiction when DFG acts as a responsible agency.)
2. ☒ **An environmental impact report /** ☐ **A negative declaration /** ☐ **A timber harvesting plan** was prepared for this project pursuant to CEQA.
3. Mitigation measures ☒ **were /** ☐ **were not** made a condition of DFG's approval of the project.
4. A Statement of Overriding Considerations ☐ **was /** ☒ **was not** adopted by DFG for this project.
5. Findings ☐ **were /** ☒ **were not** made by DFG pursuant to Public Resources Code § 21081(a). DFG did, however, adopt findings to document its compliance with CEQA.
6. Compliance with the environmental filing fee requirement at Fish and Game Code § 711.4 (check one):
   - ☐ Payment is submitted with this notice.
   - ☒ A copy of a receipt showing prior payment is on file with DFG.
   - ☐ A copy of the CEQA Filing Fee No Effect Determination Form signed by DFG is attached to this notice.

☐ Lead Agency certification: DFG, as Lead Agency, has made the final EIR with comments and responses and record of project approval, or the Negative Declaration, available to the General Public at the DFG office identified above.

☒ Responsible Agency statement: The final EIR, Negative Declaration, or THP that was prepared by the Lead Agency for this project is available to the General Public at the office location listed above for the Lead Agency. DFG's CEQA Findings are available at the DFG office identified above.

Signed: _____ Date: 6/29/10
Curt Babcock
Acting Habitat Conservation Program Manager
Northern Region

Date Received for filing at OPR:

CALIFORNIA DEPARTMENT OF FISH AND GAME
CALIFORNIA ENVIRONMENTAL QUALITY ACT FINDINGS FOR
LAKE OR STREAMBED ALTERATION AGREEMENT No. 1600-2010-0044-R1

Introduction

The California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, *et seq.*) and the State CEQA Guidelines (Guidelines) (Section 15000, *et seq.*, Title 14, California Code of Regulations) require that no public agency shall approve or carry out a project for which an Environmental Impact Report (EIR) has been completed that identifies one or more significant effects, unless the agency makes the following finding as to each significant effect:

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

As the lead agency for the project, the Department of Transportation (Caltrans) certified the EIR for the Project on **December 15, 2006**. A Supplemental EIR (SEIR) was certified by the lead agency on **May 19, 2010**. Caltrans found that the Project will not result in significant environmental effects with the mitigation measures required in, or incorporated into the Project.

The California Department of Fish and Game (DFG) is entering into Lake or Streambed Alteration Agreement (Agreement) **No. 1600-2010-0044-R1** with **Mr. Dave Kelley, representing Caltrans**. The project will affect portions of **Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks, Mendocino County, T18n, R13W, Mount Diablo Base and Meridian**.

Because DFG is issuing the Agreement, it is a Responsible Agency under CEQA for the Project. As a CEQA Responsible Agency, DFG is required by Guidelines Section 15096 to review the environmental document certified by the Lead Agency approving the projects or activities addressed in the Agreement and to make certain findings concerning a project's potential to cause significant, adverse environmental effects. However, when considering alternatives and mitigation measures approved by the Lead Agency, a Responsible Agency is more limited than the Lead Agency. When issuing the Agreement, DFG is responsible only for ensuring that the direct or indirect environmental effects of activities addressed in the Agreement are adequately mitigated or avoided. Consequently, the findings adopted or independently made by DFG with respect to an Agreement's activities are more limited than the findings of the Lead Agency funding, approving, or carrying out the project activities addressed in such Agreements.

Findings

DFG has considered the EIR and SEIR certified by Caltrans. DFG has independently concluded that the Agreement should be issued under the terms and conditions specified therein. In this regard, DFG hereby adopts any findings of Caltrans as set forth in the EIR and SEIR and record of project approval, insofar as those findings pertain to the project's impacts on biological resources.

Signed: _____ Date: 6/29/10

Curt Babcock
Acting Habitat Conservation Program Manager
Northern Region

CALIFORNIA DEPARTMENT OF FISH AND GAME
NORTHERN REGION
601 LOCUST STREET
REDDING, CA 96001

LAKE or STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2010-0044-R1
Haehl, Baechtel, Broaddus, Mill, Upp and Outlet Creeks, and
Unnamed Tributaries Thereto

CALIFORNIA DEPARTMENT OF TRANSPORTATION
WILLITS BYPASS PROJECT

This Lake or Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Game (DFG) and the California Department of Transportation (Permittee) as represented by Mr. Dave Kelley.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified DFG on March 1, 2010, that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, DFG has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement.

PROJECT LOCATION

The Willits Bypass Project (hereafter, the Project) is located near the City of Willits in Little Lake Valley, Mendocino County, California. The Project will construct a new freeway alignment to the east of Willits. The southern end of the new alignment is located at Post Mile (PM) R43.1 approximately 2.0 miles south of Willits, 39.371887, -123.321514. The northern end of the Project is located at PM R49.0, approximately 1.9 miles south of Reynolds Highway, 39.437511, -123.356766. The Project site is bounded by the City of Willits to the west and the Little Lake Valley to the east, on the Laughlin Range and Willits US Geological Survey (USGS) 7.5 minute quadrangles, Humboldt Base and Meridian.

PROJECT DESCRIPTION

The Project consists of a four-lane freeway bypass crossing the Little Lake Valley east of the City of Willits. The facility will maintain a minimum design speed of 68 miles per hour and will feature a 45.3-foot median separating the northbound and southbound lanes. Each lane will be 12 feet wide. The inside shoulder width (nearest the median) will be 5 feet, while the outside shoulder width will be 10 feet. The Project will begin approximately 2.0 miles south of Willits, where the existing four-lane freeway becomes a two-lane highway, and will continue north, rejoining the existing two-lane highway about 1.3 miles north of the Willits city limits. The overall length of the bypass will be approximately 5.8 miles, starting near PM R43.1 and ending near R49.0.

The bypass alignment will diverge from existing U.S. 101 at the new Haehl Creek interchange and continue northwesterly on an embankment constructed with excess fill from a previous freeway project. At the crossing over Center Valley Road, the roadway embankment will be replaced by a floodway viaduct, approximately 6,000 feet long. The viaduct structure will span the regulatory floodway, roughly paralleling the east bank of Baechtel Creek until it crosses the creek at the confluence with Broaddus Creek east of the Willits Waste Water Treatment Plant (WWTP). The bypass will continue on viaduct as it curves to the west and crosses Mill Creek. From a point approximately 600 feet west of the Mill Creek crossing, the facility will continue northwest on fill, bridging the Northwestern Pacific Railway (NWPRR) right-of-way before rejoining the existing alignment of U.S. 101 at the new Quail Meadows interchange.

Funding constraints require that the Project be constructed in two phases. Phase 1 consists of the two interchanges and the two southbound lanes which will be operated as a two-lane bypass (one lane in each direction). Construction of Phase 1 is expected to take four years to complete. As funding allows in Phase 1, Caltrans intends to construct as much of the four-lane embankment as possible to help facilitate the construction of Phase 2. The environmental study limits encompass the full four-lane facility and right-of-way purchased in Phase 1 will satisfy the requirements of the ultimate, four-lane, access-controlled freeway. Although only Phase 1 will be constructed at this time, Caltrans will implement mitigation for the biological resource impacts of the full four-lane facility. Funding for the second phase has not yet been identified. The additional funding necessary to construct Phase 2 will likely come from a combination of federal, state and local sources.

Construction of the Project will require excavation and placement of up to 1.4 million cubic yards of fill materiall for roadway embankment; removal of native wetland, riparian and upland vegetation; construction of temporary access roads and haul roads; construction of temporary and permanent stream crossings; removal of existing culverts on Haehl and Upp Creeks that currently impede the passage of anadromous salmonids; reconstructing the longitudinal profile of these stream reaches to provide improved fish passage; installing rock slope protection (RSP) and/or other bank stabilization measures to protect structures; dewatering of work areas in wetlands and within stream

channels for construction of permanent bridge and viaduct piers; installation of sheet piles, temporary H piles, and permanent un-filled pipe piles using vibratory and percussive hammers; and installation of wick drains to provide a stable foundation for embankment fills. In addition to erosion control and revegetation of temporary disturbance areas within the right-of-way, the Project also includes compensatory restoration, enhancement, and preservation activities on a minimum of 1,910 acres of off-site mitigation lands. An optional proposed borrow site at Oil Well Hill, located on the east side of U.S. 101 approximately 0.85-mile north of the intersection of Reynolds Highway and U.S. 101 has been designated as a source of fill material for the Project.

All work shall be in accordance with submitted plans and diagrams and any subsequent revisions approved by the DFG in writing. Specific work includes:

Interchanges

Two interchanges will be constructed for the project. The Haehl Creek interchange will be located at the south end of the project near Haehl Creek and connect the existing highway into Willits with the new facility. The Quail Meadows interchange will be located near the north end of Little Lake Valley and connect the new facility to the existing highway north of Willits. Interchange ramps will be single-lane.

Bridges and Structures

The bypass will cross creeks, riparian corridors, streets, and railroad rights-of-way using 22 bridges. Three retaining walls will be built. The following structures will be constructed with this project:

Six bridges in the Haehl Creek interchange area, one for each of the following:

- Northbound freeway lanes separation over State Route (SR) 20
- Southbound freeway lanes separation over SR 20
- Southbound off-ramp over Haehl Creek
- Northbound on-ramp over Haehl Creek
- Northbound freeway lanes over Haehl Creek
- Southbound freeway lanes over Haehl Creek

Two retaining walls in the Haehl Creek interchange area adjacent to Haehl Creek:1) East side of northbound lanes and 2) West side of northbound on-ramp

Two bridges to cross East Hill Road, including 1) one bridge for the southbound roadway lanes (Phase 1) and 2) one bridge for the northbound roadway lanes (Phase 2)

Two bridges to cross the middle reach of Haehl Creek south of Shell Lane, including one bridge for the southbound roadway lanes (Phase 1) and one bridge for the northbound roadway lanes (Phase 2).

One retaining wall on the west side of the southbound roadway lanes just south of Center Valley Road.

Two viaduct structures to span the floodway:

- Southbound (Phase 1)
- Northbound (Phase 2)

Two bridges to cross over the NWPRR tracks in the Quail Meadows interchange area, including one for the southbound roadway lanes (Phase 1) and one for the northbound roadway lanes (Phase 2).

Two bridges to cross the new connector road to existing U.S. 101 in the Quail Meadows interchange area, including one for the southbound roadway lanes (Phase 1) and one for the northbound roadway lanes (Phase 2).

Six bridges to cross Upp Creek directly north of the Quail Meadows interchange, one for each of the following:

- Southbound roadway lanes (Phase 1)
- Northbound roadway lanes (Phase 2)
- Northbound on-ramp (Phase 1)
- Northbound on-ramp (Phase 2)
- Southbound off-ramp
- Roundabout local intersection

Note that the northbound on ramp bridge constructed in Phase 1 would be replaced in Phase 2 by a different bridge.

Viaduct

Because the proposed alignment encroaches upon the 100-year floodplain, the design includes two elevated structures, which make up the floodway viaduct. The purpose of this design feature is to span the floodway. The final floodplain evaluation report concludes that project will not increase the base flood elevation of the floodway, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q).

The viaducts will be located in the central part of the project area and will span Center Valley Road, the lower reach of Haehl Creek just upstream of the confluence with Baechtel Creek, Hearst-Willits Road, Baechtel and Broaddus Creeks at their confluence (beginning of the Outlet Creek designation), the WWTP, and Mill Creek.

The approximately 6,000-foot-long structures will consist of a separate northbound and southbound elevated viaduct superstructure. The total area of both viaducts would be 11.6 acres. Each of the viaducts will be approximately 42.6 feet wide. The edge-to-edge distance between the structures will be approximately 31.2 feet, and each will have a

16.5-foot minimum clearance underneath. The viaducts will require supporting columns, ranging in size from 4.5 to 7 feet in diameter.

Reinforced Concrete Box Culverts

Two large reinforced concrete box (RCB) culverts will be built under Center Valley Road, near Shuster's Trucking to prevent floodplain impacts due to roadway embankment south of Center Valley Road. These two culverts will use turf reinforcement mats in lieu of rock slope protection (RSP) at the inlets and outlets where feasible.

Retaining Walls

Three concrete retaining walls will be constructed: two at the Haehl Creek interchange, and one just before the south end of the viaduct near Baechtel Creek. One Haehl Creek interchange wall will be located along the west side of the northbound on-ramp; the other will be located along the east side of the northbound lanes between the separation structure over SR 20 and the Haehl Creek bridge. The Baechtel Creek retaining wall will prevent floodplain elevation increases.

Excavation (Cut), Embankment (Fill), and Imported Borrow

The estimated embankment requirement for Phase 1 of the proposed project is approximately 1.4 million cubic yards. Because all soil excavated on-site will be reused as embankment, no disposal sites will be required for the project. Beginning just north of the Haehl Creek interchange to the south abutment of the viaduct, and from the north abutment of the viaduct to the terminus of the project, the alignment will be constructed largely on embankment created using excavated soil and imported fill material. Cut slopes will generally vary between a 1:2 (vertical: horizontal) and 1:2.5 ratio. Fill slopes will vary between a 1:2 and 1:4 ratio. The plans call for slope rounding at appropriate locations.

The bypass will require imported borrow material from outside the project area in addition to material excavated on-site. The construction contractor will have the option to determine whether the source of material for earthwork fill will be the Caltrans-designated borrow site at Oil Well Hill, a commercial borrow site, or another site.

An optional borrow site has been designated at Oil Well Hill, just north of Little Lake Valley, as a source of material that the contractor may use for the project. The material in this area is good-quality and suitable for use in embankment construction. The right-of-way for U.S. 101 at the designated borrow site is sufficient to provide the necessary embankment material for earthwork. Potential excavation at the proposed designated borrow site at Oil Well Hill could result in the removal of up to 1.4 million cubic yards of material. The State Geology and Mining Board granted an exception to the Surface Mining and Reclamation Act (SMARA) permitting requirement on March 13, 2008. The

contractor may also choose to use available commercial borrow sites in the vicinity to obtain the required fill. Typically, commercial borrow sites hold pre-approved operating permits and do not require any additional environmental permitting when soil is exported. Should the contractor select an alternative, non-commercial borrow site for this project, the contractor will be responsible for conducting a separate environmental review for the site.

Fish Passage

One existing culvert in the upper Haehl Creek channel, located under the proposed highway bridge 10-0129R/L, will be permanently removed and restored as a natural drainage feature. Fish passage on a second existing culvert in upper Haehl Creek will be improved by stabilizing the stream gradient to allow a backwater pool to extend throughout the length of the culvert. An existing RCB culvert in the vicinity of the proposed Quail Meadows interchange and passing under US 101 will be permanently removed and the creek contoured, re-graded, stabilized, and replanted; local traffic will cross Upp Creek on the new bridge that will be on the north leg of the roundabout.

Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) will consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements will comply with guidelines established by National Marine Fisheries Service (NMFS) and California Department of Fish and Game (DFG).

An existing culvert under the access road to the Schmidbauer Ranch will be improved. This access road will be from the east side of the southern interchange. The existing culvert in upper Haehl Creek will be backwatered by building grade control structures downstream to restore and stabilize the natural stream gradient. Stabilizing the natural stream gradient will allow the bottom of the stream bed to aggrade to the culvert elevation. Construction of grade control structures will occur during summer when this reach of Haehl Creek is normally dry. If water is present, a qualified fisheries biologist will survey the pool for the presence of salmonids. If present, the fish will be removed and relocated before removal and replacement of the culvert.

Landscaping

Disturbed upland areas such as the cut and fill slopes adjacent to the roadway and along interchange ramps, as well as the median between the inside roadway shoulders, will be revegetated with native plants sourced from the following locations, in priority order: Little Lake Valley, Outlet Creek watershed, Eel River watershed. For drivers' safety and in compliance with Caltrans design standards, no trees will be planted within the clear recovery zone where errant vehicles could hit them. Only soft shrubby and herbaceous native species may be planted throughout these areas to prevent abrupt slowing, redirection, or launching of stray vehicles. Temporarily impacted areas will be

revegetated to their pre-construction plant community type. They will be seeded and planted with native plants sourced from the following locations, in priority order: Little Lake Valley, Outlet Creek watershed, Eel River watershed.

Stream Bank Stabilization

To prevent bank erosion and damage to the bypass facilities, RSP and other bank stabilization treatments will be required along short lengths of creek banks. The use of RSP will be minimized through the substitution of "Rolled Erosion Control Product" (RECP; netting) or "Turf reinforcement Mat" (TRM) in appropriate locations.

At locations where Haehl and Upp Creeks pass through the right-of-way, the stream channel will be contoured, re-graded, and designed for fish passage following the guidelines set forth by NMFS and DFG.

Mitigation Construction

Bypass construction will result in temporary and permanent impacts on riparian and wetland habitat and permanent impacts on other waters and oak habitat. Temporary impacts on riparian and wetland habitat will be mitigated on site through the use of restoration techniques. Permanent impacts on riparian and wetland habitat will be mitigated off site through the use of creation, enhancement, and/or preservation techniques.

On site mitigation implementation will focus primarily on restoring temporarily affected riparian and wetland habitat within the bypass project footprint. In addition, on site minimization efforts related to state-listed plant species (e.g., seed collection, and topsoil harvesting and stockpiling) will be required. On site mitigation actions with the potential to result in impacts on wetlands, other waters, riparian habitat, listed plant species and/or listed fish will entail the following activities, and are summarized below (a full description of proposed mitigation actions is presented in the Final MMP):

- Site Preparation. Site preparation of on site mitigation sites will entail vegetation clearing and seed, rhizome, and topsoil salvaging. Vegetation clearing will be conducted within the bypass project footprint and will entail the use of heavy equipment to strip the existing vegetation. Prior to the beginning of ground-disturbing project construction activities, known populations of listed plant species to be affected by construction either will be salvaged for transportation to adjacent on site locations or salvaged for relocation to offsite mitigation parcels, where the harvested material will be used to topdress created wetlands.

- Grading. Temporarily affected locations will be graded as necessary to reestablish appropriate topography and site drainage. The disturbed locations will be configured to replicated preproject conditions as closely as possible. Grading will be limited to the dry season (late spring through early fall). Erosion

control seed mixes will be applied after grading is complete but prior to the onset of wet season rains to prevent loosened material/sediment from entering wetlands or waters near the bypass project footprint.

- Seeding. Temporarily affected riparian and wetland locations will be seeded with an erosion control mix or a wetland seed mix, depending on location in the bypass project footprint. The seed will be from locally collected seed or plants (i.e., sourced from the following locations, in priority order: Little Lake Valley, Outlet Creek waterhsed, Eel River watershed). All temporarily affected riparian locations and wetland locations outside the viaduct construction area will be seeded with an erosion control mix. Temporarily affected wetlands in the viaduct construction area will be seeded with a wet meadow seed mix.

- Planting. Temporarily affected riparian and wetland locations in the viaduct construction area will be restored using container stock grown from locally collected seed or cuttings (i.e., sourced from the following locations, in priority order: Little Lake Valley, Outlet Creek watershed, Eel River watershed). Container plants will be placed in a planting hole that will be hand excavated or augured.

Mitigation on individual offsite mitigation parcels may include a combination of habitat restoration, creation, enhancement, and/or preservation. Off site mitigation actions with the potential to result in impacts on wetlands, other waters, riparian habitat, listed plant species and/or listed fish will entail similar ground-disturbing activities (e.g., site preparation, grading, seeding, and planting) as those described above for on site mitigation areas. In addition, grazing management plans will be developed for each of the off site mitigation parcels. The plans will include strategies to promote the establishment and preservation of target wetland communities and associated plant species and to support and potentially increase the extent of currently occurring listed plant species. Enhancement actions for each parcel may include repairing and replacing existing fences and gates to control livestock; developing and implementing rotational grazing strategies to promote the establishment and preservation of target listed plant species and wetland communities; installing permanent and/or temporary exclusion fencing around sensitive areas; installing water troughs in each grazing management unit to spread grazing across the entire unit; and locating salt licks away from drainages and areas to be protected.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include: white-tailed kite (*Elanus leucurus*), Cooper's hawk (*Accipiter cooperii*), Red-shouldered hawk (*Buteo lineatus*), and other raptors; Southern Oregon-Northern California Coasts (SONCC) coho salmon (*Oncorhynchus kisutch*), California coastal Chinook salmon (*Oncorhynchus tshawytscha*), northern California steelhead (*O. mykiss irideus*); yellow warbler (*Dendroica petechia brewsteri*), yellow-breasted chat (*Icteria virens*), and other riparian-dependent bird species; special-status plants including Baker's meadow-foam

(*Limnanthes bakeri*) and North Coast semaphore grass (*Pleuropogon hooverianus*), as well as other non-game and game fishes, amphibians, reptiles, aquatic invertebrates, mammals, birds, and other aquatic and riparian species.

The adverse effects the project could have on the fish or wildlife resources identified above include: disruption of raptor nesting behavior and decreased reproductive success due to construction disturbance; loss of occupied passerine habitat and nests, including eggs and/or nestlings, as a result of vegetation removal; direct mortality of fish, amphibians, and other aquatic species during pile driving and construction de-watering activities; temporary and permanent impacts to aquatic species due to suspended sediment and the smothering and/or shading of egg masses and benthic invertebrate communities due to sediment deposition; direct removal of special-status plants and occupied habitat as a result of construction activities.

Implementation of the Project, including wetland creation and other mitigation activities, will result in the following permanent and temporary impacts on riparian corridors, oak woodlands, jurisdictional wetlands, and special-status plant habitats:

Table 1. Temporary and permanent resource impacts *after* removal of overlaps.

Resource	Temporary Impacts (acres)	Permanent Impacts (acres)	Total Impacts (acres)
North Coast semaphore grass	0.02	0.39	0.41
Baker's meadowfoam	36.74	33.51	70.25
Category I Riparian Corridor[1]	8.15	2.38	10.53
Jurisdictional Wetlands	12.58	26.07	38.65
Other Waters	2.04	2.03	4.07
Category II Riparian Corridor[2]	0.03	3.56	3.59
Category III Riparian Corridor[3]	0.31	0.93	1.24
Oak Woodland (tree canopy)			
Lowland	0.08	5.70	5.78
Upland	0.00	5.02	5.02
Oak Woodland (grassland)			
Lowland	2.34	26.26	28.60
Upland	0.00	7.83	7.83
Total:	**62.29**	**113.68**	**175.97**

[1] Riparian corridors adjacent to salmonid streams
[2] Riparian corridors on tributaries to salmonid streams within 1,000 feet of the confluence with a Category I stream
[3] Riparian corridors that are more than 1,000 feet upstream from the confluence with a Category I stream

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to DFG personnel, or personnel from another state, federal, or local agency upon request.

1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

1.3 Notification of Conflicting Provisions. Permittee shall notify DFG if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, DFG shall contact Permittee to resolve any conflict.

1.4 Project Site Entry. Permittee agrees that DFG personnel may enter the project site at any time after notifying the Caltrans Resident Engineer to verify compliance with the Agreement.

1.5 Permittee's notification (Notification of Lake or Streambed Alteration together with all maps, plans, photographs, drawings, and all other supporting documents submitted with notification to describe the activity) is hereby incorporated by reference into this Agreement. Permittee shall conduct project activities within the work areas and using the mitigative features described in the notification and supporting documents, unless such project activities, work areas or mitigative features are modified by the provisions of this Agreement, in which case the activities shall be conducted as described in this Agreement.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

2.1 All work within the channel or on the stream banks shall be confined to the period commencing June 15 and ending October 15, provided the stream is dry or at minimum flow. If weather conditions permit and the stream is dry or at minimum flow, the Permittee may perform work within the stream channel or on the banks

outside of the above referenced work window, provided a written request is made to DFG at least five (5) days before the proposed work period variance. Written approval from DFG for the proposed work period variance must be received by the Permittee prior to the start or the continuation of work outside of the above referenced work window.

2.2 If work is performed within the stream channel or on the banks outside of the above referenced work window, the Permittee shall do all of the following:

a. Stage erosion and sediment control materials at the work site.

b. Monitor the seventy-two (72) hour forecast from the National Weather Service.

c. When the 72-hour forecast indicates a probability of precipitation of 60% or greater, or at the onset of any precipitation, ground disturbing activities shall cease and erosion control measures shall be implemented to stabilize exposed soils and prevent the mobilization of sediment into the stream channel or adjacent wetland or riparian areas.

2.3 Notwithstanding Condition 2.1 above, removal of the above-ground portions of existing trees and shrubs shall occur after August 31 and before February 1 to avoid impacts to nesting birds. If vegetation must be removed during the nesting season (February 1 to August 31) nest surveys shall be conducted prior to vegetation clearing.

2.4 The Permittee shall instruct all persons who will be completing any ground disturbing activity at a work site to comply with the conditions set forth in this Agreement and shall inspect each work site before, during, and after completion of any ground-disturbing activity at the work site.

2.5 Permittee shall conduct an education program for all persons employed or otherwise working on the Project site prior to performing any work on-site. The program shall consist of a presentation that includes a discussion of the sensitive resources existing within and adjacent to the work area, including State and federally listed species, as well as the protective measures required in this Agreement and the Incidental Take Permit for the Project. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to their performing work on-site. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry on-site. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and be available to DFG upon request.

2.6 At least 30 days before initiating channel- ground- or vegetation-disturbing activities, Permittee shall submit to DFG in writing the name, qualifications, business address, and contact information for a biological monitor (Designated Biologist). The Designated Biologist shall be knowledgeable and experienced in the biology and natural history of the Project area, with special emphasis on special-status species and sensitive habitats. The Designated Biologist shall be responsible for monitoring Project activities and/or channel- ground- or vegetation-disturbing activities within habitats for special-status species and other sensitive areas. Permittee shall obtain DFG approval of the Designated Biologist prior to the commencement of Project-related activities that may result in disturbance to special-status species or sensitive habitats.

2.7 The Designated Biologist shall be on-site daily while Project activities including all pile installation, dewatering, channel- vegetation- or ground-disturbing activities that may affect special-status species are taking place to: (1) minimize incidental take of special-status species; (2) check for compliance with all mitigation and avoidance measures; (3) check all exclusion zones; and (4) ensure that signs, stakes, and fencing are intact, and that human activities are restricted outside of these protective zones. The Designated Representative or Designated Biologist shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections, observations of special-status species, survey results, and monitoring activities required by this Agreement. The Designated Biologist shall conduct compliance inspections a minimum of once per month during periods of inactivity and after clearing, grubbing, and grading are completed.

HABITAT AND SPECIES PROTECTION

2.8 To avoid disturbance to nesting white-tailed kites and other raptors, a qualified biologist shall conduct pre-construction field surveys during the courtship period (February) to identify nesting territories within ¼ mile of the Project alignment. If active nests are identified within ¼ mile of the alignment, a no-construction buffer will be established around the nest until the young have successfully fledged. No take of white-tailed kites or other raptors, including their nests, eggs, or young is authorized by this Agreement.

2.9 This Agreement does not authorize the take of any State or federal threatened or endangered species. Any take of listed threatened or endangered species that is incidental to Project activities shall be in full compliance with the terms and conditions of the Incidental Take Permit issued by DFG for the Project (ITP #2081-2010-007-01) and the federal Biological Opinion and Incidental Take Statement issued by National Marine Fisheries Service (NMFS) for the Project (BO #2010/01124:DW).

2.10 Prior to initiating channel- vegetation- or ground-disturbing Project activities, Permittee shall clearly delineate right-of-way and/or property boundaries of the

Project site with fencing, stakes or flags and shall similarly delineate the limits of Project activities. Permittee shall restrict all project activities to within the fenced, staked or flagged Project boundaries. Permittee shall maintain all fencing, stakes and flags until the completion of Project activities.

2.11 Wetlands, riparian areas, oak woodlands, and habitat for Baker's meadowfoam and North Coast semaphore grass within the Project limits but outside the work area shall be designated as Environmentally Sensitive Areas (ESAs) and shall be off limits to construction equipment and personnel.

2.12 ESA fencing shall consist of temporary orange construction fence or other highly visible material that clearly delineates the limits of the work area. Environmentally Sensitive Areas shall be clearly shown on the Project plans and drawings. The Permittee shall ensure that the contractor, subcontractors, and all personnel working on the Project are instructed on the purpose of the ESA fencing and understand the limits of the work area. ESA fencing shall be installed prior to the beginning of channel- ground- or vegetation-disturbing activities. The placement of ESA fencing shall be inspected and approved by DFG prior to the initiation of work.

2.13 Disturbance or removal of riparian and wetland vegetation shall not exceed the minimum necessary to complete operations. Where feasible, hand tools (chain saws, etc.) shall be used to trim woody riparian vegetation to the extent necessary to gain access to work sites. Whenever possible, root systems shall be left intact to facilitate more rapid recovery following temporary construction impacts.

2.14 Except where provided for within this agreement, the removal of riparian vegetation from the streambed or streambanks is prohibited without prior written approval from DFG. The work area shall be identified to all workers, as represented in plans.

CULVERTS AND INSTREAM STRUCTURES

2.15 All work within the channel or on the banks shall be performed when the channel is dry or at minimum flow. If water is present during construction, all work shall be performed in isolation from surface or subsurface flow.

2.16 Where water is present, a temporary stream diversion shall be constructed to isolate the work area from flow. Temporary diversions may be constructed using gravel berms, clean washed spawning gravels, sand bags, K-rail, plastic sheeting, or a combination of these materials upstream from the work area. Flows will then be diverted into a temporary culvert, pipe, or conduit and released downstream from the work area.

2.17 Dewatering shall be done in a manner that prevents the discharge of material that could be deleterious to fish, plants or other aquatic life and maintains adequate

flows to downstream reaches during all times natural flow would have supported aquatic life.

2.18 Any turbid water pumped from the work area shall be used for construction purposes (compaction, dust abatement, etc.) or properly disposed of in an upland area where it will not drain to surface waters or wetlands.

2.19 If clean washed spawning gravel (0.5" – 4") is used for diversion berms, it may be left in the channel following construction provided it is spread to a depth less than 6 inches and does not impede the movement of fish or redirect stream flows. All other temporary diversion materials shall be removed from the stream channel upon completion of work.

2.20 Temporary bridges, culverts, or other structures that will remain in the channel after October 15 shall be designed to pass the 100-year flood event. Structures and materials not designed to withstand high flows shall be removed from the floodplain prior to October 15.

2.21 Installation of permanent culverts, bridges, grade control structures, instream habitat enhancement features, and other permanent channel modifications shall not impede the passage of fish up or down stream. Permittee shall submit detailed designs for work within the stream channel to DFG for review and approval no later than August 1, 2010.

2.22 Drafting of water from surface watercourses is not authorized by this Agreement. Water for construction purposes shall be obtained from commercial municipal, industrial or groundwater sources.

INSTALLATION OF TEMPORARY AND PERMANENT PILES

2.23 All pile driving activities, including installation of sheet piles, temporary and permanent piles located within the channel or below the top of bank, shall be confined to the period June 15 through October 15. Installation of permanent bridge or viaduct piles within 50 feet of the channel shall be confined to the period June 15 through October 15. Depending on the results of hydroacoustic monitoring, the Permittee may install permanent bridge or viaduct piles within 50 feet of the channel outside this work window, provided a written request is made to DFG. Written approval from DFG for the work period variance must be received by the Permittee prior to the start or continuation of work outside the June 15 – October 15 work window.

2.24 Permanent pile driving activities within the stream channel shall be contained within coffer dams. A bubble curtain or other approved attenuation measure will be used to reduce sound exposure levels.

2.25 If surface water is present within the channel, Permittee shall conduct hydroacoustic monitoring to document peak sound pressure levels and cumulative sound exposure levels during all permanent pile driving activities in the channel or within 50 feet of the channel. Driving of temporary trestle and falsework piles below the top of bank shall also be monitored. If underwater sound pressure levels for each pile type and size do not vary to a large degree, the Permittee may request written approval from DFG to discontinue hydroacoustic monitoring. Permittee shall submit a Hydroacoustic Monitoring Plan for review and approval by DFG no later than March 15, 2011.

2.26 Prior to conducting temporary or permanent pile driving activities within the channel, or within 50 feet of the channel, Permittee shall exclude, remove and relocate fish from coffer dams and those portions of the stream where cumulative sound exposure levels ($SEL_{Cumulative}$) are predicted to exceed the interim injury criteria of 183 dB. One or more of the following NMFS-approved methods shall be used to capture coho and other salmonids: dip net, seine, throw net, or electrofishing.

2.27 If pile driving activities are expected to exceed interim $SEL_{Cumulative}$ threshold levels for more than two consecutive days, Permittee shall dewater the affected stream reach in lieu of using block nets to exclude fish. During dewatering, flows in the affected reach shall be diverted incrementally to facilitate fish capture and relocation. Flows shall be reduced over a minimum 4-hour period in the following increments: 50%, 75%, 90%, and 100%.

2.28 Pumps used to dewater cofferdams, and pipes or conduits used to dewater stream reaches, shall be screened as follows:

a. Perforated plate: screen openings shall not exceed 3/32 inches (2.38 mm) in diameter.
b. Woven wire: screen openings shall not exceed 3/32 inches (2.38 mm) measured diagonally.
c. Screen material shall provide a minimum of 27% open area.
d. Approach velocity shall not exceed 0.33 feet per second.

2.29 Fish relocation activities shall be overseen by the Designated Biologist and shall be conducted by qualified fisheries biologists that are authorized by NMFS and DFG to handle listed salmonids. Captured fish will be segregated by size to minimize predation, and maintained in cool, well-oxygenated water until released to suitable habitat outside the construction impact area.

EROSION AND SEDIMENT CONTROL

2.30 The project shall at all time feature adequate erosion and sediment control devices to prevent the degradation of water quality.

2.31 Soils exposed by project operations shall be treated to prevent sediment runoff and transport. Erosion control measures shall include the proper installation and maintenance of approved Best Management Practices (BMPs) and may include applications of seed, certified weed-free straw, compost, fiber, commercial fertilizer, stabilizing emulsion and mulch, or combinations thereof.

2.32 Erosion control measures shall be monitored and maintained during and after each storm event. Modifications, repairs, and improvements to erosion control measures shall be made following each storm event to prevent sediment from entering surface waters or wetlands.

2.33 Soils adjacent to the stream channel that are exposed by project operations shall be adequately stabilized when rainfall is reasonably expected during construction, and immediately upon completion of construction, to prevent the mobilization of such sediment into the stream channels or adjacent wetlands. National Weather Service forecasts shall be monitored by the Permittee to determine the chance of precipitation.

2.34 Following construction, all disturbed upland areas shall be stabilized and reseeded with an erosion control mix consisting of regionally appropriate, native grass and forb species. Temporarily affected wetlands shall be seeded with a wet meadow seed mix. Seed will be obtained from the following locations, in priority order: Little Lake Valley, Outlet Creek Basin, or the Eel River watershed.

EQUIPMENT ACCESS

2.35 Vehicles shall not be driven, or equipment operated, in water covered portions of a stream, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, except as otherwise provided for in the Agreement to complete authorized work.

2.36 Project-related personnel and equipment shall access the Project site using existing designated routes and shall not cross undisturbed ground outside of or in route to the Project site. Project-related vehicle traffic shall be restricted to established roads, staging, and parking areas. If Permittee determines construction of off-site routes for travel are necessary, Permittee shall contact DFG prior to carrying out such an activity. DFG may require an amendment to this Agreement if additional resource impacts may result from Project modification.

PETROLEUM, CHEMICAL AND OTHER POLLUTANTS

2.37 All construction-related materials and equipment shall be stored in designated staging areas located a minimum of 150 feet from streams or other water bodies unless approved in writing by DFG.

2.38 Refueling and vehicle maintenance shall be performed at least 150 feet from streams or other water bodies unless approved in writing by DFG.

2.39 No equipment or machinery shall be operated within any flowing stream.

2.40 Any equipment or vehicles driven and/or operated within or adjacent to the stream channel shall be checked and maintained daily to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic life, wildlife, or riparian habitat.

2.41 All equipment used during construction of this Project shall be cleaned (i.e. free of dirt and debris that may harbor noxious weed seeds and plant parts) prior to its arrival on site and before leaving the Project area.

2.42 Stationary equipment such as motors, pumps, generators, and welders that contain deleterious materials, located within or adjacent to a stream shall be positioned over drip pans.

2.43 All activities performed in or near a stream shall have absorbent materials designated for spill containment and clean up activities on-site for use in an accidental spill. The Permittee shall immediately notify the California Emergency Management Agency at 1-800-852-7550 and immediately initiate the clean up activities. DFG shall be notified by the Permittee and consulted regarding clean-up procedures.

2.44 No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, asphalt, paint or other coating material, oil or petroleum products or other organic or earthen material from any construction, or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.

3. Compensatory Measures

To compensate for adverse impacts to fish and wildlife resources identified above that cannot be avoided or minimized, Permittee shall implement each measure listed below.

3.1 Prior to initiating channel- ground- or vegetation-disturbing Project activities, and no later than December 31, 2010, the Permittee shall acquire and protect a minimum of 1,910 acres of Habitat Management Lands (HM Lands) identified in the Final Mitigation and Monitoring Proposal dated June 8, 2010. On these lands, the Permittee shall create, enhance, restore, and preserve habitats in the following amounts to offset Project impacts:

North Coast semaphore grass. Permittee shall acquire, restore, and permanently preserve four extant populations of North Coast semaphore grass totaling 5.094 acres on approximately 70 acres of HM Lands. A restoration and management plan for the HM Lands shall be prepared and submitted to DFG for approval within 18 months after the effective date of this Agreement. The plan shall specify vegetation management actions and enhancement measures designed to result in a net expansion of existing semaphore grass populations on the HM Lands.

Baker's meadowfoam. A total of 1,120.34 acres of habitat shall be acquired and preserved, including 120.38 acres of occupied habitat, 999.96 acres of potentially suitable habitat, and 9.62 acres of restored habitat.

Category I Riparian Habitat. Compensatory mitigation for riparian habitat impacts on salmonid streams shall focus on creation, enhancement, and preservation of riparian corridors along Outlet Creek and other salmonid streams. A total of 147.97 acres shall be acquired, including creation of 47.57 acres of new habitat, enhancement of 48.51 acres of habitat, and protection or preservation of 100.40 acres of existing habitat.

Jurisdictional Wetlands and Other Waters. Impacts to jurisdictional wetlands will be mitigated through creation of 24.33 acres of new wetlands, enhancement of 1,101.13 acres of existing wetlands, preservation of 53.44 acres, and restoration of 3.70 acres of existing wetlands. Mitigation for impacts to other jurisdictional waters will include enhancement of 17.58 acres through planting riparian vegetation and oaks on the banks of existing watercourses and through protecting 21.99 acres and preserving 2.16 acres of existing habitat.

Category II and III Riparian Habitat. Permanent and temporary impacts to Category II and III riparian corridors shall be mitigated by the creation, enhancement, and preservation of Category I, II, and III Riparian Corridors, with the highest priority being placed on Category I habitats. A total of 1.76 acres of new habitat will be created, 4.46 acres enhanced, and 15.63 acres protected. In addition, a total of 109.15 acres of other riparian habitat not associated with a defined watercourse will be created, enhanced, protected and preserved on the off-site HM Lands.

Lowland Oak Woodland. A total of 22.24 acres of new valley oak woodland will be planted, with an additional 2.31 acres of existing woodland preserved and restored. In addition, 201.03 acres of existing oak woodland grassland will be preserved and restored.

Upland Oak Woodland. Permanent impacts to upland oak woodland will be mitigated by preserving a minimum of 15.06 acres of existing oak canopy and 26.71 acres of oak woodland grassland at the north end of Little Lake Valley.

3.2 Prior to initiating channel- vegetation- or ground-disturbing activities, and no later than December 31, 2010, Permittee shall submit detailed mitigation plans to DFG for review and approval. The plans shall include 1) a detailed description of the baseline condition of each HM Land parcel acquired to offset impacts to the resources identified above, 2) a detailed description of the measures that will be used to restore and enhance the ecological functions of the HM Lands, including final design and planting details for habitat creation, revegetation, and enhancement actions, 3) a discussion of the parameters that will be monitored to determine changes in ecological functions, including the frequency of monitoring, methods to be used, and criteria used to determine success, 4) an adaptive management plan to be implemented in the event expected results are not achieved, and 5) a long-term plan for managing and maintaining the HM Lands after success criteria have been met.

3.3 Permittee shall provide for the permanent protection of the off-site HM Lands by transferring fee title to the properties to the Mendocino County Resource Conservation District (MCRCD) or another entity under terms approved by DFG. If fee title is held by an entity other than DFG, a conservation easement in a form approved by DFG shall be recorded on title of the HM Lands. The grantee of the conservation easement may be DFG, a DFG-approved non-profit organization qualified pursuant to California Government Code section 65965, or a public agency approved by DFG and authorized to hold conservation easements. If a DFG-approved non-profit organization or approved public agency is grantee on a conservation easement, DFG shall be named third party beneficiary;

3.4 Permittee shall conduct a Property Analysis Record (PAR) or equivalent analysis to determine the appropriate endowment amount to fund the in-perpetuity management of the required HM Lands. Permittee shall provide the required endowment to DFG after DFG reviews and approves the PAR. Monies received by DFG pursuant to this Condition shall be deposited in a special deposit account established pursuant to Fish and Game Code section 13014. DFG may pool the endowment with other endowments for the operation, management and protection of HM Lands for local populations of the Covered Species. Endowment funds provided as described above may alternatively be held by a DFG-approved non-profit organization qualified to hold endowment funds;

3.5 Permittee must complete the required acquisition, protection and transfer of all HM Lands and record the required conservation easements in favor of DFG within 18 months after the effective date of this Agreement.

3.6 In addition to the off-site HM Lands identified above, Permittee shall conduct work to improve fish passage on Ryan Creek. In consultation with DFG, Permittee shall prepare draft and final designs for a project to remediate existing barriers to fish passage at the South Fork (PM 52.25) and North Fork (PM 52.36) Ryan Creek culverts on U.S. 101. Draft plans for both crossings will be submitted to DFG for

review no later than June 30, 2011. Final plans will be prepared and submitted to DFG for approval no later than June 30, 2012.

3.7 Permittee shall complete construction of the South Fork Ryan Creek culvert remediation project no later than October 31, 2013.

3.8 Permittee shall prepare cost estimates for the passage improvement work on the North Fork Ryan Creek culvert based on the final design prepared under Condition 3.6 above and shall apply for funding to complete this work in a timely manner.

4. Reporting Measures

Permittee shall meet each reporting requirement described below.

4.1 Daily Monitoring Reports. Daily observations from the Designated Biologist during pile installation, dewatering and fish relocation, channel modification, and vegetation clearing activities shall be transmitted to DFG in electronic format on a weekly basis.

4.2 Quarterly Compliance Report: Permittee shall compile the observation and inspection records identified in Condition 4.1 above into a Quarterly Compliance Report and submit it to DFG along with a summary of Project activities, the current implementation status of each mitigation measure, and any recommended modifications in monitoring methods.

4.3 Annual Status Report: Permittee shall provide DFG with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of the Agreement and continuing until DFG accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: 1) a summary of all Quarterly Compliance Reports identified in Condition 5.4, 2) a general description of the status of the Project site and Project activities, including actual or projected completion dates, if known; 3) a summary of the annual mitigation monitoring reports and the current implementation status of each mitigation measure; and 4) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and mitigating Project impacts.

4.4 Final Mitigation Report: No later than 60 days after completion of the Project, including completion of all mitigation measures, Permittee shall provide DFG with a Final Mitigation Report. The Final Mitigation Report shall be prepared by the Designated Biologist and shall include, at a minimum: 1) a summary of all Monthly/Quarterly Compliance Reports and all ASRs, 2) copies of all mitigation monitoring reports documenting when success criteria for each of the mitigation measures were achieved; 3) all available information about Project-related incidental take of threatened or endangered species; 4) information about other Project impacts on threatened or endangered species; 5) dates of Project activities; 6) an assessment of the effectiveness of the required measures in

minimizing and mitigating Project impacts ; 7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects; and 8) any other pertinent information.

CONTACT INFORMATION

Any communication that Permittee or DFG submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or DFG specifies by written notice to the other.

To Permittee:

Mr. Dave Kelley
Department of Transportation
District 3
703 B Street, P.O. Box 911
Marysville, California 95901
Fax: (530) 741-4299
dave_kelley@dot.ca.gov

To DFG:

Department of Fish and Game
Northern Region
601 Locust Street, California 96001
Attn: Lake and Streambed Alteration Program – Craig Martz
Notification #1600-2010-0044-R1
Fax: (530) 225-0324
cmartz@dfg.ca.gov

LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute DFG's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

SUSPENSION AND REVOCATION

DFG may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees,

representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before DFG suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before DFG suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused DFG to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes DFG from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects DFG's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 et seq. (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

DFG may amend the Agreement at any time during its term if DFG determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by DFG and Permittee. To request an amendment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter DFG approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

EXTENSIONS

In accordance with FGC section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to DFG a completed DFG "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). DFG shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (Fish & G. Code, § 1605, subd. (f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of DFG's signature, which shall be: 1) after Permittee's signature; 2) after DFG complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at http://www.dfg.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire ~~on December 31, 2015,~~ 5 years from the effective date unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires. CB

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify DFG in accordance with FGC section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR DEPARTMENT OF TRANSPORTATION

Dave Kelley
Project Manager

6-25-2010
Date

FOR DEPARTMENT OF FISH AND GAME

Curt Babcock
Acting Habitat Conservation Program Manager

6/29/10
Date

Prepared by: Craig Martz, Staff Environmental Scientist

California Department of Fish and Game
Northern Region
601 Locust Street
Redding, California 96001

California Endangered Species Act
Incidental Take Permit No. 2081-2010-007-01

Willits Bypass Project

Authority: This California Endangered Species Act (CESA) Incidental Take Permit (ITP) is issued by the Department of Fish and Game (DFG) pursuant to Fish and Game Code section 2081, subdivisions (b) and (c), and California Code of Regulations, Title 14, section 783.0 et seq. CESA prohibits the take[1] of any species of wildlife designated by the California Fish and Game Commission as an endangered, threatened, or candidate species.[2] DFG, however, may authorize the take of such species by permit if the conditions set forth in Fish and Game Code section 2081, subdivisions (b) and (c) are met. (See also Cal. Code Regs., tit. 14, § 783.4.)

Permittee:	**California Department of Transportation (Caltrans)**
Name and title of principal officer:	**Dave Kelley, Project Manager**
Contact person:	**Jeremy Ketchum, (916) 274-0621**
Mailing address:	**2389 Gateway Oaks Dr. (MS-15)** **Sacramento, California 95833**

Effective Date and Expiration Date of the ITP:
This ITP shall be executed in duplicate original form and shall become effective once a duplicate original is acknowledged by signature of the Permittee on the last page of the ITP and returned to DFG's Habitat Conservation Planning Branch at the address listed in the Notices section of this ITP. Unless renewed by DFG, this ITP's authorization to take the Covered Species shall expire on **December 31, 2020**.

Notwithstanding the expiration date on the take authorization provided by this ITP, Permittee's obligations under this ITP do not end until DFG accepts as complete the Permittee's Final Mitigation Report required by Condition 6.6 of this ITP.

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[1]Pursuant to Fish and Game Code section 86, "'Take' means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill."

[2]"Candidate species" are species of wildlife that have not yet been placed on the list of endangered species or the list of threatened species, but which are under formal consideration for listing pursuant to Fish and Game Code section 2074.2.

Project Location:
The Willits Bypass Project (Project) is located near the City of Willits in Little Lake Valley, Mendocino County, California (See Figure 1). The Project involves construction of a new freeway alignment to the east of Willits. The southern terminus of the new alignment is located at Post Mile (PM) R43.1 about 2.0 miles south of Willits at 39.371887° north, 123.321514° west. The northern terminus of the new alignment is located at PM R49.0, approximately 1.9 miles south of Reynolds Highway at 39.437511° north, 123.356766° west. The Project site is bounded by the City of Willits to the west and the Little Lake Valley to the east.

Project Description:
The Project consists of a four-lane freeway bypass crossing the Little Lake Valley east of the City of Willits. The freeway will maintain a minimum design speed of 68 miles per hour and will feature a 45.3-foot median separating the northbound and southbound lanes. Each lane will be 12 feet wide. The inside shoulder width (nearest the median) will be 5 feet, while the outside shoulder width will be 10 feet. The Project will begin approximately 2.0 miles south of Willits, where the existing four-lane freeway becomes a two-lane highway, and will continue north, rejoining the existing two-lane highway about 1.3 miles north of the Willits city limits. The overall length of the bypass will be approximately 5.8 miles, starting near PM R43.1 and ending near R49.0 (See Figure 1-2a).

The bypass alignment will diverge from existing U.S. 101 at the new Haehl Creek interchange and continue northwesterly on an embankment constructed with excess fill from a previous freeway project. At the Center Valley Road over-crossing, the roadway embankment will be replaced by a floodway viaduct, approximately 6,000 feet long. The viaduct structure will span the regulatory floodway, roughly paralleling the east bank of Baechtel Creek until it crosses the creek at the confluence with Broaddus Creek east of the Willits Waste Water Treatment Plant (WWTP). The bypass will continue on viaduct as it curves to the west and crosses Mill Creek. From a point approximately 600 feet west of the Mill Creek crossing, the facility will continue northwest on fill, bridging the Northwestern Pacific Railway (NWPRR) right-of-way before rejoining the existing alignment of U.S. 101 at the new Quail Meadows interchange.

Funding constraints require that the Project be constructed in two phases. Phase 1 consists of the two interchanges and the two southbound lanes which will be operated as a two-lane bypass (one lane in each direction). Construction of Phase 1 is expected to take four years to complete. As funding allows in Phase 1, Permittee intends to construct as much of the four-lane embankment as possible to help facilitate the construction of Phase 2. Although only Phase 1 will be constructed at this time, Permittee will implement mitigation for the biological resource impacts of both Phase 1 and Phase 2, i.e. the full four-lane freeway. Funding for the second phase has not yet been identified. The additional funding necessary to construct Phase 2 will likely come from a combination of federal, state, and local sources. This ITP covers construction of both Phase 1 and Phase 2 of the Project until the expiration of this

ITP. After the expiration date of this ITP, Permittee will no longer have incidental take authorization via this ITP.

Construction of the Project will require excavation and placement of up to 1.4 million cubic yards of fill material for roadway embankment; removal of native wetland, riparian and upland vegetation; construction of temporary access roads and haul roads; construction of temporary and permanent stream crossings; removal of existing culverts on Haehl and Upp Creeks that currently impede the passage of anadromous salmonids; reconstructing the longitudinal profile of these stream reaches to provide improved fish passage; installing rock slope protection (RSP) and/or other bank stabilization measures to protect structures; dewatering of work areas in wetlands and within stream chanels for construction of permanent bridge and viaduct piers; installation of sheet piles, temporary H piles, and permanent cast-in-steel-shell (CISS) piles using vibratory and percussive hammers; and installation of wick drains to provide a stable foundation for embankment fills.

In addition to erosion control and revegetation of temporary disturbance areas within the right-of-way, the Project also includes compensatory restoration, enhancement, and preservation activities required by various permitting agencies on a minimum of approximately 1,910 acres of off-site mitigation lands. An optional proposed borrow site at Oil Well Hill, located on the east side of U.S. 101, approximately 0.85-mile north of the intersection of Reynolds Highway and U.S. 101, has been designated as a source of fill material for the Project.

Dewatering of work areas within salmonid-bearing (Category I) streams will require capture and relocation of fish. Installation of temporary and permanent piles within or adjacent to the stream channel for coffer dams and bridge crossings is projected to exceed interim injury criteria for cumulative sound exposure levels ($SEL_{Cumulative}$) for juvenile salmonids. These activities are likely to result in the incidental take of individual Southern Oregon-Northern California Coasts (SONCC) coho salmon, a species designated as threatened under CESA (Cal. Code Regs. tit. 14 § 670.5, subd. (b)(2)(D)). Placement of fill for roadway embankments will permanently impact 0.386 acre and temporarily impact 0. 015 acre of habitat occupied by North Coast semaphore grass, a species designated as threatened under CESA (Cal. Code Regs. tit. 14 § 670.2, subd. (b)(10)(A)).

Covered Species Subject to Take Authorization Provided by this ITP:

This ITP covers the following species:

Name	CESA Status[3]
Fish	
1. SONCC coho salmon (*Oncorhynchus kisutch*)	Threatened
Plants	
1. North Coast semaphore grass (*Pleuropogon hooverianus*)	Threatened

These species and only these species are hereinafter referred to as "Covered Species."

Impacts of the Taking on Covered Species:
The Project activities described above and their resulting impacts are expected to result in the incidental take of individuals of the Covered Species. Incidental take of juvenile SONCC coho salmon is likely to occur as a result of mortality due to construction activities within and adjacent to streams traversed by the bypass (direct impacts). In particular, juvenile SONCC coho salmon may be killed or injured due to (1) dewatering of work areas, (2) capture and handling during relocation activities, and (3) cumulative sound exposure levels produced during the driving of temporary and permanent piles for structure footings. In addition, the impacts of the taking on SONCC coho salmon include the permanent loss of 2.38 acres of riparian habitat along Category I streams and the temporary removal of an additional 8.15 acres of riparian canopy along Category I streams. These reductions in riparian shade are expected to contribute to increased water temperatures and loss of shaded riverine aquatic habitat for juvenile fish. Vegetation removal, excavation, and other ground-disturbing activities adjacent to watercourses may also result in increased sediment deposition, degrading instream habitat by filling pools and adversely affecting production of benthic invertebrates.

Placement of fill material for the freeway embankment between Mill Creek and the NWPRR right-of-way in the northern portion of the alignment will directly impact 0.401 acre of occupied habitat for North Coast semaphore grass. Direct impacts include the permanent loss of 0.386 acre (an estimated 2,798 plants) and temporary impacts on 0.015 acre (an estimated 28 plants). Seed and plant propagules (rhizomes) will be collected from areas of permanent impact prior to construction for propagation and re-introduction to remaining areas of suitable habitat at this population site. In addition to directly affecting occupied habitat, placement of fill and installation of wick drains as part of roadway construction may indirectly affect the remaining 1.1 acres of occupied habitat (an estimated 6,428 plants) at this location.

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[3]Under CESA, a species may be on the list of endangered species, the list of threatened species, or the list of candidate species. All other species are "unlisted."

Impact mechanisms associated with indirect impacts include habitat fragmentation and degradation resulting from potential changes in drainage patterns and hydrology, introduction of weedy species, and soil compaction.

Indirect impacts to the Covered Species are expected to occur in the form of temporal losses, increased habitat fragmentation and edge effects, and the Project's incremental contribution to cumulative impacts. These impacts include: continued degradation of aquatic and terrestrial habitats, increased pollution, as well as increased vulnerability to predation and competition with non-native species.

Other Species Not Subject to the Take Authorization Provided by this ITP:

Fully Protected Species. This ITP does not authorize the take of any fully protected species. (See Fish & G. Code §§ 3511, 4700, 5050, 5515.) DFG has advised Permittee of the requirement to avoid take of fully protected species and believes the Permittee can implement the Project as described in this ITP in a manner consistent with the Fish and Game Code provisions governing fully protected species. DFG's determination regarding Project consistency with Fish and Game Code provisions governing fully protected species is based, in part, on Permittee's commitment, independent of this ITP, to implement and adhere to the following general avoidance and minimization measures during Project implementation related to white-tailed kite (*Elanus leucurus*), a species documented to occur within the vicinity of the Project. Permittee shall conduct pre-construction surveys during the courtship season to identify active nests within ¼ mile of the Project alignment. If an active white-tailed kite nest is found during surveys, Permittee will employ an avian biologist who will determine and establish a no-construction buffer of sufficient distance around the nest to ensure the adults are not disturbed and the young can successfully fledge.

Incidental Take Authorization of Covered Species:
This ITP authorizes incidental take of the Covered Species and only the Covered Species. With respect to incidental take of the Covered Species, DFG authorizes the Permittee, its employees, contractors, and agents to take Covered Species incidentally in carrying out the Project, subject to the limitations described in this section and the Conditions of Approval identified below. This ITP does not authorize take of Covered Species from activities outside the scope of the Project as described above, take of Covered Species resulting from violation of this ITP, or intentional take of Covered Species except for capture and relocation of Covered Species as authorized by this ITP. In addition, as set forth above, this ITP does not authorize take of any species designated as fully protected under the Fish and Game Code.

Conditions of Approval:
Unless specified otherwise, the following measures shall pertain to all channel-, ground-, or vegetation-disturbing activities within the Project construction boundaries, including areas used for ingress and egress routes during Project activities, and staging and parking areas. DFG's issuance of this ITP and Permittee's authorization to take the Covered Species are

subject to Permittee's compliance with and implementation of the following Conditions of Approval:

1. Legal Compliance. Permittee shall comply with all applicable state, federal, and local laws in existence on the effective date of this ITP or adopted thereafter.

2. CEQA and ESA Compliance. Permittee shall implement and adhere to the mitigation measures related to the Covered Species in the Biological Resources section of the Environmental Impact Report (SCH Number: 1990030006) certified by the Permittee as lead agency for the Project under the California Environmental Quality Act (CEQA) on December 15, 2006 and the Supplemental Environmental Impact Report certified by the Permittee on May 19, 2010. In addition, Permittee shall implement and adhere to all applicable terms and conditions in the Biological Opinion and Incidental Take Statement issued for the Project by the National Marine Fisheries Service (BO # 2010/01124).

3. LSA Agreement Compliance. Permittee shall implement and adhere to measures related to the Covered Species in the Streambed Alteration Agreement (Notification number 1600-2010-0044-R1) for the Project pursuant to Fish and Game Code section 1602 et seq.

4. ITP Time Frame Compliance. Permittee shall fully implement and adhere to the conditions of this ITP within the time frames set forth below and as set forth in the Mitigation Monitoring and Reporting Program (MMRP), which is included as Attachment 1 to this ITP.

5. General Provisions:

5.1. Mitigation and Monitoring Proposal. Permittee shall implement and adhere to the mitigation measures related to the Covered Species in the Willits Bypass Project Final Mitigation and Monitoring Proposal (MMP) dated June 8, 2010, and any revisions to the MMP subsequently approved by DFG. Prior to initiating channel-, vegetation-, or ground-disturbing activities, and no later than December 31, 2010, Permittee shall submit a detailed mitigation plan to DFG for review and approval that will be incorporated into the MMP. The plan shall include (1) a detailed description of the baseline condition of each parcel of habitat mitigation (HM) Lands acquired to offset impacts to the Covered Species, (2) a detailed description of the measures that will be used to restore and enhance the ecological functions of the HM Lands, including final design and planting details for habitat creation, revegetation, and enhancement actions, (3) a discussion of the parameters that will be monitored to determine changes in ecological functions, including the frequency of monitoring, methods that will be used, and criteria used to determine success, (4) an adaptive management plan to be implemented in the event that expected results are not achieved, and (5) a

long-term plan for managing and maintaining the HM lands after success criteria have been met.

5.2. Designated Representative. Before initiating channel-, ground-, or vegetation-disturbing Project activities, Permittee shall designate a representative (Designated Representative) responsible for communications with DFG and overseeing compliance with this ITP. The Permittee shall notify DFG in writing prior to commencement of channel-, ground-, or vegetation-disturbing activities of the Designated Representative's name, business address, and contact information, and shall notify DFG in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.

5.3. Designated Biologist. At least 30 days before initiating channel-, ground-, or vegetation-disturbing activities, Permittee shall submit to DFG in writing the name, qualifications, business address, and contact information for a biological monitor (Designated Biologist). The Designated Biologist shall be knowledgeable and experienced in the biology and natural history of the Covered Species. The Designated Biologist shall be responsible for monitoring Project activities and/or channel-, ground-, or vegetation-disturbing activities in areas of Covered Species' habitat to help minimize or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain DFG approval of the Designated Biologist prior to the commencement of Project-related activities that may result in the incidental take of the Covered Species.

5.4. Designated Biologist Authority. To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist shall have authority to immediately stop any activity that is not in compliance with this ITP, and/or to order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species or fully protected species. Neither the Designated Biologist nor DFG shall be liable for any costs incurred in complying with the Conditions of Approval, including cease-work orders issued by DFG.

5.5. Education Program. Permittee shall conduct an education program for all persons employed or otherwise working on the Project site prior to performing any work on-site. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status under CESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to their performing work on-site. Copies of this ITP shall be maintained at the worksite. Permittee shall prepare and distribute wallet-sized cards or a fact

sheet handout containing this information for workers to carry on-site. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and be available to DFG upon request.

5.6. Firearms and Dogs: Permittee shall prohibit firearms and domestic dogs from the Project site and site access routes during Project activities and development of the Project, except those in the possession of authorized security personnel or local, State, or Federal law enforcement officials.

5.7. Delineation of Property Boundaries: Prior to initiating channel-, ground-, or vegetation-disturbing Project activities along each part of the route in active construction, Permittee shall clearly delineate right-of-way and/or property boundaries of the current Project work area or areas with fencing, stakes, or flags and shall similarly delineate the limits of Project activities. Permittee shall restrict all project activities to within the fenced, staked or flagged areas. Permittee shall maintain all fencing, stakes and flags until the completion of Project activities in that area.

5.8. Delineation of Habitat. Permittee shall clearly delineate habitat of the Covered Species on the Project site with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize the disturbance of Covered Species' habitat. Permittee shall designate Covered Species habitat adjacent to the work area as Environmentally Sensitive Areas (ESAs) on the construction plans and construction personnel and equipment shall not enter these areas. Permittee shall install ESA fencing prior to initiating vegetation clearing operations. The location of all ESA fencing shall be inspected and approved by DFG prior to vegetation removal.

5.9. Project Site Access. Project-related personnel shall access the Project site during Project activities using existing designated routes and shall not cross Covered Species' habitat outside of or en route to the Project site. Project-related vehicle traffic shall be restricted to established roads, staging, and parking areas. If Permittee determines construction of off-site routes for travel are necessary, Permittee shall contact DFG prior to carrying out such an activity. Construction of off-site routes for travel may require an amendment to this ITP if take of Covered Species incidental to such construction will occur. .

5.10. Staging Areas. Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project site using, to the extent possible, previously disturbed areas. Additionally, Permittee shall not use or cross Covered Species' habitat outside of the marked Project boundaries unless specifically provided for in Condition 5.9 of this ITP. Staging of construction materials and equipment shall not occur within the regulatory floodway.

5.11. Flood Events. Permittee shall design and construct temporary bridges and other structures in the channel to pass the 100-year flood event. Permittee shall remove structures and materials not designed to withstand high flows from the channel prior to October 15.

5.12. Hazardous Waste. Permittee shall immediately stop/repair and clean up any leaks or spills of fuel, lubricants, or other materials that may be deleterious to fish, plant, or wildlife during Project activities at the time of occurrence. Permittee shall confine the storage and handling of hazardous materials to designated staging and refueling areas and shall properly contain and dispose of any unused or leftover hazardous products off-site.

5.13. Vehicle Inspection. Permittee shall ensure that vehicles and equipment operated within or adjacent to the stream channel are free of oil or petroleum residues and are inspected and maintained on a daily basis to prevent leaks of materials that could be deleterious to aquatic life, wildlife, or riparian vegetation.

5.14. DFG Access. Permittee shall provide DFG staff with reasonable access to the Project site and mitigation lands under Permittee control, and shall otherwise fully cooperate with DFG efforts to verify compliance with or effectiveness of mitigation measures set forth in the ITP.

5.15. Refuse Removal. Upon completion of Project activities, Permittee shall remove from the Project site and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.

6. Monitoring, Notification and Reporting Provisions:

6.1. Notification Prior to Commencement. Permittee shall notify DFG 14 calendar days before initiating channel-, ground-, or vegetation-disturbing activities and shall document compliance with all pre-Project Conditions of Approval before initiating channel-, ground-, or vegetation-disturbing activities.

6.2. Notification of Non-compliance. Permittee shall immediately notify DFG in writing if it determines that it is not in compliance with any Condition of Approval of this ITP, including, but not limited to, any actual or anticipated failure to implement mitigation measures within the time periods indicated in this ITP and/or the MMRP. Permittee shall report any non-compliance with the ITP during Project activities to DFG within 24 hours.

6.3. Compliance Monitoring. The Designated Biologist shall be on-site daily while Project activities, including all pile installation, dewatering, channel-, vegetation-, or ground-disturbing activities, that may affect Covered Species are taking place to: (1) minimize incidental take of the Covered Species; (2) check for compliance with all mitigation and avoidance measures; (3) check all exclusion zones; and (4) ensure that signs, stakes, and fencing are intact, and that human activities are restricted outside of these protective zones. The Designated Representative or Designated Biologist shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species, survey results, and monitoring activities required by this ITP. The Designated Biologist shall conduct compliance inspections a minimum of once per month during periods of inactivity and after clearing, grubbing, and grading are completed.

6.4. Quarterly Compliance Report. Permittee shall compile the observation and inspection records identified in Condition 6.3 into a Quarterly Compliance Report and submit it to DFG along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Quarterly Compliance Reports shall be submitted to DFG's Regional Office at the address listed in the Notices section of this ITP or via e-mail to DFG's Regional Representative. At the time of this ITP's approval, the DFG Regional Representative is Staff Environmental Scientist, Craig Martz (email address: cmartz@dfg.ca.gov). DFG may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If DFG determines the reporting schedule is inadequate, DFG will notify Permittee by letter of the new reporting schedule.

6.5. Annual Status Report. Permittee shall provide DFG with an Annual Status Report (ASR) no later than January 31 of every year, beginning with issuance of the ITP and continuing until DFG accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all Quarterly Compliance Reports identified in Condition 6.4, (2) a general description of the status of the Project site and Project activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; and (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and mitigating Project impacts on the Covered Species.

6.6. Final Mitigation Report. No later than 60 days after completion of the Project, including completion of all mitigation measures, Permittee shall provide DFG with a Final Mitigation Report. The Final Mitigation Report shall be prepared by the Designated Biologist and shall include, at a minimum: (1) a summary of all Monthly/Quarterly Compliance Reports and all ASRs, (2) a copy of the table in the

MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) dates of Project activities; (6) an assessment of the effectiveness of the ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.

6.7. Notification of Species Mortality. If any SONCC coho salmon are killed by a Project-related activity, or if any SONCC coho salmon are otherwise found dead within the Project site, Permittee shall immediately notify the Designated Biologist. The Designated Biologist or Designated Representative shall provide initial notification to DFG by calling the Regional Office at (530) 225-2300. The initial notification to DFG shall include information regarding the location, species, number of animals injured or killed, and the ITP Number. Following initial notification, Permittee shall send DFG a written report within 2 calendar days. The report shall include the date and time of the finding or incident, location of the carcass, and, if possible, provide a photograph, explanation as to cause of death, and any other pertinent information.

7. Take Minimization Measures:

The following requirements are intended to ensure the minimization of incidental take of Covered Species that are discovered on the Project site, both prior to channel-, ground-, or vegetation-disturbing activities and during all Project activities. Permittee shall implement and adhere to the following conditions to minimize take of Covered Species:

7.1. Work in Streams. Permittee shall confine all construction work within the bed, channel, or banks of any stream to the period of June 15 through October 15. If the stream is dry, and advance written approval is obtained from DFG, then Permittee may conduct work outside of the June 15 through October 15 construction window.

7.2. Removal of Riparian Vegetation. Notwithstanding Condition 7.1 above, Permittee shall ensure that removal of above-ground riparian vegetation from the streambanks only occurs between September 1 and January 31 of any year to avoid impacts to migratory birds. Permittee shall remove all cleared material/vegetation from the riparian/stream zone and dispose of it properly. Permittee shall ensure that disturbance or removal of riparian vegetation does not exceed the minimum necessary to complete construction. Where feasible, hand tools (chain saws, etc.) shall be used to trim vegetation to the extent necessary to gain access to work sites. Whenever possible, root systems shall be left intact to facilitate more rapid recovery following temporary construction impacts.

7.3. Pile Driving. Permittee shall confine all pile driving activities, including installation of sheet piles, temporary and permanent piles located within the channel or below the top of bank, to the period between June 15 through October 15. Permittee shall also confine installation of permanent bridge or viaduct piles within 50 feet of the channel to the period between June 15 through October 15. Contingent on the results of hydroacoustic monitoring, the Permittee may install permanent bridge or viaduct piles within 50 feet of the channel outside this work window provided a written request is made to DFG. Written approval from DFG for the work window variance must be received by the Permittee prior to the start or continuation of work outside the June 15 through October 15 work window.

7.4. Hydroacoustic Monitoring. If surface water is present within the channel, Permittee shall conduct hydroacoustic monitoring to document peak sound pressure levels and cumulative sound exposure levels during all permanent pile driving activities in the channel or within 50 feet of the channel. Permittee shall also monitor the driving of temporary trestle and falsework piles below the top of bank. If underwater sound pressure levels for each pile type and size do not vary to a large degree, the Permittee may request written approval from DFG to discontinue hydroacoustic monitoring. Permittee shall submit a Hydroacoustic Monitoring Plan for review and approval by DFG no later than March 15, 2011.

7.5. Coffer Dams. Permittee shall contain permanent pile driving activities in the stream channel within coffer dams. A bubble curtain or other approved attenuation device shall be used to reduce sound exposure levels.

7.6. Fish Capture. Prior to conducting temporary or permanent pile driving activities within the channel, or within 50 feet of the channel, Permittee shall exclude, remove and relocate fish from coffer dams and those portions of the stream where $SEL_{Cumulative}$ are predicted to exceed the interim injury criteria of 183 dB. Permittee shall use one or more of the following NMFS-approved methods to capture SONCC coho and other salmonids: dip net, seine, throw net, or electrofishing.

7.7. Stream Dewatering. If pile driving activities are expected to exceed interim $SEL_{Cumulative}$ threshold levels for more than two consecutive days, Permittee shall dewater the affected stream reach in lieu of using block nets to exclude fish. During dewatering, Permittee shall incrementally divert flows in the affected reach to facilitate fish capture and relocation. Flows shall be reduced over a minimum 4-hour period in the following increments: 50%, 75%, 90%, and 100%.

7.8. Fish Relocation. Fish relocation activities shall be overseen by the Designated Biologist and shall be conducted by qualified fisheries biologists that are authorized by NMFS and DFG to handle listed salmonids. Captured fish shall be segregated by size to minimize predation, and maintained in cool, well-oxygenated water until released to

suitable habitat outside the construction impact area.

7.9. Fish Passage. Permittee shall ensure that installation of permanent culverts, bridges, grade control structures, instream habitat enhancement features, and other channel modifications do not impede the passage of fish up or down stream. Permittee shall submit detailed designs for work within the stream channel to DFG for review and approval no later than August 1, 2010.

7.10. Grass Population Study. Prior to initiating vegetation- or ground-disturbing activities, Permittee shall fund a two-year study of North Coast semaphore grass populations in the Little Lake Valley with the goal of characterizing ecological requirements for the species. The study shall investigate the soils, hydrology, and associated species at sites occupied by North Coast semaphore grass and at adjacent, unoccupied sites to identify potentially suitable areas for plant establishment, guide future management of HM Lands and determine the potential for expanding current populations.

7.11. Grass Seed Collection. Prior to initiating vegetation- or ground-disturbing activities, Permittee shall harvest mature North Coast semaphore grass seed from the area that will be directly impacted by construction. Seed shall be collected at the appropriate time of year by a botanist with a valid DFG scientific collecting permit that covers the species, or a MOU with DFG authorizing seed collection for the Project. If the property is being grazed during the growing season prior to collection, Permittee shall install temporary fencing to exclude cattle from the population.

7.12. Grass Curation and Propagation. Permittee shall sponsor the permanent curation of a portion of the collected seed by an organization participating in the Center for Plant Conservation's National Collection of Endangered Plants. Permittee shall contract with a qualified native plant nursery to propagate the remaining seed for outplanting as container stock within suitable, protected habitat adjacent to the impacted population.

7.13. Grass Relocation. Permittee shall salvage mature North Coast semaphore grass plants and/or rhizomes from the permanent impact area and relocate them to suitable, protected habitat adjacent to the impact area. Plants and/or rhizomes shall be transplanted by a qualified botanist in the late fall or early winter after soils have been moistened by the first seasonal rains. Permittee shall monitor the transplants, container stock, and adjacent natural plants within the population for a minimum period of 10 years following planting.

7.14. Surface Hydrology. Permittee shall maintain the existing surface hydrology of the remaining North Coast semaphore grass population within the Project right-of-way to the greatest extent possible by (1) installing two culverts to convey surface flows

through the roadway embankment and (2) capturing roadway runoff and preventing it from discharging into adjacent occupied habitat.

7.15. Grass Population Protection. Permittee shall provide for the long-term protection of the remaining population of North Coast semaphore grass within the Project right-of-way and shall add the location to the current database of Environmentally Sensitive Areas (ESAs) in Caltrans District 1. ESA paddles will be installed within the right-of-way to alert maintenance personnel and protect the population from inadvertent disturbance.

7.16. Grass Population Maintenance. In consultation with DFG and a qualified botanist, Permittee shall develop a maintenance prescription for the right-of-way that is compatible with the ecological requirements of North Coast semaphore grass. The prescription shall specify mowing schedules and restrict incompatible activities such as blading or herbicide application. Permittee shall ensure that local maintenance personnel understand and implement the management prescription for this section of right-of-way.

8. Mitigation Measures/Compensation for Take:

In order to mitigate for the taking of juvenile SONCC coho salmon and the temporary and permanent impacts of the Project on stream habitat for the species within the Outlet Creek Hydrologic Sub-Area, the Permittee shall implement a fish passage improvement project to restore access to spawning and rearing habitat on Ryan Creek. Permittee shall provide the following:

8.1. Fish Barrier Removal Plan. In consultation with DFG, Permittee shall prepare draft and final designs for a project to remediate existing barriers to fish passage at the South Fork (PM 52.25) and North Fork (PM 52.36) Ryan Creek culverts on U.S. 101. Draft plans for both crossings shall be submitted to DFG for review no later than June 30, 2011. Final plans shall be prepared and submitted to DFG for approval no later than June 30, 2012.

8.2. Fish Barrier Removal Completion. Permittee shall complete construction of the South Fork Ryan Creek culvert remediation project no later than October 31, 2013.

8.3. Fish Barrier Removal Funding. Permittee shall prepare cost estimates for the passage improvement work on the North Fork Ryan Creek culvert based on the final design prepared under Condition 8.1 above and shall apply for funding to complete this work in a timely manner.

In addition to the fish passage improvement project described above, DFG has determined that permanent protection and perpetual management of compensatory habitat is necessary and required under CESA to fully mitigate impacts of the taking on Covered

Species that will result from implementing the Project. This determination is based on factors including an assessment of the quality of the habitat at the Project site and the increased habitat value for the Covered Species that can be achieved through land management at the mitigation location.

8.4. HM Lands Acquisition and Management. Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of this ITP if security is provided pursuant to Condition 9, Permittee shall acquire and permanently preserve 1,486 acres of HM Lands for the Covered Species identified in the final MMP. Of this total, Permittee shall create 47.57 acres, enhance 48.51 acres, and preserve 100.40 acres of riparian habitat on approximately 1,416 acres of HM Lands to fully mitigate for the incidental taking of SONCC coho salmon that will occur as a result of the temporary and permanent habitat loss and mortality of individuals related to other Project activities. In addition, Permittee shall acquire, restore, and permanently preserve four extant populations of North Coast semaphore grass totaling 5.094 acres on an additional 70 acres of HM Lands to fully mitigate for the incidental taking of North Coast semaphore grass that will occur as a result of Project activities. A restoration and management plan for the HM Lands shall be prepared and submitted to DFG for approval within 18 months after the issuance of this ITP. The plan shall specify vegetation management actions and enhancement measures designed to result in a net expansion of existing North Coast semaphore grass populations on the HM Lands.

DFG estimates that acquisition of appropriate HM Lands to mitigate for impacts to Covered Species will cost approximately $7,800/acre for 1,486 acres for a total of approximately **$11,590,800.00**. As part of this condition, Permittee shall:

8.4.1. Transfer fee title to the HM Lands to the Mendocino County Resource Conservation District (MCRCD) or another entity under terms approved by DFG. If fee title is held by an entity other than DFG, a conservation easement in a form approved by DFG shall be recorded on title of the HM Lands. The grantee of the conservation easement may be DFG, a DFG-approved non-profit organization qualified pursuant to California Government Code section 65965, or a public agency approved by DFG and authorized to hold conservation easements. If a DFG-approved non-profit organization or approved public agency is grantee on a conservation easement, DFG shall be named third party beneficiary;

8.4.2. Provide a recent preliminary title report, initial hazardous materials survey report, and other necessary documents specified in Attachment 2 and/or requested by the DFG Regional Representative. The Permittee shall be responsible for all costs associated with obtaining and providing the required documents. All documents conveying the HM Lands and all conditions of title are

subject to the approval of DFG, the Wildlife Conservation Board and if applicable, the Department of General Services;

8.4.3. Provide for the initial protection and enhancement of HM Lands as described in the final MMP. DFG estimates that initial protection and enhancement will cost approximately $4,590.40/acre for 1,416 acres of HM Lands for SONCC coho salmon, for a total of $6,500,000.00. Additionally, DFG estimates that initial protection and enhancement will cost approximately $6,647.45/acre for 70 acres of HM Lands for North Coast semaphore grass, for a total of $465,321.00. Total initial protection and enhancement costs are estimated at **$6,965,321.00**.

8.4.4. Provide for the perpetual management of the HM Lands to benefit the Covered Species by doing the following:

Conduct a Property Analysis Record (PAR) or equivalent analysis for the HM Lands that have been identified to determine the appropriate endowment amount to fund the in-perpetuity management of the 1,486 acres of required HM Lands. Permittee shall provide the required endowment to DFG after DFG reviews and approves the PAR. Permittee shall demonstrate that sufficient funds have been allocated for the endowment as described in Condition 9 below.

Interest from the endowment amount shall be available for reinvestment in the principal and for the long-term operation, management, and protection of the HM Lands, including reasonable administrative overhead, biological monitoring, improvements to biological carrying capacity, law enforcement measures, and any other action designed to protect or improve the habitat values of the HM Lands. Monies received by DFG pursuant to this Condition may be deposited in a special deposit account established pursuant to Fish and Game Code section 13014. DFG may pool the endowment with other endowments for the operation, management and protection of HM Lands for local populations of the Covered Species. Endowment funds provided as described above may alternatively be held by a DFG-approved non-profit organization qualified to hold endowment funds;

8.4.5. Reimburse DFG for reasonable expenses incurred during title and documentation review, expenses incurred from other state agency reviews, and overhead related to transfer of HM Lands to DFG. DFG estimates that this Project will create an additional cost to DFG of no more than $3,000 for every fee title deed or easement processed.

9. Performance Security:

9.1. Funding Assurance. Permittee may proceed with channel-, ground-, or vegetation-

disturbing activities before completing all of the mitigation, monitoring and reporting activities required in the Conditions of Approval of this ITP only if Permittee ensures funding to complete those activities by providing to DFG, prior to commencing ground- or vegetation disturbing activities or within 30 days after the effective date of this ITP, whichever occurs first, written documentation that the Permittee has allocated sufficient funds, acceptable to and approved by DFG, in the Expenditure Authorization for the Project to ensure implementation of the Conditions of Approval of this ITP.

The written documentation shall identify and display in itemized form, at a minimum, the following estimated costs of implementing the ITP's mitigation, monitoring, and reporting requirements, which total **$34,556,121.00**. The written documentation submitted by the Permittee to satisfy this Condition shall be on official letterhead and signed by both the District Deputy Director of Project Management and the District Deputy Director of Environment, and shall include a statement that the funds identified have been allocated specifically for the purpose of fulfilling the Permittee's mitigation obligations associated with this ITP and will not be redirected for other Project purposes.

Even if the Funding Assurance is provided, Permittee must complete the required acquisition, protection, and transfer of all HM Lands and record the required conservation easements pursuant to Condition 8.4.1 within 18 months of the effective date of this ITP.

9.1.1. Project design costs for fish passage improvement at the existing U.S. 101 culverts on the North and South Forks of Ryan Creek, as well as implementation costs for the remediation work on the South Fork Ryan Creek crossing, estimated at **$4,000,000.00**;

9.1.2. Land acquisition costs for impacts to habitat, calculated at $7,800.00/acre for 1,486 acres: **$11,590,800.00**;

9.1.3. Costs of enhancing HM Lands, calculated at $4,590.40/acre for 1416 acres: $6,500,000.00; and $6,647.45/acre for 70 acres: $465,321.00 for a total enhancement cost of **$6,965,321.00;**

9.1.4. Endowment estimate, calculated at $8,075.37/acre for 1,486 acres: **$12,000,000.00**[4]**.**

9.2. Date of Acquisition of HM Lands. Permittee must complete the required acquisition, protection and transfer of all HM Lands and record the required conservation

[4] This figure represents an estimate of the total endowment principal. The actual endowment amount shall be based on a Property Analysis Record or equivalent analysis for individual HM Lands as described in Condition 7.4.4 of this ITP.

easements in favor of DFG within 18 months of the effective date of this ITP.

Amendment:
This ITP may be amended as provided by California Code of Regulations, Title 14, section 783.6, subdivision (c), and other applicable law. This ITP may also be amended without the concurrence of the Permittee as required by law, including if DFG determines that continued implementation of the Project under existing ITP conditions would jeopardize the continued existence of the Covered Species or that Project changes or changed biological conditions necessitate an ITP amendment to ensure that impacts to the Covered Species are minimized and fully mitigated.

Stop-Work Order:
DFG may issue Permittee a written stop-work order to suspend any activity covered by this ITP for an initial period of up to 25 days to prevent or remedy a violation of ITP conditions (including but not limited to failure to comply with reporting, monitoring, or habitat acquisition obligations) or to prevent the illegal take of an endangered, threatened, or candidate species. Permittee shall comply with the stop-work order immediately upon receipt thereof. DFG may extend a stop-work order under this provision for a period not to exceed 25 additional days, upon written notice to the Permittee. DFG shall commence the formal suspension process pursuant to California Code of Regulations, Title 14, section 783.7, within five working days of issuing a stop-work order.

Compliance with Other Laws:
This ITP contains DFG's requirements for the Project pursuant to CESA. This ITP does not necessarily create an entitlement to proceed with the Project. Permittee is responsible for complying with all other applicable state, federal, and local laws.

Notices:
The Permittee shall deliver the fully executed duplicate original ITP by first class mail or overnight delivery to the following address:

Habitat Conservation Planning Branch
California Department of Fish and Game
Attention: CESA Permitting Program
1416 Ninth Street, Suite 1260
Sacramento, CA 95814

Written notices, reports and other communications relating to this ITP shall be delivered to DFG by first class mail at the following addresses, or at addresses DFG may subsequently provide the Permittee. Notices, reports, and other communications shall reference the Project name, Permittee, and ITP Number (2081-2010-007-01) in a cover letter and on any other associated documents.

Original cover with attachment(s) to:

Mark C. Stopher, Acting Regional Manager
601 Locust Street
Redding, CA 96001
Telephone (530) 225-2275
Fax (530) 225-2381

Copy of cover without attachment(s) to:

Office of the General Counsel
California Department of Fish and Game
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

And:

Habitat Conservation Planning Branch
California Department of Fish and Game
1416 Ninth Street, Suite 1260
Sacramento, CA 95814

Unless Permittee is notified otherwise, DFG's Regional Representative for purposes of addressing issues that arise during implementation of the ITP is:

Craig Martz
601 Locust Street
Redding, CA 96001
Telephone (530) 225-2281
Fax (530) 225-0324

Compliance with CEQA:
DFG's issuance of the ITP is subject to the California Environmental Quality Act (CEQA). DFG is a responsible agency under CEQA with respect to the ITP because of prior environmental review of the Project by the California Department of Transportation as lead agency for the Project. (See generally Pub. Resources Code, §§ 21067, 21069.) The lead agency's prior environmental review of the Project is set forth in the October 2006 Final Environmental Impact Statement/Environmental Impact Report (SCH No. 1990030006) certified by the California Department of Transportation on December 15, 2006, and the Supplemental Environmental Impact Report certified by the California Department of Transportation on May 19, 2010. At the time the lead agency certified the EIR and Supplemental EIR and approved the Project it also adopted all mitigation measures described in the EIR and Supplemental EIR as Conditions of Project Approval.

In fulfilling its obligations as a responsible agency, DFG's obligations under CEQA are more limited than the lead agency. DFG, in particular, is responsible for considering only the effects of those activities involved in the Project which it is required by law to carry out or approve and mitigating or avoiding only the direct or indirect environmental effects of those parts of the Project which it decides to carry out, finance, or approve. (Pub. Resources Code, § 21002.1, subd. (d); CEQA Guidelines, §§ 15041, subd. (b), 15096, subds. (f)-(g).)[5] Because DFG's exercise of discretion is limited to issuance of the ITP, DFG is responsible under CEQA for considering only the environmental effects that fall within DFG's permitting authority under CESA.

This ITP, along with DFG's related CEQA findings that are available as a separate document, provide evidence of DFG's consideration of the lead agency's EIR and Supplemental EIR for the Project and the environmental effects related to issuance of the ITP. (CEQA Guidelines, § 15096, subd. (f).) DFG finds that issuance of the ITP will not result in any previously undisclosed potentially significant effects on the environment or a substantial increase in the severity of any potentially significant environmental effects previously disclosed by the lead agency. Furthermore, to the extent the potential for such effects on the Covered Species exists, DFG finds that adherence to and implementation of the conditions of Project approval adopted by the lead agency, as well as adherence to and implementation of the Conditions of Approval imposed by DFG through the issuance of this ITP, will avoid or reduce to below a level of significance any such potential effects. DFG consequently finds that issuance of the ITP will not result in any significant, adverse impacts on the environment.

Findings under CESA:
These findings are intended to document DFG's compliance with the specific findings requirements set forth in CESA and related regulations. (Fish & G. Code § 2081, subs. (b)-(c); Cal. Code Regs., tit. 14, §§ 783.4, subds, (a)-(b), 783.5, subd. (c)(2).)

DFG finds that issuance of this ITP complies and is consistent with the criteria governing the issuance of ITPs under CESA:

(1) Take of Covered Species as defined in the ITP will be incidental to the otherwise lawful activities covered under the ITP;

(2) Impacts of the taking of the Covered Species will be minimized and fully mitigated through the implementation of measures required by this ITP and as described in the MMRP. Measures include: (1) permanent habitat protection; (2) establishment of avoidance zones; (3) worker education; and (4) Monthly Compliance Reports. DFG evaluated the quality of the habitat on the Project site, the scope and extent of direct impacts, the scope and extent of indirect impacts, and other relevant information available to DFG or provided by the Permittee. Based on this evaluation, DFG

[5] The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

determined that the protection and management in perpetuity of 1,486 acres of compensatory habitat that is contiguous with other protected Covered Species habitat and/or is of higher quality than the habitat being destroyed by the Project, along with the minimization, monitoring, reporting, and funding requirements of this ITP fully mitigates the impacts of the taking caused by the Project;

(3) The take avoidance and mitigation measures required pursuant to the conditions of this ITP and its attachments are roughly proportional in extent to the impacts of the taking authorized by this ITP;

(4) The measures required by this ITP maintain Permittee's objectives to the greatest extent possible;

(5) All required measures are capable of successful implementation;

(6) The ITP is consistent with any regulations adopted pursuant to Fish and Game Code sections 2112 and 2114;

(7) Permittee has ensured adequate funding to implement the measures required by the ITP as well as for monitoring compliance with, and the effectiveness of, those measures for the Project; and

(8) Issuance of the ITP will not jeopardize the continued existence of the Covered Species based on the best scientific and other information reasonably available, and this finding includes consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (a) known population trends; (b) known threats to the species; and (c) reasonably foreseeable impacts on the species from other related projects and activities. Moreover, DFG's finding is based, in part, on DFG's express authority to amend the terms and conditions of the ITP without concurrence of the Permittee as necessary to avoid jeopardy and as required by law.

Attachments:

FIGURE 1	Project Location
FIGURE 1-2a	Overview of Project Features
ATTACHMENT 1	Mitigation Monitoring and Reporting Program
ATTACHMENT 2	Habitat Management Land Acquisition Checklist

ISSUED BY THE CALIFORNIA DEPARTMENT OF FISH AND GAME

on 7/9/2010.

Mark C. Stopher
Acting Regional Manager
NORTHERN REGION

ACKNOWLEDGMENT

The undersigned: 1) warrants that he or she is acting as a duly authorized representative of the Permittee, 2) acknowledges receipt of this ITP, and 3) agrees on behalf of the Permittee to comply with all terms and conditions of the ITP.

By: _____ Date: 7/14/2010

Printed Name: David G. Kelley Title: Project Manager

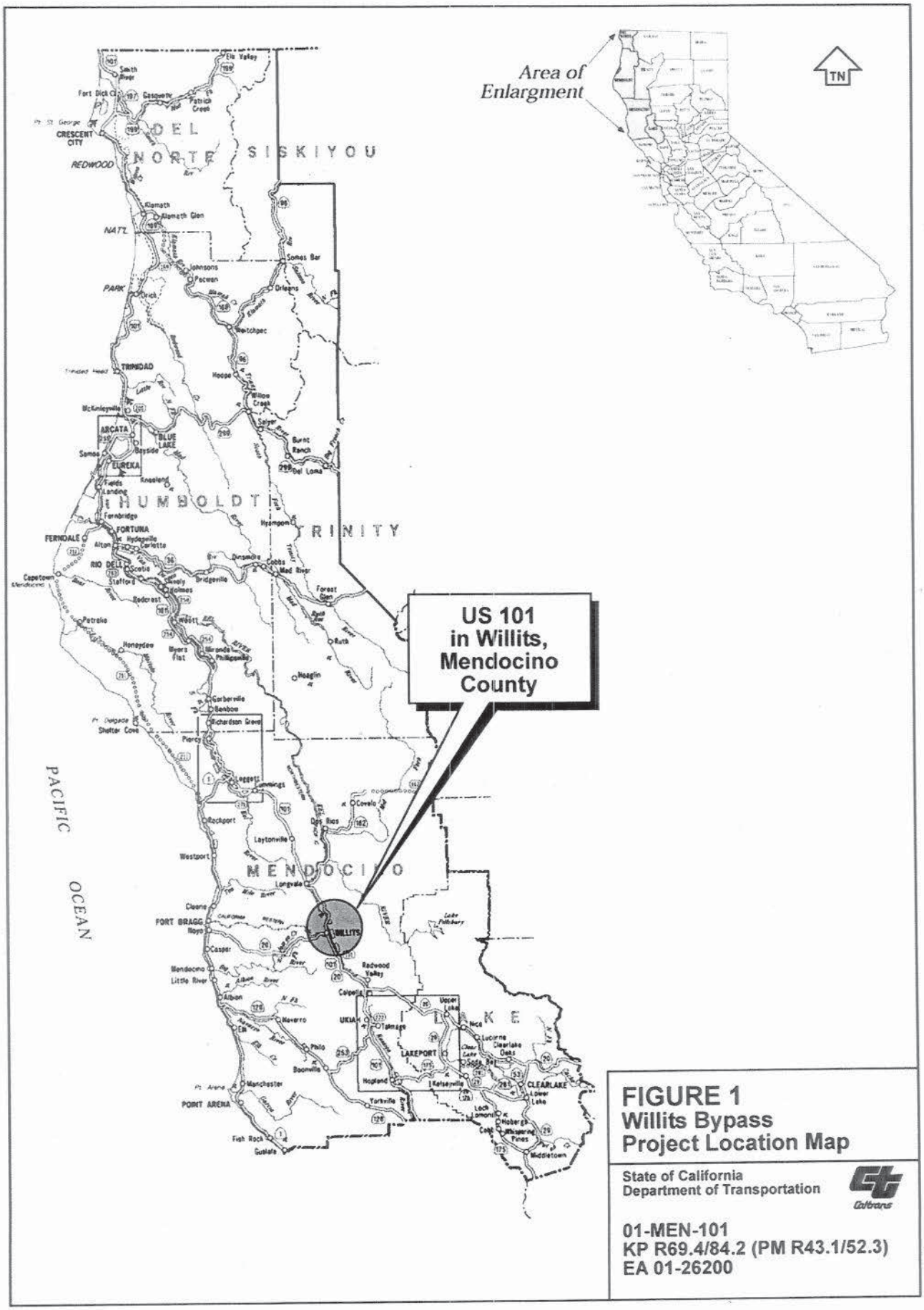

FIGURE 1
Willits Bypass Project Location Map

State of California
Department of Transportation

Caltrans

01-MEN-101
KP R69.4/84.2 (PM R43.1/52.3)
EA 01-26200

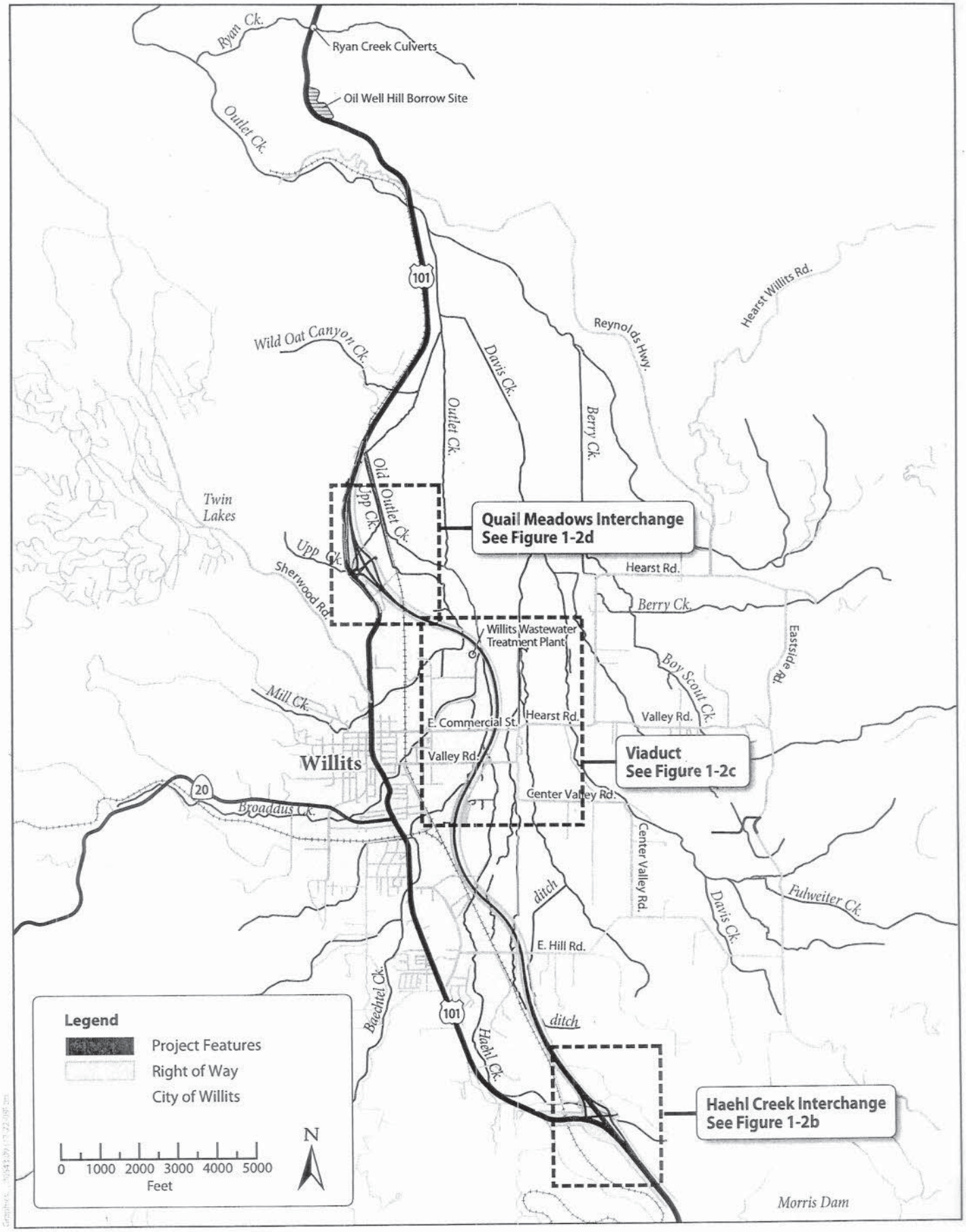

Figure 1-2a
Project Features—Overview Phase 1

Attachment 1

CALIFORNIA DEPARTMENT OF FISH AND GAME
MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)
CALIFORNIA ENDANGERED SPECIES ACT

INCIDENTAL TAKE PERMIT NO. 2081-2010-007-01

PERMITTEE: **California Department of Transportation**

PROJECT: **Willits Bypass Project**

PURPOSE OF THE MMRP

The purpose of the MMRP is to ensure that the impact minimization and mitigation measures required by the Department of Fish and Game (DFG) for the above-referenced Project are properly implemented, and thereby to ensure compliance with section 2081(b) of the Fish and Game Code and section 21081.6 of the Public Resources Code. A table summarizing the mitigation measures required by DFG is attached. This table is a tool for use in monitoring and reporting on implementation of mitigation measures, but the descriptions in the table do not supersede the mitigation measures set forth in the California Incidental Take Permit (ITP) and in attachments to the ITP, and the omission of a ITP requirement from the attached table does not relieve the Permittee of the obligation to ensure the requirement is performed.

OBLIGATIONS OF PERMITTEE

Mitigation measures must be implemented within the time periods indicated in the table that appears below. Permittee has the primary responsibility for monitoring compliance of all mitigation measures and for reporting to DFG on the progress in implementing those measures. These monitoring and reporting requirements are set forth in the ITP itself and are summarized at the front of the attached table.

VERIFICATION OF COMPLIANCE, EFFECTIVENESS

DFG may, at its sole discretion, verify compliance with any mitigation measure or independently assess the effectiveness of any mitigation measure.

TABLE OF MITIGATION MEASURES

The following items are identified for each mitigation measure: Mitigation Measure, Source, Implementation Schedule, Responsible Party, and Status/Date/Initials. The Mitigation Measure column summarizes the mitigation requirements of the ITP. The Source column identifies the ITP condition that sets forth the mitigation measure. The Implementation Schedule column shows the date or phase when each mitigation measure will be implemented. The Responsible Party column identifies the person or agency that is primarily responsible for implementing the mitigation measure. The Status/Date/Initials column shall be completed by the Permittee during preparation of each Status Report and the Final Mitigation Report, and must identify the implementation status of each mitigation measure, the date that status was determined, and the initials of the person determining the status.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
BEFORE DISTURBING SOIL OR VEGETATION					
1	Mitigation and Monitoring Proposal. Permittee shall implement and adhere to the mitigation measures related to the Covered Species in the Willits Bypass Project Final Mitigation and Monitoring Proposal (MMP) dated June 8, 2010, and any revisions to the MMP subsequently approved by DFG. Prior to initiating channel-, vegetation-, or ground-disturbing activities, and no later than December 31, 2010, Permittee shall submit a detailed mitigation plan to DFG for review and approval that will be incorporated into the MMP. The plan shall include (1) a detailed description of the baseline condition of each parcel of habitat mitigation (HM) Lands acquired to offset impacts to the Covered Species, (2) a detailed description of the measures that will be used to restore and enhance the ecological functions of the HM Lands, including final design and planting details for habitat creation, revegetation, and enhancement actions, (3) a discussion of the parameters that will be monitored to determine changes in ecological functions, including the frequency of monitoring, methods that will be used, and criteria used to determine success, (4) an adaptive management plan to be implemented in the event that expected results are not achieved, and (5) a long-term plan for managing and maintaining the HM lands after success criteria have been met.	ITP Condition #5.1	Before commencing channel- vegetation- or ground-disturbing activities and no later than December 31, 2010	Permittee	
2	Designated Representative. Before initiating channel-, ground-, or vegetation-disturbing Project activities, Permittee shall designate a representative (Designated Representative) responsible for communications with DFG and overseeing compliance with this ITP. The Permittee shall notify DFG in writing prior to commencement of channel-, ground-, or vegetation-disturbing activities of the Designated Representative's name, business address, and contact information, and shall notify DFG in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.	ITP Condition # 5.2	Before commencing channel- ground- or vegetation-disturbing activities/ Entire Project	Permittee	
3	Designated Biologist. At least 30 days before initiating channel-, ground-, or vegetation-disturbing activities, Permittee shall submit to DFG in writing the name, qualifications, business address, and contact information for a biological monitor (Designated Biologist). The Designated Biologist shall be knowledgeable and experienced in the biology and natural history of the Covered Species. The Designated Biologist shall be responsible for monitoring Project activities and/or channel-, ground-, or vegetation-disturbing activities in areas of Covered Species' habitat to help minimize or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain DFG approval of the Designated Biologist prior to the commencement of Project-related activities that may result in the incidental take of the Covered Species.	ITP Condition # 5.3	At least 30 days before commencing ground- or vegetation-disturbing activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
4	Education Program. Permittee shall conduct an education program for all persons employed or otherwise working on the Project site prior to performing any work on-site. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status under CESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to their performing work on-site. Copies of this ITP shall be maintained at the worksite. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry on-site. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and be available to DFG upon request.	ITP Condition # 5.5	Before commencing ground- or vegetation-disturbing activities / Entire Project	Permittee	
5	Firearms and Dogs: Permittee shall prohibit firearms and domestic dogs from the Project site and site access routes during Project activities and development of the Project, except those in the possession of authorized security personnel or local, State, or Federal law enforcement officials.	ITP Condition # 5.6	Before commencing ground- or vegetation-disturbing activities / Entire Project	Permittee	
6	Delineation of Property Boundaries: Prior to initiating channel-, ground-, or vegetation-disturbing Project activities along each part of the route in active construction, Permittee shall clearly delineate right-of-way and/or property boundaries of the current Project work area or areas with fencing, stakes or flags and shall similarly delineate the limits of Project activities. Permittee shall restrict all project activities to within the fenced, staked or flagged areas. Permittee shall maintain all fencing, stakes and flags until the completion of Project activities in that area.	ITP Condition # 5.7	Before commencing ground- or vegetation-disturbing activities / Entire Project	Permittee	
7	Delineation of Habitat. Permittee shall clearly delineate habitat of the Covered Species on the Project site with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize the disturbance of Covered Species' habitat. Permittee shall designate Covered Species habitat adjacent to the work area as Environmentally Sensitive Areas (ESAs) on the construction plans and construction personnel and equipment shall not enter these areas. Permittee shall install ESA fencing prior to initiating vegetation clearing operations. The location of all ESA fencing shall be inspected and approved by DFG prior to vegetation removal.	ITP Condition # 5.8	Before commencing ground- or vegetation-disturbing activities / Entire Project	Permittee	
8	Notification Prior to Commencement. Permittee shall notify DFG 14 calendar days before initiating channel-, ground-, or vegetation-disturbing activities and shall document compliance with all pre-Project Conditions of Approval before initiating channel-, ground-, or vegetation-disturbing activities.	ITP Condition # 6.1	Before commencing ground- or vegetation-disturbing activities	Permittee	
9	Grass Population Study. Prior to initiating vegetation- or ground-disturbing activities, Permittee shall fund a two-year study of North Coast semaphore grass populations in the Little Lake Valley with the goal of characterizing ecological requirements for the species. The study shall investigate the soils, hydrology, and associated species at sites occupied by North Coast semaphore grass and at adjacent, unoccupied sites to identify potentially suitable areas for plant establishment, guide future management of HM Lands and determine the potential for expanding current populations.	ITP Condition # 7.10	Before commencing ground- or vegetation-disturbing activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
10	Grass Seed Collection. Prior to initiating vegetation- or ground-disturbing activities, Permittee shall harvest mature North Coast semaphore grass seed from the area that will be directly impacted by construction. Seed shall be collected at the appropriate time of year by a botanist with a valid DFG scientific collecting permit that covers the species, or a MOU with DFG authorizing seed collection for the Project. If the property is being grazed during the growing season prior to collection, Permittee shall install temporary fencing to exclude cattle from the population.	ITP Condition # 7.11	Before commencing ground- or vegetation-disturbing activities	Permittee	
11	Grass Curation and Propagation. Permittee shall sponsor the permanent curation of a portion of the collected seed by an organization participating in the Center for Plant Conservation's National Collection of Endangered Plants. Permittee shall contract with a qualified native plant nursery to propagate the remaining seed for outplanting as container stock within suitable, protected habitat adjacent to the impacted population.	ITP Condition # 7.12	Before commencing ground- or vegetation-disturbing activities	Permittee	
12	Grass Population Maintenance. In consultation with DFG and a qualified botanist, Permittee shall develop a maintenance prescription for the right-of-way that is compatible with the ecological requirements of North Coast semaphore grass. The prescription shall specify mowing schedules and restrict incompatible activities such as blading or herbicide application. Permittee shall ensure that local maintenance personnel understand and implement the management prescription for this section of right-of-way.	ITP Condition # 7.16	Before commencing ground- or vegetation-disturbing activities	Permittee	
13	HM Lands Acquisition and Management. Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of this ITP if security is provided pursuant to Condition 9, Permittee shall acquire and permanently preserve 1,486 acres of HM Lands for the Covered Species identified in the final MMP. Of this total, Permittee shall create 47.57 acres, enhance 48.51 acres, and preserve 100.40 acres of riparian habitat on approximately 1,416 acres of HM Lands to fully mitigate for the incidental taking of SONCC coho salmon that will occur as a result of the temporary and permanent habitat loss and mortality of individuals related to other Project activities. In addition, Permittee shall acquire, restore, and permanently preserve four extant populations of North Coast semaphore grass totaling 5.094 acres on an additional 70 acres of HM Lands to fully mitigate for the incidental taking of North Coast semaphore grass that will occur as a result of Project activities. A restoration and management plan for the HM Lands shall be prepared and submitted to DFG for approval within 18 months after the issuance of this ITP. The plan shall specify vegetation management actions and enhancement measures designed to result in a net expansion of existing North Coast semaphore grass populations on the HM Lands. DFG estimates that acquisition of appropriate HM Lands to mitigate for impacts to Covered Species will cost approximately $7,800/acre for 1,486 acres for a total of approximately $11,590,800.00.	ITP Condition # 8.4	Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of the ITP	Permittee	
14	Transfer fee title to the HM Lands to the Mendocino County Resource Conservation District (MCRCD) or another entity under terms approved by DFG. If fee title is held by an entity other than DFG, a conservation easement in a form approved by DFG shall be recorded on title of the HM Lands. The grantee of the conservation easement may be DFG, a DFG-approved non-profit organization qualified pursuant to California Government Code section 65965, or a public agency approved by DFG and authorized to hold conservation easements. If a DFG-approved non-profit organization or approved public agency is grantee on a conservation easement, DFG shall be named third party beneficiary;	ITP Condition # 8.4.1	Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of the ITP	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
15	Permittee shall provide a recent preliminary title report, initial hazardous materials survey report, and other necessary documents specified in Attachment 2 and/or requested by the DFG Regional Representative. The Permittee shall be responsible for all costs associated with obtaining and providing the required documents. All documents conveying the HM Lands and all conditions of title are subject to the approval of DFG, the Wildlife Conservation Board and if applicable, the Department of General Services.	ITP Condition # 8.4.2	Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of the ITP	Permittee	
16	Permittee shall provide for the initial protection and enhancement of HM Lands as described in the final MMP. DFG estimates that initial protection and enhancement will cost approximately $4,590.40/acre for 1,416 acres of HM Lands for SONCC coho salmon, for a total of $6,500,000.00. Additionally, DFG estimates that initial protection and enhancement will cost approximately $6,647.45/acre for 70 acres of HM Lands for North Coast semaphore grass, for a total of $465,321.00. Total initial protection and enhancement costs are estimated at $6,965,321.00.	ITP Condition # 8.4.3	Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of the ITP	Permittee	
17	Permittee shall provide for the perpetual management of the HM Lands to benefit the Covered Species by doing the following: Conduct a Property Analysis Record (PAR) or equivalent analysis for the HM Lands that have been identified to determine the appropriate endowment amount to fund the in-perpetuity management of the 1,486 acres of required HM Lands. Permittee shall provide the required endowment to DFG after DFG reviews and approves the PAR. Permittee shall demonstrate that sufficient funds have been allocated for the endowment as described in Condition 9 below. Interest from the endowment amount shall be available for reinvestment in the principal and for the long term operation, management, and protection of the HM Lands, including reasonable administrative overhead, biological monitoring, improvements to biological carrying capacity, law enforcement measures, and any other action designed to protect or improve the habitat values of the HM Lands. Monies received by DFG pursuant to this Condition shall be deposited in a special deposit account established pursuant to Fish and Game Code section 13014. DFG may pool the endowment with other endowments for the operation, management and protection of HM Lands for local populations of the Covered Species. Endowment funds provided as described above may alternatively be held by a DFG-approved non-profit organization qualified to hold endowment funds;	ITP Conditions # 8.4.4	Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of the ITP	Permittee	
18	Permittee shall reimburse DFG for reasonable expenses incurred during title and documentation review, expenses incurred from other state agency reviews, and overhead related to transfer of HM Lands to DFG. DFG estimates that this Project will create an additional cost to DFG of no more than $3,000 for every fee title deed or easement processed.	ITP Condition # 8.4.5	Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of the ITP	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
18	Funding Assurance. Permittee may proceed with channel-, ground-, or vegetation-disturbing activities before completing all of the mitigation, monitoring and reporting activities required in the Conditions of Approval of this ITP only if Permittee ensures funding to complete those activities by providing to DFG, prior to commencing ground- or vegetation disturbing activities or within 30 days after the effective date of this ITP, whichever occurs first, written documentation that the Permittee has allocated sufficient funds, acceptable to and approved by DFG, in the Expenditure Authorization for the Project to ensure implementation of the Conditions of Approval of this ITP. The written documentation shall identify and display in itemized form, at a minimum, the following estimated costs of implementing the ITP's mitigation, monitoring, and reporting requirements, which total $34,556,121.00. The written documentation submitted by the Permittee to satisfy this Condition shall be on official letterhead and signed by both the District Deputy Director of Project Management and the District Deputy Director of Environment, and shall include a statement that the funds identified have been allocated specifically for the purpose of fulfilling the Permittee's mitigation obligations associated with this ITP and will not be redirected for other Project purposes. Even if the Funding Assurance is provided, Permittee must complete the required acquisition, protection and transfer of all HM Lands and record the required conservation easements pursuant to Condition 8.4.1 within 18 months of the effective date of this ITP. Project design costs for fish passage improvement at the existing U.S. 101 culverts on the North and South Forks of Ryan Creek, as well as implementation costs for the remediation work on the South Fork Ryan Creek crossing, estimated at $4,000,000.00; Land acquisition costs for impacts to habitat, calculated at $7,800.00/acre for 1,486 acres: $11,590,800.00; Costs of enhancing HM Lands, calculated at $4,590.40/acre for 1416 acres: $6,500,000.00; and $6,647.45/acre for 70 acres: $465,321.00 for a total enhancement cost of $6,965,321.00; Endowment estimate, calculated at $8,075.37/acre for 1,486 acres: $12,000,000.00. Date of Acquisition of HM Lands. Permittee must complete the required acquisition, protection and transfer of all HM Lands and record the required conservation easements in favor of DFG within 18 months of the effective date of this ITP.	ITP Condition # 9.1 and # 9.2	Prior to initiating channel- ground- or vegetation-disturbing Project activities.	Permittee	
DURING CONSTRUCTION					
19	Designated Biologist Authority. To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist shall have authority to immediately stop any activity that is not in compliance with this ITP, and/or to order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species or fully protected species. Neither the Designated Biologist nor DFG shall be liable for any costs incurred in complying with the Conditions of Approval, including cease-work orders issued by DFG.	ITP Condition # 5.4	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
	Project Site Access. Project-related personnel shall access the Project site during Project activities using existing designated routes and shall not cross Covered Species' habitat outside of or en route to the Project site. Project-related vehicle traffic shall be restricted to established roads, staging, and parking areas. If Permittee determines construction of off-site routes for travel are necessary, Permittee shall contact DFG prior to carrying out such an activity. Construction of off-site routes for travel may require an amendment to this ITP if take of Covered Species incidental to such construction may occur.	ITP Condition # 5.9	Entire Project	Permittee	
	Staging Areas. Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project site using, to the extent possible, previously disturbed areas. Additionally, Permittee shall not use or cross Covered Species' habitat outside of the marked Project boundaries unless specifically provided for in Condition 5.9 of this ITP. Staging of construction materials and equipment shall not occur within the regulatory floodway.	ITP Condition # 5.10	Entire Project	Permittee	
20	Flood Events. Permittee shall design and construct temporary bridges and other structures in the channel to pass the 100-year flood event. Permittee shall remove structures and materials not designed to withstand high flows from the channel prior to October 15.	ITP Condition # 5.11	Entire Project	Permittee	
	Hazardous Waste. Permittee shall immediately stop/repair and clean up any leaks or spills of fuel, lubricants, or other materials that may be deleterious to fish, plant, or wildlife during Project activities at the time of occurrence. Permittee shall confine the storage and handling of hazardous materials to designated staging and refueling areas and shall properly contain and dispose of any unused or leftover hazardous products off-site.	ITP Condition # 5.12	Entire Project	Permittee	
21	Vehicle Inspection. Permittee shall ensure that vehicles and equipment operated within or adjacent to the stream channel are free of oil or petroleum residues and are inspected and maintained on a daily basis to prevent leaks of materials that could be deleterious to aquatic life, wildlife, or riparian vegetation.	ITP Condition # 5.13	Entire Project	Permittee	
22	DFG Access. Permittee shall provide DFG staff with reasonable access to the Project site and mitigation lands under Permittee control, and shall otherwise fully cooperate with DFG efforts to verify compliance with or effectiveness of mitigation measures set forth in the ITP.	ITP Condition # 5.14	Entire Project	Permittee	
23	Notification of Non-compliance. Permittee shall immediately notify DFG in writing if it determines that it is not in compliance with any Condition of Approval of this ITP, including, but not limited to, any actual or anticipated failure to implement mitigation measures within the time periods indicated in this ITP and/or the MMRP. Permittee shall report any non-compliance with the ITP during Project activities to DFG within 24 hours.	ITP Condition # 6.2	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
24	Compliance Monitoring. The Designated Biologist shall be on-site daily while Project activities, including all pile installation, dewatering, channel-, vegetation-, or ground-disturbing activities that may affect Covered Species are taking place to: (1) minimize incidental take of the Covered Species; (2) check for compliance with all mitigation and avoidance measures; (3) check all exclusion zones; and (4) ensure that signs, stakes, and fencing are intact, and that human activities are restricted outside of these protective zones. The Designated Representative or Designated Biologist shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species, survey results, and monitoring activities required by this ITP. The Designated Biologist shall conduct compliance inspections a minimum of once per month during periods of inactivity and after clearing, grubbing, and grading are completed.	ITP Condition # 6.3	Entire Project	Permittee	
25	Quarterly Compliance Report. Permittee shall compile the observation and inspection records identified in Condition 6.3 into a Quarterly Compliance Report and submit it to DFG along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Quarterly Compliance Reports shall be submitted to DFG's Regional Office at the address listed in the Notices section of this ITP or via e-mail to DFG's Regional Representative. At the time of this ITP's approval, the DFG Regional Representative is Staff Environmental Scientist, Craig Martz (email address: cmartz@dfg.ca.gov). DFG may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If DFG determines the reporting schedule is inadequate, DFG will notify Permittee by letter of the new reporting schedule.	ITP Condition # 6.4	Entire Project	Permittee	
26	Annual Status Report. Permittee shall provide DFG with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of the ITP and continuing until DFG accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all Quarterly Compliance Reports identified in Condition 6.4, (2) a general description of the status of the Project site and Project activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; and (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and mitigating Project impacts on the Covered Species.	ITP Condition # 6.5	Entire Project	Permittee	
27	Notification of Species Mortality. If any SONCC coho salmon are killed by a Project-related activity, or if any SONCC coho salmon are otherwise found dead within the Project site, Permittee shall immediately notify the Designated Biologist. The Designated Biologist or Designated Representative shall provide initial notification to DFG by calling the Regional Office at (530) 225-2300. The initial notification to DFG shall include information regarding the location, species, number of animals injured or killed, and the ITP Number. Following initial notification, Permittee shall send DFG a written report within 2 calendar days. The report shall include the date and time of the finding or incident, location of the carcass, and if possible provide a photograph, explanation as to cause of death, and any other pertinent information.	ITP Condition # 6.7	Entire Project	Permittee	
28	Work in Streams. Permittee shall confine all construction work within the bed, channel, or banks of any stream to the period of June 15 through October 15. If the stream is dry, and advance written approval is obtained from DFG, then Permittee may conduct work outside of the June 15 through October 15 construction window.	ITP Condition # 7.1	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
29	Removal of Riparian Vegetation. Notwithstanding Condition 7.1 above, Permittee shall ensure that removal of above-ground riparian vegetation from the stream banks only occurs between September 1 and January 31 of any year to avoid impacts to migratory birds. Permittee shall remove all cleared material/vegetation from the riparian/stream zone and dispose of it properly. Permittee shall ensure that disturbance or removal of riparian vegetation does not exceed the minimum necessary to complete construction. Where feasible, hand tools (chain saws, etc.) shall be used to trim vegetation to the extent necessary to gain access to work sites. Whenever possible, root systems shall be left intact to facilitate more rapid recovery following temporary construction impacts.	ITP Condition # 7.2	Entire Project	Permittee	
30	Pile Driving. Permittee shall confine all pile driving activities, including installation of sheet piles, temporary and permanent piles located within the channel or below the top of bank, to the period between June 15 through October 15. Permittee shall also confine installation of permanent bridge or viaduct piles within 50 feet of the channel to the period between June 15 through October 15. Contingent on the results of hydroacoustic monitoring, the Permittee may install permanent bridge or viaduct piles within 50 feet of the channel outside this work window provided a written request is made to DFG. Written approval from DFG for the work window variance must be received by the Permittee prior to the start or continuation of work outside the June 15 through October 15 work window.	ITP Condition # 7.3	Entire Project	Permittee	
31	Hydroacoustic Monitoring. If surface water is present within the channel, Permittee shall conduct hydroacoustic monitoring to document peak sound pressure levels and cumulative sound exposure levels during all permanent pile driving activities in the channel or within 50 feet of the channel. Permittee shall also monitor the driving of temporary trestle and falsework piles below the top of bank. If underwater sound pressure levels for each pile type and size do not vary to a large degree, the Permittee may request written approval from DFG to discontinue hydroacoustic monitoring. Permittee shall submit a Hydroacoustic Monitoring Plan for review and approval by DFG no later than March 15, 2011.	ITP Condition # 7.4	Entire Project	Permittee	
32	Coffer Dams. Permittee shall contain permanent pile driving activities in the stream channel within coffer dams. A bubble curtain or other approved attenuation device shall be used to reduce sound exposure levels.	ITP Condition # 7.5	Entire Project	Permittee	
33	Fish Capture. Prior to conducting temporary or permanent pile driving activities within the channel, or within 50 feet of the channel, Permittee shall exclude, remove and relocate fish from coffer dams and those portions of the stream where cumulative sound exposure levels (SELCumulative) are predicted to exceed the interim injury criteria of 183 dB. Permittee shall use one or more of the following NMFS-approved methods to capture SONCC coho and other salmonids: dip net, seine, throw net, or electrofishing.	ITP Condition # 7.6	Entire Project	Permittee	
34	Stream Dewatering. If pile driving activities are expected to exceed interim $SEL_{Cumulative}$ threshold levels for more than two consecutive days, Permittee shall dewater the affected stream reach in lieu of using block nets to exclude fish. During dewatering, Permittee shall incrementally divert flows in the affected reach to facilitate fish capture and relocation. Flows shall be reduced over a minimum 4-hour period in the following increments: 50%, 75%, 90%, and 100%.	ITP Condition # 7.7	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
35	Fish Relocation. Fish relocation activities shall be overseen by the Designated Biologist and shall be conducted by qualified fisheries biologists that are authorized by NMFS and DFG to handle listed salmonids. Captured fish shall be segregated by size to minimize predation, and maintained in cool, well-oxygenated water until released to suitable habitat outside the construction impact area.	ITP Condition # 7.8	Entire Project	Permittee	
36	Fish Passage. Permittee shall ensure that installation of permanent culverts, bridges, grade control structures, instream habitat enhancement features, and other channel modifications do not impede the passage of fish up or down stream. Permittee shall submit detailed designs for work within the stream channel to DFG for review and approval no later than August 1, 2010.	ITP Condition # 7.9	Entire Project	Permittee	
37	Grass Relocation. Permittee shall salvage mature North Coast semaphore grass plants and/or rhizomes from the permanent impact area and relocate them to suitable, protected habitat adjacent to the impact area. Plants and/or rhizomes shall be transplanted by a qualified botanist in the late fall or early winter after soils have been moistened by the first seasonal rains. Permittee shall monitor the transplants, container stock, and adjacent natural plants within the population for a minimum period of 10 years following planting.	ITP Condition # 7.13	Entire Project	Permittee	
38	Surface Hydrology. Permittee shall maintain the existing surface hydrology of the remaining North Coast semaphore grass population within the Project right-of-way to the greatest extent possible by (1) installing two culverts to convey surface flows through the roadway embankment and (2) capturing roadway runoff and preventing it from discharging into adjacent occupied habitat.	ITP Condition # 7.14	Entire Project	Permittee	
39	Grass Population Protection. Permittee shall provide for the long-term protection of the remaining population of North Coast semaphore grass within the Project right-of-way and shall add the location to the current database of Environmentally Sensitive Areas (ESAs) in Caltrans District 1. ESA paddles will be installed within the right-of-way to alert maintenance personnel and protect the population from inadvertent disturbance.	ITP Condition # 7.15	Entire Project	Permittee	
40	Fish Barrier Removal Plan. In consultation with DFG, Permittee shall prepare draft and final designs for a project to remediate existing barriers to fish passage at the South Fork (PM 52.25) and North Fork (PM 52.36) Ryan Creek culverts on U.S. 101. Draft plans for both crossings shall be submitted to DFG for review no later than June 30, 2011. Final plans shall be prepared and submitted to DFG for approval no later than June 30, 2012.	ITP Condition # 8.1	See Condition	Permittee	
42	Fish Barrier Removal Completion. Permittee shall complete construction of the South Fork Ryan Creek culvert remediation project no later than October 31, 2013.	ITP Condition # 8.2	No later than October 31, 2013	Permittee	
43	Fish Barrier Removal Funding. Permittee shall prepare cost estimates for the passage improvement work on the North Fork Ryan Creek culvert based on the final design prepared under Condition 8.1 above and shall apply for funding to complete this work in a timely manner.	ITP Condition # 8.3	No later than June 30, 2012	Permittee	
POST-CONSTRUCTION					
44	Refuse Removal. Upon completion of Project activities, Permittee shall remove from the Project site and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.	ITP Condition # 5.15	Post-construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
	Final Mitigation Report. No later than 60 days after completion of the Project, including completion of all mitigation measures, Permittee shall provide DFG with a Final Mitigation Report. The Final Mitigation Report shall be prepared by the Designated Biologist and shall include, at a minimum: (1) a summary of all Monthly/Quarterly Compliance Reports and all ASRs, (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) dates of Project activities; (6) an assessment of the effectiveness of the ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.	ITP Condition # 6.6	Post-construction	Permittee	

ATTACHMENT 2A

DEPARTMENT OF FISH AND GAME

HABITAT MANAGEMENT LAND ACQUISITION PACKAGE CHECKLIST FOR PROJECT APPLICANTS

The following checklist is provided to inform you of what documents are necessary to expedite Department processing of your Habitat Management Land acquisition proposal. Any land acquisition processing requests which are incomplete when received, will be returned. The Region contact will review and approve the document package and forward it to the Habitat Conservation Planning Branch Senior Land Agent with a request to process the land acquisition for formal acceptance.

To: _____
Regional Manager, Region Name

From: _____
Project Applicant

Phone: _____

Tracking #: _____
CDFG assigned permit or agreement #

Project Name: _____

Enclosed is the complete package for the ☐ Conservation Easement OR ☐ Grant Deed

Documents in this package include:

☐ Fully executed, approved as to form Conservation Easement Deed or Grant Deed.

Date executed: _____

☐ Proposed Lands for Acquisition Form (PLFAF)

☐ Phase I Environmental Site Assessment Report Date on report: _____
(An existing report may be used, but it must be less than two years old.)

☐ Preliminary Title Report(s) for subject property is enclosed and has been reviewed for encumbrances and other easements. The title report must be less than six months old when final processing is conducted.

Included are additional documents:

- ☐ document(s) to support title exceptions
- ☐ document(s) to explain title encumbrances
- ☐ a plot or map of easements/encumbrances on the property

☐ Policy of Title Insurance (an existing title policy is not acceptable)

☐ County Assessor Parcel Map(s) for subject property

☐ Site Location Map (Site location with property boundaries outline on a USGS 1:24,000 scale topo)

☐ Final Permit or Agreement (or other appropriate instrument)

Type of agreement: ☐ Bank Agreement ☐ Mitigation Agreement

☐ Permit _____ Other: _____
(write in type of permit)

☐ Final Management Plan (if required prior to finalizing permit or agreement or if this package is for a Grant Deed)

☐ Biological Resources Report

☐ Draft Summary of Transactions ☐ hard copy ☐ electronic copy (both are required)

PROPOSED LANDS FOR ACQUISITION FORM ("PLFAF")

Date: _____

TO: Regional Representative
_____
_____
_____
Facsimile:

FROM:_____
_____
_____
_____

Applicant proposes that the following parcel of land be considered for approval by the Department as suitable for purposes of habitat management lands to replace the adverse environmental impacts of the Project:

Section	Township	Range	Number of Acres
_____	_____	_____	_____

Current Legal Owner(s), include Parcel Number(s):
_____
_____
_____

Location of Parcel:
_____
_____
_____
_____
_____

APPROVED ___ By:_____ DATE:_____
REJECTED ___ _____
Region

Explanation:_____
_____
_____

California Regional Water Quality Control Board
North Coast Region

Monitoring and Reporting Program No. R1-2010-0066

For

California Department of Transportation
Highway 101 – Willits Bypass Project
WDID No. 1B10019WNME

Mendocino County

1.0. INTRODUCTION and OBJECTIVE

This Monitoring and Reporting Program (MRP) is issued as a condition of the Clean Water Act Section 401 Water Quality Certification and requires the monitoring and assessment of waters of the State (wetlands, streams, and riparian areas) and the submission of technical reports. The objective of monitoring conducted under this MRP is to provide the California Department of Transportation (Caltrans) and the North Coast Regional Water Quality Control Board (Regional Water Board) with information concerning the conditions and quality of waters of the State and concentration trends within and adjacent to the proposed Highway 101 Willits Bypass Project (project) alignment and the associated off-site mitigation lands. The requirement for technical reports associated with this MRP is related to Caltrans March 1, 2010, application for a Clean Water Act Section 401 Water Quality Certification/Waste Discharge Requirements.

The technical reports required within this MRP are necessary for the Regional Water Board to appropriately determine whether or not the project will adequately comply with the Basin Plan and all applicable Water Quality Standards and provide the mitigation necessary to compensate impacts to jurisdictional resources. To compensate for the impacts to wetlands Caltrans proposes a watershed approach to achieve an increase in functions and values within the selected mitigation area. This MRP is intended to provide the data necessary to validate that proposal. This MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands. It is necessary to establish baseline conditions of surface waters to verify the establishment and enhancement of wetlands, riparian areas, and waters of the U.S. and State within the mitigation lands.

Documenting pre-project baseline conditions of surface waters for the bypass alignment and the mitigation lands are required as part of this MRP. Baseline data will be used to demonstrate that the bypass, both during and after construction, is in compliance with the Basin Plan, California's antidegradation policy in State Water Board Resolution No. 68-16, and the United States Environmental Protection Agency (U.S. EPA) established

sediment and temperature total maximum daily loads (TMDLs) for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury). Pursuant to Regional Water Board Resolution R1-2004-0087, *Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Receiving Waters within the North Coast Region* (Sediment TMDL Implementation Policy), the Executive Officer is directed to "rely on the use of all available authorities, including existing regulatory standards, and permitting and enforcement tools to more effectively and efficaciously pursue compliance with sediment-related standards by all dischargers of sediment waste."

The primary objectives of the MRP include, but are not limited to:

A. Assessing the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
B. Assessing the overall health and evaluating trends in receiving water quality;
C. Assessing the potential biological, chemical, physical impacts, both during and after construction, of the bypass alignment;
D. Determining and revising site specific performance standards and success criteria for the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
E. Evaluating the effectiveness of BMPs, mitigation measures, and avoidance measures;
F. Evaluating activities that results in or may result in violations of MRP and the Water Quality Certification that may warrant additional BMPs or stop work orders;
G. Identifying sources of pollutants;
H. Assessing compliance with water quality objectives and TMDLs;
I. Measuring and assessing the reductions or prevention in pollutant loads; and
J. Verifying and successful repair within the bypass alignment and enhancement of the mitigation lands.

The data collection and evaluation will be broken down into four separate phases for the bypass alignment and mitigation lands (with multiple tasks per phase). Data collection and evaluation may necessitate revisions to the MRP as trends and comparisons are established. This MRP requires the collection and evaluation of data to supplement the Caltrans prepared Final Mitigation and Monitoring Proposal (Final MMP), dated June 2010, for the performance standards and success criteria, short term, and long term mitigation plans. Also see MRP Appendix 1 – Willits Bypass Flow Chart.

The requirements outlined in this MRP are not subject to an expiration date, and remain in full effect and are enforceable. The Executive Officer of the Regional Water Board may add to or modify this MRP, as appropriate.

The four phases and associated tasks of this MRP will be:

Phase I - Baseline Evaluation and Reporting (Bypass Alignment)

Baseline Tasks

a) Collect baseline water quality data for stream reaches along the bypass alignment
b) Collect baseline bioassessment data for bypass alignment
c) Collect baseline wetland data for bypass alignment
d) Prepare and submit reports that evaluate data sets to assess the baseline biological, physical, and chemical properties
e) Incorporate data evaluation, revised success criteria, and revised management plans into MMP

Phase I - Baseline Evaluation and Reporting (Mitigation Lands)

Baseline Tasks

f) Collect baseline water quality data for mitigation lands
g) Collect baseline bioassessment data for mitigation lands
h) Collect baseline wetland data for off-site mitigation lands
i) Prepare and submit reports that evaluate data sets to assess the biological, physical, and chemical properties
j) Incorporate data evaluation, revised success criteria, and revised management plans into MMP

Phase II - Construction Compliance Monitoring and Reporting (Bypass Alignment)

Construction Compliance Tasks

a) Conduct water quality monitoring within the stream reaches along the bypass alignment
b) Submit monthly reports on construction compliance
c) Annual Report summary on construction compliance

Phase II - Construction Compliance Monitoring and Reporting (Mitigation Lands)

Construction Compliance Tasks

d) Conduct water quality monitoring within the mitigation lands
e) Annual qualitative status reports on progress of plantings, and mitigation construction compliance, and mitigation trends and progress

Phase III - Repair Success (Bypass Alignment) – Evaluating and Measuring Success

Repair Monitoring Tasks

a) Conduct water quality monitoring within the stream reaches along the bypass alignment to verify repair success
b) Collect bioassessment data within the stream reaches along the bypass alignment to verify repair success
c) Collect wetland data for bypass to verify repair success
d) Annual reporting on compliance and mitigation progress

e) Final Mitigation Report verifying success.

Phase III - Mitigation Land Enhancement (Mitigation Lands) – Evaluating and Measuring Success

Enhancement Monitoring Tasks

f) Conduct water quality monitoring within the mitigation lands to verify repair and enhancement success
g) Collect bioassessment data for the mitigation lands to verify repair and enhancement success
h) Collect wetland data for the mitigation lands to verify repair and enhancement success
i) Annual reporting on compliance and mitigation progress
j) Final Mitigation Report verifying success.

Phase IV - Long Term Total Maximum Daily Load (TMDL) compliance for the Bypass.

TMDL and Long Term Management Tasks

a) Once success has been achieved for the on-site repair areas, Caltrans shall develop TMDL Compliance Plan and Long Term Management Plan.

Phase IV - Long Term Total Maximum Daily Load (TMDL) compliance for the Mitigation Lands.

TMDL and Long Term Management Tasks

b) Once success has been achieved for the repair areas and the off-site mitigation lands, Caltrans shall develop TMDL Compliance Plan and Long Term Management Plan.

This MRP will detail Phases 1 and 2 to ensure the proper development and implementation of Phase 3 and 4, which are structured within this order similarly to the baseline monitoring program. However, monitoring requirements throughout Phases 3 and 4 will vary, depending on the results of the baseline evaluation and construction compliance monitoring programs. In addition, all phases of this MRP are subject to site specific conditions, climatic variability, and ultimate need for information and therefore may warrant appropriate changes to best reflect the primary objectives stated above.

2.0. SURFACE WATER MONITORING and REPORTING PROGRAM DEVELOPMENT

Prior to implementing a monitoring and sampling program Caltrans shall develop the proper Quality Assurance Project Plan (QAPP) to ensure the data gathered will be reliable for statistical evaluation. The validity of the data collected for the MRP hinges on the proper methods and procedures used.

2.1. Quality Assurance Project Plan

Caltrans shall develop a QAPP for the bypass footprint (including onsite repair areas) and the offsite mitigation lands. The QAPP shall be submitted to the Executive Officer of the Regional Water Board for review, consideration, and concurrence.

2.2. Bioassessment Protocols

Pre-project bioassessments must be conducted prior to initiating any ground-disturbing activities or vegetation removal. Post-project bioassessments shall be performed the following season after completion of the bypass. In addition, for the mitigation lands, post-project bioassessments shall be performed the season after the completion of the mitigation actions at years five and ten of the mitigation monitoring period. The stream bioassessments must be performed in accordance with the State Water Resources Control Board (SWRCB) Surface Water Ambient Monitoring Program (SWAMP) *Standard Operating Procedures for Collecting Benthic Macroinvertebrate Samples and Associated Physical and Chemical Data for Ambient Bioassessments in California,* dated February 2007, and associated standard operating procedure memo, dated 21 May 2007, and guidance on quality assurance, dated 17 September 2008. In addition, the *Standard Operating Procedures for Collecting Stream Algae Samples and Associated Physical Habitat and Chemical Data for Ambient Bioassessments in California,* dated June 2009, shall be used for the algae portion of the bioassessment.

The bioassessment must be conducted in accordance with the stream algae samples and the "full" suite of physical habitat characterization measurements, using the "reachwide benthos (Multi-Habitat) procedure". The SWRCB SWAMP standard operating procedures, memos, and guidance documents can be found online at: http://swamp.mpsl.mlml.calstate.edu/resources-and-downloads/standard-operating-procedures

3.0. PHASE I - BASELINE MONITORING AND REPORTING

The results of the monitoring requirements outlined below shall be used to develop performance standards and success criteria for the on-site repair areas (bypass alignment) and the off-site mitigation lands. Additionally, the data will be used to demonstrate the enhancement and protection of beneficial uses and long term TMDL implementation for the receiving waters with the Outlet Creek Hydrologic Sub-Area (HSA).

3.1. Baseline Bypass Monitoring

The following water quality constituents will be measured as part of the baseline monitoring within the bypass alignment. This baseline data shall be collected from

August 20th, 2010 to at least May 15th, 2011, if baseline conditions are not changed, baseline monitoring shall continue. Baseline data collection will continue until construction activities have a measureable effect on receiving water monitoring data.

Constituent(s)	Frequency
Stream flow (cubic feet per second)	Continuous[1]
pH	Continuous
Temperature (Air and Water)	Continuous
Total Dissolved Solids	Continuous
Turbidity	Continuous
Specific Conductance	Continuous
Dissolved Oxygen	Continuous
Total Settleable Solids	Event based*
Hardness	Event based*
Total and Dissolved Metals (Cam 17)	Event based*
Oil and Grease	Event based*
Bioassessment – BMI, Phab, & Algae	One Baseline Survey in Summer 2010. (Reaches that are dry in 2010 shall be conducted in Spring 2011)
California Rapid Assessment Method (CRAM) Score	One survey to be determined per CRAM methodology (Spring 2011)
* Additional precipitation event sampling to be conducted in conjunction with the "first flush[2]" event and the seven subsequent storm events > 0.25 inches of precipitation in 24 hours. Precipitation events are separated by 48 hours of dry weather. Precipitation monitoring shall be conducted daily from Phase I through Phase III of this program at a weather station within Little Lake Valley and a method approved by Regional Water Board staff.	

In addition, precipitation event-based monitoring will include visual observations of the appearance of the stream, including color, presence of floating or suspended matter or debris; appearance of the receiving water at the station location (e.g., occurrence of erosion and scouring, solids deposition, unusual aquatic growth, algae); and observations about the receiving water, such as the presence of aquatic life.

Wetland baseline assessments throughout the bypass alignment shall include:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition] - Hydrology frequency at two week intervals from **November 1st - May 30th, 2010**
- Absolute percent coverage of wetland plants
- Absolute percent cover of native plant species

1 Continuous monitoring shall occur at all sampling sites at 15 minute intervals.

2 First flush is the initial surface runoff from a rainstorm after the dry season that causes a measurable increase of flow in surface waters.

- Species richness
- Absolute percent coverage of invasive species
- CRAM score.

3.2. Baseline Bypass Monitoring Locations

The number of monitoring locations will vary according to the status of bypass construction. Baseline water quality data will be collected at the following 10 locations along the bypass alignment, as shown in Figure 1:

- Upper Haehl Creek downstream of the Haehl Creek interchange construction footprint (WQ-3);
- Middle Haehl Creek downstream of the Haehl Creek bridge construction footprint (WQ-5);
- Lower Haehl Creek downstream of the viaduct construction footprint, but upstream of the Baechtel Creek confluence (WQ-9);
- Baechtel Creek upstream of the Baechtel Creek retaining wall construction footprint (WQ-6), upstream of the Haehl Creek confluence (WQ-7), and upstream of the viaduct construction footprint (WQ-10);
- Broaddus Creek upstream of the viaduct construction footprint (WQ-12);
- Outlet Creek downstream of the viaduct construction footprint (WQ-11);
- Mill Creek downstream of the viaduct construction footprint (WQ-14); and
- Upp Creek downstream of the Quail Meadows interchange construction footprint (WQ-17).

Bioassessment monitoring will occur at the following 13 locations along the bypass alignment, as shown in Figure 2:

- Upper Haehl Creek upstream of the Haehl Creek interchange (BA-1), within the Haehl Creek interchange creek repair (BA-2), and downstream of the Haehl Creek interchange (BA-3);
- Baechtel Creek below its confluence with Haehl Creek (BA-4), along the Category I riparian enhancement area parcels (BA-5), and below the riparian enhancement area (BA-6);
- Outlet Creek downstream of the Baechtel-Broaddus Creek confluence but upstream of the Category I riparian enhancement area (BA-7);
- Mill Creek upstream of the bypass footprint (BA-8), below the bypass footprint (BA-9), and downstream of the Category I riparian enhancement parcel (BA-10); and
- Upp Creek upstream of the Quail Meadows interchange (BA-11), within the Quail Meadows interchange creek repair (BA-12), and downstream of the Quail Meadows interchange (BA-13).

Wetland baseline assessments throughout the bypass alignment shall be conducted in accordance with the following:

- Plants surveys conducted in spring 2011 for 10-20% of total wetland acreage
- A minimum of 10-20% of the wetland surface area will be surveyed. Following this data collection, a percent cover-area curve will be developed to determine if 10-20% is an adequate sample size to accurately monitor vegetation. If not, additional quadrats will be sampled until the curve reaches the appropriate number of samples needed to minimize error and maximize accuracy (by capturing the inherent variability in the vegetation across the wetland). Once the cover-area curve has stabilized, an additional 3 quadrats will be sampled to confirm that the curve's plateau does not shift.

Following baseline data collection, a statistical analysis will be conducted to determine if the number of quadrats sampled was appropriate to accurately assess the vegetation. The data will be combined and averaged by habitat type and the analysis will include the following parameters:

- Power analysis at 80%;
- Test of significance at 10% (i.e., the probability of mistakenly rejecting accurate data is no more than the stated probability);
- Minimum detectable change at 20%; and
- Standard error by habitat type.

The result of this analysis will determine the number of quadrats to be sampled in subsequent years (this number could be greater than or less than 10-20% of the wetland surface area). While the complete statistical analysis described above will not be required in subsequent years, the standard error will be reported for each monitoring year.

3.3. Baseline Mitigation Monitoring

The following water quality constituents will be measured as part of baseline monitoring in the mitigation lands. This baseline data shall be collected from **August 20th, 2010 to at least October 15th, 2011**, if baseline conditions are not changed by construction activities or mitigation actions then baseline monitoring shall continue until conditions are altered. Baseline data collection will continue until implemented mitigation activities have a measureable effect on receiving water monitoring data.

Constituent(s)	Frequency
Stream flow	Continuous
pH	Continuous
Temperature (air and water)	Continuous
Total Dissolved Solids	Continuous

Constituent(s)	Frequency
Turbidity	Continuous
Specific Conductance	Continuous
Dissolved Oxygen	Continuous
Total Settleable Solids	Monthly*
Total and Dissolved Metals (Cam 17)	Monthly*
Total Nitrogen	Monthly*
Ammonia	Monthly*
Nitrate and Nitrite	Monthly*
Total Kjeldahl Nitrogen	Monthly*
Biochemical Oxygen Demand	Monthly*
Total and Dissolved Phosphorus	Monthly*
Hardness	Monthly*
Fecal Coliform	Monthly*
Enterococcus	Monthly*
Total Organic Carbon	Monthly*
Bioassessment – BMI, Phab, & Algae	Two Baseline Surveys Summer 2010 and Spring 2011 (April/May).
CRAM Score	One survey to be determined per CRAM methodology (Spring 2011)
* Additional precipitation event sampling to be conducted in conjunction with the "first flush" event and the seven subsequent storm events > 0.25 inches of precipitation in 24 hours. Precipitation events are separated by 48 hours of dry weather. Precipitation monitoring shall be conducted from Phase I through Phase III of this program at a weather station within Little Lake Valley and a method approved by Regional Water Board staff.	

In addition, monthly and precipitation event-based monitoring will include visual observations of the appearance of the stream including color, presence of floating or suspended matter or debris; appearance of the receiving water at the station location (e.g., occurrence of erosion and scouring, solids deposition, unusual aquatic growth, algae); and observations about the receiving water, such as the presence of aquatic life.

Wetland baseline assessments throughout the mitigation lands shall include:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition] - Hydrology frequency **every two weeks from November 1st - May 30th, 2010**
- Nutrient removal/transformation
- Sediment/toxicant retention
- Absolute percent coverage of wetland plants
- Relative percent cover of native plant species
- Species richness

- Absolute percent coverage of invasive species
- CRAM score

3.4. Baseline Mitigation Land Monitoring Locations

The number of monitoring locations may vary according to the status of bypass construction. Baseline water quality data will be collected at the following 11 locations at the offsite mitigation parcels (Figure 1):

- Old Outlet Creek downstream of parcel 108-030-04 (WQ-20), west of parcel 108-010-06 along the Category I riparian creation area (WQ-21), and west of parcel 108-010-06 downstream of the Category II riparian creation site on lower Wild Oat Canyon Creek (WQ-22);
- Outlet Creek downstream of parcels 108-030-05 (WQ-18) and 108-020-04\ (WQ-19);
- Davis Creek upstream of parcel 108-070-08 (WQ-23), downstream of parcel 108-060-01 (WQ-24), and downstream of parcel 108-010-05 (WQ-25);
- Berry Creek upstream of Category I riparian creation on parcel 108-070-09 (WQ-26), and downstream of parcel 108-060-02 (WQ-28); and
- Outlet Creek (WQ-27) downstream of the confluence with Davis Creek and Caltrans existing Highway 101 Outlet Creek Bridge post mile (PM) 50.66.

Bioassessment monitoring will occur at the following 10 locations at the offsite mitigation lands (Figure 2):

- Outlet Creek downstream of parcels 108-030-05 (BA-14) and 108-020-04 (BA-15);
- Old Outlet Creek downstream of parcel 108-030-04 (BA-16), west of parcel 108-010-06 along the Category I riparian creation area (BA-17), and west of parcel 108-010-06 downstream of the Category II riparian creation site on lower Wild Oat Canyon Creek (BA-18);
- Davis Creek upstream of parcel 108-070-08 (BA-19), downstream of parcel 108-060-01 (BA-20), and downstream of parcel 108-010-05 (BA-21); and
- Berry Creek upstream of Category I riparian creation on parcel 108-070-09 (BA-22), and downstream of parcel 108-060-02 (BA-24).

Wetland baseline assessments throughout the mitigation lands shall be conducted in accordance with the following:

- Plants surveys conducted in spring 2011 for 10-20% of total wetland acreage
- A minimum of 10-20% of the wetland surface area will be surveyed. Following this data collection, a percent cover-area curve will be developed to determine if 10-20% is an adequate sample size to accurately monitor vegetation. If not, additional quadrats will be sampled until the curve reaches the appropriate

number of samples needed to minimize error and maximize accuracy (by capturing the inherent variability in the vegetation across the wetland). Once the cover-area curve has stabilized, an additional 3 quadrats will be sampled to confirm that the curve's plateau does not shift.

Following baseline data collection, a statistical analysis will be conducted to determine if the number of quadrats sampled was appropriate to accurately assess the vegetation. The data will be combined and averaged by habitat type and the analysis will include the following parameters:

- Power analysis at 80%;
- Test of significance at 10% (i.e., the probability of mistakenly rejecting accurate data is no more than the stated probability);
- Minimum detectable change at 20%; and
- Standard error by habitat type.

The result of this analysis will determine the number of quadrats to be sampled in subsequent years (this number could be greater than or less than 10-20% of the wetland surface area). While the complete statistical analysis described above will not be required in subsequent years, the standard error will be reported for each monitoring year.

3.4.1. Baseline Evaluation Reports and Revised MMP

Caltrans shall submit reports documenting the results of the baseline water quality surveys required by this MRP: A report for the bypass alignment and a report for the mitigation lands. The report for the bypass alignment shall evaluate the data gathered and revise the performance standards and success criteria for proposed repair and restoration actions. In addition, the bypass alignment report shall present how the revised performance standards and success criteria will be used to implement the sediment and temperature TMDLs. The report for the off-site mitigation lands shall evaluate the data gathered and revise the performance standards and success criteria for the enhancement of the off-site mitigation lands. Additionally, the mitigation land report shall present how the revised performance standards and success criteria will be used to implement the sediment and temperature TMDLs.

The CRAM scores shall be entered into the CRAM database. In addition, the data collected shall be SWAMP compatible and submitted electronically to the Regional Water Board. The baseline evaluation reports will be used to amend the final MMP. The reports shall include, at a minimum, the following information:

- Data collection procedures protocols
- QA/QC for sample collection, handling and analysis
- Data in narrative summaries and data analysis
- Summaries and conclusions
- Data tables

- Data concentration graphs
- Site maps
- Site photographs
- Laboratory analytical reports
- Field logs and data sheets
- Filed instrument calibration logs

The reports shall correlate site observations, historical data, and local site specific baseline data to establish the local baseline conditions along the bypass alignment and mitigation lands to establish the proper functioning conditions (PFC). The PFC or ideal natural conditions shall be defined in the future reports subsequent to the completion of the baseline assessments. The data gathered from the baseline assessment shall be used to assess the characteristics of the PFC and shall be correlated to the performance standards and success criteria for wetlands, streams, and riparian/buffer areas for the off-site mitigation lands. The baseline reports are due to the Regional Water Board by **January 31, 2012**.

3.4.2. Revised Performance Standards / Success Criteria

The performance standards listed below shall be cumulatively assessed within each category to determine the success of the mitigation and repair actions. In other words successful mitigation shall take into consideration an overall weight of evidence. Those performance standards and success criteria shall be incorporated in the MMP, which shall be submitted to the Regional Water Board by **April 30, 2012**.

3.4.3. Riparian (Buffer) Establishment/Creation, Repair, and Enhancement Success Criteria

Based on the baseline data gathered Caltrans shall include the following performance standards and success criteria:

- Plant survival
- Plant vigor
- Percent vegetation cover (canopy)
- Maximum site potential shade
- Baseline percent canopy cover
- Percent effective shade (shade on water)
- Baseline and target temperature objectives
- Physical Habitat Criteria per SWAMP protocols
- Benthic Index of Biotic Integrity (B-IBI) for Wadeable Streams in Northern Coastal California.

3.4.4. Wetland Establishment/Creation, Repair and Enhancement Success Criteria

Based on the baseline data gathered, Caltrans shall include the following performance standards and success criteria:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition]
- Nutrient removal/transformation
- Sediment/toxicant retention
- Absolute percent coverage of wetland plants
- Absolute percent cover of native plant species
- Species richness
- Absolute percent coverage of invasive species
- CRAM score.

3.4.5. Other Waters (streams) Enhancement Success Criteria

Based on the baseline data gathered, Caltrans shall include shall include the following performance standards and success criteria:

- Geomorphic conditions (e.g., cross sectional water depth, wetted channel width, bankfull width, full channel width, cross sectional channel width, substrate characteristics, canopy cover, gradient, sinuosity, large woody debris, fish habitat characteristics and rating)
- Physical Habitat Criteria per SWAMP protocols
- IBI for BMI assessment including but not limited to (taxa richness, taxa composition, percent tolerant/intolerant organisms, functional feeding group analysis, and abundance)
- B-IBI for Wadeable Streams in Northern Coastal California
- CRAM Score.

3.4.6. Work Plan / Short Term Management Plan

Subsequent to evaluating the baseline data collected and revising the performance standards, Caltrans shall revise the work plan / short term mitigation plan for the bypass alignment and mitigation lands to include:

- Mitigation Specific Design Plans (e.g., riparian/buffer planting plans, erosion site restoration plans, exclusionary fence locations)
- Repair Action Specific Design Plans (e.g., riparian/buffer planting plans)
- Design and Construction Specifications
- Implementation Schedule

The revised work plan / short term management plan shall be incorporated in the MMP and submitted to the Regional Water Board by **April 30, 2012**.

3.4.7. Grazing Management Plan

Subsequent to evaluating the data collected from Phase I of the MRP, Caltrans shall revise the grazing management plan (parcel or zone specific) to include monitoring for the performance standards listed above that apply to streams, riparian areas, and wetlands. The goal is to monitor and manage the PFC of the wetlands, riparian areas, and streams.

The grazing management plan shall include the following goals and objectives:

- The components (functioning conditions of the ecosystem and cattle)
- What is to be accomplished (enhancement of the baseline conditions)
- The amount of change (success criteria increase from baseline)
- The locations (parcel or zone specific)
- A timeframe (schedule for success and reevaluation of management practices)

It is recommended that the grazing management plan include the following best management practices (BMPs):

- Parcel or zone specific grazing prescription;
- Parcel or quadrant specific grazing schedule that is developed with the enhancement and protection of natural resources (e.g., wetlands, streams and riparian areas) as the primary focus of the management plan;
- A setback plan (e.g. exclusionary fencing) to prevent cattle from entering streams or degrading the functions of the riparian areas;
- A schedule and plan that provides for plant development prior to, or plant recovery following, the grazing period each year; and
- An inspection schedule to assess the conditions of wetland and riparian areas at a frequency adequate to enable, if necessary, prompt corrective management action to protect the health of the riparian area. The schedule should be at least monthly during grazing within the short term mitigation implementation period.

The revised grazing management plan shall be incorporated in the MMP and submitted to the Regional Water Board by **April 30, 2012**.

4.0. PHASE II - CONSTRUCTION COMPLIANCE MONITORING and REPORTING

In order to demonstrate whether the bypass is in compliance with the applicable water quality objectives, Caltrans shall conduct monitoring in accordance with this MRP and the Water Quality Certification. This MRP requires monitoring at static locations throughout the bypass alignment during the construction phase.

4.1. Water Quality Monitoring for the Bypass Footprint.

Constituent(s)	Frequency
Stream flow	Continuous
pH	Continuous
Temperature (Air and Water)	Continuous
Total Dissolved Solids	Continuous
Turbidity	Continuous
Specific Conductance	Continuous
Dissolved Oxygen	Continuous
Total Settleable Solids	Event based*
Total and Dissolved Metals (Cam 17)	Event based*
Hardness	Event based*
Oil and Grease	Event based*
Methlylene Blue Activated Substances	Event based*
* Additional precipitation event sampling to be conducted in conjunction with the "first flush" event and the seven subsequent storm events > 0.25 inches of precipitation in 24 hours. Precipitation events are separated by 48 hours of dry weather. Precipitation monitoring shall be conducted from Phase I through Phase III of this program at a weather station within Little Lake Valley and a method approved by Regional Water Board staff.	

In addition, precipitation event-based monitoring will include visual observations of the appearance of the stream including color, presence of floating or suspended matter or debris; appearance of the receiving water at the station location (e.g., occurrence of erosion and scouring, solids deposition, unusual aquatic growth, algae); and observations about the receiving water, such as the presence of aquatic life.

Water quality data will be collected at the following 17 locations along the bypass alignment for construction compliance monitoring (Figure 1):

- Upper Haehl Creek upstream of the interchange construction footprint (WQ-1), within the construction foot print (WQ-2) and downstream of the Haehl Creek interchange (WQ-3);
- Middle Haehl Creek bridge construction upstream of the project footprint (WQ-4) and downstream of the project footprint (WQ-5);
- Baechtel Creek upstream of the Baechtel Creek retaining wall construction footprint (WQ-6), upstream of the Haehl Creek confluence (WQ-7), Lower Haehl Creek upstream of the bypass footprint (WQ-8);
- Lower Haehl Creek downstream of the viaduct construction footprint, but upstream of the Baechtel Creek confluence (WQ-9); and upstream of the viaduct construction footprint (WQ-10);

- Outlet Creek downstream of the viaduct construction footprint (WQ-11) and Broaddus Creek upstream of the viaduct construction footprint (WQ-12);
- Mill Creek upstream of the viaduct construction footprint.(WQ-13) downstream of the viaduct construction footprint (WQ-14); and
- Upp Creek upstream (WQ-15) and within (WQ-16) the Quail Meadows interchange construction footprint and downstream of the interchange construction footprint (WQ-17).

4.2. Water Quality Objectives

The relevant water quality requirements, parameters, and objectives applicable to the project are summarized below. However, the list below is not all inclusive of all relevant water quality requirements; water quality objectives, and the authority and jurisdiction of the Regional Water Board are not limited to the list below.

Constituent	**Concentrations**
pH[3]	>6.5 or <8.5
Temperature[4]	<0.5 degrees F
Dissolved Oxygen[5]	>7.0 mg/L or (>9.0 mg/L)
Total Dissolved Solids	<230[6] or <125[7]
Turbidity	<20% above background
Specific Conductance[8]	<400[5] or <200[6]
Hardness	Used to correlate metals concentrations
Total and Dissolved Metals	Various aquatic criteria within the Basin Plan and California Toxics Rule[9] for Inland Surface Waters
Total Suspended Solids	Waters shall not contain substances in concentrations that causes nuisance or adversely affect beneficial uses.
Oil and Grease	

3 Changes in normal ambient pH levels shall not change 0.5 units within the range specified in fresh waters with designated COLD or WARM beneficial uses.

4 The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. At no time or place shall the temperature of any COLD water be increased by more than 5°F above natural receiving water temperature. mg/L – milligrams per liter

5 Waters designated SPWN during critical spawning and egg incubation periods is >9.0 mg/l

6 90% or more of the yearly values must be less than or equal this limit.

7 50% or more of the monthly means must be less than this limit.

8 micromhos @ 77°F

9 California Toxics Rule (CTR) objectives are not used as effluent limitations or Basin Plan Water Quality Objectives. CTR values will be utilized to assess the effectiveness of BMPs associated with the project construction as well as post-construction treatment BMPs.

4.3. Reporting

Monthly Monitoring Reports: shall be submitted to the Executive Officer of the Regional Water Board. The monthly monitoring reports shall include, at a minimum;

1) A summary of discharges;

2) A summary of corrective actions taken (if necessary);

3) Photographs;

4) All field sampling measurements and/or results;

5) Project status (i.e. upcoming construction schedule and disturbed soil area updates);

6) Monitoring reports and field logs;

7) Water quality monitor reports and field logs;

8) All field monitoring equipment calibration logs;.

9) Caltrans shall develop, and Regional Water Board shall approve, a data management and reporting system to efficiently and effectively report sampling and monitoring data. Monthly monitoring reports are due to the Regional Water Board **by the 15th of each month** once work on the project has been initiated.

Rainy Day Reports: Caltrans shall take photos of all areas disturbed by project activities, including all excess materials disposal areas, after rainfall events that generate visible runoff from these areas in order to demonstrate that erosion control and revegetation measures are present and have been installed appropriately and successfully. A brief report containing these photos shall be submitted **within 30 days of the rainfall event that generated runoff from the disturbed areas**.

Annual Monitoring Reports: Caltrans shall provide the Regional Water Board with an Annual Monitoring Report no later than **January 31** of every year beginning with issuance of this Order and continuing until the Regional Water Board accepts the Final Mitigation Report. The annual reports (i.e. report for the bypass alignment and a report for the mitigation lands) shall include, at a minimum:

1) A summary of all monitoring reports identified in this Order;

2) A general description of the status of the project site and project activities, including actual or projected completion dates, if known;

3) A summary of the annual mitigation monitoring reports and the current implementation status of each mitigation measure;

4) An assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and mitigating project impacts (e.g., adaptive management summary for mitigation and environmental sensitive area fencing for bypass construction);

5) Results and an evaluation of the data collected from this MRP;

6) Monthly Monitoring and Rainy Day Reports; and

7) A compliance table (spreadsheet) that presents each condition of the Water Quality Certification and the MRP, time frame (yearly calendar), project milestones and achievements, all reported discharges, and all violations of this MRP and each condition of the Water Quality Certification.

5.0. PHASE III – EVALUATING SUCCESS FOR THE MITIGATION LAND ESTABLISHMENT/CREATION AND ENHACEMENT (MITIGATION LANDS) AND ON-SITE REPAIR (BYPASS)

As stated in Section 1.0., the purpose of the baseline monitoring is to establish the conditions of surface waters to verify the establishment, enhancement and repair of wetlands, riparian areas (buffers), and streams within the mitigation lands and bypass footprint, respectively. Prior to Phase III the proper functioning conditions of the establishment, enhancement, and repair sites has been determined, and the data gathered during the baseline has been correlated with the performance standards and ultimate success criteria. The following post construction monitoring will be implemented to track performance and determine success.

5.1. Post-Construction Bypass Water Quality

The following water quality monitoring program will be conducted for **one calendar year at years one, five, and ten** as part of compliance monitoring in the bypass alignment subsequent to the completion bypass. Monitoring may be extended or reduced depending on the results.

Constituent(s)	Frequency
Stream flow	Continuous
pH	Continuous
Temperature (Air and Water)	Continuous
Total Dissolved Solids	Continuous
Turbidity	Continuous

Constituent(s)	Frequency
Specific Conductance	Continuous
Dissolved Oxygen	Continuous
Total Settleable Solids	Event based*
Total and Dissolved Metals (Cam 17)	Event based*
Hardness	Event based*
Oil and Grease	Event based*
Methlylene Blue Activated Substances	Event based*
Bioassessment – BMI, Phab, & Algae	Summer and Spring Surveys twice per year (July/August and April/May) at years one, five and ten
CRAM Score	To be determined per CRAM methodology (Spring) at years one, five and ten
* Additional precipitation event sampling to be conducted in conjunction with the "first flush" event and the seven subsequent storm events > 0.25 inches of precipitation in 24 hours and which generate visible runoff. Precipitation events are separated by 48 hours of dry weather. Precipitation monitoring shall be conducted from Phase I through Phase III of this program at a weather station within Little Lake Valley and a method approved by Regional Water Board staff.	

Wetland Assessment for On-site Repair shall include:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition] - Hydrology frequency conducted at two week intervals from November 1st - May 30th
- Absolute percent coverage of wetland plants
- Relative percent cover of native plant species
- Species richness
- Absolute percent coverage of invasive species
- CRAM score.

5.2. Bypass Monitoring Locations

Water quality data will be collected at the following 17 locations along the bypass alignment (Figure 1):

- Upper Haehl Creek upstream of the interchange construction footprint (WQ-1), within the construction foot print (WQ-2) and downstream of the Haehl Creek interchange (WQ-3);
- Middle Haehl Creek bridge construction upstream of the project footprint (WQ-4) and downstream of the project footprint (WQ-5);

- Baechtel Creek upstream of the Baechtel Creek retaining wall construction footprint (WQ-6), upstream of the Haehl Creek confluence (WQ-7), Lower Haehl Creek upstream of the bypass footprint (WQ-8);
- Lower Haehl Creek downstream of the viaduct construction footprint, but upstream of the Baechtel Creek confluence (WQ-9); and upstream of the viaduct construction footprint (WQ-10);
- Outlet Creek downstream of the viaduct construction footprint (WQ-11) and Broaddus Creek upstream of the viaduct construction footprint (WQ-12);
- Mill Creek upstream of the viaduct construction footprint.(WQ-13) downstream of the viaduct construction footprint (WQ-14); and
- Upp Creek upstream (WQ-15) and within (WQ-16) the Quail Meadows interchange construction footprint and downstream of the interchange construction footprint (WQ-17).

Bioassessment monitoring will occur at the following 13 locations along the bypass alignment twice per year at years one, five and ten subsequent to the completion of the bypass (Figure 2):

- Upper Haehl Creek upstream of the Haehl Creek interchange (BA-1), within the Haehl Creek interchange creek repair (BA-2), and downstream of the Haehl Creek interchange (BA-3);
- Baechtel Creek below its confluence with Haehl Creek (BA-4), along the Category I riparian enhancement area parcels (BA-5), and below the riparian enhancement area (BA-6);
- Outlet Creek downstream of the Baechtel-Broaddus Creek confluence but upstream of the Category I riparian enhancement area (BA-7);
- Mill Creek upstream of the bypass footprint (BA-8), below the bypass footprint (BA-9), and downstream of the Category I riparian enhancement parcel (BA-10); and
- Upp Creek upstream of the Quail Meadows interchange (BA-11), within the Quail Meadows interchange creek repair (BA-12), and downstream of the Quail Meadows interchange (BA-13).

Wetland assessments for the baypass alignment shall be conducted in accordance with the following:

- Plants surveys conducted in spring for the location and area determined by the baseline surveys and associated statistical power analysis.

5.3. Mitigation Monitoring

The following water quality monitoring program will be conducted for **one calendar year at years one, five and ten** as part of establishment and enhancement monitoring in the mitigation lands subsequent to the completion of the mitigation actions. The mitigation

actions are defined as construction events (e.g., wetland creation, riparian creation, bank erosion stabilization), not management activities (e.g., grazing management).

Constituent(s)	Frequency
Stream flow	Continuous
pH	Continuous
Temperature (air and water)	Continuous
Total Dissolved Solids	Continuous
Turbidity	Continuous
Specific Conductance	Continuous
Dissolved Oxygen	Continuous
Total Settleable Solids	Monthly*
Total and Dissolved Metals (Cam 17)	Monthly*
Total Nitrogen	Monthly*
Ammonia	Monthly*
Nitrate and Nitrite	Monthly*
Total Kjeldahl Nitrogen	Monthly*
Biochemical Oxygen Demand	Monthly*
Total and Dissolved Phosphorus	Monthly*
Hardness	Monthly*
Fecal Coliform	Monthly*
Enterococcus	Monthly*
Total Organic Carbon	Monthly*
Bioassessment – BMI, Phab, & Algae	Twice per year (July/August and April/May) at years one, five and ten
CRAM Score	To be determined per CRAM methodology (Spring) at years one, five and ten
* Additional precipitation event sampling to be conducted in conjunction with the "first flush" event and the seven subsequent storm events > 0.25 inches of precipitation in 24 hours and which generate visible runoff. Precipitation events are separated by 48 hours of dry weather. Precipitation monitoring shall be conducted from Phase I through Phase III of this program at a weather station within Little Lake Valley and a method approved by Regional Water Board staff.	

In addition, monthly and precipitation event-based monitoring will include visual observations of the appearance of the stream, including color, presence of floating or suspended matter or debris; appearance of the receiving water at the station location (e.g., occurrence of erosion and scouring, solids deposition, unusual aquatic growth, algae); and observations about the receiving water, such as the presence of aquatic life.

Wetland Assessment for Mitigation Monitoring:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition] - Hydrology frequency conducted at two week intervals from November 1st - May 30th
- Plants surveys conducted in spring
- Nutrient removal/transformation
- Sediment/toxicant retention
- Absolute percent coverage of wetland plants
- Relative percent cover of native plant species
- Species richness
- Absolute percent coverage of invasive species
- CRAM score

5.4. Mitigation Land Monitoring Locations

The number of monitoring locations may vary according to the status of bypass construction. Water quality data will be collected at the following 11 locations throughout the offsite mitigation parcels (Figure 1):

- Old Outlet Creek downstream of parcel 108-030-04 (WQ-20), west of parcel 108-010-06 along the Category I riparian creation area (WQ-21), and west of parcel 108-010-06 downstream of the Category II riparian creation site on lower Wild Oat Canyon Creek (WQ-22);
- Outlet Creek downstream of parcels 108-030-05 (WQ-18) and 108-020-04\ (WQ-19);
- Davis Creek upstream of parcel 108-070-08 (WQ-23), downstream of parcel 108-060-01 (WQ-24), and downstream of parcel 108-010-05 (WQ-25);
- Berry Creek upstream of Category I riparian creation on parcel 108-070-09 (WQ-26), and downstream of parcel 108-060-02 (WQ-28); and
- Outlet Creek (WQ-27) downstream of the confluence with Davis Creek and Caltrans existing Highway 101 Outlet Creek Bridge.

Bioassessment monitoring will occur at the following 10 locations at the offsite mitigation lands subsequent to the completion of the mitigation actions (Figure 2):

- Outlet Creek downstream of parcels 108-030-05 (BA-14) and 108-020-04 (BA-15);
- Old Outlet Creek downstream of parcel 108-030-04 (BA-16), west of parcel 108-010-06 along the Category I riparian creation area (BA-17), and west of parcel 108-010-06 downstream of the Category II riparian creation site on lower Wild Oat Canyon Creek (BA-18);

- Davis Creek upstream of parcel 108-070-08 (BA-19), downstream of parcel 108-060-01 (BA-20), and downstream of parcel 108-010-05 (BA-21); and
- Berry Creek upstream of Category I riparian creation on parcel 108-070-09 (BA-22) and downstream of parcel 108-060-02 (BA-24).

Wetland assessments throughout the mitigation lands shall be conducted in accordance with the following:

- Plants surveys conducted in spring for the location and area determined by the baseline surveys and associated statistical power analysis.

5.5. Reporting

Annual Monitoring Reports: Caltrans shall provide the Regional Water Board with an Annual Monitoring Report no later than **January 31** of every year beginning with issuance of this MRP and continuing until the Regional Water Board accepts the verified success of the mitigation and signs of on the Final Mitigation Report. Each annual report shall include, at a minimum:

1) A summary of all monitoring reports identified in this Order;

2) A general description of the status of the project site and project activities, including actual or projected completion dates, if known;

3) A summary of the annual mitigation monitoring reports and the current implementation status of each mitigation measure;

4) An assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing, and mitigating project impacts;

5) Results and an evaluation of the data collected from this MRP;

6) Monthly Monitoring and Rainy Day Reports; and

7) A compliance table (spreadsheet) that presents each condition of the Water Quality Certification and the MRP, time frame (yearly calendar), project milestones and achievements, all reported discharges, and all violations of this MRP and each condition of the Water Quality Certification.

Slope Stability Reports: Caltrans shall provide yearly slope evaluation and erosion control monitoring reports for up to 10 years subsequent to the completion of the bypass project. Caltrans shall provide at least 80 percent coverage of established erosion control of all exposed areas along the bypass. To ensure the reduction of sediment transport into the Outlet Creek HSA, Caltrans shall conduct inspections prior to and

subsequent to each rainy season up to 10 years after completion of the bypass. Reports shall include, at a minimum:

1) Name and title of personnel conducting monitoring and/or maintenance;

2) Observation dates;

3) Site photographs;

4) Maps including percent coverage of established erosion control and revegetion efforts; and

5) An erosion evaluation.

If the new bypass project has slope failures, excessive erosion, or causes other water quality degradation corrective actions will be required to mitigate the impacts. Established erosion control is vegetation growth, not applied erosion control product.

Final Mitigation Report: No later than 120 days after achieving success criteria for the on-site repair and the off-site mitigation lands, Caltrans shall provide the Regional Water Board with a Final Mitigation Report. The Final Mitigation Report shall include, at a minimum:

1) A summary of all monthly monitoring reports and annual status reports;

2) Copies of all mitigation monitoring reports documenting when success criteria for each of the mitigation measures were achieved;

3) All available information about mitigation measures, data collection for the MRP, and projects taken to implement the sediment and temperature TMDLs;

4) Each yearly compliance calendar;

5) An assessment of the effectiveness of the required measures in avoiding, minimizing, and mitigating project impacts;

6) Any recommendations on how mitigation measures might be changed to more effectively minimize impacts to water quality and mitigate the impacts of future projects;

7) A final long term management plan;

8) Revised PAR and endowment calculation approved by the long term manager; and

9) Any other pertinent information.

The long term management plan shall include the following actions:

a) Water Quality Monitoring plans to verify habitat enhancement, compliance with the basin plan, and TMDL;
b) Inspections of the erosion sites shall be conducted annually to assess the stability and condition of the repair actions and for all the sites identified in Appendix J of the Final MMP;
c) All adaptive management plans and actions (e.g. stream channel or bank stabilization, vegetation management, and erosion control) for waters of the State (i.e., streams, riparian areas, and wetlands) shall be submitted to the Executive Officer of the Regional Water Board for prior review and concurrence.

6.0. PHASE IV – TMDL COMPLIANCE BYPASS AND MITIGATION LANDS

Once success has been achieved for the on-site repair areas and the off-site mitigation lands, Caltrans shall develop individual TMDL Compliance Plans for the bypass and mitigation lands. The TMDL compliance plan for the bypass shall be incorporated into the Annual Storm Water Work Plans and Reports, while the TMDL compliance plan shall be incorporated into the Mitigation Lands Long Term Management Plan and enrolled under the appropriate regulatory permit as determined by the Executive Officer of the Regional Water Board.

All previously gathered data shall be evaluated to determine the minimum amount of monitoring necessary to regularly evaluate whether the bypass alignment and mitigation lands are continuing to remain in compliance with the Basin Plan and applicable TMDLs or if there are contributing factors to degradation and impairments of water quality and beneficial uses.

Ordered by _____

Catherine Kuhlman
Executive Officer

August 6, 2010

California Regional Water Quality Control Board
North Coast Region
Geoffrey M. Hales, Chairman

www.waterboards.ca.gov/northcoast
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
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Linda S. Adams
Secretary for Environmental Protection

Arnold Schwarzenegger
Governor

August 6, 2010

In the Matter of

Water Quality Certification

for the

California Department of Transportation
Highway 101 – Willits Bypass Project:
WDID No. 1B10019WNME

APPLICANT:	California Department of Transportation
RECEIVING WATER:	Wetlands and Haehl Creek, Baechtel Creek, Broaddus Creek, Mill Creek, Outlet Creek, Upp Creek, and Ryan Creek
HYDROLOGIC AREA:	Eel River Hydrologic Unit (HU) No.111.00 Outlet Creek Hydrologic Sub-Area (HSA) No. 111.61
COUNTY:	Mendocino
FILE NAME:	CDOT - Hwy 101, Willits Bypass Project

BY THE EXECUTIVE OFFICER:

1. On March 1, 2010, the North Coast Regional Water Quality Control Board (Regional Water Board) received an application and $40,000.00 fee from the California Department of Transportation (Caltrans), requesting federal Clean Water Act (CWA), section 401, Water Quality Certification for activities related to the proposed first phase of the Highway 101, Willits Bypass project (project). The proposed project will cause disturbances to waters of the United States (U.S.) and waters of the State, including wetlands and intermittent, ephemeral and perennial tributaries to Outlet Creek, which is located within the Eel River Hydrologic Unit No.111.00, the Outlet Creek Hydrologic Sub-Area (HSA) No. 111.61, and the Little Lake Valley Ground Water Basin. The Regional Water Board is proposing to

regulate this project pursuant to Section 401 of the CWA (33 USC 1341) and/or Porter-Cologne Water Quality Control Act authority.

2. The Regional Water Board provided public notice of the application pursuant to title 23, California Code of Regulations, section 3858 on April 29, 2010, and posted information describing the project on the Regional Water Board's website. Regional Water Board staff received letters from 75 individuals or groups in response to the subject notice of Water Quality Certification and Waste Discharge Requirements. Of those 75, 27 were in favor of the proposed project, while 48 raised various objections. Because many of the same comments were described in different letters, Regional Water Board staff grouped comments together where appropriate, and provided one response. The Regional Water Board has issued a response to comments concurrently with this Order, and is included as Attachment 1.

3. The proposed project is located on Highway 101, in Mendocino County, and will begin approximately 0.8 mile south of the Haehl Overhead and end approximately 1.9 miles south of the Reynolds Highway. The overall length of the bypass is approximately 5.9 miles from post mile realignment (PMR) 43.1 and ending near PMR 49.0. The purpose of the project is to upgrade the level of service to the traveling public along Highway 101 by reducing travel times and reducing the traffic congestion along Highway 101 and within the City of Willits. Beginning at the southern end of the project, the new alignment of Highway 101 would swing to the northeast and then travel back to the northwest, adjacent to the Willits Wastewater Treatment Plant (WWTP). Because of funding constraints, the decision was made to construct the bypass in two phases such that a functional interim two-lane facility would be constructed initially; when adequate funding becomes available in the future, the remaining lanes will be constructed to complete the four-lane bypass. This Water Quality Certification is for Phase I only.

Project Description

4. The proposed project will be constructed largely on fill material imported to the site. The bypass requires imported borrow material from outside the project area in addition to material excavated on-site. The area from which Caltrans proposes that the contractor will take fill material for the project is at Oil Well Hill, which is located on the east side of Highway 101, approximately 0.85 mile north of the intersection of Reynolds Highway and Highway 101. The State Geology and Mining Board granted an exception to the Surface Mining and Reclamation Act (SMARA) permitting requirement on March 13, 2008 for obtaining the fill material from Oil Well Hill. The construction contractor will have the option to determine whether the source of fill material for the project will be from the Caltrans-designated borrow site at Oil Well Hill, a commercial borrow site, or another site. If

the contractor chooses to use available commercial borrow sites in the vicinity of the project to obtain the required fill, it will likely not need to obtain any additional environmental permitting when soil is exported, because commercial borrow sites typically hold preapproved operating permits. Should the contractor select an alternative, noncommercial borrow site for this project, the contractor will be responsible for obtaining proper approvals.

5. The following structures will be constructed during the project:
   - Two interchanges will be constructed for the project. The Haehl Creek interchange will be located at the south end of the project near Haehl Creek and connect the existing highway into Willits with the new highway facility. The Quail Meadows interchange will be located near the north end of Little Lake Valley and connect the new highway facility to the existing highway north of Willits.
   - The bypass will cross multiple creeks, riparian corridors, streets, and railroad rights-of-way using 22 bridges, three retaining walls, and a one mile long viaduct that will span the regulated floodway.
   - Six bridges will be constructed in the Haehl Creek interchange area, one for each of the following:
     1. Northbound freeway lanes separation over State Route (SR) 20
     2. Southbound freeway lanes separation over SR 20
     3. Southbound off-ramp over Haehl Creek
     4. Northbound on-ramp over Haehl Creek
     5. Northbound freeway lanes over Haehl Creek
     6. Southbound freeway lanes over Haehl Creek

   - A culvert will be replaced during improvement of the proposed new Schmidbauer Ranch access road.

   - Two retaining walls will be constructed in the Haehl Creek interchange area adjacent to Haehl Creek:
     1. East side of northbound lanes
     2. West side of northbound on-ramp

   - One retaining wall will be constructed on the west side of the southbound roadway lanes, just south of Center Valley Road.

   - Two bridges will be constructed to cross East Hill Road:
     1. One bridge for the southbound roadway lanes (Phase 1)
     2. One bridge for the northbound roadway lanes (Phase 2)

- Two bridges will be constructed to cross the middle reach of Haehl Creek south of Shell Lane:
  1. One bridge for the southbound roadway lanes (Phase 1)
  2. One bridge for the northbound roadway lanes (Phase 2)

- Two viaduct structures will be constructed to span the floodway:
  1. Southbound (Phase 1)
  2. Northbound (Phase 2)

- Two bridges will be constructed to cross over the North Western Pacific Rail Road tracks in the Quail Meadows interchange area, one for each of the following:
  1. U.S. Highway 101 Willits Bypass
  2. Southbound roadway lanes (Phase 1)
  3. Northbound roadway lanes (Phase 2)

- Two bridges will be constructed to cross the new connector road to existing U.S. Highway 101 in Quail Meadows Interchange area:
  1. One for the southbound roadway lanes (Phase 1)
  2. One for the northbound roadway lanes (Phase 2)

- Six bridges will be constructed to cross Upp Creek directly north of the Quail Meadows interchange, one for each of the following:
  1. Southbound roadway lanes (Phase 1)
  2. Northbound roadway lanes (Phase 2)
  3. Northbound on-ramp (Phase 1)
  4. Northbound on-ramp (Phase 2)
  5. Southbound off-ramp
  6. Roundabout local intersection

- The proposed alignment encroaches upon the 100 year floodplain. The design includes two elevated structures, which make up the floodway viaducts. The purpose of this design feature is to span the floodway. The Willits Bypass Floodplain Evaluation Report, dated September 2006, concludes that the project will not increase the base flood elevation of the floodway, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q). The viaduct will be located in the central part of the project area and will span Center Valley Road, the lower reach of Haehl Creek just upstream of the confluence with Baechtel Creek, Hearst Willits Road, Baechtel and Broaddus Creeks at their confluence (beginning of the Outlet Creek designation), the WWTP, and Mill Creek. The approximately 6,000-foot long structures will consist of separate northbound and southbound elevated viaduct

superstructures. The total area of both viaducts would be 11.6 acres. Each of the viaducts will be approximately 42.6 feet wide. The edge to edge distance between the structures will be approximately 31.2 feet, and each will have a 16.5 foot minimum clearance underneath. The viaducts will require supporting columns, ranging in size from 4.5 to 7 feet in diameter.

Proposed Impacts to Wetlands and Surface Waters within the Regional Water Board's Jurisdiction

6. The project will result in impacts to wetlands and surface waters within the Outlet Creek HSA, including Haehl Creek, Baechtel Creek, Broaddus Creek, Mill Creek, Outlet Creek, Upp Creek, Ryan Creek and two ponds (Rutledge and Niesen). Caltrans has determined that the project would directly impact a total of 89.27 acres of waters of the U.S[1]., including 83.77 acres of impacts to wetlands and 5.5 acres (12,416 linear feet) to streams and ponds also identified as waters of the U.S. The project would temporarily impact 29.88 acres of wetlands and 3.16 acres (9,255 linear feet) of streams and ponds identified as waters of the U.S[2]. In addition, the project would result in permanent impacts to 53.89 acres of wetlands and up to 2.34 acres (3,161 linear feet) of streams and ponds that are waters of the U.S.[3]

7. Caltrans has also determined that the project would result in 10.12 acres of temporary impacts (6,693 linear feet) and 10.88 acres of permanent impacts (8,535 linear feet) to waters of the state, including riparian areas.[4] "Waters of the

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1 Waters of the U.S. is defined in section 232.2 of title 40 of the Code of Federal Regulations and includes "all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide. All interstate waters, including interstate wetlands. All other waters including intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which would or could affect interstate or foreign commerce… and wetlands adjacent to waters (other than waters that are themselves wetlands) …"

2 A temporary impact is the short term impact that occurs during the placement of fill within wetlands for access roads, or the removal of trees and vegetation along streams to construct false work and structures.

3 A permanent impact is the placement of fill within areas for the purpose of a permanent structure such as the roadway embankments for the new highway, bridge footings, or culverts within streams.

4 Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects waterbodies with their adjacent uplands. Protection of riparian areas adjacent to streams, lakes, and estuarine-marine shorelines is essential to the protection of the beneficial uses of the waterbodies. As collectively agreed to by the resource agencies with jurisdiction over this project, riparian areas are: 1) Category I Riparian Corridors, which include areas of salmonid streams and adjacent riparian areas extending 100 feet from each bank laterally from the Ordinary High Water Mark; 2) Category II Riparian Corridors, which include tributaries of Category I Riparian Corridors that are within 1,000 feet of the confluence with a Category I Stream,

State" is defined very broadly within the Water Code as "any surface water or groundwater, including saline waters, within the boundaries of the state." (Cal. Water Code, § 13050(e)). It has been interpreted to include all Waters of the U.S., in addition to areas outside of Waters of the U.S., such as isolated wetlands, headwaters, and riparian areas above the ordinary high water mark.

8. Protecting riparian areas is essential to ensuring the protection of beneficial uses identified in the Regional Water Board's Water Quality Control Plan (Basin Plan). Riparian areas support and protect surface water quality by accumulating and filtering sediment before it reaches surface waters and providing shade for the enhancement and protection of cold freshwater habitat. In addition, riparian areas have their own beneficial uses that are recognized in the Basin Plan, such as providing terrestrial habitats, vegetation, and wildlife (WILD), providing flood peak attenuation/ flood water storage (FLD), providing water quality enhancement, including filtration, purification and erosion control (WQE), and the preservation and enhancement of wetland habitat (WET).

Proposed Mitigation

9. As part of its application for the Water Quality Certification, Caltrans submitted the *Final Mitigation and Monitoring Proposal* (Final MMP), dated June 8, 2010. To mitigate impacts to wetlands, Caltrans has proposed creating 24.33 acres of wetlands. During the project planning process Caltrans assessed over 6,000 acres of land within Little Lake Valley to identify potential mitigation for the impacts of the bypass project and contacted the property owners, requesting that they consider selling land to Caltrans for mitigation. Caltrans received responses from willing sellers of 3,157 acres, of which there was little opportunity for wetland creation. At the request of the Regional Water Board, Caltrans expanded their search to approximately 11,000 acres outside Little Lake Valley. Caltrans received responses from land owners willing to sell 2,700 acres, with little opportunity for wetland creation.

10. Prior to the beginning of ground-disturbing project construction activities, known populations of wetlands plant species to be affected by construction will either be salvaged for transportation to adjacent on-site locations, or salvaged for relocation to off-site mitigation parcels, where the harvested material will be used to topdress created wetlands. Off-site mitigation actions for wetlands creation will require site preparation, including grading uplands and modifying local hydrology; seeding

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and extending 50 feet from the OHWM on each bank; and 3) Category III Riparian Corridors, which include tributaries of Category I Riparian Corridors that are more than 1,000 feet upstream of the confluence with the Category I Stream, extending 25 feet from the OHWM on each bank.

graded areas; planting wetlands species; and monitoring for successful wetland establishment.

11. After the creation of approximately 24 acres of wetlands, the project would still result in a permanent net loss of approximately 29 acres of wetlands. State of California Executive Order W-59-93 directs all state agencies to *"ensure no overall net loss and long term net gain in the quantity, quality and permanence of wetlands acreage and values in California…"* Executive Order W-59-93 also directs all state agencies "to encourage partnerships to make restoration, landowner incentive programs, and cooperative planning efforts the primary focus of wetland conservation." To compensate for the loss of the approximately 29 acres of wetlands, the United States Environmental Protection Agency (U.S. EPA), United States Fish and Wildlife Service (U.S. FWS), United States Army Corps of Engineers (U.S. ACE), National Marine Fisheries Service (NMFS), California Department of Fish and Game (CDFG), Mendocino County Resource Conservation District (MCRCD), Willits Environmental Center (WEC) and Regional Water Board collectively agreed to and developed an ecologically based watershed approach designed to ensure no net loss of ecological functions and values. The watershed approach would provide significant improvements to the ecological functions and values of wetlands off-site of the project, but still within the Little Lake Valley[5]. (The project is planned in the west-central portion of the Little Lake Valley.) The resource agencies agreed that the mitigation should be focused within Little Lake Valley because it hosts a variety of unique ecological features, including the presence of several rare, threatened, and endangered species (e.g. anadromous fish and Baker's Meadowfoam).

12. In addition, the watershed approach option was developed in collaboration with U.S. EPA and U.S. ACE to be consistent with federal Compensatory Mitigation Rule released on April 10, 2008. (40 CFR § 230, Subpart J; 33 CFR 332.). Caltrans proposed that 1,011.13 acres of existing wetlands would be enhanced and in combination with the 24.33 acres created and 53.44 acres preserved, for a total of 1,088.90 acres of wetlands secured in perpetuity. Wetland enhancement actions include: filling in man-made drainage ditches to increase the residence time of surface waters within the wetland area; implementing a grazing management plan to reduce the impacts from cattle; and removing invasive species to promote the health and natural recruitment of native wetland species. The enhancement of wetlands will be verified through a robust monitoring and reporting program (per Condition 10) that requires Caltrans to use the California

[5] During the Willits Bypass Mitigation Development Team meetings, it was collectively agreed between the U.S. EPA, U.S. ACE, U.S. FWS, CDFG, NMFS, WEC, Caltrans, and the Regional Water Board that the most appropriate use of the mitigation funds would be a watershed approach within Little Lake Valley. The resource agencies believe, that in this case, a watershed based approach will be superior to an approach relying on wetland creation/establishment ratios..

Rapid Assessment Method (CRAM) for wetlands, as well as additional hydrology, vegetation, and surface water sampling and analysis methods to verify the enhancement of wetland functions and values. The mitigation site preservation and site protection instruments would be a combination of fee title purchase, conservation easement, or other deed restriction.

13. The Eel River watershed is listed on the Clean Water Act section 303(d) list as impaired for sediment and temperature. In 2004, the U.S. EPA established sediment and temperature total maximum daily loads (TMDLs) for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury). Therefore, to fully develop a watershed approach the mitigation must include a nexus to address the temperature and sediments impairments. The nexus relates how the proposed mitigation will implement additional measures to reduce stream temperatures and excessive sediment inputs into the watershed. For sediment, Caltrans has prepared an assessment of all the erosion sites located within the off-site mitigation lands, which includes the inventory, prescription, and prioritization of restoration actions that will reduce erosion and sediment delivery within the watershed. In addition, the bypass structure has been designed to reduce erosion and sediment delivery to the maximum extent practicable (MEP). For temperature impairment, the most practical way to reduce stream temperatures is to provide riparian vegetation in all areas feasible within the project limits, including bypass alignment and off-site mitigation lands (maximum site potential shade). In addition, baseline surveys will be conducted to find all areas that benefit from riparian plantings to achieve maximum site potential shade, and percent effective shade (shade on water). Additionally, the current land management practices of stream alteration and cattle grazing have potentially negative side effects on water. Therefore, the proposed grazing management plan, which is geared towards the enhancement and protection of natural resources, will be implemented to improve the overall health of the watershed.

14. Caltrans proposes to mitigate impacts to riparian areas by planting with native riparian species along approximately 48 acres (approximately 35,000 linear feet) adjacent to waters of the U.S. and State, and monitoring to ensure successful establishment. In addition, 49 acres of riparian areas would be enhanced by the following actions: expanding riparian habitat through planting native species; increasing habitat complexity; improving hydrology; controlling invasive species; and implementing a grazing management plan. A total of 104 acres of riparian areas would be secured in perpetuity. The mitigation site protection would be a combination of fee title purchase, conservation easement, or other deed restriction.

15. To mitigate for temporary and permanent impacts to waters of the U.S. and State, Caltrans proposes to enhance approximately 17 acres of streams by improving hydrology and increasing habitat complexity. The Rutledge pond will be realigned

adjacent to the bypass, and therefore its disturbance will only be a temporary impact. Additionally, Caltrans proposes to grade and modify the Neisen pond as part its plan to create wetlands. Approximately 24 acres of streams identified as waters of the U.S. and State will be protected in perpetuity. Overall, the mitigation plan would result in the purchase and/or preservation of approximately 2,100 acres of land within Little Lake Valley.

16. Caltrans proposes to remove fish passage barriers along Upp Creek, Haehl Creek and Ryan Creek. The removal and/or upgrade of these facilities would likely reduce sediment input into the creeks as well as improve the beneficial use of the creeks for migration by anadromous fish. One existing culvert in the upper Haehl Creek channel, located under the proposed highway bridge, will be permanently removed and the stream channel will be restored as a natural drainage feature. A second existing culvert in upper Haehl Creek will be replaced and the area restored during improvement of the proposed new Schmidbauer Ranch access road. An existing box culvert in the vicinity of the proposed Quail Meadows interchange and passing under US 101 will be permanently removed and the creek contoured, re-graded, stabilized, and replanted; local traffic will cross Upp Creek on the new bridge that will be on the north leg of the roundabout. Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) will consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements will comply with guidelines established by NMFS and CDFG.

17. The project will result in an increase of approximately 38 new acres of impervious surface in the Little Lake Valley. The total area of impervious surface that will exist within the project limits will be 49 acres (including new and existing impervious surface) when the first phase of the project is completed. Caltrans will provide permanent post-construction storm water treatment for approximately 43 acres of impervious surface. Storm water runoff and modifications to the local hydrograph will be controlled primarily through the use of low impact development (LID) best management practices (BMPs) such as bio-strips, bio-swales, and shallow vegetated detention basins that rely on infiltration and dispersion. In addition, where feasible, Caltrans will install and maintain traction sand traps within drain inlets along the roadway to reduce sediment delivery to Outlet Creek HSA.

18. If Caltrans uses Oil Well Hill as a borrow site for fill material, the modifications to the roadside area will allow room for additional post-construction treatment BMPs. Therefore, additional storm water treatment would be provided by treating existing Highway 101 storm water runoff.

Project Schedule

19. The proposed activities associated with the bypass project are scheduled to begin in the fall of 2010 with the projected completion of the first phase of the project near the end of 2015. The proposed project will be conducted year round; however, work within jurisdictional streams will only occur within summer months during low flow conditions from the period of June15th to October 15th. The entire project is expected to take four to five years to complete.

Federal and State Regulatory Compliance

20. Caltrans has applied for authorization from the U.S. ACE to conduct the project under an individual Department of the Army permit pursuant to the CWA, section 404. Caltrans has applied to the CDFG for a 1602 Lake and Streambed Alteration Agreement. Additionally, Caltrans has sought formal consultation and obtained Biological Opinions from the U.S. FWS and the NMFS. On October 25, 2006, Caltrans certified a Final Environmental Impacts Statement / Environmental Impact Report (FEIS/EIR - State Clearing House No. 1990030006) for the project in order to comply with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). On December 15, 2006, Caltrans filed a Notice of Determination (NOD) for the proposed project. On December 18, 2006, Caltrans filed a Record of Decision (ROD) for the proposed project. A Supplemental Environmental Impact Report (EIR) was prepared pursuant to CEQA. The draft report was signed on November 15, 2009. Comments were received during the circulation period, which ended January 19, 2010. The Final Supplemental EIR was completed in May 2010, with potential impacts to NCSG determined to be less than significant after mitigation.

Total Maximum Daily Loads and Compliance with Water Quality Standards

21. The Eel River watershed is listed on the Clean Water Act section 303(d) list as impaired for sediment and temperature. In 2004, the U.S. EPA established sediment TMDLs for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury). Roads are a significant source of sediment in the watershed (directly, from surface erosion, and, indirectly, by triggering landslides). In addition, activities that impact the riparian zone and reduce riparian vegetation are identified as sources contributing to increased stream temperatures. A focus on measures to reduce sediment discharges to surface waters from roads in the watershed, and measures to avoid, minimize, and mitigate impacts on riparian zones is essential for achieving TMDL compliance.

22. Pursuant to Regional Water Board Resolution R1-2004-0087, *Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Receiving Waters within the North Coast Region* (Sediment TMDL Implementation Policy), the Executive Officer is directed to "rely on the use of all available authorities, including existing regulatory standards, and permitting and enforcement tools to more effectively and efficaciously pursue compliance with sediment-related standards by all dischargers of sediment waste."

23. To ensure compliance with sediment, temperature and other related Water Quality Objectives within the Basin Plan, and consistent with the U.S. EPA-established TMDLs, adequate wetland and riparian protection and stringent requirements to avoid, minimize, and mitigate the sediment and temperature impacts associated with the proposed project will be incorporated as enforceable conditions this Water Quality Certification. In addition, Caltrans will be required to conduct surface water monitoring, sampling, and analysis in accordance with the conditions of the Water Quality Certification. Additionally, storm water runoff monitoring, sampling, and analysis will be conducted as required by the State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water Discharges from the State of California, Department of Transportation (Caltrans) Properties, Facilities and Activities Order No. 99 – 06 - DWQ. The surface water data collected will be utilized to assess the adequacy of BMPs during construction as well as site specific mitigation measures proposed to minimize impacts to the environment, including sediment and temperature impacts.

24. The federal antidegradation policy requires that state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. This Order is consistent with applicable federal and State antidegradation policies, as it does not authorize the discharge of increased concentrations of pollutants or increased volumes of treated wastewater, and does not otherwise authorize degradation of the waters affected by this project.

California Environmental Quality Act

25. On October 25, 2006, Caltrans certified the FEIS/EIR (State Clearing House No. 1990030006) for the project in order to comply with the NEPA and CEQA. On December 15, 2006, Caltrans filed a NOD for the proposed project. On December 18, 2006, Caltrans filed a ROD for the proposed project. The Final Supplemental

EIR for NCSG was completed in May 2010. As a Responsible Agency, the Regional Water Board complies with CEQA by considering the FEIS/FEIR prepared by the Lead Agency (Caltrans) and by reaching its own conclusions on whether and how to approve the project involved. (Cal. Code Regs, tit. 14, § 15096.) The Regional Water Board has considered the FEIS/FEIR and any proposed changes incorporated into the project or required as a condition of approval to avoid significant effects to the environment. The Regional Water Board's conclusions on the FEIS/FEIR and findings for impacts to resources within the jurisdiction of the Regional Water Board are included in Attachment 2 to this Water Quality Certification and incorporated herein.

Receiving Waters:	Wetlands, Haehl Creek, Baechtel Creek, Broaddus Creek, Mill Creek, Outlet Creek, Upp Creek, and Ryan Creek Eel River Hydrologic Unit No.111.00 Outlet Creek Hydrologic Sub-Area No. 111.61
Filled or Excavated Areas:	Permanent - wetlands: 53.89 acres Permanent - streams and ponds: 2.34 acres Permanent - riparian areas: 10.88 acres Temporary - wetlands: 29.88 acres Temporary - streams and ponds: 3.16 acres Temporary - riparian areas: 10.12 acres
Total Linear Impacts:	Permanent - wetlands: 20,222 linear ft (2.83 miles) Permanent - streams and ponds: 3,161 linear ft (0.6 miles) Permanent - riparian areas: 8,535 linear ft (1.62 miles) Temporary - wetlands: 21,463 linear ft (4.07 miles) Temporary - streams and ponds: 9,255 linear ft (1.75 miles) Temporary - riparian areas: 6,693 linear ft (1.27 miles)
Dredge Volume :	None
Fill Volume :	Permanent - wetlands: 358,083 cubic yards Permanent - streams and ponds: 15,099 cubic yards Permanent - riparian areas: 72,846 cubic yards Temporary - wetlands: 167,682 cubic yards Temporary - streams and ponds: 20,581 cubic yards Temporary - riparian areas: 67,764 cubic yards

Latitude/Longitude:	39.3752 N/123.3249 W (Southern Interchange) 39.4392 N/123.2563 W (Northern Interchange)
Expiration:	This Water Quality Certification authorizes dredge and fill activities for ten years following the date of issuance or until the U.S. ACE CWA Section 404 permit expires. If this Water Quality Certification Expires and the project does not comply with the proposed application, findings, and conditions of this Order, the Regional Water Board may enroll the project in the appropriate regulatory tool as determined by the Executive Officer. Conditions and monitoring requirements outlined in this Order are not subject to the expiration date outlined above, and remain in full effect and are enforceable.

ACCORDINGLY, BASED ON ITS INDEPENDENT REVIEW OF THE RECORD, THE REGIONAL WATER BOARD CERTIFIES THAT THE Caltrans – Highway 101 – Willits Bypass Project, WDID No. 1B10019WNME, as described in the application will comply with sections 301, 302, 303, 306 and 307 of the Clean Water Act, and with applicable provisions of state law, provided that Caltrans complies with the requirements and conditions specified in this certification and the activity being limited and all proposed mitigation being completed in compliance with the applicant's project description, as set forth in the application and applicable documents received by the Regional Water Board from Caltrans. Discharges from these projects are also regulated under the State Water Resources Control Board Order No. 2003-0017-DWQ, "Statewide General Waste Discharge Requirements for Dredge or Fill Discharges That Have Received State Water Quality Certification," which requires compliance with all conditions of this Order.

STANDARD CONDITIONS

1. This certification action is subject to modification or revocation upon administrative or judicial review; including review and amendment pursuant to Water Code section 13330 and title 23, California Code of Regulations, section 3867.

2. This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to title 23, California Code of Regulations, section 3855, subdivision (b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3. The validity this certification is conditioned upon total payment of any fee required under title 23, California Code of Regulations, section 3833, and owed by the application.

4. Except as may be modified by any preceding conditions, all certification actions are contingent on: a) the discharge being limited, and all proposed revegetation and mitigation being completed, in strict compliance with the applicant's project description, as approved herein, and b) compliance with all applicable water quality requirements and water quality control plans including the requirements of the Basin Plan, and amendments thereto.

COMPENSATORY MITIGATION CONDITIONS

5. Caltrans shall submit plans and reports to the satisfaction of the Executive Officer of the Regional Water Board by all dates and time frames detailed in this Order, unless an exception is granted by the Executive Officer, or all bypass construction activities shall cease and desist, until the Regional Water Board authorizes operations.

6. Caltrans is ultimately responsible for the success of all mitigation performance standards, success criteria, and long term management actions.

7. Caltrans shall mitigate the project impacts by implementing the Caltrans-prepared *Final Mitigation and Monitoring Proposal (Final MMP)*, adopted June 8, 2010. At a minimum, the mitigation shall result the enhancement of approximately 1,011 acres of existing wetlands, the creation of 24 acres, the preservation of 53 acres for a total of approximately 1,088 of wetlands to be secured in perpetuity. In addition, Caltrans must mitigate impacts to riparian areas (waters of the State) by creating 47.57 acres, enhancing 48.51 acres, and securing in perpetuity 104 acres. Additionally the mitigation must enhance 27.58 acres and preserve 24.5 acres of waters of the U.S. and State.

8. At least 90 days prior to conducting any channel- ground- or vegetation-disturbing activities associated with bypass construction and no later than December 31, 2010; Caltrans shall acquire by fee title, easement, or deed restriction and permanently preserve all the mitigation lands identified in the Final MMP, dated June 8, 2010. Caltrans must maintain the properties to prohibit any owner/occupier of property to be used for mitigation from using that land, or allowing activities on the land that would interfere with the use of the property as mitigation including dredging, filling, modifying drainage patterns, or removing any vegetation within waters of the State, including riparian areas.

9. Caltrans shall submit a restoration work plan for the erosion sites identified in Appendix J of the final MMP, to the Executive Officer of the Regional Water Board for review, consideration, and concurrence by April 30, 2012. The restoration plan shall include the following locations and shall have work completed by October 15, 2012:
   - Outlet Creek (108-010-06);
   - Outlet Tributary (108-030-04;
   - Berry Creek tributaries (108-070-04); and
   - Davis Creek tributaries (108-070-13).

   The erosion site restoration work plan shall be submitted to the, U.S. ACE, CDFG, and the Executive Officer of the Regional Water Board for prior review, consideration, and concurrence. The restoration plans shall include:
   - Existing functions and conditions (wetted channel width, pool/riffle ratio, mean/maximum depths, complexity, shade/cover);
   - List and plot of native species to be planted, density of plantings;
   - Detailed design plans and cross-sections;
   - Restoration methods and materials; and
   - Water diversion plans (if necessary).

10. Caltrans must implement the monitoring and reporting program (MRP) set forth in Attachment 3. The MRP is designed to collect data and provide reports that assess the biological, chemical, physical conditions of resources within the jurisdiction of the Regional Water Board for both the bypass footprint alignment and the associated mitigation lands. The required technical reports outlined in the MRP are necessary for the Regional Water Board to appropriately determine whether or not the project will adequately comply with the Basin Plan and all applicable Water Quality Standards and provide the mitigation necessary to compensate for the impacts to jurisdictional resources. The results of the monitoring requirements outlined in the MRP shall be used to develop performance standards and success criteria for the on-site repair areas (bypass alignment) and the off-site mitigation lands. Additionally, the data will be used to demonstrate the enhancement and protection of beneficial uses and long term TMDL implementation for the receiving waters with the Outlet Creek HSA. The baseline reports are due to the Regional Water Board by January 31, 2012. In addition, the revised MMP including revised management plans shall submitted to the Executive Officer of the Regional Water Board by April 30, 2012, for review, consideration, and concurrence. Caltrans may request revisions to the MRP by submitting a plan to the Executive Officer of the Regional Water Board for review, consideration, and concurrence.

11. Subsequent to obtaining baseline information on the mitigation parcels, and no later than April 30, 2012, Caltrans shall submit a revised grazing management plan to the Executive Officer of the Regional Water Board for review, consideration, and concurrence. If it is determined by Regional Water Board staff that the grazing practices are not implemented in accordance with the approved management plan and pose a potential threat to water quality the Regional Water Board will adopt Individual Waste Discharge Requirements (WDRs) for the short term and long term grazing practices under Porter-Cologne Water Quality Control Act authority.

12. Herbicides and pesticides shall not be used on the bypass or mitigation parcels. If Caltrans or the long term manager has a compelling case as to why herbicides and pesticides should be used, they may submit a plan to the Regional Water Board for Executive Officer review, consideration, and concurrence.

13. Caltrans shall provide detailed designs and implementation schedule for the Ryan Creek Fish Passage projects. Final plans will be prepared and submitted to the Executive Officer of the Regional Water Board for review and concurrence no later than June 30, 2012. Caltrans shall complete construction of the South Fork Ryan Creek culvert project no later than October 15, 2013.

14. At least 90-days prior to initiating channel- ground- or vegetation-disturbing activities on Oil Well Hill, Caltrans shall submit the following information to the Executive Officer of the Regional Water Board for review, consideration, and concurrence:

    a) A geotechnical report on the site specific hydrology and geology of the Oil Well Hill borrow area. The report shall identify potential hazards and corrective actions in regards to slope stability, ground water interception, and the potential for mass wasting;
    b) A site specific land restoration/reclamation plan;
    c) A surface water monitoring plan to address storm water runoff discharges to and from waters of the State, and any potentially new waters of the State (springs or seeps) that may develop as a result of excavation or any activities on Oil Well Hill.
    d) A revised risk level assessment for the entire project (Oil Well Hill, bypass alignment, and mitigation sites).

    If it is determined by Regional Water Board staff that the reclamation/restoration activities are not implemented in accordance with the approved plan and pose a potential threat to water quality, the Regional Water Board will adopt individual WDRs under Porter-Cologne Water Quality Control Act authority.

15. At least 90 days prior to conducting any channel- ground- or vegetation-disturbing activities Caltrans shall:

    a) Appoint an appropriate land manager that is approved by the Executive Officer of the Regional Water Board.
    b) Obtain the land manager's concurrence with the final MMP and associated management plans.
    c) Recalculate the Property Analysis Record (PAR) and long term endowment to include all the conditions of this Order, projected changes to the short term and long term management plans for long term manager approval.

16. The land manager shall comply with all conditions within this Order and shall submit confirmation to the Regional Water Board that they approve the final MMP and any future modifications thereto, including but not limited to: associated plans; PAR; long term endowment; and acceptance of all conditions of this Order. Any revisions or modifications to the final MMP (e.g. work plan, grazing plan, long term management plan, adaptive management actions or plans, stream alteration plans or actions, and flood control plans or actions) shall cause an open review period of the PAR and endowment and shall be approved by the land manager. The open review period allows the land manager and Caltrans to revisit the PAR and endowment to ensure the revised mitigation actions are appropriately funded. In addition, any change in the PAR, endowment or final MMP shall be submitted to the U.S. ACE, CDFG, and the Executive Officer of the Regional Water Board for review, consideration, and concurrence.

17. Mitigation and monitoring requirements outlined in this Order are not subject to an expiration date, and remain in full effect and are enforceable.

GENERAL CONDITIONS

All conditions of this order apply to Caltrans (and all its employees) and all contractors (and their employees), sub-contractors (and their employees), the land manager, and any other entity or agency that performs activities or work on the project (including the off-site mitigation lands) as related to this Water Quality Certification.

18. This Water Quality Certification covers the construction of Phase I only.

19. All conditions required by this Order shall be included in the Plans and Specifications prepared by Caltrans for the Contractor. In addition, Caltrans shall require compliance with all conditions included in this Order in the bid contract for this project and the worker training program requirement per Condition 27 below.

20. Caltrans shall construct the project in accordance with the project described in the application and the findings above, and shall comply with all applicable water quality requirements and Water Quality Standards as detailed in the Basin Plan.

21. Any change in the design or implementation of the project that would have a significant or material effect on the findings, conclusions, or conditions of this Order must be submitted to the Executive Officer of the Regional Water Board for prior review, consideration, and concurrence.

22. At least 90 days before initiating channel- ground- or vegetation-disturbing activities associated with construction, Caltrans shall submit to the Regional Water Board a technical analysis of the proposed haul road(s) and demonstrate that the contractor's proposal will not impact the 100-year floodplain. All temporary bridges, culverts, haul roads, or other structures that will remain in place after October 15 shall be designed to pass the 100-year flood event. Structures and materials not designed to withstand high flows or 100-year flood shall be removed from the floodplain prior to October 1st and the associated areas shall be appropriately stabilized to prevent erosion and sediment discharges to "Waters of the State".

23. Caltrans shall provide a copy of this Order, associated attachments, and State Water Resources Control Board (SWRCB) Order No. 2003-0017-DWQ to the contractor, all subcontractors, and all utility companies conducting the work, and require that copies remain in their possession at the work site. Caltrans shall be responsible for work conducted by its employees, contractors, subcontractors, utility companies, and land manager.

24. The Regional Water Board shall be notified in writing each year at least five working days (working days are Monday – Friday) prior to the commencement of ground disturbing activities, major concrete pours, dewatering activities, or water diversion activities with details regarding the construction schedule, in order to allow Regional Water Board staff to be present on-site during installation and removal activities, and to answer any public inquiries that may arise regarding the project. Caltrans shall provide Regional Water Board staff access to the project site to document compliance with this order.

25. Caltrans shall provide monthly updates and coordinate with the City of Willits on their construction schedule of work to avoid conflicts with the WWTP during construction and to avoid potential cumulative impacts.

26. The Resident Engineer (or appropriately authorized agent) shall hold on-site water quality permit compliance meetings (similar to tailgate safety meetings) to discuss permit compliance, including instructions on how to avoid violations and

procedures for reporting violations. The meetings shall be held at least every other week, before forecasted storm events, and when a new contractor or subcontractor arrives to begin work at the site. The contractors, subcontractors and their employees, as well as any inspectors or monitors assigned to the project, shall be present at the meetings. Caltrans shall maintain dated sign-in sheets for attendees at these meetings, and shall make them available to the Regional Water Board on request.

27. Caltrans shall conduct an environmental awareness and compliance training program for all contractors, sub-contractors and Caltrans staff working on the project and shall be approved by the Executive Officer of the Regional Water Board. The training program shall present the environmental regulations and various permit conditions that Caltrans, the contractors, and land manager shall comply with and the applicable measures established for the project to minimize impacts to water quality and avoid sensitive resources, habitats, and species. The training program shall be conducted at least once annually during the construction of the bypass, and is required for all employees, contractors, sub-contractors, and other entities prior to performing any work or monitoring activities on the project. The training program must emphasize that Caltrans and the contractors are legally liable for compliance with all environmental regulations and permit conditions. In addition, the training program must emphasize a clear understanding of all applicable permits and conditions thereof. Caltrans shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry on-site. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and be available to Regional Water Board staff upon request.

28. Pursuant to its authority under Section D(2) of the Caltrans Storm Water MS4 permit, the Regional Water Board hereby requires Caltrans to conduct a risk determination in accordance with the State Water Resources Control Board (SWRCB) Construction General Permit (CGP) Order No. 2009-0009-DWQ for the entire area of the bypass and the mitigation sites. In addition, Caltrans shall submit the Storm Water Pollution Prevent Plan (SWPPP) in an electronic format using the Storm Water Multi-Application Reporting and Tracking System (SMARTS). http://smarts.waterboards.ca.gov/. Risk determination shall include the time frame (i.e. number of years) that will be required to completely construct the bypass. Caltrans shall submit the SWPPP, including the risk level determination(s) 30 days prior to initiating channel- ground- or vegetation-disturbing activities.

29. If the contractor elects to use Oil Well Hill as a borrow site, Caltrans shall recalculate the risk determination to fully include the borrow site and the entire area of the bypass, and the mitigation sites in the risk analysis. In addition, the risk

determination shall include the time frame, in years that will be required to completely construct the bypass and fully (to the satisfaction of the Regional Water Board) complete reclamation on Oil Well Hill. Additionally, if the Oil Well Hill site is used then Caltrans shall develop and install the appropriate post-construction storm water treatment measures along existing Highway 101 to the maximum extent practicable (MEP).

30. All activities and best management practices (BMPs) shall be implemented according to the submitted application and the conditions in this Order. BMPs for erosion, sediment, turbidity and pollutant control shall be implemented and in place at commencement of, during, and after any ground clearing activities, construction activities, or any other project activities that could result in erosion, sediment, or other pollutant discharges to waters of the State. The BMPs shall be implemented in accordance with the Caltrans Construction Site Best Management Practice Manual (CCSBMPM) and all contractors and subcontractors shall comply with the CCSBMPM. In addition, BMPs for erosion and sediment control shall be utilized year round, regardless of season or time of year. Caltrans shall stage erosion and sediment control materials at the work site. All BMPs shall be installed properly and in accordance with the manufacturer's specifications. If the project Resident Engineer elects to install alternative BMPs for use on the project, Caltrans shall submit a proposal to Regional Water Board staff for review and concurrence.

31. Caltrans shall prioritize the use of wildlife-friendly biodegradable (not photo-degradable) erosion control products wherever feasible. Caltrans shall not use or allow the use of erosion control products that contain synthetic netting for permanent erosion control (i.e. erosion control materials to be left in place for two years or after the completion date of the project). If Caltrans finds that erosion control netting or products have entrapped or harmed wildlife, personnel shall remove the netting or product and replace it with wildlife-friendly biodegradable products. Caltrans shall not use or allow the use of erosion control products that contain synthetic materials within waters of the United States or waters of the State at any time. Caltrans shall request approval from the Regional Water Board if an exception from this requirement is needed for a specific location.

32. Work in flowing or standing surface waters, unless otherwise proposed in the project description and approved by the Regional Water Board, is prohibited. If construction dewatering of groundwater is found to be necessary, Caltrans shall use a method of water disposal other than disposal to surface waters (such as land disposal) or Caltrans shall apply for coverage under the Low Threat Discharge Permit or an individual National Pollutant Discharge Elimination System (NPDES) Permit and receive notification of coverage to discharge to surface waters, prior to the discharge.

33. Caltrans is prohibited from discharging waste to waters of the State, unless explicitly authorized by this Order. For example, no debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or concrete washings, welding slag, oil or petroleum products, or other organic or earthen material from any construction or associated activity of whatever nature, other than that authorized by this Order, shall be allowed to enter into waters of the State. In addition, none of the materials listed above shall be placed within 150 linear feet of waters of the State or where the materials may be washed by rainfall into waters of the State.

34. Herbicides and pesticides shall not be used on the bypass. If Caltrans has a compelling case as to why herbicides and pesticides should be used, they may submit a request along with a BMP plan to the Executive Officer of the Regional Water Board for review, consideration, and concurrence.

35. Caltrans shall submit, subject to approval by the Regional Water Board staff, a dewatering and/or diversion plan that appropriately describe the dewatered or diverted areas and how those areas will be handled during construction. The diversion/dewatering plans shall be submitted no later than 30 days prior to conducting the proposed activity. Information submitted shall include the area or work to be diverted or dewatered and method of the proposed activity. All diversion or dewatering activities shall be designed to minimize the impact to waters of the State and maintain natural flows upstream and downstream. All dewatering or diversion structures shall be installed in a manner that does not cause sedimentation, siltation or erosion upstream or downstream. All dewatering or diversion structures shall be removed immediately upon completion of project activities. The in-channel work within fish-bearing streams will only be conducted between June 15th and October 15th. This Water Quality Certification does not authorize Caltrans to draft surface waters.

36. Fueling, lubrication, maintenance, storage and staging of vehicles and equipment shall be at least 150 linear feet beyond of waters of U.S. and the State with the exception of cranes and stationary equipment which shall only be refueled using a company certified by the CDFG. Proper certification and documentation of fueling (field logs) shall be provided to the Regional Water Board upon request. The Regional Water Board shall provide concurrence with each fueling location prior to fueling equipment within waters of the State. Fueling, lubrication, maintenance, storage and staging of vehicles and equipment shall not result in a discharge or a threatened discharge to any waters of the State or the U.S. At no time shall Caltrans or its contractors allow use of any vehicle or equipment, which leaks any substance that may impact water quality.

37. If, at any time, an unauthorized discharge to surface water (including wetlands, rivers or streams) occurs, or any water quality problem arises, the associated

project activities shall cease immediately until adequate BMPs are implemented. The Regional Water Board shall be notified promptly and in no case more than 24 hours after the unauthorized discharge or water quality problem arises.

38. Caltrans shall implement appropriate BMPs to prevent the discharge of equipment fluids to the stream channel. The minimum requirements will include: storing hazardous materials at least 150 linear feet outside of the stream banks; checking equipment for leaks and preventing the use of equipment with leaks; pressure washing or steam cleaning equipment to remove fluid residue on any of its surfaces prior to its entering any stream channel in a manner that does not result in a discharge to Waters of the State.

39. Spill kits are required at each fueling location and at each location that work will be conducted with streams. If the event of an unauthorized release of fuel (spill or leak) to waters of the State, Caltrans shall immediately stop work and conduct the following measures:

    a) Notify the appropriate agencies including the Regional Water Board, CDFG, and the Office of Emergency Services (OES) at 1(800) 852-7550;
    b) Utilized the appropriate spill kits for containment and clean up of the release;
    c) Collect samples within the release, 50 feet downstream, and downstream to the full extent of the release; and
    d) Analyze samples for total petroleum hydrocarbons as diesel (TPH-D), total petroleum hydrocarbons as gasoline (TPH-G), and benzene, toluene, ethlybenzene, total xylenes (BTEX).

40. The project shall have no more than 17 acres of disturbed soil area (DSA) at any time. Caltrans shall request approval from the Regional Water Board if an exception from this requirement is needed. Request for exceptions must include the locations, size of area, anticipated duration of exposure (e.g. DSA without BMPs), and a location specific rain event action plan (REAP). All disturbed soil areas and exceptions to the 17 acre limit shall be adequately documented in the site specific SWPPP.

41. Caltrans shall establish and clearly define stream setbacks that limit construction activities and prohibit ground disturbing activities within 50 linear feet of streams during the rainy season (October 15th to May 15th). If an exception from this requirement is needed for a specific location, Caltrans shall request approval from the Regional Water Board at least 5 working days in advance. At no time shall in-stream activities be conducted outside the work window of June 15th to October 15th. Exceptions may be granted by the Executive Officer of the Regional Water Board on a case by case review, only if the streams are dry or have minimal flow, and CDFG and NMFS have concurred.

42. If work is allowed within the stream channel or on the banks outside of the above referenced work window, Caltrans shall monitor the seventy-two (72) hour forecast from the National Weather Service. When forecast indicates a probability of precipitation of 50 percent or greater within the 72-hour period, or at the onset of any precipitation, ground disturbing activities shall cease and erosion and sediment control measures shall be implemented to stabilize exposed soils and prevent the mobilization of sediment into the stream channel or adjacent wetland or riparian areas. Caltrans bears full liability should the BMPs employed fail to prevent any discharge to waters of the State that exceeds applicable water quality standards or is beyond the certified area of impact. All earthwork and ground disturbing activities halted due to precipitation may resume when precipitation ceases and a 50 percent or less chance of precipitation is forecast throughout the duration of the subsequent 72-hour weather forecast.

43. Caltrans and their contractor are not authorized to discharge wastewater (e.g., water that has contacted uncured concrete or cement, or asphalt) to surface waters, ground waters, or land. Wastewater may only be disposed of to a sanitary waste water collection system/facility (with authorization from the facility's owner or operator) or a properly-licensed disposal or reuse facility. If Caltrans or their contractor proposes an alternate disposal method, Caltrans or their contractor shall apply for a permit from the Regional Water Board. Plans to reuse or recycle wastewater require written approval from Regional Water Board staff.

44. Any potentially hazardous waste(s) (solids, liquids, or slurries) derived or encountered in this project shall undergo the appropriate characterization to demonstrate compliance will all applicable waste disposal laws and regulations. If unanticipated or anticipated waste are encountered or created during the project, Caltrans shall notify the Regional Water Board immediately and at least within 24 hours. Caltrans or their contractor shall prepare applicable work plans for handling, treating, transporting, and disposing of waste. The work plans shall be prepared and signed by an engineer or geologist with the appropriate and valid California licenses.

45. Caltrans shall provide analysis and verification that placing non-hazardous waste or inert materials (which may include discarded product or recycled materials) will not result in degradation of water quality, human health, or the environment. All project-generated waste shall be handled, transported, and disposed in strict compliance with all applicable State and Federal laws and regulations. When operations are complete, any excess material or debris shall be removed from the work area and disposed of properly and in accordance with the Special Provisions for the project and/or Standard Specification 7-1.13, Disposal of Material Outside the Highway Right of Way. Caltrans shall submit to the Regional Water Board the

satisfactory evidence provided to the Caltrans Engineer by the Contractor referenced in Standard Specification 7-1.13. In accordance with State and Federal laws and regulations, Caltrans is liable and responsible for the proper disposal of waste generated by their project.

46. Wastewater from invasive species control and equipment washing must be disposed of at an appropriately permitted facility or comply with the proper NPDES requirements for discharges. Wastewater from vehicle cleaning will not be allowed for on-site use for any purposes (e.g. dust control) unless Caltrans can demonstrate to the satisfaction of the Regional Water Board that the wastewater has been adequately treated for potential pollutants and invasive species.

47. All imported fill material shall be clean and free of pollutants. All fill material shall be imported from a source that has the appropriate environmental clearances and permits. The reuse of low-level contaminated solids as fill on-site shall be performed in accordance with all State and Federal policies and established guidelines and must be submitted to the Regional Water Board for review and concurrence.

48. Only clean washed spawning gravel (0.5" – 4") with a cleanliness value of at least 85, using the Cleanness Value Test Method for California Test No. 227 will be placed in the streams. Gravel bag fabric shall be nonwoven polypropylene geotextile (or comparable polymer) and shall conform to the following requirements:
    - Mass per unit area, grams per square meter, min ASTM Designation: D 5261 – 270
    - Grab tensile strength (25-mm grip), kilonewtons, min. ASTM Designation: D4632* 0.89
    - Ultraviolet stability, percent tensile strength retained after 500 hours, ASTM Designation: D4355, xenon arc lamp method 70 or appropriate test method for specific polymer
    - Gravel bags shall be between 600 mm and 800 mm in length, and between 400 mm and 500 mm in width.
    - Yarn used in construction of the gravel bags shall be as recommended by the manufacturer or bag supplier and shall be of a contrasting color. Gravel shall be between 0.5" – 4" in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags shall be secured to prevent gravel from escaping. Gravel-filled bags shall be between 13 kg and 22 kg in mass.

If an exception from this requirement is needed for a specific location, Caltrans may request that the Executive Officer of the Regional Water Board consider and approve the exception.

49. Caltrans shall retain a dedicated Water Quality Monitor to be on-site daily and document compliance with all applicable water quality requirements. At least 30 days before initiating channel- ground- or vegetation-disturbing activities, Caltrans shall submit to the Regional Water Board in writing the name, qualifications, and contact information for the designated water quality monitor(s). The water quality monitor(s) shall be knowledgeable of and have experience with the Basin Plan, and surface water monitoring procedures, protocols, quality assurance, and quality control protocols. The water quality monitor(s) shall be responsible for monitoring Project activities and/or channel- ground- or vegetation disturbing activities that result in or have the potential to result in a discharge to waters of the State.

50. The water quality monitor shall be on-site daily while project activities including all pile installation, dewatering, channel- vegetation- or ground-disturbing activities that may affect water quality to: (1) document compliance with water quality standards and conditions of this Order; (2) record the results of all required surface water monitoring; (3) evaluate the effectiveness of BMPs, mitigation measures, and avoidance measures; (4) alert key construction staff of precipitation forecasts; and (5) make stop work recommendations for activities that results in or may result in violations of this Order. The water quality monitor(s) shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections; recommendations; monitoring and sampling results; and discharges.

51. Surface water monitoring shall be conducted whenever a project activity is conducted within waters of the State (e.g. demolition, pier construction, stream diversions). Surface water monitoring shall be conducted when any project activity has, or has the potential to, mobilize sediment and/or alter background conditions within waters of the State. In order to demonstrate compliance with receiving water limitations and applicable Water Quality Standards, field measurements shall be collected whenever a project activity may alter background conditions.

52. Caltrans in conjunction with the water quality monitor shall establish effluent, upstream (background) and downstream monitoring locations to demonstrate compliance with all applicable water quality requirements, and Water Quality Objectives as detailed in the Basin Plan. The downstream location shall be no more than 50 feet from the effluent location. Field measurements shall be taken from each location four times daily for flow, pH, temperature, dissolved oxygen, total dissolved solids, turbidity and specific conductance. In addition, visual observations shall be made four times daily and include the appearance of the

discharge including color, turbidity, floating or suspended matter or debris, appearance of the receiving water at the point of discharge (occurrence of erosion and scouring, turbidity, solids deposition, unusual aquatic growth, etc), and observations about the receiving water, such as the presence of aquatic life. Measurements shall be collected from each sampling location four times daily while work is being conducted within waters of the State. Prior to conducting any and all monitoring and sampling activities required by this Water Quality Certification, Caltrans shall develop the proper Quality Assurance Project Plan (QAPP) to ensure the data gathered is valid and will be reliable for statistical evaluation.

53. Whenever, as a result of project activities, downstream measurements exceed the following Water Quality Objectives, appropriate measurements shall be collected from all monitoring locations every hour during the period of increase, and shall continue until measurements demonstrate compliance with receiving water limitations and the water quality parameters are no longer increasing as a result of project activities.

pH	<6.5 or >8.5 (any changes >0.5 units)
temperature	>0.5^{o}F above background
dissolved oxygen	<7 milligrams per liter (mg/L)
total dissolved solids	>125 mg/L
turbidity	20% above natural background
specific conductance	>200 micromhos @ 77°F

If any measurements are beyond the water quality objectives 50 feet downstream of the source(s), all necessary steps shall be taken to install, repair, and/or modify BMPs to control the source(s). In addition, the overall distance from the source(s) to the downstream extent of the exceedance shall be measured.

Monitoring results shall be reported to appropriate Regional Water Board staff person by telephone within one hour of taking any measurements that exceed the limits detailed above (turbidity only if it is higher than 20 NTU as well). Upstream and downstream pictures within the working and/or disturbed area shall be taken and submitted to the appropriate Regional Water Board staff via e-mail or fax within 24 hours of the incident. All other monitoring data shall be reported on a monthly basis and is due to the Regional Water Board by the 15th of the following month.

54. Monthly Monitoring Reports: shall be submitted to the Executive Officer of the Regional Water Board. The monthly monitoring reports shall include at a minimum a summary of discharges, a summary of corrective actions taken (if necessary), photographs, all field sampling measurements and/or results, project status (i.e.

upcoming construction schedule and disturbed soil area updates), water quality monitor reports and field logs, water quality monitor reports and field logs, and all field monitoring equipment calibration logs. Caltrans shall develop, and Regional Water Board shall approve, a data management and reporting system to efficiently and effectively report sampling and monitoring data. Monthly monitoring reports are due to the Regional Water Board by the 15th of each month once work on the project has been initiated.

55. Rainy Day Reports: Caltrans shall take photos of all areas disturbed by project activities, including all excess materials disposal areas, after rainfall events that generate visible runoff from these areas in order to demonstrate that erosion control and revegetation measures are present and have been installed appropriately and successfully. A brief report containing these photos shall be submitted within 30 days of the rainfall event that generated runoff from the disturbed areas.

56. Slope Stability Reports: Caltrans shall provide yearly slope evaluation and erosion control monitoring reports for up to 10 years subsequent to the completion of the bypass project. Caltrans shall provide at least 80 percent coverage of established erosion control of all exposed areas along the bypass. To ensure the reduction of sediment transport into the Outlet Creek HSA, Caltrans shall conduct inspections prior to and subsequent to each rainy season up to 10 years after completion of the bypass. Reports shall include, at a minimum, the following information: name and title of personnel conducting monitoring and/or maintenance; observation dates; site photographs; maps including percent coverage of established erosion control and revegetation efforts; and an erosion evaluation. If the new bypass project has slope failures, excessive erosion, or causes other water quality degradation corrective actions will be required to mitigate the impacts. Established erosion control is vegetation growth, not applied erosion control product.

57. Annual Status Reports: Caltrans shall provide the Regional Water Board with an Annual Status Report no later than January 31 of every year beginning with issuance of this Order and continuing until the Regional Water Board accepts the Final Mitigation Report. Each annual report shall include, at a minimum: 1) a summary of all monitoring reports identified in this Order; 2) a general description of the status of the project site and project activities, including actual or projected completion dates, if known; 3) a summary of the annual mitigation monitoring reports and the current implementation status of each mitigation measure; 4) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and mitigating project impacts; 5) results and an evaluation of the data collected from the SWMRP; 6) Monthly Monitoring and Rainy Day Reports; and 7) A compliance table (spreadsheet) that presents each

condition of this certification, time frame (yearly calendar), project milestones and achievements, all reported discharges, and all violations of this Order.

58. Final Mitigation Report: No later than 90 days after completion of the project, including completion of all mitigation measures, Caltrans shall provide the Regional Water Board with a Final Mitigation Report. The Final Mitigation Report shall include, at a minimum: 1) a summary of all monthly monitoring reports and annual status reports; 2) copies of all mitigation monitoring reports documenting when success criteria for each of the mitigation measures were achieved; 3) all available information about mitigation measures, data collection for the SWMRP, and projects taken to implement the sediment and temperature TMDL; 4) each yearly compliance calendar; 5) an assessment of the effectiveness of the required measures in minimizing and mitigating project impacts; 6) any recommendations on how mitigation measures might be changed to more effectively minimize impacts to water quality and mitigate the impacts of future projects; 7) a final long term management plan; 8) revised PAR and endowment calculation approved by the long term manager; and 9) any other pertinent information.

59. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under applicable state or federal law. For the purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this Order. In response to a suspected violation of any condition of this certification, the State Water Board may require the holder of any federal permit or license subject to this Order to furnish, under penalty of perjury, any technical or monitoring reports the State Water Board deems appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In response to any violation of the conditions of this Order, the Regional Water Board may add to or modify the conditions of this Order as appropriate to ensure compliance.

60. The Regional Water Board may add to or modify the conditions of this Order, as appropriate, and to implement any new or revised Water Quality Standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act.

61. This Order is not transferable. In the event of any change in control of ownership of land presently owned or controlled by Caltrans, Caltrans shall notify the successor-in-interest of the existence of this Order by letter and shall forward a copy of the letter to the Regional Water Board. The successor-in-interest must

send to the Regional Water Board Executive Officer a written request for transfer of this Order to discharge dredged or fill material under this Order. The request must contain the following:

a. requesting entity's full legal name
b. the state of incorporation, if a corporation
c. address and phone number of contact person
d. description of any changes to the project or confirmation that the successor-in-interest intends to implement the project as described in this Order.

62. This Water Quality Certification authorizes dredge and fill activities for ten years following the date of issuance or until the U.S. ACE CWA Section 404 permit expires. If this Water Quality Certification Expires and the project does not comply with the proposed application, findings, and conditions of this Order, the Regional Water Board may enroll the project in the appropriate regulatory tool as determined by the Executive Officer. Conditions and monitoring requirements outlined in this Order are not subject to the expiration date outlined above, and remain in full effect and are enforceable.

63. Please contact our staff Environmental Specialist / Caltrans Liaison Jeremiah Puget of at (707) 576-2835 or jpuget@waterboards.ca.gov if you have any questions.

_____

Catherine Kuhlman
Executive Officer

100806_JJP_CDOT_Hwy101_WillitsBypass_401cert

Attachments:

1. Response to Public Comments
2. CEQA Findings
3. Monitoring and Reporting Program
4. State Water Resources Control Board Order No. 2003-0017 -DWQ, General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification

Original sent to: Mr. Jeremy Ketchum, Caltrans, 2800 Gateway Oaks Drive, Sacramento, CA 95833

Copies sent to:

Ms. Jane Hicks, U.S. Army Corps of Engineers, Regulatory Functions,1455 Market Street, San Francisco, CA 94103-1398

Ms. Laurie Monarres, U. S. Army Corps of Engineers, 1455 Market Street, San Francisco, CA 941003

Mr. David Wickens, U. S. Army Corps of Engineers, 1455 Market Street, San Francisco, CA 941003

Mr. Jason Brush, U.S. Environmental Protection Agency, Region 9, 75 Hawthorne Street, San Francisco, CA 94105

Ms. Melissa Scianni, U.S. Environmental Protection Agency, Region 9, 75 Hawthorne Street, San Francisco, CA 94105

Mr. Tom Daugherty, NMFS, 777 Sonoma Avenue, Room 325, Santa Rosa, CA 95404

Mr. Ray Bosch, U.S. Fish & Wildlife Service, 1655 Heindon Road, Arcata, CA 95521

Mr. Craig Martz, California Department of Fish and Game, 601 Locust Street, Redding, CA 96001

Mr. Dave Kelly, Caltrans, P.O. Box 911, Marysville, CA 95901

Mr. Jason Meigs, Caltrans, 2800 Gateway Oaks Drive, Sacramento, CA 95833

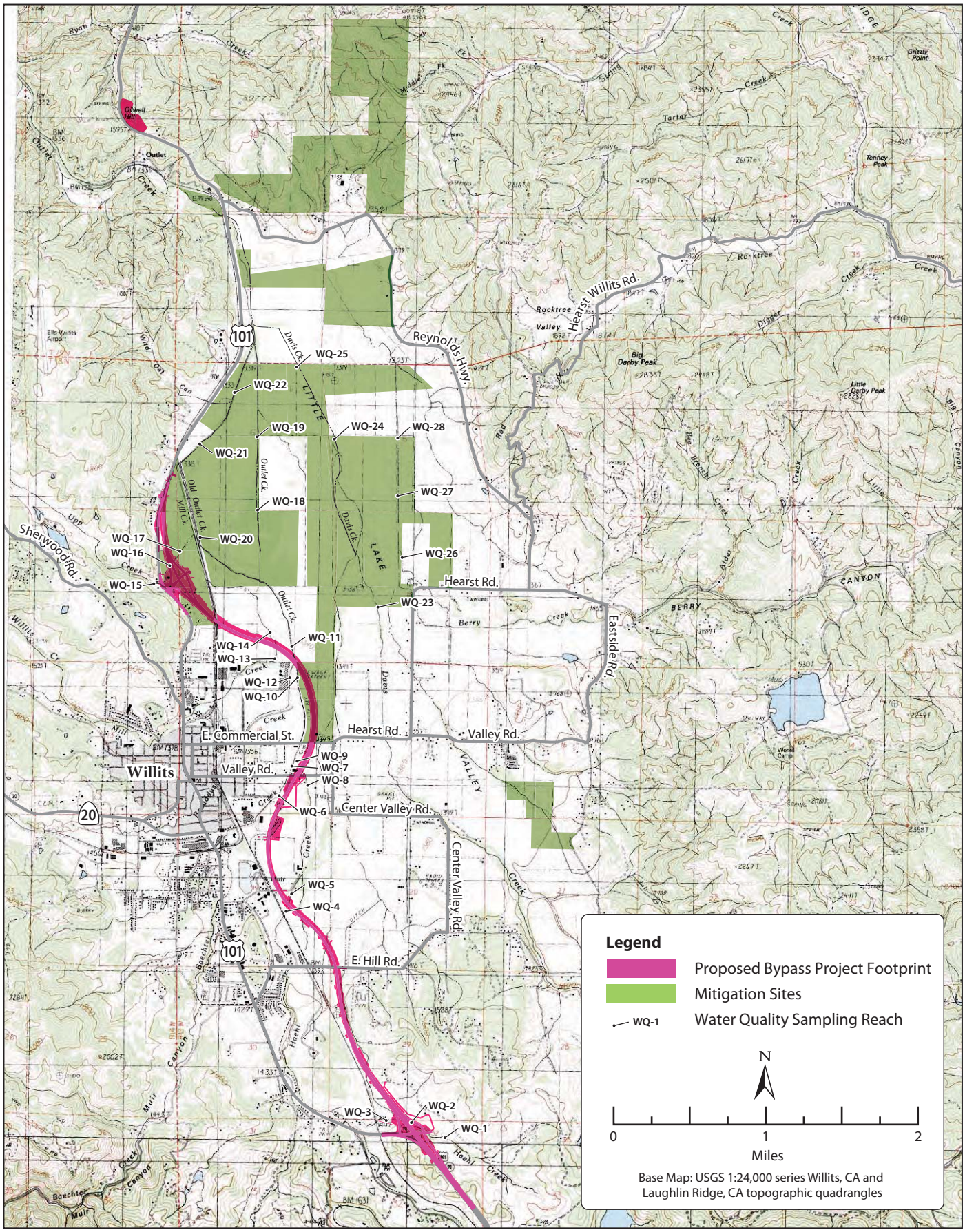
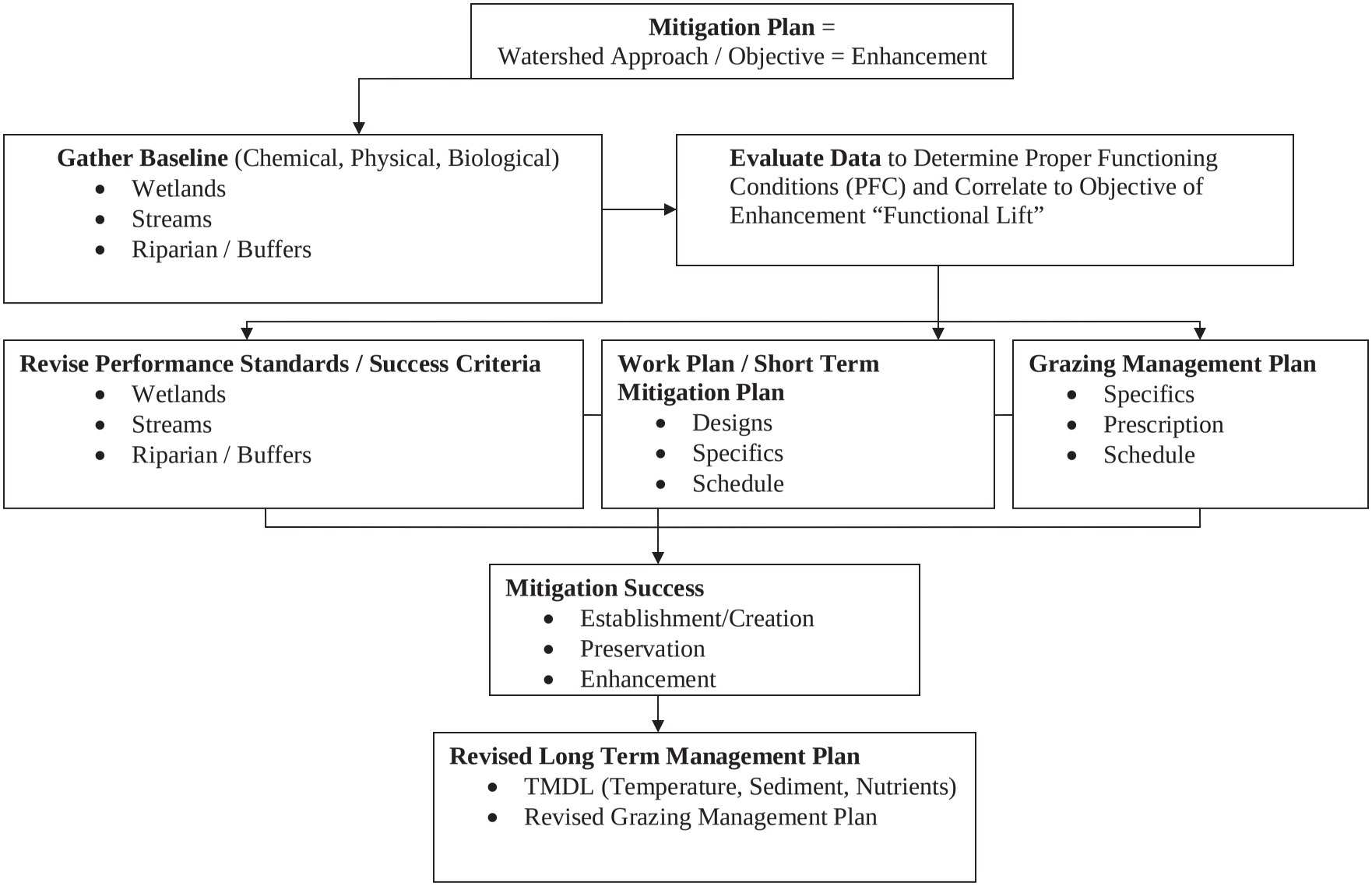


Figure 1
Location of Water Quality Sampling Reaches

APPENDIX 1
WILLITS BYPASS MITIGATION FLOW CHART



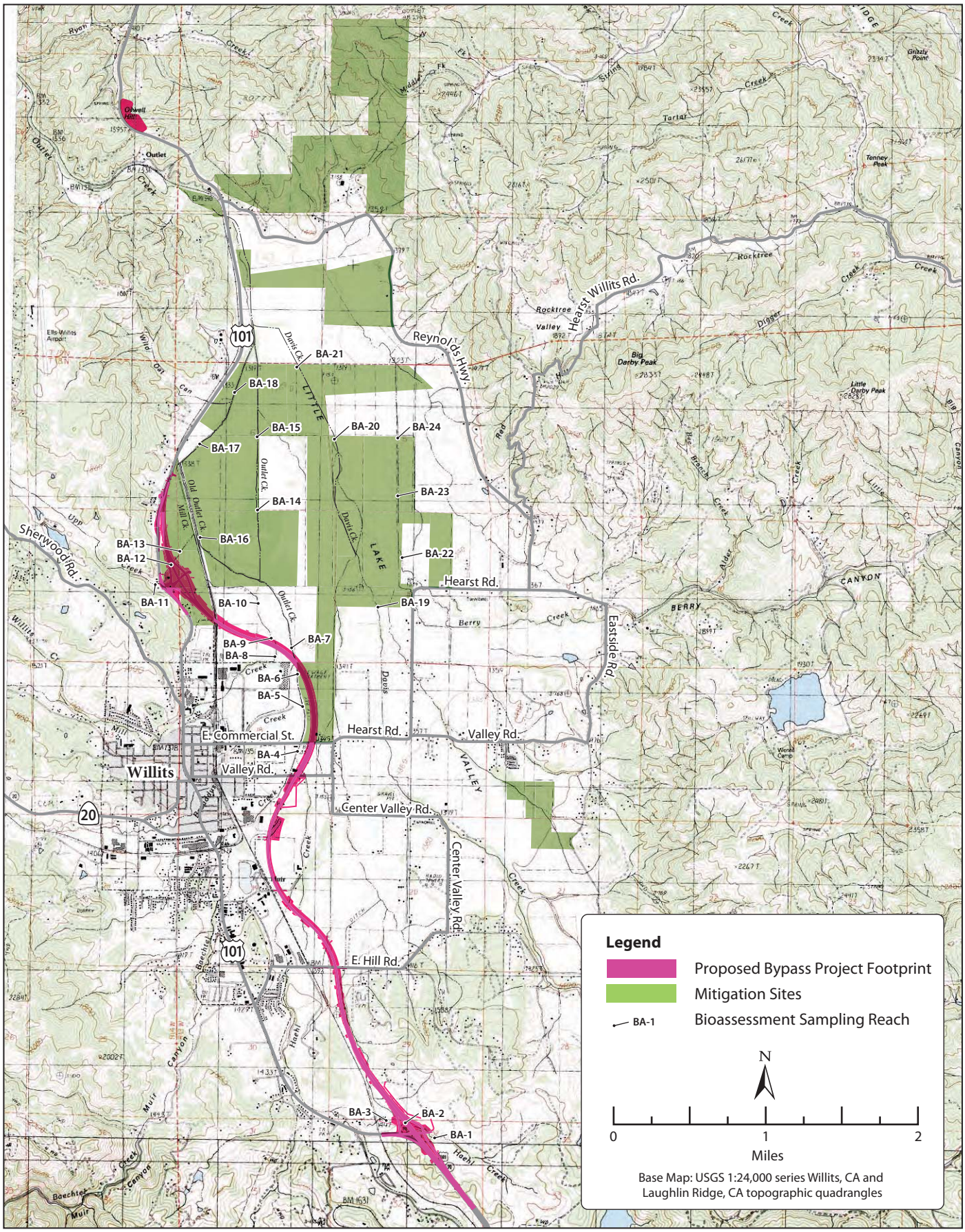


Figure 2
Location of Bioassessment Sampling Reaches

Attachment 1

Response to Comments on the Public Notice for Clean Water Act Section 401 Water Quality Certification and General Waste Discharge Requirements related to California Department of Transportation - Highway 101, Willits Bypass Project WDID No. 1B10019WNME

On April 29, 2010, the North Coast Regional Water Quality Control Board (Regional Water Board) opened a public comment period for California Department of Transportation (Caltrans) proposed Highway 101 Willits Bypass project. Regional Water Board staff received letters from 75 individuals or groups in response to the subject notice of Water Quality Certification and Waste Discharge Requirements. Of those 75, 27 were in favor of the proposed project, while 48 raised various objections. Because many of the same comments were described in different letters, Regional Water Board staff grouped comments together where appropriate, and provided one response. In order to identify where a particular comment was addressed in this response to comments, please review the attached spreadsheet.

Mitigation Plan Comment 1 (MPC-1) - *Mitigation Area vs. Adjacent Land Use*

How will the mosaic of mitigation habitats be constructed and maintained with adjacent parcels being managed for agriculture and not wetland mitigation?

Response to Mitigation Plan Comment 1 (RMPC-1)

Wetlands created pursuant to the Mitigation and Monitoring Proposal (MMP), dated June 2010, will be constructed on the offsite mitigation parcels in upland areas that are not currently jurisdictional wetlands under the Clean Water Act, Section 404. Wetland creation will be achieved through grading of high areas that are surrounded by the existing jurisdictional wetlands, as determined through Section 404 and verified by the United States Army Corps of Engineers (U.S. ACE). Additional wetland creation measures include planting native wetland plant species and monitoring for successful establishment and adequate hydrology. If these created wetlands accumulate sediment from seasonal flooding or other nonpoint source activities, such as grading, the MMP has an adaptive management component that will be triggered and actions will be taken to ensure that the wetlands achieve the success criteria set out in the MMP. Any adaptive management actions taken by Caltrans or the land managers retained to maintain the wetlands and/or mitigation parcels will be undertaken in coordination with resource agencies.

The adaptive management plan (Chapter 12) in the MMP presents a general framework and process for addressing unforeseen threats to the success of the MMP, identifying and implementing appropriate responses to those threats, and assessing the effectiveness of those responses. Adaptive management will be performed as needed by the land manager for each offsite mitigation parcel, under coordination with the stakeholder resource agencies.

In areas where development of an incompatible use adjacent to mitigation sites cannot be avoided, potential negative impacts must be evaluated and remediation steps planned and implemented. Remediation efforts may include:

- • Implementation of buffer zones within the mitigation site, where feasible, to separate sensitive biological resources on the mitigation site from adjacent development.
- • Installation of cattle barriers.
- • Installation of storm water pollution prevention measures.
- • Increase in mowing and weeding schedules.
- • Increase in irrigation or water storage capacity during plant establishment period.

Mitigation Plan Comment 2 (MPC-2) - *Natural Succession and Land Management*

How will the process of natural succession for streams and riparian areas and stream geomorphology be addressed in conjunction with the concept of highly functional habitats? How will these habitats be maintained given the ecological processes within Little Lake Valley?

Response to Mitigation Plan Comment 2 (RMPC-2)

The Regional Water Board agrees with the commenter and we raised this issue to Caltrans in our May 13, 2010, letter as a significant issue for the long term management of the mitigation lands. The Regional Water Board requested in its May 13, 2010 letter that *"Caltrans should provide information on how wetlands, streams and floodplains will interact, and have plans prepared to deal with the local hydrology and inevitable changes in stream characteristics as ecological succession occurs. Regional Water Board staff recommends conducting stream reach assessments and then utilizing them to determine the ultimate ecological / watershed goals of the proposed mitigation plan".*

For general management of the off-site mitigation parcels, a short-term maintenance plan and long-term management plan have been developed as part of the final MMP. The overall adaptive management strategy will be to evaluate and work within the constraints of the normal conditions (e.g., ongoing sedimentation due to upstream land use) and natural processes (e.g., meandering creek beds) of the mitigation sites. These normal conditions and natural processes create a dynamic environment. The mitigation parcels will be allowed to conform to the dynamic environment, responding to the normal conditions and natural processes. Adaptive management actions will avoid creating situations that require recurring intervention to redirect or compete with the Valley's normal conditions and natural processes (e.g., removal of large woody debris and gravel from streams).

Natural recruitment and succession, and changes in type of habitat will be accepted as part of this approach. For example, if a wet meadow is flooded by beaver activity downstream and changes into an emergent marsh, adaptive management to interfere with this change would not be considered prudent because such a change constitutes a landscape evolution or natural succession. In this scenario, specific actions by the land manager to reduce the flooding would not be warranted.

Similarly, if stream channel erosion is the result of lateral channel migration, adaptive management steps would not include trying to confine the channel to its original path, but may include further assessment to determine appropriate restoration options for bank stabilization, such as biotechnical bank stabilization. Another example of where adaptive management will respect the normal conditions and natural processes is where a stream begins to meander into a Baker's meadowfoam population and washes out some of the plants. The creek would not be redirected back to its previous bed and held there by artificial devices. Instead, the area of Baker's meadowfoam would be lost due to the meandering creek bed as part of the natural processes of the site.

If adaptive management becomes necessary to address unforeseen situations with this dynamic environment, adaptive management actions will avoid creating conditions that require recurring intervention to redirect or compete with Little Lake Valley's normal conditions and natural processes.

Mitigation Plan Comment 3 (MPC-3) - ***Fish Migration/Passage and Habitat Creation and Enhancement***

How do the stream passage projects increase the natural functions of the stream channels within the bypass footprint, and mitigate and provide a net benefit for listed salmonids? How do improvements to Haehl, Ryan, and Upp Creeks mitigate for impacts to Baechtel, Broaddus, and Mill Creeks?

Response to Mitigation Plan Comment 3 (RMPC-3)

Fish Migration/Passage

Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) will consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements will comply with guidelines established by the National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (CDFG). The removal of the Upp Creek culvert along existing 101 and the stabilization of stream channel at the Haehl Creek interchange would likely reduce sediment input into the creeks as well as improve the beneficial use of the creeks for migration by anadromous salmonids. Regional Water Board staff recognizes that the Upp Creek and Haehl Creek interchanges were primarily designed with the bypass

structure in mind; however, they will benefit salmonids because they were designed in accordance with NMFS and CDFG requirements to help fish passage and control sediment discharge. In addition, Caltrans worked closely with NMFS, CDFG, and Regional Water Board staff at these locations to ensure that all concerns raised by the agencies were addressed. As for the Ryan Creek passage barrier, Regional Water Board staff is satisfied that this is an appropriate mitigation for impacts to listed salmonids, especially when considered in conjunction with the cumulative benefits of additional barrier removal (located further upstream) which is being planned by Mendocino County.

Caltrans has designed the project to minimize the number of permanent structures that will be constructed in creek channels. Bent 24, which is associated with the viaduct structure at the confluence of Baechtel and Broaddus Creeks, will be the only permanent bridge piling that will be constructed in the creek channel during Phase 1. All other creek crossings will consist of clear-span bridges, precluding the need for the construction and placement of permanent bridge piers within creek channels at these crossings. During construction of both project phases, a number of temporary piles to support trestles for the temporary access road and falsework construction also will be needed during project construction; however, these will be removed following construction of each phase of the project. The permanent and temporary piles that will be placed in the creek channels during construction of Phases 1 and 2 will not affect the migration pathway for upstream and downstream migrants.

In addition to enhancement and preservation of habitat on off-site mitigation parcels, Caltrans will implement stream restoration and fish passage improvements on Haehl and Upp Creeks where they cross the project footprint. Caltrans has also committed, as part of its mitigation plan, to providing the design for the North and South Fork locations of the Ryan Creek fish passage project, as well as construct the South Fork location to mitigate impacts on salmonids and jurisdictional waters of the United States. These fish passage improvements on Ryan and Upp Creeks will improve access to upstream spawning and rearing habitat for coho and Chinook salmon and steelhead relative to current conditions. Improvements to fish passage will help offset the temporary effects associated with project construction by potentially increasing the productivity of listed salmonids in these creeks through increased spawning success.

There is general agreement among CDFG's Northern Region staff that Ryan Creek is a high priority for fish passage improvement. Ryan Creek was also identified as the Number 1 priority for passage improvement in Mendocino County in an inventory of road crossings on the State Highway system in Caltrans District 1 (Lang 2005). Ryan Creek ranked as the Number 2 priority within all of District 1. Ryan Creek is the first Outlet Creek tributary located immediately downstream from Little Lake Valley. Providing access to spawning and rearing habitat that is currently obstructed on Ryan Creek will directly benefit coho salmon populations in the Middle-Upper Eel River Recovery Unit and the Outlet Creek HSA. Identifying and treating passage barriers is

consistent with the Recovery Strategy for California Coho Salmon and is identified as a Level D task (will directly contribute to recovery of coho salmon) for the Outlet Creek HSA.

Habitat Creation and Enhancement

Fish migration habitat will be further improved by the inclusion of approximately 1,700 linear feet of riparian plantings along the east bank of Baechtel Creek between where the viaduct would cross Baechtel Creek and where East Commercial Street currently crosses the creek, and along approximately 1,400 linear feet of the north bank of Mill Creek before Mill Creek passes under the Western Pacific railroad tracks. Approximately, six miles (measured along both sides of the stream banks) of riparian habitat will be created or enhanced along Category I, II, and III streams within the offsite mitigation parcels. Long stream reaches that would benefit from riparian plantings are present along both Davis and Outlet Creeks. Consultations with Craig Martz and Scott Harris of CDFG and Tom Daugherty of NMFS on April 18, 2008, indicated a preference for Category I riparian mitigation to occur on Outlet Creek, as it supports populations of all three listed fish species (salmonid and steelhead) potentially affected by the bypass project. Therefore, Caltrans has proposed approximately 10,000 linear feet of riparian vegetation to provide shade on Outlet Creek.

Additional mitigation includes restoration to areas along Outlet Creek and Berry Creek that are undergoing bank erosions or that have large headcuts. These areas were identified in an erosion assessment conducted in May 2010. The erosion assessment consists of an inventory of sediment contributing sites within the mitigation parcels and a prioritization of those restoration efforts. The recommended treatments for these sites include bio-engineered bank stabilization efforts to reduce sediment input, reconnect the streams with their adjacent floodplains, and further improve fish habitat.

Mitigation Plan Comment 4 (MPC-4) – *Mitigation Lands Purchase*

Caltrans must provide proof that all mitigation lands have been purchased without any restrictions that prohibit the land manager from complying with the United States Environmental Protection Agency (USEPA) and USACE joint 2008 Compensatory Mitigation for Losses of Aquatic Resources (Federal Mitigation Rule).

Response to Mitigation Plan Comment 4 (RMPC-4)

The federal rule for Compensatory Mitigation for Losses of Aquatic Resources (federal mitigation rule) does not apply to the Regional Water Board. However, the Water Quality Certification is conditional upon Caltrans obtaining the necessary rights to all of the properties necessary to conduct the creation and enhancement of wetlands set forth in the MMP. The water quality certification requires that at least 90 days prior to conducting any channel- ground- or vegetation-disturbing activities, Caltrans shall

acquire by fee title or conservation easement and permanently preserve all the mitigation lands identified in the Final MMP, dated June 8, 2010. Caltrans must maintain the properties for the benefit of the natural resources and prohibit any activities on the mitigation lands (e.g., dredging, filling, or removing any vegetation within or adjacent to streams and wetlands) that would interfere with the enhancement and preservation of those natural resources used as mitigation.

Mitigation Plan Comment 5 (MPC-5) - *Mitigation Credits and Preservation*

Caltrans has double counted the mitigation credits for preservation and enhancement and has not adequately made a case for preservation in accordance with the Federal Mitigation Rule.

Response to Mitigation Plan Comment 5 (RMPC-5)

Regional Water Board staff recognizes that Caltrans double counted credits (acreages) for preservation and enhancement. However, as noted in the Regional Water Board public notice dated April 29, 2010, the mitigation would result in the purchase and/or preservation of approximately 2,100 acres of land within Little Lake Valley. For example, in the MMP Caltrans stated a total of 2,230 acres of wetland mitigation area; however, this is the combination enhancement and preservation. The Regional Water Board will not credit the double counting of these acres and considers preservation in perpetuity a mandatory component of compensatory mitigation for this project. The numbers presented in the public notice and in the Water Quality Certification do not include the double counting error. The Regional Water Board has determined that the real and true amount of land approximately 1,011 acres of wetlands, 108 acres of riparian areas, and 17 acres of streams are adequate to perform compensatory mitigation measures for the project.

Also see response RMPC-5.

Mitigation Plan Comment 6 (MPC-6) - *Long Term Management Plan*

We agree with the Regional Board's comments in their May 13, 2010 letter that the Long Range Management Plan portion of the MMP needs to contain specific vegetation, wildlife, water, and geomorphic objectives. Without specific objectives and goals, along with the current, potential and capable conditions for the mitigation lands it is impossible to determine if the entire watershed scale enhancement, preservation, restoration, or rehabilitation mitigation efforts that the Federal Mitigation Rule requires, are achieving success. Instead of proving the necessary specific science-based objectives and goals, Caltrans provides a list of Land Manager responsibilities that includes only a vague list of conceptual tasks. Without an agreement with the land manager the MMP is only a plan with no assurance of implementation.

Response to Mitigation Plan Comment 6 (RMPC-6)

Regional Water Board staff agrees that commitment by land managers to conduct activities consistent with the goals of the MMP is a key factor in successful mitigation. Condition 6 of the Water Quality Certification states that, Caltrans will be held ultimately responsible for the mitigation in both short term and long term. However, the Water Quality Certification is conditioned (Conditions 15 and 16) upon the land manager complying with all conditions within the water quality certification and shall submit confirmation to the Regional Water Board that they approve the final MMP, associated plans, PAR, long term endowment, and acceptance of all conditions. In addition, the mitigation requirements of the Water Quality Certification do not expire and remain fully enforceable.

Caltrans has revised the Long Term Management Plan (Chapter 11) for the Final MMP to include site assessments with monitoring components for hydrology, geomorphology, habitat, vegetation, water quality, and adjacent development and/or conflicting land use. In addition, Caltrans provides an outline for dynamic changes in the environment that may warrant adaptive management. For example, Appendix J of the Final MMP provides an inventory off sites that are likely to produce excessive sediment and a prioritization of restoration actions for these sites. Additionally, the long term management plan discussed the long term monitoring of these sites to assess their stability and potential sediment delivery to the Outlet Creek HSA. However, Caltrans recognizes that not all erosion may be negative to the ecosystem and anticipates natural succession as part of the long term restoration process. For example, meandering streams may cause bank erosion and may threaten Baker's Meadowfoam populations, but are ultimately a result of the stream finding is appropriate equilibrium with sediment supply and water discharges.

Condition 10 of the Water Quality Certification requires Caltrans to conduct baseline assessments for the purpose of developing the appropriate success criteria, grazing management plan, and long term management plan for mitigation actions. Caltrans will be conducting additional site-specific baseline surveys (water quality, geomorphology, fish habitat, and vegetation) in conjunction with the recommendations of the U.S. EPA, U.S. ACE, CDFG, and Regional Water Board. The purpose of the surveys is to further understand the potential and capable conditions for the mitigation lands. This baseline information will be used to determine the most appropriate goals and objectives for the mitigation lands, and will be utilized to show both enhancement of the mitigation lands, and potentially problematic areas within the mitigation lands, to ensure a successful long term management approach. This information will be critical for the long term managers to understand the potential and proper functioning conditions of the mitigation lands.

Mitigation Plan Comment 7 (MPC-7) - *Work Plan and Contingency Plan*

We agree with the Regional Water Board that the mitigation work plan must contain a contingency plan with clear direction for the land manager should the mitigation actions begin to fail. The MMP must be detailed in its explanation of Short Term Mitigation.

Response to Mitigation Plan Comment 7 (RMPC-7)

While Regional Water Board staff believes that it would be a good idea to have a contingency plan for the mitigation work plan, it is not necessary because the water quality certification requires compliance with the performance standards and success criteria set out in the MMP and water quality certification. If the mitigation work fails to meet the criteria, Caltrans and the land manager will be responsible for redoing the work until the mitigation is successful.

What is more critical than a contingency plan is ensuring that the land manager has ample funds to deal with problems should they arise. Funds to cover reasonably foreseeable set-backs to mitigation (e.g. plant mortality during the short-term establishment period, especially after irrigation is removed) as well as unforeseeable problems that would require remedial action have been budgeted into the endowment costs. These contingency funds will allow the land manager to respond promptly to get the mitigation back on track toward success. Conditions 15 and 16 of the Water Quality Certification ensure that the selected long term managers shall approve the MMP, property analysis record (PAR), and long term endowment prior to Caltrans initiating any ground, channel, or vegetation disturbing activities.

Mitigation Plan Comment 8 (MPC-8) – *Long Term Financial Assurances*

How can we be assured that the funds to maintain fish passage and keep the floodplain from expanding because of deposition of material will be adequate? Agreements for land manager duties are not in the MMP. Unless exact details of the transfer of lands, the amount of money provided to develop an agreement and when it would be available, the amount of money in the endowment and when that money would be available there is no way to judge whether the agreement will guarantee that the mitigation land management agency will have the resources to accomplish the goals.

Response to Mitigation Plan Comment 8 (RMPC-8)

A PAR was used to calculate the endowment amount that will cover the costs of the long-term management. To calculate the endowment amount, the PAR takes into account all of the day-to-day maintenance activities, all monitoring and reporting, and includes contingency funds. To further ensure that the amount of the endowment provided will be adequate to carry out the long-term management outlined in the MMP, Caltrans projected a low return rate of 2% to avoid under estimating the sum of the

principal to be invested. Based on the PAR calculation, the endowment sum is $15,287,504. The endowment will be transferred to CDFG and invested prior to the beginning of any management activities that it is required to fund. Also, Conditions 15 and 16 of the Water Quality Certification require that the selected long term managers shall approve the MMP, PAR, and long term endowment prior to Caltrans initiating any ground, channel, or vegetation disturbing activities.

Also see comment response RMPC-7.

Mitigation Plan Comment 9 (MPC-9) – *Establish Baseline*

The plan must establish a baseline for which preservation and enhancement can be measured. This baseline needs to be in all areas that are impacted and must include measurements taken during every season of the year. There must also need explanation of what the desired condition is.

Response to Mitigation Plan Comment 9 (RMPC-9)

Regional Water Board staff agrees with the comment and have requested additional baseline studies in a letter to Caltrans dated May 13, 2010. Within the Final MMP, Caltrans did provide reference to local watershed studies such as the *Outlet Creek Basin Assessment* (CDFG, Coastal Watershed Planning and Assessment Program, 2008) as well as several other published documents from various sources. Baseline information presented in Chapter 5 of the draft MMP was determined to be too general to fully describe the proper functioning conditions of the proposed mitigation lands. Condition 10 of the Water Quality Certification requires Caltrans to implement a robust Monitoring and Reporting Program (MRP) that will includes baseline assessments for the purpose of developing the proper success criteria for mitigation actions. Caltrans is currently continuing to gather more detailed and site specific baseline information that can be used to measure the level of enhancement achieved at the mitigation sites. Site specific baseline studies will be conducted prior to mitigation implementation for invasive plants, plant communities (species richness, diversity, and native plants), erosion potential sites, water quality, riparian shade, and benthic-macroinvertebrates (BMI).

Baseline data, the following constituents will be monitored:

- Flow rate
- pH
- Temperature
- Total Dissolved Solids (TDS)
- Turbidity
- Specific Conductance (SC)

- Total Settleable Solids (TSS)
- Total and Dissolved Metals
- Oil and grease.

Monitoring will also include visual observations of the appearance of the stream flow including color, floating or suspended matter or debris, presence of aquatic life, etc.

During baseline assessment, construction, success criteria monitoring, and post-construction monitoring data for pH, temperature, TDS, turbidity, and SC will be collected continuously and during select precipitation events. An additional parameter may be added to the constituent list if dust palliatives are used on haul roads (i.e. Methlylene Blue Activated Substances).

The following physical channel characteristics will be assessed:

- Cross sectional water depth
- Wetted channel width
- Bankfull width
- Substrate characteristics
- Canopy cover
- Gradient
- Sinuosity
- LWD.

The following biological assessments will be conducted for benthic macroinvertebrate sampling (bioassessment):

- Taxa richness
- Taxa composition
- Percent tolerant/intolerant organisms
- Functional feeding group analysis
- Abundance.

Chemical and physical habitat data will be used to assist in interpreting BMI community responses to construction (point-source) and mitigation (non-point source) activities. These data will be used to establish an index of biological integrity (IBI) that can be compared to the baseline condition (pre-project) as well as to regional index sites to monitor the success of channel restoration and enhancement efforts.

Mitigation Plan Comment 10 (MPC-10) – *TMDL*

We are very concerned about TMDL limitations on Outlet Creek and would like to see continuous monitoring for turbidity and temperature. We want to be sure there is adequate fish passage and that the fish's food sources are not adversely affected.

Response to Mitigation Plan Comment 10 (RMPC-10)

The Eel River watershed is listed on the Clean Water Act section 303(d) list as impaired for sediment and temperature. In 2004, the U.S. EPA established sediment and temperature total maximum daily loads (TMDLs) for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury). Roads are a responsible source of sediment in the watershed (directly, from surface erosion, and, indirectly, by triggering landslides). In addition, activities that impact the riparian zone and reduce riparian vegetation are identified as sources contributing to increased stream temperatures. A focus on measures to reduce sediment discharges to surface waters from roads in the watershed, and measures to avoid, minimize, and mitigate impacts on riparian zones is essential for achieving TMDLs.

Pursuant to Regional Water Board Resolution R1-2004-0087, *Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Receiving Waters within the North Coast Region* (Sediment TMDL Implementation Policy), the Executive Officer is directed to "rely on the use of all available authorities, including existing regulatory standards, and permitting and enforcement tools to more effectively and efficaciously pursue compliance with sediment-related standards by all dischargers of sediment waste."

To ensure compliance with sediment, temperature and other related water quality objectives within the Basin Plan, and consistent with the U.S. EPA-established TMDLs, adequate wetland and riparian protection and adequate measures and actions to avoid, minimize, and mitigate the sediment and temperature impacts associated with the proposed project will be incorporated as enforceable conditions of the water quality certification. In addition, Caltrans will be required to conduct surface water monitoring, sampling, and analysis in accordance with the conditions of the water quality certification. Additionally, storm water runoff monitoring, sampling, and analysis will be conducted as required by the State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water Discharges from the State of California, Department of Transportation (Caltrans) Properties, Facilities and Activities. The surface water data collected will be utilized to assess the adequacy of BMPs during construction as well as site specific mitigation measures proposed to minimize impacts to the environment, including sediment and temperature impacts.

The MRP required by Condition 10 of the Water Quality Certification requires that Caltrans used the data gathered from the baseline assessment, construction monitoring, and post-construction monitoring efforts to develop a TMDL compliance plan for the bypass alignment and the off-site mitigation lands.

To fully develop a watershed approach the mitigation must include a nexus to address the temperature and sediments impairments. The nexus relates how the proposed

mitigation will implement additional measures to reduce stream temperatures and excessive sediment inputs into the watershed. For sediment, Caltrans has prepared an assessment of all the erosion sites located within the off-site mitigation lands, which includes the inventory, prescription, and prioritization of restoration actions that will reduce erosion and sediment delivery within the watershed. In addition, the bypass structure has been designed to reduce erosion and sediment delivery to the maximum extent practicable (MEP). For temperature impairment, the most practical way to reduce stream temperatures is to provide riparian vegetation in all areas feasible within the project limits, including bypass alignment and off-site mitigation lands (maximum site potential shade). In addition, baseline surveys will be conducted to find all areas that benefit from riparian plantings to achieve maximum site potential shade, and percent effective shade (shade on water). Additionally, the current land management practices of stream alteration and cattle grazing have potentially negative side effects on water. Therefore, the proposed grazing management plan, which is geared towards the enhancement and protection of natural resources, will be implemented to improve the overall health of the watershed.

Also, see responses RMPC-3, RSWMC-1, RMPC-12.

Mitigation Plan Comment 11 (MPC-11) – *Lack of Detail*

Commenter supports the decision to reject the mitigation plan and wants the mitigation plan to include additional details prior to approval.

Response to Mitigation Plan Comment 11 (RMPC-11)

A considerable amount of detail was added to the MMP, dated June 2010. This detail includes additional success criteria, more detailed description of mitigation actions, additional requirements for baseline studies, water quality and bioassessment monitoring, a grazing plan, long-term management plan, endowment amount, and identification of the property owner, land manager, endowment holder, and CE holder/compliance monitor.

In addition, the Condition 10 of the Water Quality Certification requires the baseline studies be conducted to provide the adequate information regarding the existing conditions of the mitigation parcels. The MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands. It is necessary to establish baseline conditions of surface waters to verify the establishment and enhancement of wetlands, riparian areas, and waters of the U.S. and State within the mitigation lands.

Baseline data will be used to demonstrate that the bypass, both during and after construction, is in compliance with the Basin Plan, California's antidegradation policy in

State Water Board Resolution No. 68-16, and the U.S. EPA established sediment and TMDLs for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury).

The primary objectives of the MRP include, but are not limited to:

A. Assessing the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
B. Assessing the overall health and evaluating trends in receiving water quality;
C. Assessing the potential biological, chemical, physical impacts, both during and after construction, of the bypass alignment;
D. Determining and revising site specific performance standards and success criteria for the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
E. Evaluating the effectiveness of BMPs, mitigation measures, and avoidance measures;
F. Evaluating activities that results in or may result in violations of MRP and the Water Quality Certification that may warrant additional BMPs or stop work orders;
G. Identifying sources of pollutants;
H. Assessing compliance with water quality objectives and TMDLs;
I. Measuring and assessing the reductions or prevention in pollutant loads; and
J. Verifying and successful repair within the bypass alignment and enhancement of the mitigation lands.

The data collection and evaluation will be broken down into four separate phases for the bypass alignment and mitigation lands (with multiple tasks per phase). Data collection and evaluation may necessitate revisions to the MRP as trends and comparisons are established. This MRP requires the collection and evaluation of data to supplement the Final MMP for the short term and long term mitigation plans.

Also, see responses RMPC-1 through RMPC-10, and RMPC-12.

Mitigation Plan Comment 12 (MPC-12) – *Net Loss of Wetlands*

Wetland enhancement does not adequately mitigate the permanent net lost of wetlands.

Response to Mitigation Plan Comment 12 (RMPC-12)

During the project planning process Caltrans assessed over 6,000 acres of land within Little Lake Valley to identify potential mitigation for the impacts of the bypass project and contacted the property owners requesting that they consider selling land to Caltrans for mitigation. Caltrans received responses from willing sellers of 3,157 acres, of which only minor wetland creation was feasible. At the request of the Regional Water Board, Caltrans expanded their search to approximately 11,000 acres outside Little Lake

Valley. Caltrans received responses from land owners willing to sell 2,700 acres, with little opportunity for wetland creation. Caltrans was able to identify approximately 24 acres of wetland creation. Conditions 7 of the Water Quality Certification requires Caltrans to obtain control of all of the area necessary for the creation of the 24 acres of wetlands, as proposed in its mitigation and monitoring proposal.

Prior to the beginning of ground disturbing project construction activities, known populations of wetlands plant species to be affected by construction either will be salvaged for transportation to adjacent on-site locations or salvaged for relocation to off-site mitigation parcels, where the harvested material will be used to topdress created wetlands. Off-site mitigation actions for wetlands creation will require site preparation, including grading uplands and modifying local hydrology; seeding graded areas; planting wetlands species; and monitoring for successful wetland establishment.

After the creation of approximately 24 acres of wetlands, the project would still result in a loss of approximately 29 acres of wetlands. State of California Executive Order W-59-93 directs all state agencies to *"ensure no overall net loss and long term net gain in the quantity, quality and permanence of wetlands acreage and values in California…"* Executive Order W-59-93 also directs all state agencies "to encourage partnerships to make restoration, landowner incentive programs, and cooperative planning efforts the primary focus of wetland conservation." After several years of meetings and planning with Caltrans, the U.S. EPA, U.S. FWS, U.S. ACE, NMFS, CDFG, Mendocino County Resource Conservation District (MCRCD), Willits Environmental Center (WEC) and Regional Water Board collectively agreed to an ecologically designed watershed approach to mitigate for the permanent impact to wetlands wetlands. The watershed approach would involve providing a significant improvement to the ecological functions and values of wetlands off-site of the project, but still within the Little Lake Valley. (The project is planned in the west-central portion of the Little Lake Valley.) The resource agencies collectively agreed that the mitigation should be focused within Little Lake Valley, because it hosts a variety of unique ecological features, including the presence of several rare, threatened, and endangered species (e.g. anadromous fish and Baker's Meadowfoam).

This watershed approach mitigation strategy would combine habitat creation, restoration, enhancement, and preservation, which is consistent with the U.S. EPA and U.S. ACE new Compensatory Mitigation Rule released on April 10, 2008. Caltrans proposed enhancing approximately 1,011 acres of existing wetlands in combination with the 24 acres created, the 53 acres preserved for a total of approximately 1,088acres of wetlands secured in perpetuity. Wetland enhancement actions include: filling in man-made drainage ditches to increase the residence time of surface waters within the wetland area; implementing a grazing management plan to reduce the impacts from cattle; and removing invasive species to promote the health and natural recruitment of native wetland species. The mitigation site preservation and site protection instruments would be a combination of fee title purchase, conservation easement, or other deed

restriction. Condition 8 of the Water Quality Certification requires Caltrans to acquire by fee title, easement, or deed restriction and permanently preserve all the mitigation lands identified in the MMP, dated June 2010.

The Federal Mitigation Rule (33 CFR Part 332.3) discusses the considerations for the watershed mitigation approach which include water quality and watershed impairments. The Eel River watershed is listed on the Clean Water Act section 303(d) list as impaired for sediment and temperature. In 2004, the U.S. EPA established sediment and temperature TMDLs for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury). Therefore, to fully develop a watershed approach the mitigation must include a nexus to address the temperature and sediments impairments.

The nexus relates how the proposed mitigation will implement additional measures to reduce stream temperatures and excessive sediment inputs into the watershed. For sediment, Caltrans has prepared an assessment of all the erosion sites located within the off-site mitigation lands, which includes the inventory, prescription, and prioritization of restoration actions that will reduce erosion and sediment delivery within the watershed. In addition, the bypass structure has been designed reduce erosion and sediment delivery to the MEP. For temperature impairment, the most practical way to reduce stream temperatures is to provide riparian vegetation in all areas feasible within the project limits, including bypass alignment and off-site mitigation lands (maximum site potential shade). In addition, baseline surveys will be conducted to find all areas that benefit from riparian plantings to achieve maximum site potential shade, and percent effective shade (shade on water). Additionally, the current land management practices of stream alteration and cattle grazing have potentially negative side effects on water. Therefore, the proposed grazing management plan, which is geared towards the enhancement and protection of natural resources, will be implemented to improve the overall health of the watershed.

Legal Compliance Comment 1 (LCC-1)

There is no justification for Caltrans to avoid their legal responsibilities to meet the requirements of the Clean Water Act; Caltrans has requested permits from the resources agencies with any legal compliance based only on their promise to comply at a later date. We trust that the Regional Water Board will insist that those who propose to destroy public natural resources are required to comply with the law.

Response to Legal Compliance Comment 1 (RLCC-1) - *Clean Water Act Compliance*

It is beyond our regulatory purview to comment generally on Caltrans' legal compliance. However, with the issuance of the Water Quality Certification, we do find that the

project, including all required mitigation, will comply with state law as regards impacts to water quality.

The Water Quality Certification is conditional upon Caltrans meeting all of the requirements set forth therein, stating that no channel, ground or vegetative disturbing activities are allowed until Caltrans has: obtained all the required mitigation lands; provided specific work plan details; provided additional planting and creek restoration plans; geologic reports and reclamation plans for Oil Well Hill; the MMP approved by the land manager and recalculated the property assessment record and long term endowment; and perform an impact assessment of the contractors proposed haul road on the 100-floodplain to verify the road will have no additional impacts. In addition, the Water Quality Certification is conditional upon Caltrans revising the performance standards and success criteria, grazing plan, long term management plan, and developing a TMDL compliance plan. The Regional Water Board staff finds that the recent changes incorporated in the MMP, dated June 2010, the conditions within the Water Quality Certification, and MRP are sufficient to protect and enhance wetlands, streams, and the water quality within the bypass footprint as well as the mitigation lands.

Regulatory Evaluation Comment 1 (REC-1) - *Careful Not Rushed Regulatory Decision*

Public regulatory agencies must avoid expedited review and make careful decisions. They must not favor economic growth at the expense of poor planning, which could in turn lead to long term environmental and economic damage. The issues related to the mitigation plan must be resolved prior to issuing the permit.

Response to Regulatory Evaluation Comment 1 (REC-1)

Comment noted. See also response to RLCC-1, above.

Surface Water Monitoring Comment 1 (SWMC-1) – *Surface Water Monitoring*

There is no monitoring plan for the aquatic system as part of the MMP. Snorkel counts should be completed annually in streams and macro-invertebrate surveys should be established.

Response to Surface Water Monitoring Comment 1 (RSWMC-1)

The MMP, dated June 2010, included a Surface Water Monitoring and Reporting Program (SWMRP); however, Regional Water Board staff found the program to be incomplete in its development. Therefore, the Regional Water Board will contain a MRP that includes Bioassessement (benthic macroinvertebrate sampling), chemical, physical and biological monitoring components. Regional Water Board staff worked closely with

the U.S. EPA, U.S. ACE, and Caltrans to develop a comprehensive and complete MRP. The data collection and evaluation will be broken down into four separate phases for the bypass alignment and mitigation lands (with multiple tasks per phase).

Phase I - Baseline Evaluation and Reporting (Bypass Alignment)

Baseline Tasks

a) Collect baseline water quality data for stream reaches along the bypass alignment
b) Collect baseline bioassessment data for bypass alignment
c) Collect baseline wetland data for bypass alignment
d) Prepare and submit reports that evaluate data sets to assess the baseline biological, physical, and chemical properties
e) Incorporate data evaluation, revised success criteria, and revised management plans into MMP

Phase I - Baseline Evaluation and Reporting (Mitigation Lands)

Baseline Tasks

f) Collect baseline water quality data for mitigation lands
g) Collect baseline bioassessment data for mitigation lands
h) Collect baseline wetland data for off-site mitigation lands
i) Prepare and submit reports that evaluate data sets to assess the biological, physical, and chemical properties
j) Incorporate data evaluation, revised success criteria, and revised management plans into MMP

Phase II - Construction Compliance Monitoring and Reporting (Bypass Alignment)

Construction Compliance Tasks

a) Conduct water quality monitoring within the stream reaches along the bypass alignment
b) Submit monthly reports on construction compliance
c) Annual Report summary on construction compliance

Phase II - Construction Compliance Monitoring and Reporting (Mitigation Lands)

Construction Compliance Tasks

d) Conduct water quality monitoring within the mitigation lands
e) Annual qualitative status reports on progress of plantings, and mitigation construction compliance, and mitigation trends and progress

Phase III - Repair Success (Bypass Alignment) – Evaluating and Measuring Success

Repair Monitoring Tasks

a) Conduct water quality monitoring within the stream reaches along the bypass alignment to verify repair success

b) Collect bioassessment data within the stream reaches along the bypass alignment to verify repair success
c) Collect wetland data for bypass to verify repair success
d) Annual reporting on compliance and mitigation progress
e) Final Mitigation Report verifying success.

Phase III - Mitigation Land Enhancement (Mitigation Lands) – Evaluating and Measuring Success

Enhancement Monitoring Tasks

f) Conduct water quality monitoring within the mitigation lands to verify repair and enhancement success
g) Collect bioassessment data for the mitigation lands to verify repair and enhancement success
h) Collect wetland data for the mitigation lands to verify repair and enhancement success
i) Annual reporting on compliance and mitigation progress
j) Final Mitigation Report verifying success.

Phase IV - Long Term Total Maximum Daily Load (TMDL) compliance for the Bypass.

TMDL and Long Term Management Tasks

a) Once success has been achieved for the on-site repair areas, Caltrans shall develop TMDL Compliance Plan and Long Term Management Plan.

Phase IV - Long Term Total Maximum Daily Load (TMDL) compliance for the Mitigation Lands.

TMDL and Long Term Management Tasks

Baseline data will be collected for all mitigation sites prior to the start of soil disturbing activities. This data collection effort will include at a minimum the following information:

Water quality parameters (continuous monitoring):

- Flow (cfs)
- pH
- Temperature
- Dissolved oxygen
- Total dissolved solids
- Turbidity
- Specific conductance

Water quality parameters (precipitation event monitoring):

- Total settleable solids
- Total nitrogen

- Nitrate and nitrite
- Biochemical Oxygen Demand
- Total Kjeldahl Nitrogen (TKN)
- Total phosphorus
- Dissolved phosphorous
- Total and dissolved metals
- Hardness
- Fecal coliform
- Enterococcus
- Total organic carbon (except on-site mitigation sites).

Physical channel characteristics:

- Cross sectional water depth
- Wetted channel width
- Bankfull width
- Substrate characteristics
- Canopy cover
- Gradient
- Sinuosity
- LWD.

Benthic macroinvertebrate sampling (bioassessment):

- Taxa richness
- Taxa composition
- Percent tolerant/intolerant organisms
- Functional feeding group analysis
- Abundance.

Chemical and physical habitat data will be used to assist in interpreting benthic macroinvetebrate (BMI) community responses to construction (point-source) and mitigation (non-point source) activities. These data will be used to establish an index of biological integrity (IBI) that can be compared to the baseline condition (pre-project) as well as to regional index sites to monitor the success of channel restoration and enhancement efforts.

Although annual snorkel count surveys would provide useful information with respect to species occurrence and relative abundance in the project area over time, these surveys would not allow Caltrans or the resource agencies to determine whether any observed differences in annual monitoring results were the result of the project or environmental conditions unaffected by the project. For example, while observed differences in the abundance of young-of-the-year steelhead during annual snorkel counts could be the result of the project, they also may be a result of the timing, duration, or magnitude of

flows that occurred during the previous spawning season or a result of differences in the number of adult steelhead returning from the ocean to spawn the previous winter – the latter two being conditions that are clearly unrelated to the project. While monitors would clearly see differences in species abundances from year to year, monitors would not be able to determine what caused those differences.

As stated above, the subsequent phases of the MRP will require Caltrans to adequately verify the success of the mitigation with data collected during the baseline assessments. Once the resource agencies have determined that the mitigation actions are successful, Caltrans will be required to use the data gathered to develop and fine tune the appropriate long term management plans for the bypass alignment and off-site mitigation lands.

Surface Water Monitoring Comment 2 (SWMC-2) – *Construction Monitoring*

Given Caltrans past history of violations for discharges and lack of monitoring they should not be allowed to execute the monitoring themselves and should hire qualified third party.

Response to Surface Water Monitoring Comment 2 (RSWMC-2)

Condition 49 of the Water Quality Certification will require that Caltrans retain a qualified water quality monitor. The water quality monitor(s) shall be knowledgeable of and have experience with the Basin Plan, and surface water monitoring procedures, protocols, quality assurance, and quality control protocols. The water quality monitor(s) shall be responsible for monitoring project activities and/or channel- ground- or vegetation disturbing activities that result in or have the potential to result in a discharge to waters of the State. The water quality monitor(s) shall be approved by Regional Water Board staff shall make requests and provide recommendations to the Caltrans Resident Engineer, Construction Storm Water Coordinator, and Environmental Construction Liaison.

The water quality monitor shall be on-site daily while Project activities are occurring including all pile installation, dewatering, channel- vegetation- or ground-disturbing activities that may affect water quality to: (1) document compliance with water quality standards and this certification; (2) record the results of all required surface water monitoring; (3) evaluate the effectiveness of BMPs, mitigation measures, and avoidance measures; (4) alert key construction staff of precipitation forecasts; and (5) make stop work recommendations for activities that results in or may result in violations of this certification. The water quality monitor(s) shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections; recommendations; monitoring and sampling results; and discharges.

During construction of the Bypass water quality monitoring will be performed at 17 locations, at least, to assess the impacts and measure compliance with the Water Quality Certification.

Water quality parameters (continuous monitoring):

- Flow (cfs)
- pH
- Temperature
- Dissolved oxygen
- Total dissolved solids
- Turbidity
- Specific conductance

Water quality parameters (precipitation event monitoring):

- Total settleable solids
- Total and dissolved metals
- Hardness
- Oil and Grease

Storm Water Comment 1 (SWC-1) - *Toxics from Storm Water & Viaduct*

The bypass project will result in additional toxic substances entering the stream channels, especially from viaduct. How will the project mitigate for these toxic substances?

Response to Storm Water Comment 1 (RCWC-1)

The project will result in an increase of approximately 38 new acres of impervious surface in the Little Lake Valley. The total area of impervious surface that will exist within the project limits will be 49 acres (including new and existing impervious surface) when the project is completed. Caltrans will provide permanent post-construction storm water treatment for approximately 43 acres of impervious surface, which is more than the amount of impervious area being added. In accordance with the National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water Discharges from the State of California, Department of Transportation Properties, Facilities, and Activities [Caltrans Storm Water Permit (Order No. 99 – 06 – DWQ)], the project has been designed to reduce discharges of storm water to the Maximum Extent Practicable (MEP). Storm water runoff and modifications to the local hydrograph will be controlled primarily through the use of low impact development (LID) best management practices (BMPs) such as bio-strips, bio-swales, and shallow vegetated detention basins that rely on infiltration and dispersion. In addition, where feasible, Caltrans will install and maintain traction sand traps within drain inlets along the roadway to reduce sediment delivery to Outlet Creek HSA.

For safety reasons, storm water drainage from the viaduct structure will be routed to deck drains and/or scupper drains. There is no treatment prior to these drainage appurtenances draining directly below. This represents a relatively small volume of storm water. Although they do not discharge directly to receiving waters, they will be discharging into the wetlands. Impacts to these wetlands are being addressed by the mitigation strategy set forth in the MMP for the creation, enhancement and preservation of wetlands.

During construction of the viaduct, temporary erosion control measures will be taken to prevent storm water discharges into the wetlands and surface waters, including the installation of Temporary Hydraulic Mulch (Bonded Fiber Matrix). Also, temporary BMPs will be used during the Construction phase. The BMPs are to be implemented in order to minimize the potential for sediments and pollutants from entering any water bodies. Caltrans will be required to implement a MRP as part of the project implementation. The MRP will establish baseline water quality conditions prior to the beginning of construction. The MRP will continue during construction and extend to one year after construction. Data will be analyzed to determine any potential impacts to water quality and proposed additional BMPs, if necessary, to improve water quality.

Although the project will create approximately 38 new acres of additional impervious surface, it will result in the treatment of storm water from approximately 43 acres. Approximately five acres will remain untreated. Because storm water from approximately eleven acres of impervious surface previously went untreated, and now this amount is lessened to five acres, this project arguably results in a net benefit to water quality because of the improved storm water treatment that it provides.

Project Impact Comments 1 (PIC-1) - *Haul Roads and Staging Areas, Water Sources / Disposal, "Wicking" and Compacting, and Concrete Batch Plant*

Water quality impacts have not been described or mitigated. These include those related to: Haul Roads and Staging Areas; Water Quality, Quantity, Source and Disposal, "Wicking" and compaction; Concrete Batch Plant; Oil Well Hill; and Upp Creek and Haehl Creek Culvert Repairs.

Response to Project Impact Comments 1 (RPIC-1)

Haul Roads and Staging Areas

The proposed haul roads and staging area locations have been identified in the Final EIS/EIR and in the application for water quality certification. For several years resource agency staffs (including Regional Water Board staff) have discussed the haul road scenarios with Caltrans. The impacts to waters of the State associated with the haul roads and staging areas will be mitigated on-site by restoring the areas subsequent to

the completion of the bypass. The restoration actions include revegetation and monitoring for successful plant establishment and surface hydrology.

During construction, the haul roads and staging areas will be stabilized to minimize temporary impacts. The contract between Caltrans and its contractor will contain provisions that specifically require that BMPs be implemented to address water quality impacts by requiring Caltrans to include all conditions of this order in the Plans and Specifications prepared for the Contractor. In addition, Caltrans shall require compliance with all conditions included in this Order in the bid contract for this project.

In addition, the Water Quality Certification requires Caltrans to:

- Submit a technical floodplain analysis that demonstrates the proposed haul road will not impact the 100-floodplain;
- Implement BMPs to the MEP with Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or eliminate pollutants in storm water runoff in accordance with the Caltrans Storm Water Permit (Order No. 99 – 06 – DWQ), and the SWRCB NPDES General Permit and Waste Discharge Requirements for Discharges of Storm Water Runoff Associate with Construction and Land Disturbance Activities (Construction General Permit or CGP, Order No. 2009-0009 DWQ); and
- Comply with all applicable conditions within the water quality certification that requires surface water motoring and sampling and strict compliance with the water quality standards within the Basin Plan.

Additionally, Caltrans will implement a Surface Water Monitoring and Reporting Program that will collect water quality data prior to construction, during construction, and after construction. Collected water quality data will be analyzed to assess and improve BMP performance and re-vegetation efforts after construction.

Water Quantity

Caltrans will not be allowed to draft surface waters for this project. Water would have to come from other sources, including municipalities, groundwater or other private sources. Issues of water supply are outside of the Regional Water Board's jurisdiction.

Construction Dewatering and Water Disposal

Construction dewatering may be required at several locations within the project limits, including construction of Bent 24 at the confluence of Baechtel and Broaddus Creek. Currently, construction dewatering with discharges directly to receiving waters is not permitted. That would change if the Low Threat Discharge basin plan amendment approved by the Regional Water Board last year is approved by the State Board and the Office of Administrative Law. That amendment and the permit adopted to implement

that permit, Order No. R1-2009-0045, General NPDES Permit No CA0024901, Waste Discharge Requirements for Low Threat Discharges to Surface Waters in the North Coast Region, would allow discharges of water from the dewatering of construction sites where sediment and naturally occurring parameters (e.g. naturally occurring metals or salts, temperature, pH, etc.) in area groundwater are the only pollutants of concern and do not exceed water quality objectives in the Basin Plan or California Toxics Rule (CTR). A groundwater characterization study is required as part of Permit coverage. Note the Permit states: "The discharge duration, flow rate, and volume must be disclosed and evaluated in relation to the receiving flow rate and characteristics in order for the Regional Water Board to determine if the discharge will have a low threat to water quality"

"Wicking" and Compacting

There will be wick drains placed under the abutments and roadway fills north of the viaduct to accelerate settlement. The wick drains will be placed to a depth of eighty feet. The areas where the wick drains are being placed and areas south of the viaduct where there will be no wick drains will have additional weight on the subsurface soils. That additional weight will not create a barrier to water movement. The subsurface water table will maintain equilibrium and remain stable on both sides of the embankment in all areas of the project.

On-Site Concrete Batch Plant

No discharges would be allowed from on-site concrete batch plants. Any batch plant would be required to comply with either the Caltrans Storm Water Permit or the State Water Board Construction General Permit. Either would require best management practices to ensure that storm water discharges from the site were not contaminated by pollutants from the batch plant. A concrete batch plant may also require compliance with additional regulatory requirements, such as a permit from the local Air Quality Management District.

Project Impact Comments 2 (PIC-2) - *Oil Well Hill*

Water quality impacts have not been described or mitigated related to the borrow site at Oil Well Hill.

Response to Project Impact Comments 2 (RPIC-2)

The location of the potential borrow site is within the impact footprint of the project, and thus incorporated in the impact and mitigation discussions in Sections 1.10.4, 2.3.5.,2.4.2., 3.7., 3.15., and 3.17. of the FEIS/EIR and permit applications. Oil Well Hill is within the Outlet Creek HSA and Caltrans has limited the potential material extraction areas to avoid dredging or filling waters of the State. A Geotechnical Design Report for

Oil Well Hill was done by a Licensed Professional Geologist dated, December 23, 2009, and a Seismic Investigation at Oil Well Hill by a Professional Certified Engineering Geologist was performed as well, dated April 20, 2007.

Caltrans has determined that additional permanent treatment BMPs could be implemented at this location during and after borrow source activities are complete. If Oil Well Hill is used as a borrow site the Contractor will be required to install temporary and permanent treatment BMPs to treat storm water runoff from the existing roadway adjacent to the borrow site. The contractor prepared SWPPP must designate construction BMPs to be implemented at the Oil Well Hill proposed borrow site. The Regional Water Board must approve the SWPPP prior to the beginning of project construction. In addition, storm water monitoring will be required by the Construction General Permit for both visible and non-visible pollutants.

Although Caltrans obtained an exemption from the Surface Mining and Reclamation Act, the Water Quality Certification will have conditions requiring Caltrans to submit a Reclamation Plan and conduct storm water and surface water monitoring to ensure the protection of Waters of the State and compliance with the Basin Plan.

Project Impact Comments 3 (PIC-3) – *Floodplain Analysis, Cumulative Impacts*

Caltrans must recalculate the cumulative impacts to the Federal Emergency Management Agency (FEMA) 100-year floodplain to include the final designs of the bypass footprint, haul roads, Willits Wastewater Treatment Plant (WWTP) and recent local development.

Response to Project Impact Comments 3 (RPIC-3)

The proposed project encroaches upon the 100-year floodplain. The design includes two elevated structures, which make up the floodway viaduct. The purpose of this design feature is to span the floodway. The Willits Bypass Floodplain Evaluation Report, dated September 2006, indicates that project will not increase the base flood elevation of the floodway, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q).

Section 3.19.7 of the FEIS/FEIR considered cumulative impacts from the entire bypass project, planned improvements to the WWTP, and recent local developments. The FEIS/FEIR explained that WWTP improvements would include constructing ponds within the Little Lake Valley floodplain that would require mitigation to avoid impacts to the floodplain. The FEIS/FEIR further stated that although construction of the bypass within the floodplain would have minimal impacts related to additional impervious surface area or to beneficial floodplain values because of the relatively small areas involved, "*[t]he City of Willits and Caltrans are coordinating and sharing information to ensure that our hydraulic analyses use the same base conditions and that the projects*

do not cumulatively increase the floodplain elevations in the Little Lake Valley. If the WWWTP project precedes construction of the Willits Bypass, the baseline conditions for the bypass will be modified and the effects reassessed". This language essentially reflects the existing legal requirement, pursuant to the California Environmental Quality Act (CEQA), that supplemental or subsequent analysis may be required should changes to the proposed project or the surrounding circumstances, i.e., the baseline condition(s) of the floodplain substantially changes. (Pub. Resources Code, § 21166; Cal. Code Regs., tit. 14, § 15162).

Once a CEQA document has been fully approved by a lead agency, as has occurred here with Caltrans acting as lead agency, a responsible agency such as the Regional Board is bound by the document even where the responsible agency has misgivings about the adequacy of the document. (Discussion following Cal. Code Regs., tit. 14, § 15052.) A responsible agency may only step into the lead agency role and/or prepare a supplemental environmental document in the following limited circumstances: (1) subsequent changes to the project require substantial revisions to the environmental document due to new or increased environmental impacts; (2) there is new information that renders the environmental document inadequate; (3) changes to the surrounding circumstances require substantial revisions to the environmental document due to new or increased environmental impacts. (Cal. Code Regs, tit. 14, §§ 15052, 15162.) None of these circumstances currently exist with respect to this project and the associated FEIR/FEIS.

First, since the FEIR/FEIS was approved by the lead agency, the Regional Board has been presented with no information that changes have occurred to the project which requires substantial revisions to the environmental document. Second, the Regional Board has been presented with no new information that requires substantial revisions to the FEIR/FEIS. Third, although section 3.19.7 of the FEIR/FEIS contemplates the need for additional analyses should the environmental baseline of the floodplain change in the future, the floodplain has yet to be modified as part of the proposed WWTP and the baseline conditions of the floodplain remain the exactly same as they were when the FEIR/FEIS was adopted. A memorandum produced by Caltrans, dated August 2, 2010, confirms that the 2006 analysis is still adequate since baseline conditions have not changed. Accordingly, without an actual change to the baseline conditions, it would be premature to require additional analysis at this time and would violate CEQA's clear guidance on the preparation of a supplemental or subsequent environmental document by a responsible agency.

In addition, the Water Quality Certification for the WWTP includes compensatory mitigation that includes wetland creation through floodplain modifications. It has been concluded that the mitigation included as part of the WWTP will actually reduce the floodplain, which should further reduce impacts on floodplain from viaduct. Additionally, the August 2, 2010 memo from Caltrans confirms that the Little Lake Valley Floodplain Hydrology and Hydraulic Assessment for the City of Willits Wastewater Treatment Plant,

dated August, 2008, will reduce the base floodplain elevation and not results in a cumulative impact to the floodplain.

Project Impact Comments 4 (PIC-4) – *Wastewater Disposal*

Caltrans proposed to use drive through water washes on-site for invasive species control. How will wastewater from invasive species control be handled?

Response to Project Impact Comments 4 (RPIC-4)

The water quality certification will require that wastewater from invasive species control and equipment washing must be disposed of at an appropriately permitted facility or comply with the proper NPDES requirements for discharges. Wastewater from vehicle cleaning will not be allowed for on-site use for any purposes (e.g. dust control) unless Caltrans can demonstrate to the satisfaction of the Regional Water Board that the wastewater has been adequately treated for potential pollutants and invasive species.

Project Impact Comments 5 (PIC-5) – *Cumulative Impacts to the WWTP and Outlet Creek*

Will the bypass footprint and mitigation have cumulative impacts on the WWTP and will the viaduct interfere with the biological process of the City of Willits created wetlands? Will dewatering the confluence of Baechtel and Broaddus Creeks interfere with the City's ability to meet their effluent stream flow ratio? What are the cumulative impacts to Outlet Creek as the first rains wash create runoff from the viaduct and the WWTP is preparing to discharge?

Response to Project Impact Comments 5 (RPIC-5)

The proposed project encroaches upon the 100-year floodplain. The design includes two elevated structures, which make up the floodway viaduct. The purpose of this design feature is to span the floodway. A floodplain evaluation report concludes that project will not increase the base flood elevation of the floodway, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q). CEQA requires that previously approved land use documents, including, but not limited to, general plans, specific plans, and local coastal plans, may be used in cumulative impact analysis.

Last year, the City of Willits also received permits from the U.S. ACE and the Regional Water Board for dredge and fill activities associated with construction of a wastewater treatment wetland at the WWTP which is within the floodplain. To mitigate potential impacts to the floodplain, the City of Willits created additional floodplain area by creating approximately 24 acres of seasonal wetlands. These seasonal wetlands will be created by removing and maintaining riparian berms, planting native wetland plant species and

allowing floodwaters to that were once confined to the channel by the riparian berms to overtop inundate the newly created seasonal wetland area. Therefore, this project will not have any impact on the floodplain. Accordingly, construction of the WWTP will not cumulatively contribute to any additional impacts associated with the project. See RPIC-3, above.

Furthermore, because this is a regulated floodplain, development in this area is restricted, and it is not likely that there would be any further development within this area that would cumulatively contribute to a significant effect on the floodplain. Based on the size of the cities wetland creation sites, the height of the viaduct and the seasonal aspect of the sun, it is not likely that the viaduct will affect the wetland creation sites enough to prevent the City of Willits from meeting compliance with their proposal. In addition, only a portion of the viaduct that is over the newly created wetlands will discharge directly to the wetlands below. The City's wetland creation proposal includes an adaptive management element, and should any problems arise with the proposed creation site they will be managed accordingly. Additionally, the Regional Water Board and U.S.ACE are the regulatory agencies that will verify compliance with the proposed mitigation and evaluate the mitigation reports to verify whether success is be achieved or is being hindered by the bypass or other constraints.

The Water Quality Certification for the bypass will require that the construction of the haul road must meet a set of guidelines that will involve addressing seasonal conditions and meeting all permit requirements. The Contractor will be required to submit a floodplain analysis that models the haul road in the existing floodplain demonstrating the haul road will not affect the 100-year floodplain.

Caltrans will only be allowed to work at the confluence of Baechtel and Broaddus Creeks between June 15th and October 15th. The Water Quality Certification will condition that Caltrans provide the City of Willits with their schedule for work in this area to avoid conflicts and potential cumulative impacts to the area during construction. In addition, the WWTP is prohibited by the basin plan to discharge to Outlet Creek from May 15th to September 30th, and typically does not discharge until later in the fall (depending on flows). Therefore, the construction of the viaduct should not interfere with the ability of the WWTP to meet the requirements under their individual NPDES permit.

Currently, the WWTP can discharge 3.0 million gallons per day (a per month average). The upgraded WWTP will be authorized to discharge up to 4.0 million gallons per day (a per month average) or 10% of the flow within Outlet Creek and a weekly average of 500 lbs/day of Total Suspended Solids. Storm water discharges associated with the viaduct represent a fraction of both the existing and future point source discharges to Outlet Creek. The estimated water quality volume discharged by the viaduct structure for a design storm of 2 years is 121,487 gallons. This represents 0.015% of discharges to Outlet Creek during the 2 year design storm. The estimated water quality volume

discharged by the viaduct structure for a design storm of 2 years is 121,487 gallons. This represents 0.015% of discharges to Outlet Creek during the 2 year design storm.

Also see response RSWC-1.

Project Impact Comments 6 (PIC-6) – *Excessive Fill*

Fill will be placed for the second phase of the bypass. Reasons provided for the need to place this fill are inadequate.

Response to Project Impact Comments 6 (RPIC-6)

The Willits Bypass project is a four-lane grade separated freeway project to improve interregional traffic operation, improve safety, and provide a level of service rating of C or better. The project is being phased due to financial constraints. The Final EIS/EIR and Project Report discuss the possibility of phasing the project due to funding. Section 2.2 of the FEIS/R states, “Upon environmental approval and appropriation of funding, Caltrans could design and construct all or part of the proposed project depending on funding availability. In an effort to balance potential funding limitations and the need for the project, the Willits bypass could be constructed in phases, whereby a functional interim facility would be constructed initially, and completion of the full facility would occur at a later date when additional funding is available.”

Phase I consists of a four-lane interchange at the south end of the project conforming to an interim two-lane freeway before crossing East Hill Road. The interim two-lane freeway will utilize the southbound lanes of the ultimate four-lane freeway. The northern terminus of the project contains a two-lane grade separated interchange configured to allow the full four-lane ultimate interchange to use the existing roadway and structures.

Caltrans has evaluated the construction scenarios for completing Phase I of the project with the reduced amount of fill necessary for Phase I, as compared to the current proposal which includes the amount of fill necessary to construct Phase II. The evaluation indicated that additional project impacts to wetlands, streams, and riparian areas would result within and beyond the current bypasses alignment and possibly to the potential borrow site of Oil Well Hill. With the four-lane fill in place, design criteria for the Phase I structures will simplify Phase II design and minimize impacts in Phase II construction.

Project Impact Comments 7 (PIC-7) – *Temporary Impacts to Wetlands*

Wherever fill material is ultimately transported to the area below the viaduct which is sensitive wetland will be dewatered, significantly disturbed and severely compacted. Because there is no plan for returning the texture of the soil to pre-construction state, the construction areas identified under the viaduct will be permanently compacted. This

is a cumulative impact to the floodway and there will be impacts to water quality from the time restriction made to the floodplain.

Response to Project Impact Comments 7 (RPIC-7)

Caltrans is required by the U.S. ACE, Regional Water Board, and CDFG to successfully restore all temporary impacts to wetlands in accordance with the requirements presented in the final MMP. The restoration efforts will include re vegetation of native wetland species as well as monitoring of the surface hydrology and inundation period. In addition, the Water Quality Certification will require the success criteria for: wetland creation, restoration and enhancement success to include:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition]
- Nutrient removal/transformation
- Sediment/toxicant retention
- Absolute percent coverage of wetland plants
- Absolute percent cover of native plant species
- Species richness
- Absolute percent coverage of invasive species
- California Rapid Assessment Method (CRAM) score.

Therefore, the interaction of surface waters and ground water and soil saturation will be assessed. Restored or created wetlands will be monitored annually for at least 5 years. If success criteria are not met then additional actions or mitigation measures will be required by the resource agencies.

For cumulative impacts to the floodplain see responses RPIC-3 and RPIC-5.

Project Impact Comments 8 (PIC-8) – *Shortened Viaduct*

Before 2007 funding constraints were imposed the viaduct (Alternative J1T) was to begin about ¼ mile south of Center Valley Road. Doesn't the LEDPA need to be reexamined? A supplemental environmental document should be required for impacts to water quality and the floodplain.

Response to Project Impact Comments 8 (RPIC-8)

The structure commonly called the "viaduct" is a bridge spanning the floodway/floodplain. It was determined during the LEDPA analysis that the viaduct was not needed south of Center Valley Road and was eliminated before the Final EIS/EIR was finalized. The viaduct is as long as the longest viaduct discussed in the Draft

EIS/EIR alternatives. Accordingly, no supplemental environmental document pursuant to CEQA needs to be drafted.

For impacts to the floodplain, see responses RPIC-3 and RPIC-5.

Project Impact Comments 9 (PIC-9) – *Prevent Excessive Violations*

Add mechanism to SWPPP to prevent another project that fails to comply with water quality conditions and requirements, like the 150 Confusion Hill violations. All contractors should be required to attend water quality training class. Contractors should be notified that they will be held liable for violations. Biological/water quality monitor should have stop-work authority (Water Agency wants to meet monitor).

Response to Project Impact Comments 9 (RPIC-9)

The bypass project will at all times be required to feature adequate erosion and sediment control devices to prevent the degradation of water quality. Soils exposed by project operations will be treated to prevent sediment runoff and transport. Erosion control measures will include the proper installation and maintenance of BMPs pursuant to the Caltrans Storm Water Permit, and the Construction General Permit. In addition, Caltrans must comply with all applicable conditions within the Water Quality Certification that requires surface water motoring and sampling and strict compliance with the water quality standards within Basin Plan. Additional conditions of the certification will require that:

- Caltrans retain a water quality monitor dedicated to the project (also see response RSWMC-2);
- The Resident Engineer shall hold on-site water quality permit compliance meetings (similar to tailgate safety meetings) to discuss permit compliance, including instructions on how to avoid violations and procedures for reporting violations. The meetings shall be held at least every other week, and particularly before forecasted storm events and when a new contractor or subcontractor arrives to begin work at the site.
- Caltrans shall conduct an environmental awareness and compliance training program for all contractors, sub-contractors and Caltrans staff working on the project. The training program shall present the environmental regulations and various permit conditions that Caltrans and the contractors shall comply with and the applicable measures established for the project to minimize impacts to water quality and avoid sensitive resources, habitats, and species.

Regional Water Board staff is pleased to know that the Mendocino County Water Agency would like to take a proactive and supportive role in this and other such projects. Cooperation with environmental compliance awareness, water quality

sampling, trainings, and construction inspections could all be coordinated between the State and County agencies throughout this and other projects within the region.

Project Impact Comments 10 (PIC-10) – Downsize the Bypass

Scaling down the bypass would accomplish the main goals without so much damage.

Response to Project Impact Comments 10 (PIC-10)

Alternatives resulting in less than a four-lane freeway have been considered during the development of the project. General Response 1.10 in Volume 2 of the Final EIS/EIR addresses the suggestion of a two-lane bypass. Transportation System Management (TSM) alternatives were also considered and discussed in Section 3.6.1 of the Draft EIS/EIR. TSM alternatives seek ways to use the existing facilities in lieu of an entirely new route. As elaborated upon in the environmental documents, the purpose and need would not be met with either the two lane or TSM alternatives. Numerous additional alternatives were considered during the scoping of the project. None of the alternatives reviewed would result in fewer environmental impacts than the identified LEDPA Modified J1T while still meeting the purpose and need.

Project Impact Comment 11 (PIC-11) – *Construction Impacts*

Construction activities and heavy equipment will threaten wetlands and salmonid streams.

Response to Project Impact Comment 11 (RPIC-11)

During construction, water quality effects will be minimized through provisions in the construction contract. Contractors will be required to prepare and implement a program to effectively control water pollution during the construction of the bypass project, in compliance with Caltrans Standard Specifications Section 7-1.01G—Water Pollution and Contract Special Provisions. This program will consist of the development of a SWPPP, which requires that the bypass project meet standards and objectives to minimize water quality impacts during construction. The SWPPP will be submitted to Regional Water Board before any construction activities begin. The SWPPP will include appropriate Caltrans construction BMPs to reduce the potential for sediment and contaminants from entering creeks. Potential BMPs for inclusion in the project's SWPPP are listed below with detailed descriptions available online at http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm (additional BMPs could be implemented as necessary to minimize potential effects on water quality).

- preservation of existing vegetation
- hydroseeding
- silt fencing

- gravelbag barriers
- stabilized construction entrance/exit
- stabilized construction roadway
- dewatering operations
- paving and grinding operations
- temporary stream crossings
- clear water diversion
- material delivery and storage
- stockpile management
- spill prevention and control
- solid waste management
- hazardous waste management
- concrete waste management
- sanitary/septic waste management
- liquid waste management.

The contractor will be required to implement appropriate BMPs to prevent the discharge of equipment fluids to the stream channel. The minimum requirements will include: storing hazardous materials outside of the stream banks; checking equipment for leaks and preventing the use of equipment with leaks; pressure washing equipment to remove fluid residue on any of its surfaces prior to its entering the live channel (if equipment is needed in the channel to establish a flow diversion); maintaining spill response material and suitably trained personnel at the project site; responding immediately to any fluid releases and applying containment booms and absorbent materials as appropriate; and notifying the Regional Water Board of releases and discharges. For minor accidental releases of equipment fluid to the dewatered channel, the contractor will be required to remove and properly dispose of contaminated material.

In addition, Caltrans shall submit the SWPPP in an electronic format using the Storm Water Multi-Application Reporting and Tracking System (SMARTS). http://smarts.waterboards.ca.gov/. The SWPPP, updates to the SWPPP, and monitoring reports regarding the regulation or storm water will be available to the public via this website. In addition, the public may view inspections reports and facility information related to the Section 401 Water Quality Certification at the California Intergraded Water Quality System (CWIQS) at http://www.waterboards.ca.gov/water_issues/programs/ciwqs/

All disturbed soil areas, including non structural slopes, will be stabilized with revegetation and erosion control measures. Disturbed slopes will be re-vegetated in accordance with plans developed by the Caltrans District Landscape Architect and the Revegetation Specialist or otherwise stabilized. Permanently impacted areas such as cut and fill slopes adjacent to the roadway along interchange ramps, as well as median between the inside roadway shoulders will be re-vegetated with native plants

appropriate to Little Lake Valley. Steeper embankment slopes located at structures approaches will be protected with RECP (Netting) blanketing materials and all final slopes will be stabilized and re-vegetated with local topsoil and native grass seed which is included in the Erosion Control (Bonded Fiber Matrix) application. In addition, finished slopes and ditches constructed greater than 1:3 (V:H) will be stabilized with Rolled Erosion Control Product (Netting). Upon completion of construction of the Floodway Viaduct structure, the entire disturbed area will be regarded to pre-construction conditions and re-vegetated with Erosion Control (Bonded Fiber Matrix). Prior to the application of Erosion Control (Bonded Fiber Matrix), Local Topsoil will be collected/harvested and stockpiled prior to construction and placed back on all areas to receive permanent erosion control measures such as Erosion Control (Bonded Fiber matrix) in the re-vegetation effort, once the project has been completed. Bio-swales will be constructed and re-vegetated as part of Treatment BMPs at drainage outlet areas prior to run-off off site of the project. Turf Reinforcement Mat (TRM) along with Erosion Control (Bonded Fiber Matrix) will be utilized to line the inlet channel at Center Valley Rd.

Also, see responses RSWMC-1 and RSWMC-2.

Project Impact Comment 12 (PIC-12) – Permanent Fill Area

All re-vegetation must have an 80% success rate. Efforts must continue until success is achieved with no time limitation.

Response to Project Impact Comment 12 (RPIC-12)

The comment was made with respect to the permanent fill area. For areas along the bypass that need to be re/vegetated with erosion control to stabilize fill slopes Caltrans typically requires 70 percent coverage of applied erosion control products. Condition 56 of the Water Quality Certification requires Caltrans to provide yearly slope evaluation and erosion control monitoring reports for up to 10 years subsequent to the completion of the bypass project. Caltrans shall provide at least 80 percent coverage of established erosion control of all exposed areas along the bypass. If the new bypass project has slope failures, excessive erosion, or causes other water quality degradation corrective actions will be required to mitigate the impacts. To clarify, established erosion control is vegetation growth, not applied erosion control product.

Temporary impact areas will be repaired once construction of the Willits Bypass is complete. The yearly performance standards and final success criteria are set up to acknowledge that plant mortality is a normal and expected occurrence in any re-planting effort. The final success criteria for riparian areas are expected to be met by year 10, however, if the criteria are not met by year 10 this does not absolve Caltrans of the obligation to meet the criteria. If the yearly performance standards do not show a trend toward meeting the final success criteria in year 10, adaptive management actions will

have already been implemented to get the mitigation back on track to meet success criteria. Monitoring and adaptive management will continue until final success criteria are met regardless of the year. The same approach applies to wetland areas.

General Opposition Comments 1 (GOC-1) – *No to the Project*

Commenter's who oppose the bypass in general.

Response to General Opposition Comments 1 (RGOC-1)

Comments noted. Areas commented on that are outside of the Regional Water Board's regulatory jurisdiction include: general opposition; noise; impacts to bees and local pollinators; sink holes; traffic; farmland; and former Highway 101 relinquishment.

Requests for an Additional Public Comment Period 1 (PCPC-1) – *Public Comment Period and Meeting*

Commenter's request that the Regional Water Board open an additional public comment after the application is deemed complete and hold a public meeting. Several commenters' raised concerns that the mitigation approach was not fully disclosed to the public.

Response to Requests for an Additional Public Comment Period 1 (PCPC-1)

As required by the California Code of Regulations title 23, chapter 28, section 3858 the Executive Officer is required to provide a public notice for at least 21 days, unless the Federal Agency or Application has provided an adequate notice period. On March 16, 2010, the U.S. ACE provided a 30 day public comment period, which adequately covers the responsibilities of the Regional Water Board. However, on April 29, 2010, the Regional Water Board issued a public notice for the project as well. In addition, based on a public request the Regional Water Board extended the comment period by six days, and has considered all comments received up to June 16, 2010.

Economic Comments 1 (EC-1)

In California's current financial crisis is this project the best use of limited funds? This project should be redesigned to something with a more practical price tag.

Response to Economic Comments 1 (REC-1)

Comment noted. This issue is outside of the Regional Water Board regulatory jurisdiction.

Project Planning Comments 1 (PPC-1) – Antiquated Design

Decade old plans and ideas are not being looked at from a 2010 perspective. Peak oil, climate change and economic cataclysm were not in the picture when these plans were originally made.

Response to Project Planning Comments 1 (RPPC-1)

Comment noted.

Project Planning Comments 2 (PPC-2) – Tight Diamond Interchanges

Caltrans should be required to actually design "tight diamond" interchanges as they promised in the Final EIS/EIR.

Response to Project Planning Comments 2 (RPPC-2)

The DEIS/EIR dated May 2002 states in section 5.6.4 Mitigation Measures, subsection FP-4 the project will consist of tight diamond interchanges rather than the larger spread diamond interchanges. The current vernacular for the two types of diamond interchanges are now compact diamond and spread diamond interchanges. The compact diamond interchange replaces the tight diamond. The current Modified J1T Alignment uses compact diamond interchanges, the same intersection design as the tight diamond interchanges.

Public Access Comment (PAC-1) – Unannounced Public Inspections

Please require and allow public access for periodic unannounced site inspections.

Response to Public Access Comment (PAC-2)

For safety and liability reasons only authorized personnel will be allowed to enter the construction sites. Authorized resource agency personnel may enter the project site at any time to verify compliance with permit conditions and regulations. Regional Water Board staff frequently performs unannounced inspections of sites and facilities to verify compliance. In accordance with CalOSHA regulations everyone on the project site must be wearing the required personal protection equipment and it is State policy that these inspectors are maintain yearly HAZWOPER (health and safety) training. For the safety of everyone, all visitors must contact the Resident Engineer's office to make arrangements to read the Code of Safe Practices and receive a briefing on the current operations before entering the project. Construction zones can be very dangerous if one does not know how to properly maneuver around the sites and heavy equipment.

Potential Wetland Enhancement 1 (PEC-1)

Commenter suggested specific areas in the watershed that have potential wetland enhancement opportunities.

Response to Potential Wetland Enhancement 1 (PEC-1)

Comment noted. These areas may provide potential wetland mitigation opportunities and would require further evaluation. These locations may provide useful mitigation for future projects.

Also see response RMPC-11.

Traffic Volume Comments 1 (TVC-1) – *Traffic and LEDPA*

Decisions on the LEDPA utilized numbers from the mid 90's. Traffic projections have not borne out. Caltrans website shows that traffic numbers have decreased since 1992. The decision to use Level C as the criteria for accepting alternatives is unnecessary and precludes any two lane options or in town at grade solutions. A two-lane alternative would remove the slow-down currently experienced by through traffic in Willits. The traffic problem is not as bad as Caltrans has described and this project does not meet LEDPA.

Response to Traffic Volume Comments 1 (TVC-1)

Comment noted. The Regional Water Board is not a signatory agency to LEDPA. Modified Alternative J1T was determined by Caltrans, FHWA, U.S. EPA and the U.S. ACE to be the LEDPA/Preferred Alternative because it would have the least overall impact to the natural and community resources, while still meeting the purpose and need for the project. A Record of Decision was issued for the proposed project based upon the purpose and need on December 18, 2009 by the Federal Highway Administration.

Traffic Volume Comments 2 (TVC-2) – *Trucks in Town*

There have never been any assurances that truck traffic associated with construction of the bypass will not go through town.

Response to Traffic Volume Comments 2 (TVC-2)

Comment noted. This issue is outside of the Regional Water Board regulatory jurisdiction.

Contractor Comments 1 (CC-1) – *Bar Problem Contractors*

Contractors with poor track records of environmental compliance should be barred from the project.

Response Contractor Comments 1 (CC-1)

Comment noted. As the permit applicant and holder Caltrans has the ultimate responsibility on projects and is subject to liability for actions taken by its contractors.

Semaphore Grass Comment 1 (SGC-1)

The commenter discussed the impacts to North Coast Semaphore Grass (NCSG) related to the project and the lack of appropriate mitigation pursuant to the California Endangered Species Act (CESA).

Response to Semaphore Grass Comment 1 (RSGC-1)

A Supplemental Environmental Impact Report was prepared pursuant to the California Environmental Quality Act. The draft report was signed on November 15, 2009. Comments were received during the circulation period, which ended January 19, 2010. The Final Supplemental EIR was completed in May 2010, with potential impacts to NCSG determined to be less than significant after mitigation. The mitigation proposal will protect and manage over 1,900 acres of habitat and include preservation of North Coast semaphore grass.

Measures will be taken to minimize and fully mitigate project impacts. As part of avoidance and minimization measures, North Coast semaphore grass seed and rhizomes will be salvaged from the impact area prior to project construction and transplanted within the bypass alignment to an unaffected area. In addition, Caltrans is coordinating with CDFG and USFWS on a 2-year study to characterize hydrology (i.e., groundwater), soils (i.e., moisture and temperature), and cultural (i.e., land use) conditions at Arkelian, Frost, Goss, Lusher, and MGC Plasma North offsite mitigation parcels and the Huffman impact parcel for use in determining the potential to actively expand these occurrences. Data collected relating to the soil dry down curve at the occurrence sites will be of particular interest. Based on qualitative observations made during March 2010 abundance surveys, expansion at the occurrences seem possible as there appears to be unoccupied habitat available at the boundaries of the occurrences that could accommodate expansion. Land management practices, such as low intensity livestock grazing and limited mowing, also may allow expansion of North Coast semaphore grass.

As part of mitigation efforts, five existing North Coast semaphore grass populations in Little Lake Valley that occur at the Arkelian, Frost, Goss, Lusher, and MGC Plasma North offsite mitigation parcels will be placed in preserves as part of project mitigation. A total of 5.094 acres of occupied habitat has been identified at these preserves. The soil and hydrologic conditions favored by north coast semaphore grass are currently being evaluated to better understand the groundwater, soil moisture, soil temperature, soil profile, and soil density conditions under which NCSG grows. The evaluation is also intended to provide an understanding of the characteristics of areas adjacent to NCSG populations that may be used for implementing minimization measures (e.g., transplantation and seeding) for NCSG impacts at and for determining expansion potential at existing NCSG populations that will be preserved. Caltrans has developed a work plan in coordination with the CDFG and U.S. USFWS)to provide supplemental data for NCSG. During March 11—26, 2010, NCSG populations were identified, mapped, stratified (into stands), and surveyed for abundance. Simultaneously, 69 shallow soil pits were excavated within and adjacent to NCSG stands at five separate occurrences in Little Lake Valley as part of general habitat characterization efforts. Soil, hydrologic, and other site characteristics were documented at each of the pit sites. These data have been used to develop monitoring methods to collect more detailed soils and hydrology data. In addition to the soil and hydrologic data collected during general habitat characterization surveys, data were also collected on NCSG rooting depth. Knowledge of the root zone will help define the depth at which soil moisture and soil temperature monitoring sensors will be installed. The results of the detailed soil and hydrologic monitoring will be presented in annual monitoring reports to be submitted to the resource agencies for review in September 2010 and September 2011.

General Support Comments 1 (GSC-1) – *In Support of Conditional Permit*

Commenter's who support the Regional Water Board issuing a conditional permit for the bypass. Commenter's also support the ecologically designed mitigation approach and restoration efforts for the benefit of salmonids. Commenter's who urge the Regional Water Board to give this project as much attention as possible in order to get it approved.

Response to General Support Comments 1 (RGSC-1)

Comment noted. Collectively the State and Federal resource agencies have spent an incalculable amount of staff time on the Caltrans-proposed Highway 101 Willits Bypass Project over past decades. The purpose of the resource agencies' involvement in the process is to aid Caltrans in appropriately avoiding, minimizing and mitigating significant impacts to the environment associated with the proposed Project. In addition, over the past several months Regional Water Board staff (Caltrans liaison) has been dedicated full time to this project to expedite meetings with State and Federal agencies, conduct document reviews, and provide additional planning efforts to assist Caltrans in meeting

their goal. Subsequent to the incomplete letters issued by the U.S.EPA and U.S. ACE, the Regional Water Board also issued an incomplete letter reiterating the issues identified by the Federal agencies. However, Regional Water Board staff also provided additional suggestions on how to improve the project what type of information would be useful for the permitting agencies to receive in order to approve the project.

100806_JJP_CDOT_Hwy101WillitsBypass_CommentsResponse

Commenter Key

Comment Type	Comment Catergory
Contractor Comments	CC-1
Contractor Comments	CC-1
Economic Comments	EC-1
Economic Comments	EC-1
Economic Comments	EC-1
Economic Comments	EC-1
Economic Comments	EC-1
Economic Comments	EC-1
Economic Comments	EC-1
No to the Project	GOC-1
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Comment Type	Comment Catergory
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No to the Project	GOC-1
In Support of the Project	GSC-1
In Support of the Project	GSC-1
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Comment Type	Comment Catergory
Toxics from Storm Water & Viaduct	SWC-1
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Construction Monitoring	SWMC-2
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Comment Type	Comment Catergory
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Construction Monitoring	SWMC-2
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Traffic and LEDPA	TVC-1
Traffic and LEDPA	TVC-1
Traffic and LEDPA	TVC-1
Traffic and LEDPA	TVC-1
Traffic and LEDPA	TVC-1
Traffic and LEDPA	TVC-1
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Trucks in Town	TVC-2

Attachment 2

California Environmental Quality Act Findings for Potentially Significant Impacts to Water Quality related to California Department of Transportation Highway 101, Willits Bypass Project WDID No. 1B10019WNME

As a Responsible Agency, the Regional Water Quality Control Board, North Coast Region (Regional Water Board), complies with the California Environmental Quality Act (CEQA) by considering the Environmental Impact Report (EIR) prepared by the Lead Agency (California Department of Transportation) and making its own findings regarding significant impacts within its regulatory purview and jurisdiction. (Cal. Code Regs, tit. 14, §§15091, 15096.) These findings are set forth below.

The Final Environmental Impacts Statement / Environmental Impact Report for the Willits Bypass project (FEIS/EIR - State Clearing House No. 1990030006), certified by the California Department of Transportation (Caltrans) on October 25, 2006 and Supplemental Environmental Impact Report certified by Caltrans on May 19, 2010 (SEIR State Clearing House No. 1990030006), identifies the following potentially significant impacts to water quality from the project:

1. Increases in Water Temperature (FEIS/EIR, § 3.5.1)
2. Impacts to Sensitive Plant Communities and Habitats (FEIS/EIR, § 3.7.1, SEIR, § 4.1.)
3. Direct and Indirect Impacts to Special-Status Plants (FEIS/EIR, §§ 3.7.3, 3.17.2)
4. Direct and Indirect Impacts to Special-Status Fish (FEIS/EIR, §§ 3.7.7, 3.17.1)
5. Direct and Indirect Impacts to Wetlands and Waters of the U.S. (FEIS/EIR, §§ 3.7.4, 3.17.3)
6. Impacts to Special Status Wildlife (FEIS/EIR, § 3.7.5)

Based on its own independent review of the FEIS/EIR and SEIR, the Regional Water Board finds that with the implementation of the mitigation measures identified in the FEIS/EIR and SEIR and conditions of the Water Quality Certification, all potentially significant impacts to water quality will be reduced to levels which are less than significant. This conclusion is supported by the findings below.

Potentially Significant Impact to Water Quality – Increases in Stream Temperature (FEIS/EIR, § 3.5.1):

Impact Description:

The proposed project would span the following surface waters: Haehl Creek, Baechtel Creek, Broaddus Creek, Mill Creek, and Upp Creek, all of which are tributaries to Outlet Creek. Construction of the bypass at these stream crossings would result in the removal of riparian habitat in order to accommodate the construction of bridges, culverts, and the viaduct structure. This would result in 10.12 acres of temporary impacts (6,693 linear feet) and 10.88 acres of permanent impacts (8,535 linear feet) of

riparian areas.[1] The removal of this vegetation and loss of canopy cover could affect water quality by elevating stream water temperatures at these locations. The FEIS/EIR has identified this as a potentially significant impact.

Finding:

Pursuant to Public Resources Code Section 21081(a) and CEQA Guidelines Section 15091(a), the Regional Water Board finds that changes or alterations have been required in, or incorporated into, the project that would avoid or substantially lessen the significant environmental effect to a less than significant level. The Regional Water Board finds that mitigation measures and conditions listed below are feasible to offset the impact to stream temperature and are, therefore, incorporated as conditions of the Water Quality Certification and associated Monitoring and Reporting Program (MRP).

Facts that Support the Finding:

FEIS/FEIR Mitigation Measures:

WQ-3: Revegetation: Where vegetation is removed or severely trimmed back, Caltrans will plant replacement vegetation for shading of creeks to reduce temperature related impacts to water quality. Local native plant species would be used for the revegetation of impacted riparian areas along salmonid streams, within the project limits as well as off-site mitigation areas. Mitigation would be in-kind and plant propagules would be collected in Little Lake Valley. Planting methods would include the installation of stem (pole) cuttings from plants such as willows, cottonwood, thimbleberry, coyote bush, or other species capable of easy rooting from cuttings. Pole cuttings would also be used to revegetate areas where Rock Slope Protection (RSP) is required on the stream banks. In mitigation areas where some riparian vegetation is already present, additional vegetation would be planted. Revegetation of unvegetated stream banks would be considered creation.

BIO-9: Riparian Woodland: Caltrans/Federal Highway Administration (FHWA) will mitigate for impacts to riparian forest habitat through creation and restoration or

[1] Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects waterbodies with their adjacent uplands, and are considered "waters of the State." Protection of riparian areas adjacent to streams, lakes, and estuarine-marine shorelines is essential to the protection of the beneficial uses of the waterbodies. As collectively agreed to by the resource agencies with jurisdiction over this project, riparian areas are: 1) Category I Riparian Corridors, which include areas of salmonid streams and adjacent riparian areas extending 100 feet from each bank laterally from the Ordinary High Water Mark; 2) Category II Riparian Corridors, which include tributaries of Category I Riparian Corridors that are within 1,000 feet of the confluence with a Category I Stream, and extending 50 feet from the OHWM on each bank; and 3) Category III Riparian Corridors, which include tributaries of Category I Riparian Corridors that are more than 1,000 feet upstream of the confluence with the Category I Stream, extending 25 feet from the OHWM on each bank.

enhancement (including expansion) of existing degraded riparian habitat at a ratio agreed upon in consultation with California Department of Fish and Game (CDFG), United States Fish and Wildlife Services (USFWS), National Marine Fisheries Service (NMFS), and United States Environmental Protection Agency (USEPA). Caltrans/FHWA will protect riparian forest mitigation areas in perpetuity through conservation easements, deed restrictions or other equivalent measures. The primary goal of the Mitigation and Monitoring Plan for riparian communities will be to ensure that no permanent loss of habitat values occurs as a result of the project and that the temporal loss of habitat is adequately mitigated.

Additional Conditions:

Revegetation: Where removal of vegetation is required, protection of riparian woodland, and riparian creation and enhancement are proposed to offset potential impacts related to loss of canopy and elevated stream temperature. Where riparian woodland vegetation must be removed, mitigation for all affected riparian woodlands would be implemented through creation/restoration, enhancement, and preservation within Little Lake Valley as required by the Monitoring and Reporting Program (MRP) and MMP. Section 3.0. of the MRP requires the conversion of baseline information into site-specific performance standards that will measure success and ensure that long-term impacts resulting from the loss of canopy and the corresponding potential increases in stream water temperature are reduced to a less than significant level or avoided.

Protection of Riparian Woodland: Potential impacts to riparian woodlands would first be minimized. Minimization measures during construction shall include: removing the minimum amount of vegetation necessary; installing environmental sensitive area (ESA) fencing and enforcing protection of riparian vegetation located within established protected areas; implementation of appropriate Best Management Practices (BMPs); and pre-construction training sessions to inform contractors and construction workers of the status of sensitive habitats and special-status species and the requirements for avoidance of protected areas.

Riparian Creation and Enhancement: In addition to minimizing impacts and mitigating all removed riparian vegetation, the project will also revegetate unvegetated stream banks (which would be considered creation) and provide additional vegetation along some sparsely vegetated areas (which would be considered enhancement). Approximately 1,700 linear feet of riparian plantings will be placed along the east bank of Baechtel Creek between where the viaduct will cross Baechtel Creek and where East Commercial Street presently crosses the creek, and along approximately 1,400 linear feet of the north bank of Mill Creek before Mill Creek passes under the Western Pacific railroad tracks, which will further improve surface water temperatures within the watershed. Approximately, six miles (measured along both sides of the stream banks) of riparian habitat will be created or enhanced along Category I, II, and III streams within the offsite mitigation parcels. Long stream reaches that would benefit from riparian

plantings are present along both Davis and Outlet Creeks, and will be required as a condition of the Water Quality Certification and MRP.

Monitoring and Reporting Program: As stated in Section 1.0. of the MRP, Caltrans is required to conduct bioassessment (benthic macroinvertebrate sampling) as well as chemical, physical, and biological monitoring components. Chemical monitoring includes parameters such as dissolved oxygen, temperature, turbidity, total dissolved solids, oil and grease, and several other constituents. Physical monitoring includes hydrology, geomorphic conditions (i.e., cross sectional water depth, wetted channel width, bankfull width, substrate characteristics, canopy cover, gradient, sinuosity, large woody debris) and other parameters. Biological monitoring includes wetland plant coverage, invasive species coverage, riparian canopy coverage, benthic macro-invertebrates surveys, as well as other parameters. Regional Water Board staff worked closely with the USEPA, United States Army Corps of Engineers (USACE), and Caltrans to develop the MRP and to ensure that impacts to stream temperatures are fully mitigated.

Section 3.0. of the MRP details the schedule (including the frequency of monitoring), the locations, and the evaluation of data to adequate develop the short term work plans, grazing management plan, and mitigation success criteria. The requirements for baseline assessments, monitoring during construction, procedures for enhancement verification, and long term monitoring requirements as also detailed in Section 3.0.

Section 4.0. of the MRP requires that Caltrans monitor impacts to stream temperatures associated with the construction of the bypass and Section 5.0. requires Caltrans to measure the success of the mitigation measures (revegetation) and ensure the project does not result in a significant increase in stream temperatures in the long term. Additionally, the Water Quality Certification and MRP require Caltrans to plant riparian vegetation in all areas within the bypass alignment and mitigation lands to provide the maximum site potential shade to streams within the project area. Section 3.0 of the MRP also require Caltrans to include additional and robust success criteria within the Mitigation and Monitoring Proposal (MMP) for measuring effectiveness of riparian mitigation measures that incorporate percent canopy cover and percent effective shade requirements which measure the effectiveness of riparian creation and enhancement actions for mitigating impacts to streams.

Potentially Significant Impact - Impacts to Sensitive Plant Communities and Habitats (FEIS/EIR, § 3.7.1; SEIR, § 4.1.)

Impact Description:

Baker's meadowfoam is a federal species of concern, a state-listed rare species, and a California Native Plant Society (CNPS) List 1B species. Modified Alternative J1T would permanently impact approximately 33.5 acres of potentially suitable Baker's meadowfoam habitat. Additionally, the project may impact North Coast Semaphore

Grass, as discussed in the SEIR. North Coast semaphore grass (*Pleuropogon hooverianus*) is listed by the State of California as a threatened species and is a federal species of concern. It is also a CNPS List 1B.1 species (Plants Rare, Threatened, or Endangered in California or Elsewhere). An essential element of the Regional Water Board's Water Quality Control Plan (Basin Plan) is to adopt and ensure the protection of beneficial uses. While rare, threatened, and endangered species (RARE) is an existing beneficial use which the Regional Water Board is designated to protect, the primary mitigation authorities for special status plants are CDFG and USFWS. The FEIS/EIR and SEIR have identified these impacts as potentially significant.

Finding:

Pursuant to Public Resources Code Section 21081(a) and CEQA Guidelines Section 15091(a), the Regional Water Board finds that changes or alterations have been required in, or incorporated into the project such that it would avoid or substantially lessen the significant environmental effect to a less than significant level. The Regional Water Board further finds that mitigation measures and conditions listed below (including those pertaining to impacts to wetlands and waters of the U.S.) are feasible to offset the impacts and are, therefore, incorporated as conditions of the Water Quality Certification and associated MRP.

Facts that Support the Finding:

FEIS/EIR Mitigation Measures:

BIO-11: Special Status Plants: Impacts to Baker's meadowfoam would be mitigated by off-site preservation of existing populations and habitat, as well as by creation/enhancement of new habitat for populations occurring on upland sites and on wetland sites. Portions of temporarily impacted Baker's meadowfoam habitat could be restored where feasible. Baker's meadowfoam habitats occurring within jurisdictional wetlands would be mitigated by a combination of creation/restoration at the same ratios as jurisdictional wetlands, and preservation. Baker's meadowfoam creation/restoration parameters would be based on specific hydrologic and soil conditions specified and described for the species in a formerly prepared study titled "Hydrologic and Soil-Geomorphic Conditions Associated with Baker's Meadowfoam in Little Lake Valley, Mendocino County, California" (Balance Hydrologics, Inc. 1993). The mitigation strategy allows for the creation, restoration, enhancement, protection and preservation of approximately 1,157 acres of potential Baker's meadowfoam habitat. The Baker's meadowfoam preserves would be maintained in perpetuity within Little Lake Valley.

SEIR Mitigation Measures:

Impacts to NCSG will be mitigated, as with Baker's meadowfoam, primarily through off-site preservation and enhancement of existing populations and habitat population and to protect and restore the remaining portions of the population within the right-of-way.

However, measures will also be taken to minimize direct and indirect impacts to the affected. Mitigation measures will be taken to minimize and fully mitigate project impacts. As part of avoidance and minimization measures, North Coast semaphore grass seed and rhizomes will be salvaged from the impact area prior to project construction and transplanted within the bypass alignment to an unaffected area. In addition, Caltrans is coordinating with CDFG and USFWS on a 2-year study to characterize hydrology (i.e., groundwater), soils (i.e., moisture and temperature), and cultural (i.e., land use) conditions at Arkelian, Frost, Goss, Lusher, and MGC Plasma North offsite mitigation parcels and the Huffman impact parcel for use in determining the potential to actively expand these occurrences. Data collected relating to the soil dry down curve at the occurrence sites will be of particular interest. Based on qualitative observations made during March 2010 abundance surveys, expansion at the occurrences seem possible as there appears to be unoccupied habitat available at the boundaries of the occurrences that could accommodate expansion. Land management practices, such as low intensity livestock grazing and limited mowing, also may allow expansion of North Coast semaphore grass.

As part of mitigation efforts, five existing North Coast semaphore grass populations in Little Lake Valley that occur at the Arkelian, Frost, Goss, Lusher, and MGC Plasma North offsite mitigation parcels will be placed in preserves as part of project mitigation. A total of 5.094 acres of occupied habitat has been identified at these preserves. The soil and hydrologic conditions favored by north coast semaphore grass are currently being evaluated to better understand the groundwater, soil moisture, soil temperature, soil profile, and soil density conditions under which NCSG grows. The evaluation is also intended to provide an understanding of the characteristics of areas adjacent to NCSG populations that may be used for implementing minimization measures (e.g., transplantation and seeding) for NCSG impacts at and for determining expansion potential at existing NCSG populations that will be preserved. Caltrans has developed a work plan in coordination with the CDFG and USFWS)to provide supplemental data for NCSG. During March 11—26, 2010, NCSG populations were identified, mapped, stratified (into stands), and surveyed for abundance. Simultaneously, 69 shallow soil pits were excavated within and adjacent to NCSG stands at five separate occurrences in Little Lake Valley as part of general habitat characterization efforts. Soil, hydrologic, and other site characteristics were documented at each of the pit sites. These data have been used to develop monitoring methods to collect more detailed soils and hydrology data. In addition to the soil and hydrologic data collected during general habitat characterization surveys, data were also collected on NCSG rooting depth. Knowledge of the root zone will help define the depth at which soil moisture and soil temperature monitoring sensors will be installed. The results of the detailed soil and hydrologic monitoring will be presented in annual monitoring reports to be submitted to the resource agencies for review in September 2010 and September 2011.

Potentially Significant Impact - Direct and Indirect Impacts to Special-Status Plants (FEIS/EIR, §§ 3.7.3, 3.17.2)

Impact Description:

The project study area for the Modified Alternative J1T alignment, as well as the designated borrow site at Oil Well Hill, together comprise 270 acres of land. Within the project study limits, permanent impacts to sensitive plant communities and habitats are estimated at approximately 108 acres, and temporary impacts are estimated at 28 acres. In considering the impacts and mitigation to various biological resources, it was recognized that some resources occur together as components of the same habitat or community (e.g., Baker's meadowfoam occurs within jurisdictional wetlands, oak trees occur within riparian zones, etc.).

The FEIS/EIR identifies these impacts as potentially significant.

Finding:

Pursuant to Public Resources Code Section 21081(a) and CEQA Guidelines Section 15091(a), the Regional Water Board finds that changes or alterations have either been required in or incorporated into the project such that it would avoid or substantially lessen the significant environmental effect to a less than significant level. The Regional Water Board further finds that mitigation measures and conditions identified below are feasible to offset the impact and are, therefore, incorporated as conditions of the Water Quality Certification and associated MRP.

Facts that Support the Finding:

FEIS/EIR Mitigation Measures:

BIO-11: Special Status Plants: Modified Alternative J1T would temporarily and permanently affect two populations of Baker's meadowfoam, one in the central portion of the project (in the area of the Colli Ranch) and one in the northern portion of the project, in the vicinity of the Quail Meadows Interchange. The project would avoid most of the central population of Baker's meadowfoam, but would impact the majority of the northern population.

Impacts to Baker's meadowfoam plants would be mitigated by off-site preservation of existing populations and habitat, as well as by creation/enhancement of new habitat for populations occurring on upland sites and on wetland sites. Portions of temporarily impacted Baker's meadowfoam habitat could be restored where feasible. Baker's meadowfoam habitats occurring within jurisdictional wetlands would be mitigated by a combination of creation/restoration at the same ratios as jurisdictional wetlands, and preservation. Baker's meadowfoam creation/restoration parameters would be based on specific hydrologic and soil conditions specified and described for the species in a

formerly prepared study titled “Hydrologic and Soil-Geomorphic Conditions Associated with Baker’s Meadowfoam in Little Lake Valley, Mendocino County, California” (Balance Hydrologics, Inc. 1993). Baker’s meadowfoam preservation sites would be acquired within Little Lake Valley. Additionally, funds would be necessary in order to set up a long-term management and maintenance program. The Baker’s meadowfoam preserves would be maintained in perpetuity and their management could be transferred to CDFG or a mitigation bank (refer to the Conceptual Mitigation Plan, Appendix L).

Other Conditions:

Condition 10 of the Water Quality Certification requires Caltrans to adhere to the MRP issued by the Regional Water Board. The MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands. The baseline assessment of wetlands within the bypass alignment and the off-site mitigation parcels includes:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition]
- Absolute percent coverage of wetland plants
- Absolute percent cover of native plant species
- Species richness
- Absolute percent coverage of invasive species
- CRAM score.

Additionally, the mitigation measures identified above for impacts to wetlands are applicable to Baker’s Meadowfoam habitat which occurs within wetlands.
The information gathered above will provide Caltrans with data on the presence of Baker’s Meadowfoam and which locations it appears to be flourishing in.

Potentially Significant Impact – Direct and Indirect Impacts to Special Status Fish (FEIS/EIR, §§ 3.7.3, 3.17.2):

Impact Description:

Impacts to special status fish could result from sedimentation in streams, temperature increases due to loss of canopy, and/or potential noise affects related to pile driving activities near streams. The Modified Alternative J1T would require stream crossings that would directly affect the upper, middle, and lower reaches of Haehl Creek, as well as the lower reaches of Baechtel, Broaddus, Mill, and Upp creeks, which contain habitat for three listed salmonids (Northern California steelhead, Southern Oregon/Northern California coho salmon, and California Coastal chinook salmon). An essential element of the Regional Water Board’s Basin Plan is to adopt and ensure the protection of

beneficial uses. While rare, threatened, and endangered species (RARE) is an existing beneficial use which the Regional Water Board is designated to protect, the primary mitigation authorities for special status fish are CDFG and NMFS. The FEIS/EIR identifies these impacts as potentially significant.

Finding:

Pursuant to Public Resources Code Section 21081(a) and CEQA Guidelines Section 15091(a), the Regional Water Board finds that changes or alterations have either been required in or incorporated into the project such that it would avoid or substantially lessen the significant environmental effect to a less than significant level. The Regional Water Board further finds that mitigation measures and conditions identified below are feasible to offset the impact and are, therefore, incorporated as conditions of the Water Quality Certification and associated MRP.

Facts that Support the Finding:

FEIS/EIR Mitigation Measures:

BIO-1: Mitigation and monitoring. The Modified Alternative J1T project will comply with terms and conditions provided by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), in their Biological Opinions. Caltrans will also comply with conditions of the permits issued by all of the resources agencies, and will implement mitigation and monitoring measures provided in the Final MMP, dated June 2010, includes measures that would compensate for impacts to wetlands and other waters; riparian woodlands, oak woodlands, listed salmonids; northern spotted owl and Pacific fisher; Baker's meadowfoam and non-listed special-status species.

BIO-2: Compensatory mitigation. Compensatory mitigation would include the creation, restoration, enhancement, and/or preservation of sensitive habitats affected by the project. The U.S. EPA, U.S. FWS, U.S. ACE, NMFS, CDFG, Mendocino County Resource Conservation District (MCRCD), Willits Environmental Center (WEC) and Regional Water Board collectively agreed to and developed an ecologically based watershed approach designed to ensure no net loss of ecological functions and values. The watershed approach would provide significant improvements to the ecological functions and values of wetlands off-site of the project, but still within the Little Lake Valley[2]. (The project is planned in the west-central portion of the Little Lake Valley.) The resource agencies agreed that the mitigation should be focused within Little Lake Valley because it hosts a variety of unique ecological features, including the presence of several rare, threatened, and endangered species (e.g. anadromous fish and Baker's

[2] During the Willits Bypass Mitigation Development Team meetings, it was collectively agreed between the U.S. EPA, U.S. ACE, U.S. FWS, CDFG, NMFS, WEC, Caltrans, and the Regional Water Board that the most appropriate use of the mitigation funds would be a watershed approach within Little Lake Valley. The resource agencies believe, that in this case, a watershed based approach will be superior to an approach relying on wetland creation/establishment ratios..

Meadowfoam). Caltrans proposed that 1,011.13 acres of existing wetlands would be enhanced and in combination with the 24.33 acres created and 53.44 acres preserved, for a total of 1,088.90 acres of wetlands secured in perpetuity. In addition, an off-site fish passage project at Ryan Creek will be implanted to provide salmonids with access to previously blocked habitat.

BIO-3: Avoidance and Minimization: During the final design phase of the Modified Alternative J1T project, Caltrans biologists, Caltrans design engineers, and the resource agencies have worked together on construction scenarios, BMPs, work windows and project monitoring strategy that will avoid and/or minimize impacts to sensitive biological resources.

BIO-4: Environmentally Sensitive Areas: Caltrans will establish and delineate Environmentally Sensitive Areas (ESAs) on project plans and specifications to protect sensitive biological resources adjacent to the construction corridor by prohibiting construction activities in those areas.

BIO-5: Training: Caltrans will develop and implement an environmental awareness and training program that informs the contractor and construction workers of the environmental regulations that Caltrans is committed to comply with, and measures established for the project to minimize and avoid sensitive habitats and species.

BIO-6: Monitoring: Qualified biologists would monitor construction activities in sensitive biological resource areas to ensure permit conditions and mitigation requirements are adhered to.

BIO-7: Construction in Streams: Caltrans will avoid working in live stream channels. Construction associated with stream crossings (bridges, viaduct and culvert) will conform to the work window of June 15 though October 15 of each year for work associated with bridge, viaduct, and culvert construction over salmonid bearing streams.

BIO-9: Riparian Woodland: Riparian woodlands within the project corridor are divided into three categories (Final MMP). Category I riparian woodlands are associated with salmonid bearing streams, and Category II and III riparian woodlands are other riparian woodlands that are not associated with salmonid streams.
Minimization measures that would occur during construction would include: removing the minimum amount of vegetation necessary; installing ESA fencing and enforcing protection of riparian vegetation located within established protected areas; implementation of appropriate BMP's; and pre-construction training sessions to inform contractors and construction workers of the status of sensitive habitats and special-status species and the requirements for avoidance of protected areas.

BIO-13: Wetlands and Other Waters: The goal is not net loss of wetland habitat functions and values. Mitigation would consist of a combination of measures, including the creation of wetlands and other waters, and the restoration, enhancement and

preservation of existing wetlands and other waters in Little Lake Valley. Wetland enhancement actions include: filling in man-made drainage ditches to increase the residence time of surface waters within the wetland area; implementing a grazing management plan to reduce the impacts from cattle; and removing invasive species to promote the health and natural recruitment of native wetland species. The enhancement of wetlands will be verified through a robust monitoring and reporting program (per Condition 10) that requires Caltrans to use the California Rapid Assessment Method (CRAM) for wetlands, as well as additional hydrology, vegetation, and surface water sampling and analysis methods to verify the enhancement of wetland functions and values. The mitigation site preservation and site protection instruments would be a combination of fee title purchase, conservation easement, or other deed restriction.

BIO-22: Aquatic Resources: In addition to requiring the contractor to prepare a Storm Water Pollution Prevention Plan (SWPPP), Caltrans will implement the following measures to minimize disturbances to aquatic resources. In addition, mitigation measures WQ-1 through WQ-3 and WQ-6 through WQ-8 will also reduce impacts to aquatic resources.

- All construction-related materials shall be stored in designated staging areas at least 150 feet from perennial waterways and drainages.

- Refueling and vehicle maintenance shall be performed at least 150 feet from creeks and other water bodies.

- Operation of heavy equipment shall be minimized in perennial creeks (to the greatest extent possible). If equipment must access perennial creeks, this will occur during the late summer months when the stream flows are low, or when no water is in the channels. If water is flowing, the channels will be appropriately dewatered.

- Temporary sedimentation barriers, such as gravel bags or siltation fencing, shall be installed to minimize the amount of silt entering the creeks and any ephemeral drainages with water present in the channel. The location of these barriers shall be determined by the resident engineer and environmental monitor, and shall be clearly marked in the field before construction activities begin.

- All imported fill material shall be clean and free of pollutants and shall be imported from a source that has the appropriate environmental clearances and permits. The reuse of low level contaminated solids as fill on-site shall be performed in accordance with all State and Federal policies and established guidelines and must be submitted to the Regional Water Board for review and concurrence.

- Only clean washed spawning gravel (0.5” – 4”) with a cleanliness value of at least 85, using the Cleanness Value Test Method for California Test No. 227 will be placed in the streams. Gravel bag fabric shall be nonwoven polypropylene geotextile (or comparable polymer) and shall conform to the following requirements: Mass per unit area, grams per square meter, min ASTM Designation: D 5261 – 270; Grab tensile strength (25-mm grip), kilonewtons, min. ASTM Designation: D4632* 0.89; Ultraviolet stability, percent tensile strength retained after 500 hours, ASTM Designation: D4355, xenon arc lamp method 70 or appropriate test method for specific polymer; Gravel bags shall be between 600 mm and 800 mm in length, and between 400 mm and 500 mm in width. Yarn used in construction of the gravel bags shall be as recommended by the manufacturer or bag supplier and shall be of a contrasting color. Gravel shall be between 10 mm and 20 mm in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags shall be secured to prevent gravel from escaping. Gravel-filled bags shall be between 13 kg and 22 kg in mass.

- Caltrans shall submit to the Regional Water Board in writing the name, qualifications, and contact information for the designated water quality monitor(s). The water quality monitor(s) shall be knowledgeable of and have experience with the Regional Water Board’s Basin Plan, which includes beneficial uses and water quality objectives, and surface water monitoring procedures, protocols, quality assurance, and quality control protocols. The water quality monitor(s) shall be responsible for monitoring project activities and/or channel- ground- or vegetation disturbing activities that result in or have the potential to result in a discharge to waters of the state. The water quality monitor shall make requests and provide recommendations to the Caltrans Resident Engineer, Construction Storm Water Coordinator, and Environmental Construction Liaison.

- Caltrans, in conjunction with the water quality monitor(s), shall establish effluent, upstream (background) and downstream monitoring locations to demonstrate compliance with all applicable water quality objectives as detailed in the Basin Plan. The downstream location shall be no more than 50 feet from the effluent location. Field measurements shall be taken from each location four times daily for flow, pH, temperature, dissolved oxygen, total dissolved solids, turbidity and specific conductance. In addition, visual observations shall be made four times daily and include the appearance of the discharge including color, turbidity, floating or suspended matter or debris, appearance of the receiving water at the point of discharge (occurrence of erosion and scouring, turbidity, solids deposition, unusual aquatic growth, etc), and observations about the receiving water, such as the presence of aquatic life. Measurements shall be collected from each sampling location four times daily while work is being conducted within waters of the state.

- Caltrans shall submit, subject to approval by the Regional Water Board staff, a dewatering and/or diversion plan that appropriately describe the dewatered or diverted areas and how those areas will be handled during construction. The diversion/dewatering plans shall be submitted no later than 30 days prior to conducting the proposed activity. Information submitted shall include the area or work to be diverted or dewatered and method of the proposed activity. All diversion or dewatering activities shall be designed as to minimize the impact to waters of the state and maintain natural flows upstream and downstream. All dewatering or diversion structures shall be installed in a manner that does not cause sedimentation, siltation or erosion upstream or downstream. All dewatering or diversion structures shall be removed immediately upon completion of project activities. The in-channel work within fish bearing streams will only be conducted between June 15th and October 15th. This project is not authorized to draft surface waters.

WQ-1: Soil Stabilization, Sediment Control, and Storm Water Pollution Prevention. To address potential water quality impacts during construction, Caltrans will require the contractor to use a combination of BMPs to control potential erosion and sedimentation from the project site. Caltrans has developed a suite of construction site BMPs that will be implemented on the proposed project. The construction site BMP manual can be downloaded at: http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm
The Plans, Specifications and Estimates (PS&E) developed for the project will require the contractor to prepare and implement SWPPP, and other project specific construction BMPs, which will effectively reduce potential pollutants of concern in storm water discharges. The SWPPP will be reviewed and approved by the Caltrans Resident Engineer to ensure all the necessary BMPs are incorporated. The SWPPP will also include a final Revegetation Plan to be implemented at the end of construction activities.

WQ-2: Oil, Grease, and Chemical Control: Caltrans SSPs will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters. For example, on this project, equipment operating in water bodies will be required to be steam cleaned prior to arrival on site, and be maintained in a clean condition during the length of activities.

WQ-3: Revegetation. Where vegetation along streams is removed or severely trimmed back, Caltrans will plant replacement vegetation for shading of creeks to reduce temperature related impacts to water quality. Mitigation measure BIO-9 will also reduce impacts associated with vegetation removal along riparian corridors.

WQ-6: Revegetation and Soil/Slope Stabilization. Following the construction process, the contractor will stabilize disturbed soil areas through permanent re-vegetation or other means. The Storm Water Quality Handbook, Project Planning and Design Guide (revised July 2005), provides detailed procedures for design of permanent slope stabilization controls, design pollution prevention, and permanent treatment BMPs. The procedures are intended to ensure that an appropriate design is developed that will

allow all finished slopes to achieve stabilization, even under severe conditions, and also provide erosion control BMPs at all point source discharges of storm water runoff. Treatment BMPs, such as biofiltration, will be incorporated where feasible.

WQ-8: Hazardous Waste Spill Control. As part of standard operation and maintenance procedures, Caltrans has developed a standard Hazardous Waste and Spill Response Plan (HW&SRP), which Caltrans will ensure is implemented during the project. These BMPs address water quality issues associated with accidental spills.

Other Conditions:

NMFS' Biological Opinion: The Biological Opinion issued by NMFS states that the project is not likely to jeopardize the continued existence of Northern California steelhead, Southern Oregon/Northern California coho salmon, and California Coastal Chinook salmon. Mitigation measures to reduce impacts to Special Status fish such as fish migration/fish passage and habitat creation and repair, as well as minimization measures for protecting aquatic resources are presented in Appendix A of the FIES/EIR and in Chapter 6 of the MMP. Construction and maintenance BMPs and compliance with the Caltrans statewide NPDES permit (Order No. 99 – 06 – DWQ) would also reduce impacts to fish species. Caltrans will implement the terms and conditions of the NMFS Biological Opinion, as well as mitigation measures and conditions listed above and below to minimize impacts to salmonids.

Fish Migration/Passage: Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) will consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements will comply with guidelines established by the NMFS and the CDFG. The removal of the Upcreek culvert along existing 101 and the stabilization of stream channel at the Haehl Creek interchange would likely reduce sediment input into the creeks as well as improve the beneficial use of the creeks for migration by anadromous salmonids. Regional Water Board staff recognizes that the Upp Creek and Haehl Creek interchanges were primarily designed with the bypass structure in mind; however, they will benefit salmonids because they were designed in accordance with NMFS and CDFG requirements and help fish passage and control sediment discharge. In addition, Caltrans worked closely with NMFS, CDFG, and Regional Water Board staff at these locations to ensure that all concerns raised by the agencies were addressed. As for the Ryan Creek passage barrier, Regional Water Board staff is satisfied that this is an appropriate mitigation for impacts to listed salmonids, especially when considered in conjunction with the cumulative benefits of additional barrier removal (located further upstream) which is being planned by Mendocino County.

Caltrans has designed the project to minimize the number of permanent structures that will be constructed in creek channels. Bent 24, which is associated with the viaduct structure at the confluence of Baechtel and Broaddus Creeks, will be the only

permanent bridge piling that will be constructed in the creek channel during Phase 1. All other creek crossings will consist of clear-span bridges, precluding the need for the construction and placement of permanent bridge piers within creek channels at these crossings. During construction of both project phases, a number of temporary piles to support trestles for the temporary access road and falsework construction also will be needed during project construction; however, these will be removed following construction of each phase of the project. The permanent and temporary piles that will be placed in the creek channels during construction of Phases 1 and 2 will not affect the migration pathway for upstream and downstream migrants.

In addition to enhancement and preservation of habitat on off-site mitigation parcels, Caltrans will implement stream restoration and fish passage improvements on Haehl and Upp Creeks where they cross the project footprint. Caltrans has also committed as part of its mitigation plan to providing the design for the North and South Fork locations of the Ryan Creek fish passage project, as well as constructing the South Fork location to mitigate impacts on salmonids and jurisdictional waters of the United States. These fish passage improvements on Ryan and Upp Creeks will improve access to upstream spawning and rearing habitat for coho and Chinook salmon and steelhead relative to current conditions. Improvements to fish passage will help offset the temporary effects associated with project construction by potentially increasing the productivity of listed salmonids in these creeks through increased spawning success.

There is general agreement among CDFG's Northern Region staff that Ryan Creek is a high priority for fish passage improvement. Ryan Creek was also identified as the Number 1 priority for passage improvement in Mendocino County in an inventory of road crossings on the State Highway system in Caltrans District 1 (Lang 2005). Ryan Creek ranked as the Number 2 priority within all of District 1. Ryan Creek is the first Outlet Creek tributary located immediately downstream from Little Lake Valley. Providing access to spawning and rearing habitat that is currently obstructed on Ryan Creek will directly benefit coho salmon populations in the Middle-Upper Eel River Recovery Unit and the Outlet Creek HSA. Identifying and treating passage barriers is consistent with the Recovery Strategy for California Coho Salmon and is identified as a Level D task (will directly contribute to recovery of coho salmon) for the Outlet Creek HSA.

Habitat Creation and Enhancement: Fish migration habitat will be further improved by the inclusion of approximately 1,700 linear feet of riparian plantings along the east bank of Baechtel Creek between where the viaduct would cross Baechtel Creek and where East Commercial Street currently crosses the creek, and along approximately 1,400 linear feet of the north bank of Mill Creek before Mill Creek passes under the Western Pacific railroad tracks. Approximately, six miles (measured along both sides of the stream banks) of riparian habitat will be created or enhanced along Category I, II, and III streams within the offsite mitigation parcels. There are long stream reaches along both Davis and Outlet Creeks that would benefit from riparian plantings. Consultations with Craig Martz and Scott Harris of CDFG and Tom Daugherty of NMFS on April 18, 2008,

indicated a preference for Category I riparian mitigation to occur on Outlet Creek, as it supports populations of all three listed fish species (salmonid and steelhead) potentially affected by the bypass project. Therefore, Caltrans has proposed approximately 10,000 linear feet of riparian vegetation to provide shade on Outlet Creek.

Additional mitigation includes restoration to areas along Outlet Creek and Berry that are undergoing bank erosion or that have large headcuts. These areas were identified in an erosion assessment conducted in May 2010. The erosion assessment consists of an inventory of sediment contributing sites within the mitigation parcels and a prioritization of those restoration efforts. The recommended treatments for these sites include bio-engineered bank stabilization efforts to reduce sediment input, reconnect the streams with their adjacent floodplains, and further improve fish habitat.

Monitoring of Pile Driving Noise near Streams*:* During pile driving activities below the top-of-bank and within 15 m (50 feet) of salmonid bearing streams, Caltrans will dewater the stream (including relocating fish), and a qualified fisheries biologist will monitor underwater noise levels both upstream and downstream of the dewatered area. If noise levels exceed 187 dB (sound exposure levels (SEL) or 208 dB peak, Caltrans will cease pile driving at this location and immediately contact NMFS to discuss further reasonable and prudent measures to minimize potential impacts to fish, which could include additional fish relocation and dewatering. Dewatering could be required for six weeks or more at some stream crossings as explained more fully in the NMFS' Biological Opinion.

Monitoring and Reporting Program: As stated in Section 1.0. of the MRP, Caltrans is required to conduct bioassessment (benthic macroinvertebrate sampling) as well as chemical, physical, and biological monitoring components. Chemical monitoring includes parameters such as dissolved oxygen, temperature, turbidity, total dissolved solids, oil and grease, and several other constituents. Physical monitoring includes hydrology, geomorphic conditions (i.e., cross sectional water depth, wetted channel width, bankfull width, substrate characteristics, canopy cover, gradient, sinuosity, large woody debris) and other parameters. Biological monitoring includes wetland plant coverage, invasive species coverage, riparian canopy coverage, benthic macro-invertebrates surveys, as well as other parameters. Regional Water Board staff worked closely with the U.S. EPA, U.S. ACE, and Caltrans to develop the MRP and to ensure that impacts to stream temperatures are fully mitigated.

Section 3.0. of the MRP details the schedule (including the frequency of monitoring), the locations, and the evaluation of data to adequate develop the short term work plans, grazing management plan, and mitigation success criteria. The requirements for baseline assessments, monitoring during construction, procedures for enhancement verification, and long term monitoring requirements as also detailed in Section 3.0.

Section 4.0. of the MRP requires that Caltrans monitor impacts to stream temperatures associated with the construction of the bypass and Section 5.0. requires Caltrans to

measure the success of the mitigation measures (revegetation) and ensure the project does not result in a significant increase in stream temperatures in the long term. Additionally, the Water Quality Certification and MRP require Caltrans to plant riparian vegetation in all areas within the bypass alignment and mitigation lands to provide the maximum site potential shade to streams within the project area. Section 3.0 of the MRP also require Caltrans to include additional and robust success criteria within the MMP for measuring effectiveness of riparian mitigation measures that incorporate percent canopy cover and percent effective shade requirements which measure the effectiveness of riparian creation and enhancement actions for mitigating impacts to streams.

Potentially Significant Impact - Direct and Indirect Impacts to Wetlands and Waters of the U.S. (FEIS/EIR, §§ 3.7.3, 3.17.2):

Impact Description:

The project will result in impacts to wetlands and surface waters within the Outlet Creek HSA, including Haehl Creek, Baechtel Creek, Broaddus Creek, Mill Creek, Outlet Creek, Upp Creek, Ryan Creek and two ponds (Rutledge and Niesen). Caltrans has determined that the project would directly impact a total of 89.27 acres of waters of the U.S[3]., including 83.77 acres of impacts to wetlands and 5.5 acres (12,416 linear feet) to streams and ponds also identified as waters of the U.S. The project would temporarily impact 29.88 acres of wetlands and 3.16 acres (9,255 linear feet) of streams and ponds identified as waters of the U.S[4]. In addition, the project would result in permanent impacts to 53.89 acres of wetlands and to 2.34 acres (3,161 linear feet) of streams and ponds that are waters of the U.S.[5] The FEIS/EIR has identified this as a potentially significant impact.

Finding:

Pursuant to Public Resources Code Section 21081(a) and CEQA Guidelines Section 15091(a), the Regional Water Board finds that changes or alterations have been

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[3] Waters of the U.S. is defined in section 232.2 of Title 40 of the Code of Federal Regulations and includes "all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide. All interstate waters, including interstate wetlands. All other waters including intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflates, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which would or could affect interstate or foreign commerce… and wetlands adjacent to waters (other than waters that are themselves wetlands) …"

[4] A temporary impact is the short term impact that occurs during the placement of fill within wetlands for access roads, or the removal of trees and vegetation along streams to construct false work and structures.

[5] A permanent impact is the placement of fill within areas for the purpose of a permanent structure such as the roadway embankments for the new highway, bridge footings, or culverts within streams.

required in, or incorporated into, the project that would avoid or substantially lessen the significant environmental effect to a less than significant level. The Regional Water Board further finds that mitigation measures and conditions identified below are feasible to offset the impact and are, therefore, incorporated as conditions of the Water Quality Certification and MRP.

Facts that Support the Finding:

FEIS/EIR Mitigation Measures:

BIO-1: Mitigation and monitoring: The Modified Alternative J1T project will comply with terms and conditions provided by the U.S. FWS and NMFS, in their Biological Opinions. Caltrans will also comply with conditions of the permits issued by all of the resources agencies, and will implement mitigation and monitoring measures provided in the MMP.

BIO-2: Compensatory Mitigation: Compensatory mitigation would include the creation, restoration, enhancement, and/or preservation of sensitive habitats affected by the project. Compensatory rations shall be developed through coordination with U.S. ACE, U.S. FWS, NMFS, U.S. EPA, and CDFG. See Other Conditions section below for more detailed information.

BIO-3: Avoidance and Minimization: During the final design phase of the Modified Alternative J1T project, Caltrans biologists, Caltrans design engineers, and resource agencies will work together on additional design solutions that will avoid or minimize impacts to sensitive biological resources.

BIO-4: Environmental Sensitive Area: Caltrans will establish and delineate ESAs on project plans and specifications to protect sensitive biological resources adjacent to the construction corridor by prohibiting construction activities in those areas.

BIO-5: Training: Caltrans will develop and implement an environmental awareness and training program that informs the contractor and construction workers of the environmental regulations that Caltrans is committed to comply with, and measures established for the project to minimize and avoid sensitive habitats and species.

BIO-6: Monitoring: Qualified biologists and water quality monitors would monitor construction activities in sensitive biological resource areas to ensure permit conditions and mitigation requirements are adhered to.

BIO-7: Construction In Streams: Caltrans would avoid working in live stream channels to the extent feasible. Construction associated with stream crossings (bridges, viaduct and culvert) would conform to the work window of June 15 though October 15 of each year for work associated with bridge, viaduct, and culvert construction over salmonid bearing streams.

BIO-13: Wetlands and Other Waters: Caltrans will mitigate for impacts to wetlands and other waters of the U.S. by implementing the mitigation measures that are set forth in the Final MMP, The mitigation will consist of a combination of measures, including the creation of wetlands and other waters, and the restoration, enhancement and preservation of existing wetlands and other waters in Little Lake Valley.

FP-1: Structure Design: According to FEMA, the floodway is "the area of the floodplain that should be reserved (kept free of obstructions) to allow floodwaters to move downstream." For each valley alternative, the Floodway Viaduct (bridge) spans the floodway. The only encroachments in the floodway are the columns supporting the structure. In addition, the structure designs have relatively long spans, in the range of 30 m (100 ft). These structure design features limit the impacts on the floodplain by minimizing the actual footprint of the impacts and obstructions to flow.

FP-2: Drainage Philosophy: The valley alternatives include equalizing culverts at periodic points along the embankments, which should minimize the redirection of flows, maintaining the existing flood patterns. The culverts will not be included, however, if detailed hydraulic studies indicate the culverts would cause other problems with flood patterns.

FP-3: Design Cross-Sections: The cross sectional design of the facility, the side slopes, median, pavement widths, and so forth, has been established to limit impacts to floodplains as well as other resources. The median width, at 13.8 m (45 ft), is 4.8 m (16 ft) less than Caltrans' current design standard. This median width reduces the footprint of impact along the entire alignment, including the floodplain. Sideslopes are the slopes connecting the roadbed with the existing ground. When the embankment is low, the sideslopes can be constructed at relatively low angles without extending an unreasonable distance from the roadbed. But as embankments increase in height, sideslopes constructed at the same angles would cover much wider areas and add to the volume of earth to be placed. To reduce the earthwork and footprint of higher embankments, sideslopes are constructed at steeper angles. In the floodplain, the higher embankments occur at bridge approaches, and the steeper sideslopes constructed in connection with these higher embankments limit the impacted areas.

FP-4: Geometric Design: The use of tight diamond interchanges rather than spread diamonds reduces the footprint of impacts on the floodplain.

Other Conditions:

Wetlands and Other Waters: Wetlands subject to Regional Water Board jurisdiction would be permanently and temporarily affected by the project. Other waters (streams and ponds) would also be permanently and temporarily affected by the project, and consist of: 1) two ponds (one on the Colli Ranch and one in the Niesen Ranch); 2) approximately 2,500 feet of an ephemeral stream south of East Hill Road; 3) the culvert crossing over Upp Creek at the north end of the project corridor; and 4) potential temporary dewatering of perennial streams (if needed) to minimize pile driving-related noise impacts to listed salmonids.

Compensatory Mitigation: Compensatory mitigation would include the creation, restoration, enhancement, and/or preservation of sensitive habitats affected by the project. The Water Quality Certification by the Regional Water Board will be conditioned upon Caltrans obtaining control of all of the area necessary for the creation of the 24 acres of wetlands, as proposed in its mitigation and monitoring proposal. Off-site mitigation actions for wetlands creation will require site preparation, including grading uplands and modifying local hydrology; seeding graded areas; planting wetlands species; and monitoring for successful wetland establishment.

After the creation of approximately 24 acres of wetlands, the project would still result in a loss of 29 acres of wetlands. After several years of meetings and planning with Caltrans, the U.S. EPA, U.S. FWS, U.S. ACE, NMFS, CDFG, MCRCD, WEC and Regional Water Board collectively agreed to an ecologically designed watershed approach to mitigate for the loss of 29 acres of wetlands. The watershed approach would involve providing a significant improvement to the ecological functions and values of wetlands off-site of the project, but still within the Little Lake Valley. (The project is planned in the west-central portion of the Little Lake Valley.) The resource agencies collectively agreed that the mitigation should be focused within Little Lake Valley, because it hosts a variety of unique ecological features, including the presence of several rare, threatened, and endangered species (e.g. anadromous fish and Baker's Meadowfoam).

This watershed approach mitigation strategy would combine habitat creation, restoration, enhancement, and preservation, which is consistent with the U.S. EPA and U.S. ACE new Compensatory Mitigation Rule released on April 10, 2008. The watershed approach is discussed in the Code of Federal Regulations [33 CFR Part 332.3(h)] which details the applicability, considerations, information needed, and watershed scale. As stated in the Federal Mitigation Rule, "If a functional or condition assessment of other suitable metric is not used, a minimum of one-to-one acreage or linear foot compensation ratio must be used." With Caltrans unable to provide the required acreage for wetlands establishment (creation) they proposed mitigating through the watershed approach. Approximately 1,011 acres of existing wetlands would be enhanced and in combination with the 24 acres created, and the 54 acres preserved, for a total of approximately 1,088 acres of wetlands to be secured and managed in perpetuity. Wetland enhancement actions include: filling in man-made drainage ditches to increase the residence time of surface waters within the wetland area; implementing a grazing management plan to reduce the impacts from cattle; and removing invasive species to promote the health and natural recruitment of native wetland species. The mitigation site preservation and site protection instruments would be a combination of fee title purchase, conservation easement, or other deed restriction. The Water Quality Certification (Condition 8) will be conditioned upon Caltrans obtaining control of all of the area necessary for the enhancement and preservation of wetlands, as identified in their mitigation plan.

The Federal Mitigation Rule (33 CFR Part 332.3) discusses the considerations for the watershed mitigation approach which include water quality and watershed impairments. The Eel River watershed is listed on the Clean Water Act section 303(d) list as impaired for sediment and temperature. In 2004, the U.S. EPA established sediment and temperature total maximum daily loads (TMDLs) for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury). Therefore, to fully develop a watershed approach the mitigation must include a nexus to address the temperature and sediments impairments.

The nexus relates how the proposed mitigation will implement additional measures to reduce stream temperatures and excessive sediment inputs into the watershed. For sediment, Caltrans has prepared an assessment of all the erosion sites located within the off-site mitigation lands, which includes the inventory, prescription, and prioritization of restoration actions that will reduce erosion and sediment delivery within the watershed. In addition, the bypass structure has been designed reduce erosion and sediment delivery to the maximum extent practicable (MEP). For temperature impairment, the most practical way to reduce stream temperatures is to provide riparian vegetation in all areas feasible within the project limits, including bypass alignment and off-site mitigation lands (maximum site potential shade). In addition, baseline surveys will be conducted to find all areas that benefit from riparian plantings to achieve maximum site potential shade, and percent effective shade (shade on water). Additionally, the current land management practices of stream alteration and cattle grazing have potentially negative side effects on water. Therefore, the proposed grazing management plan, which is geared towards the enhancement and protection of natural resources, will be implemented to improve the overall health of the watershed.

Monitoring and Reporting Program: To compensate for the impacts to wetlands Caltrans proposes a watershed approach to achieve an increase in functions and values within the selected mitigation area. The MRP is intended to provide the data necessary to validate that proposal. The MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands. It is necessary to establish baseline conditions of surface waters to verify the establishment and enhancement of wetlands, riparian areas, and waters of the U.S. and State within the mitigation lands.

The primary objectives of the MRP include, but are not limited to:

A. Assessing the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
B. Assessing the overall health and evaluating trends in receiving water quality;
C. Assessing the potential biological, chemical, physical impacts, both during and after construction, of the bypass alignment;

D. Determining and revising site specific performance standards and success criteria for the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
E. Evaluating the effectiveness of BMPs, mitigation measures, and avoidance measures;
F. Evaluating activities that results in or may result in violations of MRP and the Water Quality Certification that may warrant additional BMPs or stop work orders;
G. Identifying sources of pollutants;
H. Assessing compliance with water quality objectives and TMDLs;
I. Measuring and assessing the reductions or prevention in pollutant loads; and
J. Verifying and successful repair within the bypass alignment and enhancement of the mitigation lands.

The MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands. The baseline assessment of wetlands within the bypass alignment and the off-site mitigation parcels includes:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition]
- Absolute percent coverage of wetland plants
- Absolute percent cover of native plant species
- Species richness
- Absolute percent coverage of invasive species
- CRAM score.

Potentially Significant Impact-Impacts to Special-Status Wildlife (FEIS/EIR, § 3.7.5)

Impact Description:

Construction of Modified Alternative J1T could affect Northern spotted owl (a federally listed threatened species) by removing suitable habitat that could be used by this species at the optional borrow site (Oil Well Hill). Using Oil Well Hill for borrow material could also affect Pacific fisher (a federal candidate for listing as threatened or endangered), as well as red tree vole (a non-listed state special-status species), by removing suitable habitat.

Modified Alternative J1T would remove riparian woodland and scrub habitat (within all three categories) along streams that provide nesting and foraging habitat for white-tailed kite, a California fully protected species, and Cooper's hawk, yellow-breasted chat, and California yellow warbler, which are California special-status species. In addition,

Modified J1T would remove oak woodland that could provide nesting and foraging habitat for white-tailed kite, Coopers hawk, and other raptors.

Construction of the bridges and viaducts for Modified Alternative J1T could affect Northwestern pond turtle and foothill yellow-legged frog that could be present in the streams within the project corridor.

The FEIS/EIR identifies these impacts as potentially significant.

Finding:

Pursuant to Public Resources Code Section 21081(a) and CEQA Guidelines Section 15091(a), the Regional Water Board finds that changes or alterations have either been required in or incorporated into the project such that it would avoid or substantially lessen the significant environmental effect to a less than significant level. The Regional Water Board further finds that mitigation measures and conditions identified below are feasible to offset the impact and are, therefore, incorporated as conditions of the Water Quality Certification and associated MRP.

Facts that Support the Finding:

FEIS/EIR Mitigation Measures:

BIO-1: Mitigation and monitoring: The Modified Alternative J1T project will comply with terms and conditions provided by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), in their Biological Opinions. Caltrans will also comply with conditions of the permits issued by all of the resources agencies, and will implement mitigation and monitoring measures provided in the Final MMP, dated June 2010, includes measures that would compensate for impacts to wetlands and other waters; riparian woodlands, oak woodlands, listed salmonids; northern spotted owl and Pacific fisher; Baker's meadowfoam and non-listed special-status species.

BIO-2: Compensatory mitigation: Compensatory mitigation would include the creation, restoration, enhancement, and/or preservation of sensitive habitats affected by the project. The U.S. EPA, U.S. FWS, U.S. ACE, NMFS, CDFG, MCRCD, WEC and Regional Water Board collectively agreed to and developed an ecologically based watershed approach designed to ensure no net loss of ecological functions and values. The watershed approach would provide significant improvements to the ecological functions and values of wetlands off-site of the project, but still within the Little Lake Valley[6]. (The project is planned in the west-central portion of the Little Lake Valley.)

[6] During the Willits Bypass Mitigation Development Team meetings, it was collectively agreed between the U.S. EPA, U.S. ACE, U.S. FWS, CDFG, NMFS, WEC, Caltrans, and the Regional Water Board that the most appropriate use of the mitigation funds would be a watershed approach within Little Lake Valley. The resource agencies believe, that in this case, a watershed based approach will be superior to an approach relying on wetland creation/establishment ratios..

The resource agencies agreed that the mitigation should be focused within Little Lake Valley because it hosts a variety of unique ecological features, including the presence of several rare, threatened, and endangered species (e.g. anadromous fish and Baker's Meadowfoam). Caltrans proposed that 1,011.13 acres of existing wetlands would be enhanced and in combination with the 24.33 acres created and 53.44 acres preserved, for a total of 1,088.90 acres of wetlands secured in perpetuity. In addition, an off-site fish passage project at Ryan Creek will be implanted to provide salmonids with access to previously blocked habitat.

BIO-3: Avoidance and Minimization: During the final design phase of the Modified Alternative J1T project, Caltrans biologists, Caltrans design engineers, and the resource agencies have worked together on construction scenarios, BMPs, work windows and project monitoring strategy that will avoid and/or minimize impacts to sensitive biological resources.

BIO-4: Environmentally Sensitive Areas: Caltrans will establish and delineate Environmentally Sensitive Areas (ESAs) on project plans and specifications to protect sensitive biological resources adjacent to the construction corridor by prohibiting construction activities in those areas.

BIO-5: Training: Caltrans will develop and implement an environmental awareness and training program that informs the contractor and construction workers of the environmental regulations that Caltrans is committed to comply with, and measures established for the project to minimize and avoid sensitive habitats and species.

BIO-6: Monitoring: Qualified biologists would monitor construction activities in sensitive biological resource areas to ensure permit conditions and mitigation requirements are adhered to.

BIO-8: Oak Woodland: Oak woodland occurring in the project corridor consists of valley oak woodland, Oregon white oak woodland, and black oak woodland, which would be permanently affected by the Modified Alternative J1T.
Minimization efforts during construction would consist of the removal of only the minimum number of trees necessary to allow for efficient project construction. Environmentally Sensitive Area (ESA) fencing would be installed around oak woodlands adjacent to the work areas. Any encroachment beyond the ESA fencing during construction (including driving, material or equipment storage and vehicle parking) would be prohibited. The ESA fencing would be accurately depicted on the final contract drawings. Compensation for the permanent loss of oak woodland would consist of in-kind creation/restoration, enhancement and preservation of oak woodlands on newly acquired parcels. These parcels would be purchased in fee or by a conservation easement and preserved in perpetuity. On sites to where creation/restoration or enhancement is to occur, oak trees would be initially planted in these areas at the ratio of five new saplings for each oak lost with the goal of three of them surviving after a ten-year monitoring period. Other compensation options may include: 1) a monetary

contribution to the California Oak Woodlands Conservation Fund, administered by the State Wildlife Conservation Board for the purpose of purchasing oak woodland conservation easements, or; 2), if there is an established CDFG oak woodland mitigation bank, the mitigation bank could be used to fulfill the off-site compensation requirements (refer to Conceptual Mitigation Plan; Appendix L).

BIO-14: Migratory Bird Treaty Act: To comply with the provisions of the Migratory Bird Treaty Act, vegetation required for removal will be removed or trimmed during the fall and/or winter months, to the extent possible, to avoid impacts to nesting birds. If vegetation cannot be removed during the non-breeding season, Caltrans will arrange to have a qualified biologist conduct preconstruction surveys of impact areas to check for nesting activity of all bird species. If nesting activity is detected, Caltrans will, if possible, establish a buffer around the nest(s). The buffer width would be determined through consultation with USFWS and CDFG. The buffer will be maintained and construction activities will avoid nest sites until the biologist determines that the young have fledged or nesting activity has ceased.

BIO-16 (revised): Northern Spotted Owl Habitat at Oil Well Hill. Excavation at the designated borrow site at Oil Well Hill could affect a maximum of 40 acres of Northern spotted owl (NSO) foraging and dispersal habitat. Caltrans will conduct additional pre-construction protocol-level surveys to determine the status of NSO in the vicinity of the Oil Well Hill borrow site. If NSO is found nesting within 1.3 miles of the borrow site, Caltrans/FHWA will consult with the USFWS (refer to USFWS Biological Opinion (BO) for NSO, Appendix D). Caltrans/FHWA will document the results of all protocol surveys conducted for Northern spotted owls. Caltrans will implement mitigation measures provided in the USFWS BO for NSO, which include:

BIO-16A: All large trees that can reasonably be avoided at Oil Well Hill will be protected.
BIO-16B: Vegetation removal at Oil Well Hill will occur during the non-breeding season (September 15 – February 1), to the extent feasible, to minimize potential impacts to spotted owls. Vegetation will be removed incrementally (i.e., only on those portions of the site that are needed for borrow material), rather than removing all vegetation on the approximately 16 ha (40 ac) site prior to excavation.
BIO-16C: Planting the same tree species that occurred at the borrow site following excavation, if feasible, could restore vegetation at Oil Well Hill.

BIO-17: This mitigation measure is retained, but has been renamed BIO-16D (see above).
BIO-18: Non-listed Special-Status Wildlife Species: If non-listed special-status wildlife species are found nesting on or near the project site, including California yellow warbler, yellow-breasted chat, and raptors, Caltrans will establish buffers around each nest. The buffer width will be determined through consultation with CDFG. The buffer shall be maintained and construction activities shall avoid nest sites until the Caltrans biologist determines that the young have fledged or nesting activity has ceased.

For white-tailed kites and other raptors, Caltrans shall conduct a pre-construction survey during the spring or early summer (April-early July) to determine whether nesting raptors (e.g., white-tailed kites, Cooper's hawks, red-tailed hawks, red-shouldered hawks) are present on or within 0.40 km (0.25 mi) of the selected alternative. If the survey detects nesting raptors on or within 0.40 km (0.25 mi) of the selected alternative, Caltrans will maintain buffer areas and seasonal construction constraints (e.g., no work during active nesting periods) in coordination with USFWS and CDFG.

BIO-19: White-tailed kite and other raptors: Mitigation Measure BIO-19 is retained, but has been incorporated as part of BIO-18 (above). Mitigation measures for all non-listed special-status are now discussed under BIO-18.
BIO-20: Yellow-breasted chat: Mitigation Measure BIO-20 is retained, but has been incorporated as part of BIO-18 (above). Mitigation measures for all non-listed special-status are now discussed under BIO-18.
BIO-21: Wildlife Crossings: The proposed viaduct and bridge crossings would provide access for wildlife to cross under the proposed alignment. Caltrans could construct additional wildlife under-crossings, if feasible, that would be suitable for use by deer and other wildlife species. If the construction of other wildlife crossings is feasible, the location, number and design of the under-crossings would be determined through consultation with CDFG.

Other Conditions:

The project will comply with terms and conditions listed in the USFWS Biological Opinion to minimize impacts. In addition, all appropriate BMPs will be implemented to minimize impacts to Northern spotted owl and other sensitive resources in the area.

Measures implemented for salmonids would also minimize impacts to northwestern pond turtle and foothill yellow-legged frog.

Monitoring and Reporting Program: The MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands. It is necessary to establish baseline conditions of surface waters to verify the establishment and enhancement of wetlands, riparian areas, and waters of the U.S. and State within the mitigation lands.

The primary objectives of the MRP include, but are not limited to:

A. Assessing the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
B. Assessing the overall health and evaluating trends in receiving water quality;
C. Assessing the potential biological, chemical, physical impacts, both during and after construction, of the bypass alignment;

D. Determining and revising site specific performance standards and success criteria for the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
E. Evaluating the effectiveness of BMPs, mitigation measures, and avoidance measures;
F. Evaluating activities that results in or may result in violations of MRP and the Water Quality Certification that may warrant additional BMPs or stop work orders;
G. Identifying sources of pollutants;
H. Assessing compliance with water quality objectives and TMDLs;
I. Measuring and assessing the reductions or prevention in pollutant loads; and
J. Verifying and successful repair within the bypass alignment and enhancement of the mitigation lands.

The MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands.

Application for California Department of Fish and Game Notification of Lake or Streambed Alteration and 1602 Additional Pages

California Department of Transportation U.S. Highway 101 Willits Bypass Project Mendocino County, California

Submitted to:

California Department of Fish and Game
Northern Region
601 Locust Street
Redding, CA 96001
Contact: Karen Moore
530/225-2381

Applicant:

California Department of Transportation
District 3—Office of Environmental Management
2800 Gateway Oaks Drive
Sacramento, CA 95833
Contact: Jason Meigs
916/274-0564

February 2010

For individuals with sensory disabilities, this document is available in alternate formats. Please write to Jason Meigs, California Department of Transportation, District 3—North Region Environmental Division, 2800 Gateway Oaks Drive, Sacramento, CA 95833, or call (916) 274-0564 or use the CA Relay Service TTY number (800) 735-2929.

Application for
California Department of Fish and Game Notification of Lake or Streambed Alteration and 1602 Additional Pages

California Department of Transportation
U.S. Highway 101 Willits Bypass Project
Mendocino County, California

Prepared by: _____ Date: _____

Jason Meigs, Biologist
D-3 North Region Environmental Division
California Department of Transportation, District 3
916/274-0564

Approved by: _____ Date: _____

Jeremy Ketchum, Senior Environmental Planner
Office of Environmental Management S-3
California Department of Transportation, District 3
916/264-0621

Contents

Application for California Department of Fish and Game Notification of Lake or Streambed Alteration

Appendix 1: Jurisdictional Wetland Impacts Maps (Bypass Alignement) From MMP

Appendix 2: Mitigation Imapcts Maps From MMP

Appendix 3: Riparian and Oak Woodland Impact Maps From MMP

Attachment 1: Supplemental Information

- Block 3. Property Owners
- Block 8A. Project Location
  - Bypass Alignment
  - Bypass Vertical Alignment1
  - Latitude/Longitude of Key Project Components (Approximate)
- Block 8B. Rivers, Streams or Lakes Affected
  - Jurisdictional Determinations
  - Name and Description of Affected Rivers, Streams or Lakes Affected
- Block 10A. Project Description
  - Background and Changes Since the Final EIS/EIR
  - Description of Specific Design Elements
  - Description of Specific Construction Elements
- Block 10B. Equipment and Machinery
- Block 11A. Project Impacts
- Block 11B. Vegetation Type and Tree Removal
- Block 11C. Special-Status Species
- Block 12A. Techniques Used to Prevent Sediment From Entering Watercourse During Construction
- Block 12B. Avoidance and/or Minimization Measures to Protect Fish, Wildlife and Plant Resource
- Block 12C. Mitigation and Compensation Measures to Protect Fish, Wildlife and Plant Resources
  - Habitat Mitigation and Monitoring Plan
- Block 13. Permits

Attachment 2 Figures

Attachment 3 Jurisdictional Determinations

Attachment 4 Record of Decision, and Notice of Determination

Attachment 5 Section 7 Concurrence Documents

Attachment 6 Names and Addresses of Adjoining Property Owners/Lessees

Attachment 7 Copies of CWA Sec. 404 Permit Application and CWA Sec. 401 Water Quality Certification Application

FOR DEPARTMENT USE ONLY				
Date Received	*Amount Received*	*Amount Due*	*Date Complete*	*Notification No.*
	$	$		

STATE OF CALIFORNIA

DEPARTMENT OF FISH AND GAME

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

1. APPLICANT PROPOSING PROJECT

Name	Jason Meigs		
Business/Agency	State of California, Department of Transportation - District 3		
Street Address	2800 Gateway Oaks Drive		
City, State, Zip	Sacramento, CA 95833		
Telephone	(916) 274-0564	Fax	(916) 274-0602
Email	jason_meigs@dot.ca.gov		

2. CONTACT PERSON (*Complete only if different from applicant*)

Name			
Street Address			
City, State, Zip			
Telephone		Fax	
Email			

3. PROPERTY OWNER (*Complete only if different from applicant*)

Name	Refer to Attachment 6 "Names and Adressess of Adjoining Property Owners/Lessees"		
Street Address			
City, State, Zip			
Telephone		Fax	
Email			

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name	U.S. Highway 101 Willits Bypass Project			
B. Agreement Term Requested	☑ Regular (*5 years or less*) ☐ Long-term (*greater than 5 years)*			
C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (*year*)	Ending (*year*)	Start Date (*month/day*)	End Date (*month/day*)	
2011	2015	04/15	10/30	

5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.

A.	☑ Standard *(Most construction projects, excluding the categories listed below)*	
B.	☐ Gravel/Sand/Rock Extraction (*Attachment A*)	*Mine I.D. Number:* _____
C.	☐ Timber Harvesting (*Attachment B*)	THP *Number:* _____
D.	☐ Water Diversion/Extraction/Impoundment (*Attachment C*)	*SWRCB Number:* _____
E.	☐ Routine Maintenance (*Attachment D*)	
F.	☐ DFG Fisheries Restoration Grant Program (FRGP)	*FRGP Contract Number:* _____
G.	☐ Master	
H.	☐ Master Timber Harvesting	

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: The Department may not process this notification until the correct fee has been received.***

	A. Project	B. Project Cost	C. Project Fee
1	U.S. Highway 101 Willits Bypass (40 x-ings x $4,482.75)		$179,310.00
2			
3			
4			
5			
		D. Base Fee *(if applicable)*	
		E. TOTAL FEE ENCLOSED	$179,310.00

7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?

☐ Yes (*Provide the information below*) ☑ No

Applicant: _____ Notification Number: _____ Date: _____

B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?

☑ No ☐ Yes (*Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.*)

☐ *Continued on additional page(s)*

8. PROJECT LOCATION

A. Address or description of project location.

(*Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway*)

Refer to Attachment 1 "Supplemental Information:; Block 8A

☑ *Continued on additional page(s)*

B. River, stream, or lake affected by the project.	Refer to Attachment 1 "Supplemental Information; Block 8B.
C. What water body is the river, stream, or lake tributary to?	Eel River, Pacific Ocean
D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts?	☐ Yes ☑ No ☐ Unknown
E. County	Mendocino County

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Willits	18N	13W	23	

☐ *Continued on additional page(s)*

K. Meridian (*check one*) ☐ Humboldt ☐ Mt. Diablo ☐ San Bernardino

L. Assessor's Parcel Number(s)

efer to Attachment 6 "Nams and Addresses of Adjoining Property Owners/Lessees".

☐ *Continued on additional page(s)*

M. Coordinates (*If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes)*

Latitude/Longitude	*Latitude:* sup info block 8A	*Longitude:*	
	☐ Degrees/Minutes/Seconds	☐ Decimal Degrees	☐ Decimal Minutes
UTM	*Easting:*	*Northing:*	☑ Zone 10 ☐ Zone 11
Datum used for Latitude/Longitude or UTM	☐ NAD 27	☑ NAD 83 or WGS 84	

9. PROJECT CATEGORY AND WORK TYPE *(Check each box that applies)*

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	☑	☐	☐
Bank stabilization – rip-rap/retaining wall/gabion	☑	☑	☐
Boat dock/pier	☐	☐	☐
Boat ramp	☐	☐	☐
Bridge	☑	☐	☐
Channel clearing/vegetation management	☑	☐	☐
Culvert	☑	☐	☐
Debris basin	☐	☐	☐
Dam	☐	☐	☐
Diversion structure – weir or pump intake	☑	☐	☐
Filling of wetland, river, stream, or lake	☑	☐	☐
Geotechnical survey	☐	☐	☐
Habitat enhancement – revegetation/mitigation	☑	☐	☐
Levee	☐	☐	☐
Low water crossing	☑	☐	☐
Road/trail	☑	☐	☐
Sediment removal – pond, stream, or marina	☐	☐	☐
Storm drain outfall structure	☑	☐	☐
Temporary stream crossing	☑	☐	☐
Utility crossing : Horizontal Directional Drilling	☐	☐	☐
Jack/bore	☐	☐	☐
Open trench	☐	☐	☐
Other *(specify)*: Place fill for roadway	☑	☐	☐

10. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., “bird’s-eye view”) showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

Refer to Attachment 1 "Supplemental Information"; Block 10A

☑ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

refer to Attachment 1 "Supplemental Information"; Block 10B

☑ *Continued on additional page(s)*

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).

☑ Yes ☐ No (*Skip to box 11*)

D. Will the proposed project require work in the wetted portion of the channel?

☑ Yes (*Enclose a plan to divert water around work site*)

☐ No

11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

Refer to Attachment 1 "Supplemental Information"; Block 11A

☐ *Continued on additional page(s)*

B. Will the project affect any vegetation? ☑ Yes (*Complete the tables below*) ☐ No

Vegetation Type	Temporary Impact	Permanent Impact
Refer to Attachment 1 "Supplemental Information"; Block 11B	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____
	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____

Tree Species	Number of Trees to be Removed	Trunk Diameter (range)
"Supplemental Information"; Block 11B		

☐ *Continued on additional page(s)*

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☑ Yes *(List each species and/or describe the habitat below)* ☐ No ☐ Unknown

"Supplemental Information"; Block 11C

☑ *Continued on additional page(s)*

D. Identify the source(s) of information that supports a “yes” or “no” answer above in Box 11.C.

Natural Environment Study, Biological Assessment, Individual Take Permit Application

☑ *Continued on additional page(s)*

E. Has a biological study been completed for the project site?

☑ Yes (*Enclose the biological study*) ☐ No

Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.

F. Has a hydrological study been completed for the project or project site?

☑ Yes (*Enclose the hydrological study*) ☐ No

Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.

12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.

Refer to Attachment 1 "Supplemental Information"; Block 12A

☑ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Refer to Attachment 1 "Supplemental Information"; Block 12B

☐ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

Refer to Attachment 1 "Supplemental Information"; Block 12C

☐ *Continued on additional page(s)*

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

A. _____ ☑ Applied ☐ Issued

B. _____ ☑ Applied ☐ Issued

C. Attachment 1 "Supplemental Information"; Block 13 ☑ Applied ☐ Issued

D. Unknown whether ☐ local, ☐ state, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☑ *Continued on additional page(s)*

14. ENVIRONMENTAL REVIEW

A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)?

☑ Yes (*Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each*)

☐ No (*Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared*)

☐ Notice of Exemption	☐ Mitigated Negative Declaration	☐ NEPA document (*type*): EIS
☐ Initial Study	☑ Environmental Impact Report	☐ CESA document (*type*): 2081 and 2080.1
☐ Negative Declaration	☑ Notice of Determination *(Enclose)*	☐ ESA document (*type*): Sect 7
☐ THP/ NTMP	☑ Mitigation, Monitoring, Reporting Plan	

B. State Clearinghouse Number (*if applicable*)	1990030006		
C. Has a CEQA lead agency been determined?	☑ Yes (*Complete boxes D, E, and F*)	☐ No (*Skip to box 14.G*)	
D. CEQA Lead Agency	Caltrans		
E. Contact Person	Jason Meigs	F. Telephone Number	(916) 274-0564

G. If the project described in this notification is part of a larger project or plan, briefly describe that larger project or plan.

The proposed U.S. 101 Willits Bypass project is a single and complete project and is not part part of a larger project or plan.

☐ *Continued on additional page(s)*

H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid?

☑ Yes (*Enclose proof of payment*) ☐ No (*Briefly explain below the reason a filing fee has not been paid)*

Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.

15. SITE INSPECTION

Check one box only.

☐ In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry.

☑ I request the Department to first contact (*insert name*) Jason Meigs at (*insert telephone number*) (916) 274-0564 to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.

16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

☑ Yes (Please enclose the information via digital media with the completed notification form)

☐ No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

_____ _____

Signature of Applicant or Applicant's Authorized Representative — Date

Jason Meigs, Caltrans District 3 Associate Env. Planner - NS

Print Name

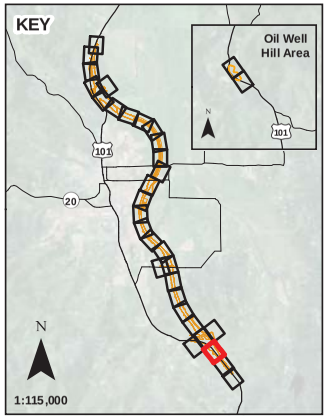
Appendix A: Bypass Impact Maps - Waters and Wetland (From Appendix B of the Willits Bypass Mitigation and Monitoring Plan)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-4

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

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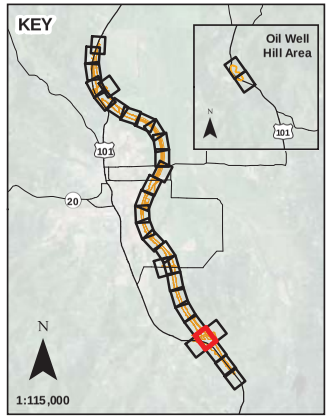

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Sheet B-6

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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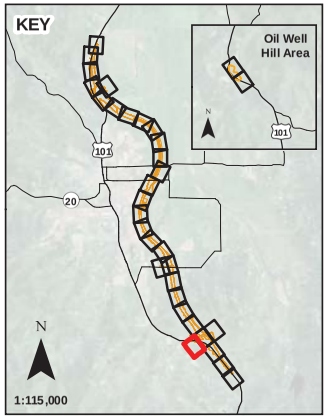

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Sheet B-8

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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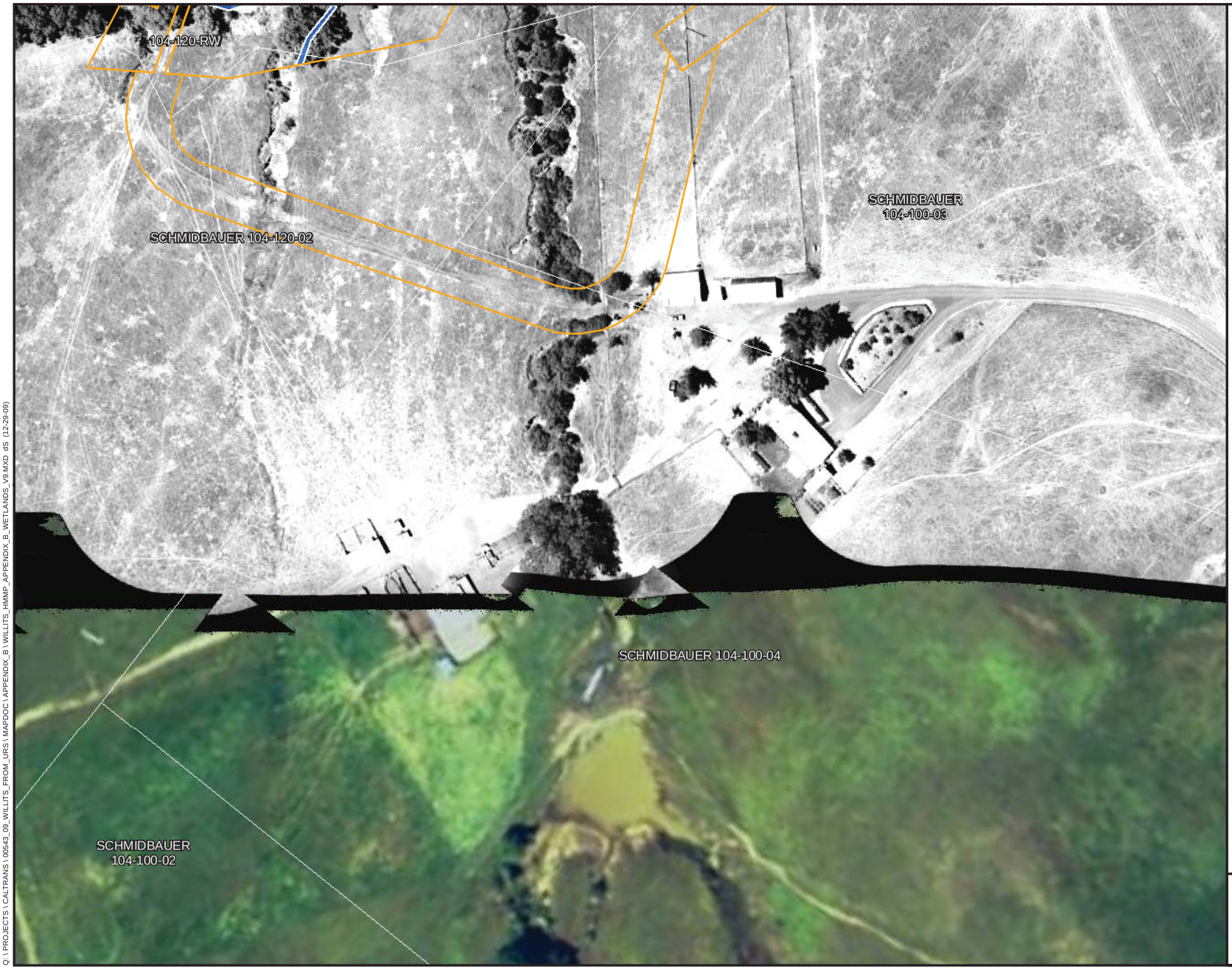

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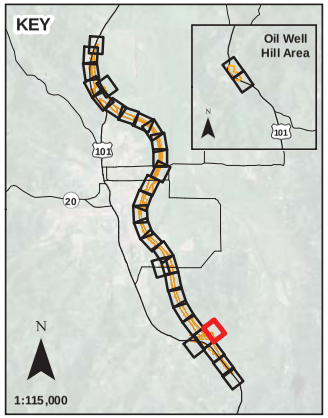

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Sheet B-10

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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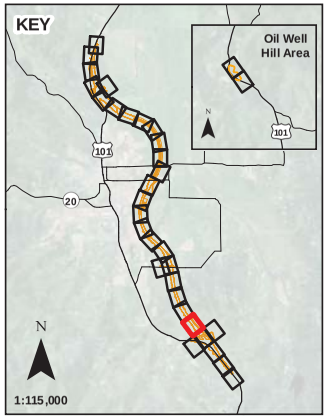

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Sheet B-12

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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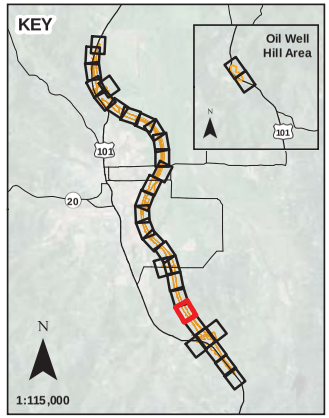

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Sheet B-14

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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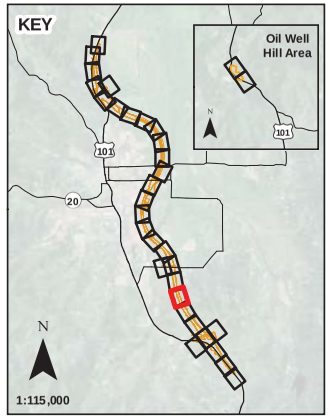

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Sheet B-16

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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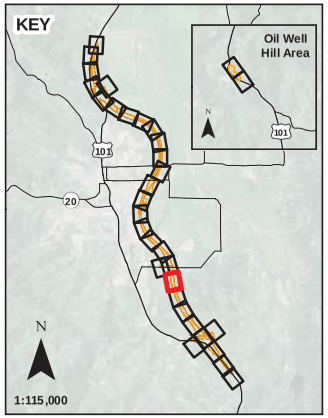

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Sheet B-18

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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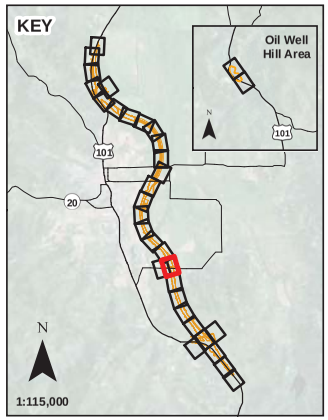

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Sheet B-20

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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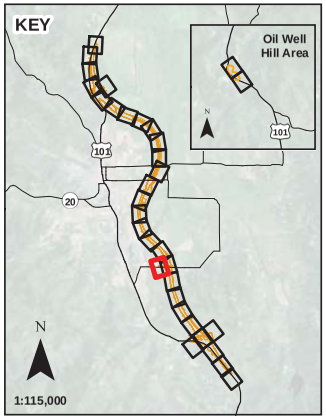

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Sheet B-22

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
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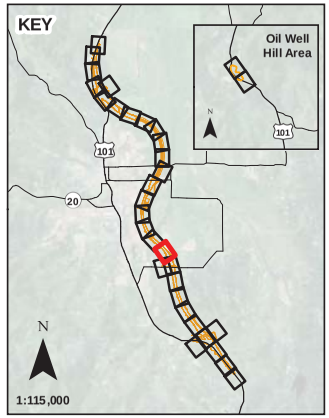

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Sheet B-24

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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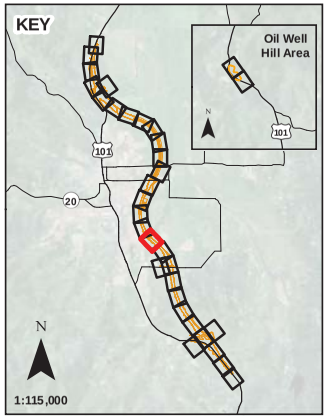

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Sheet B-26

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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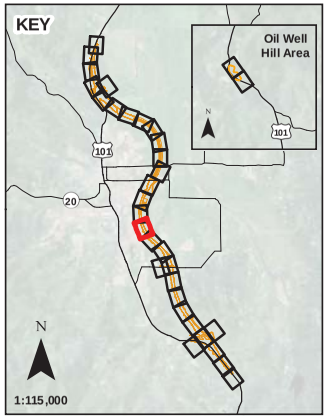

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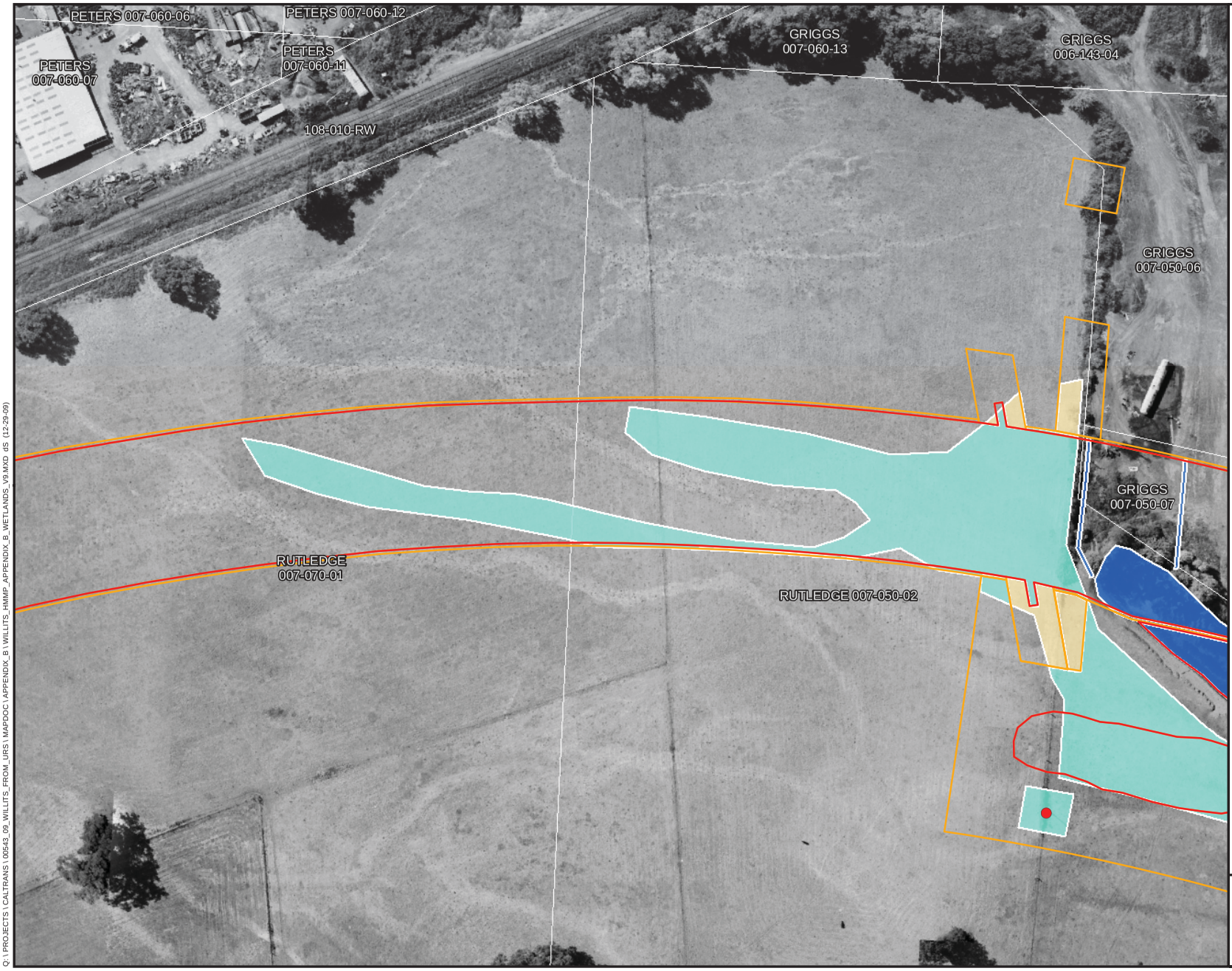
Scale in Feet

Sheet B-28

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

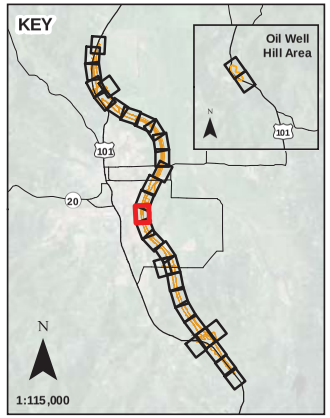


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

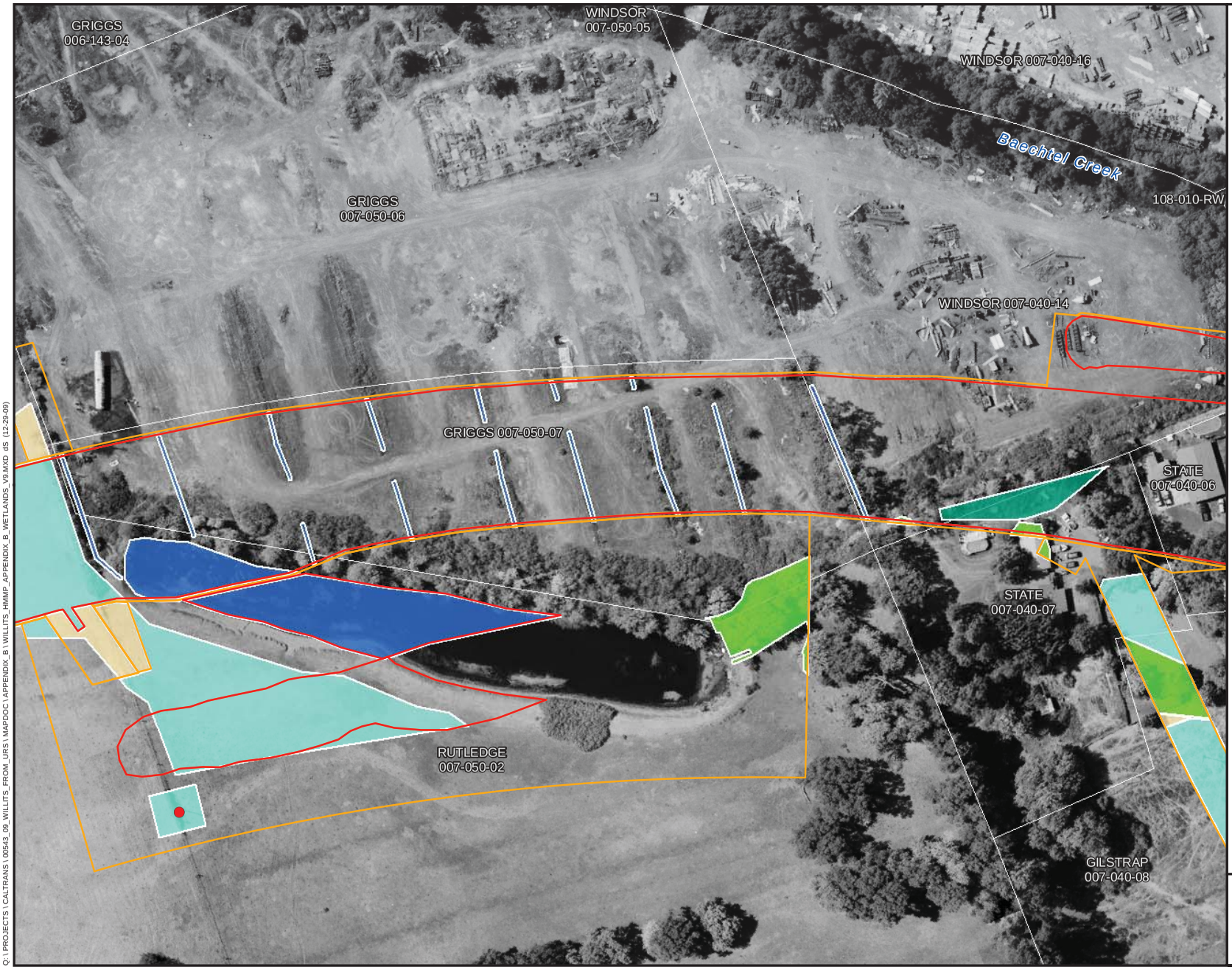
0 100

Scale in Feet

Sheet B-31

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

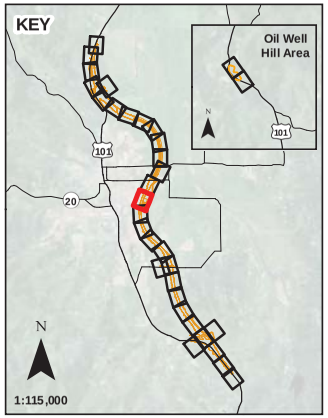


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

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Scale in Feet

Sheet B-34

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

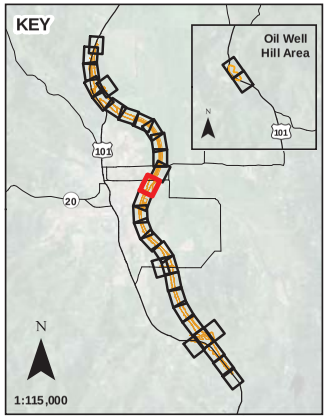
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

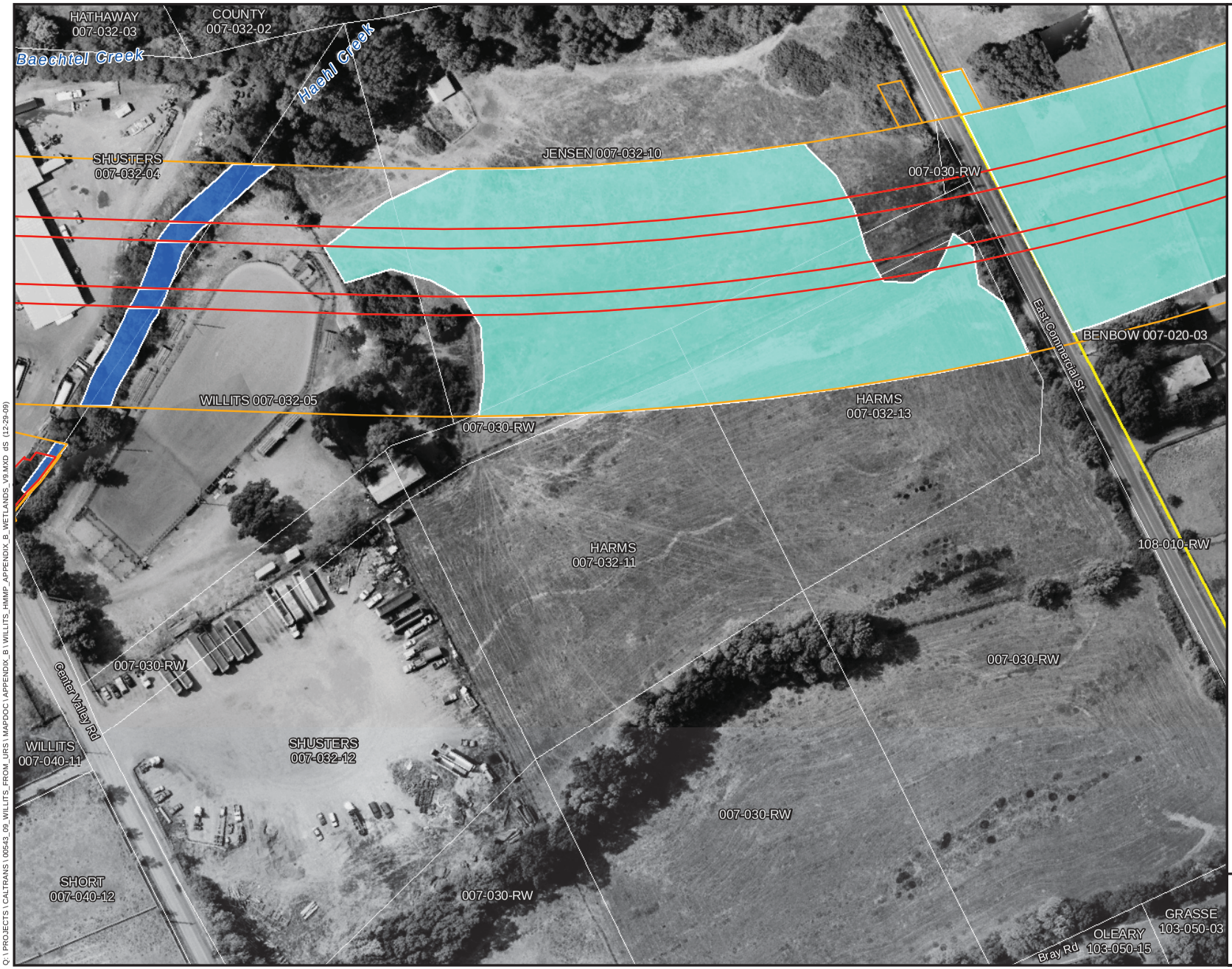
0 100

Scale in Feet

Sheet B-37

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

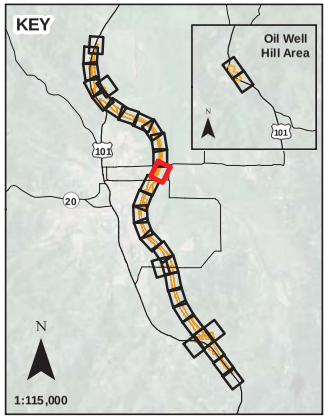


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-40

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

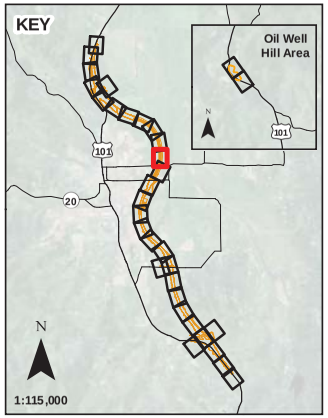
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

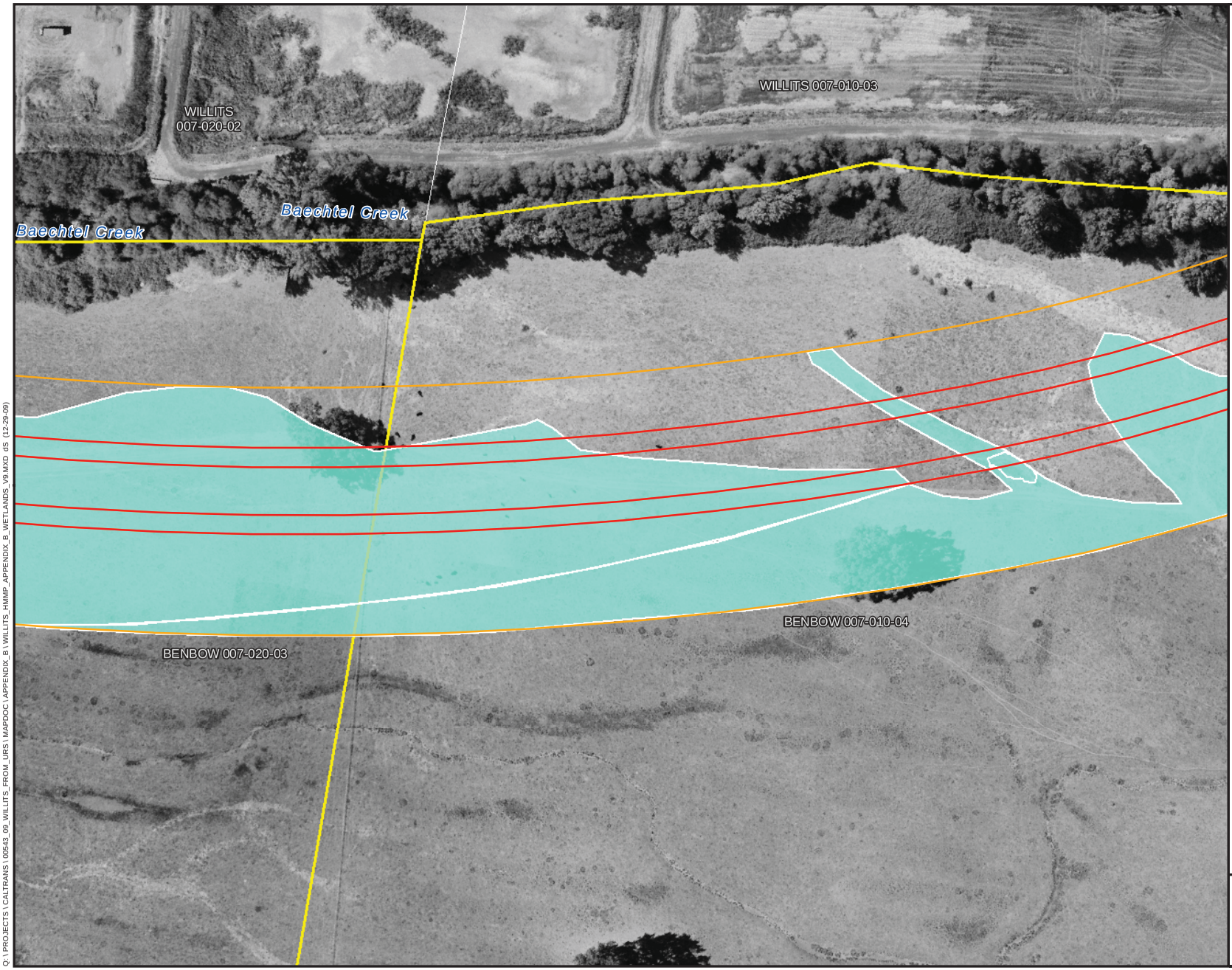
0 100

Scale in Feet

Sheet B-43

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

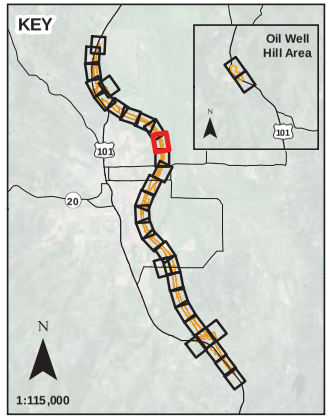


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

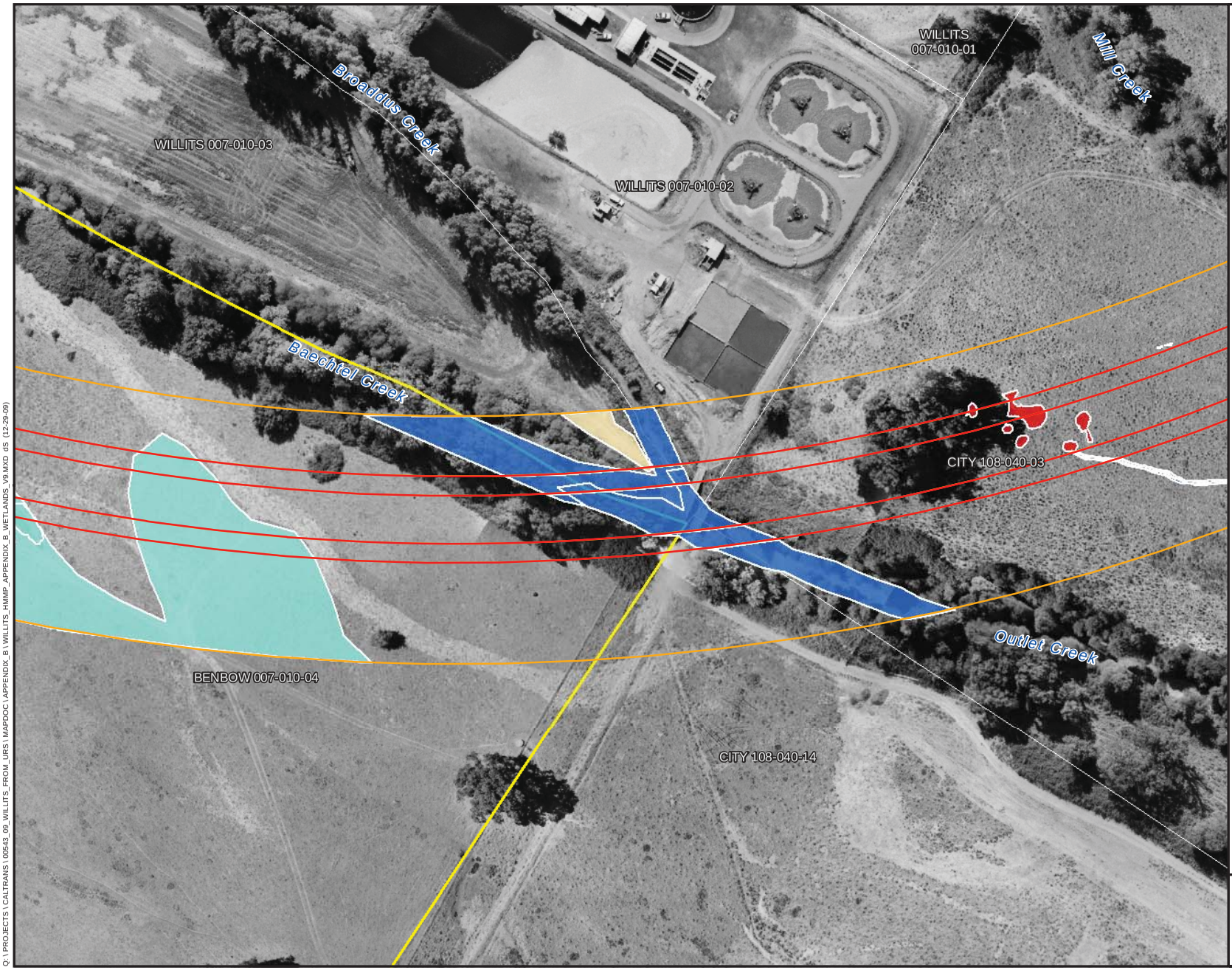
0 100

Scale in Feet

Sheet B-46

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

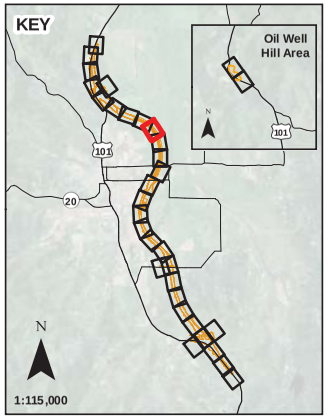


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

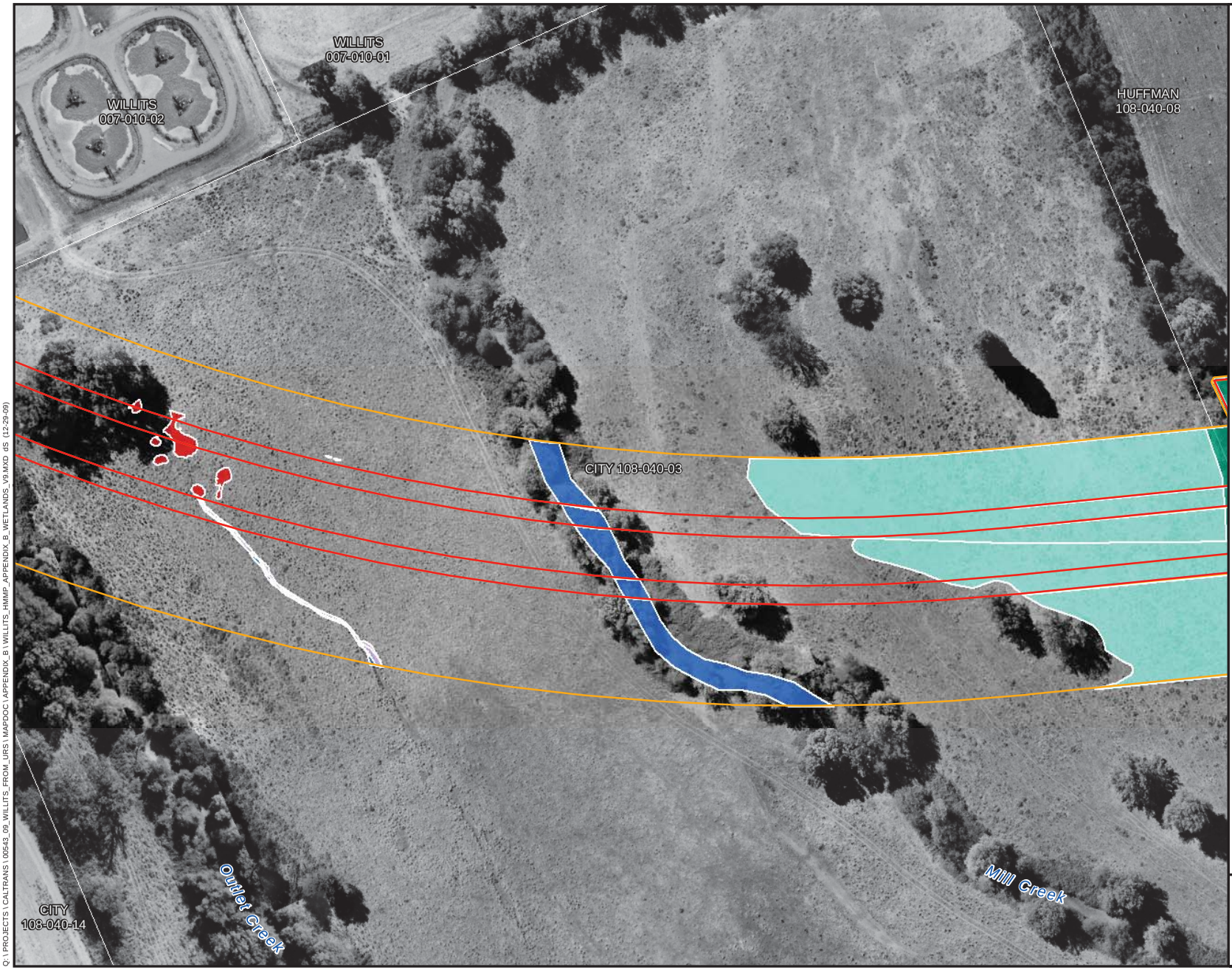
0 100

Scale in Feet

Sheet B-49

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

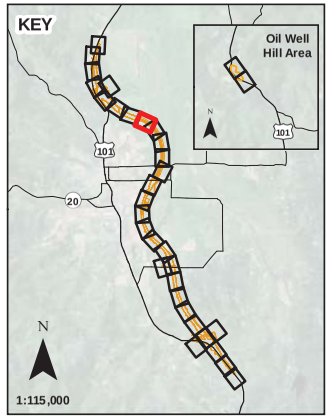


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-51

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

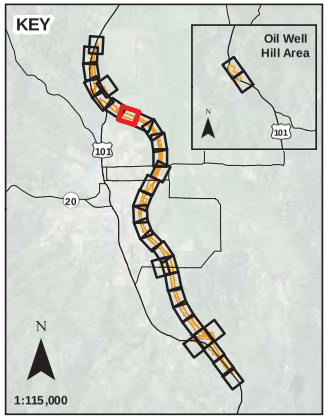
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-54

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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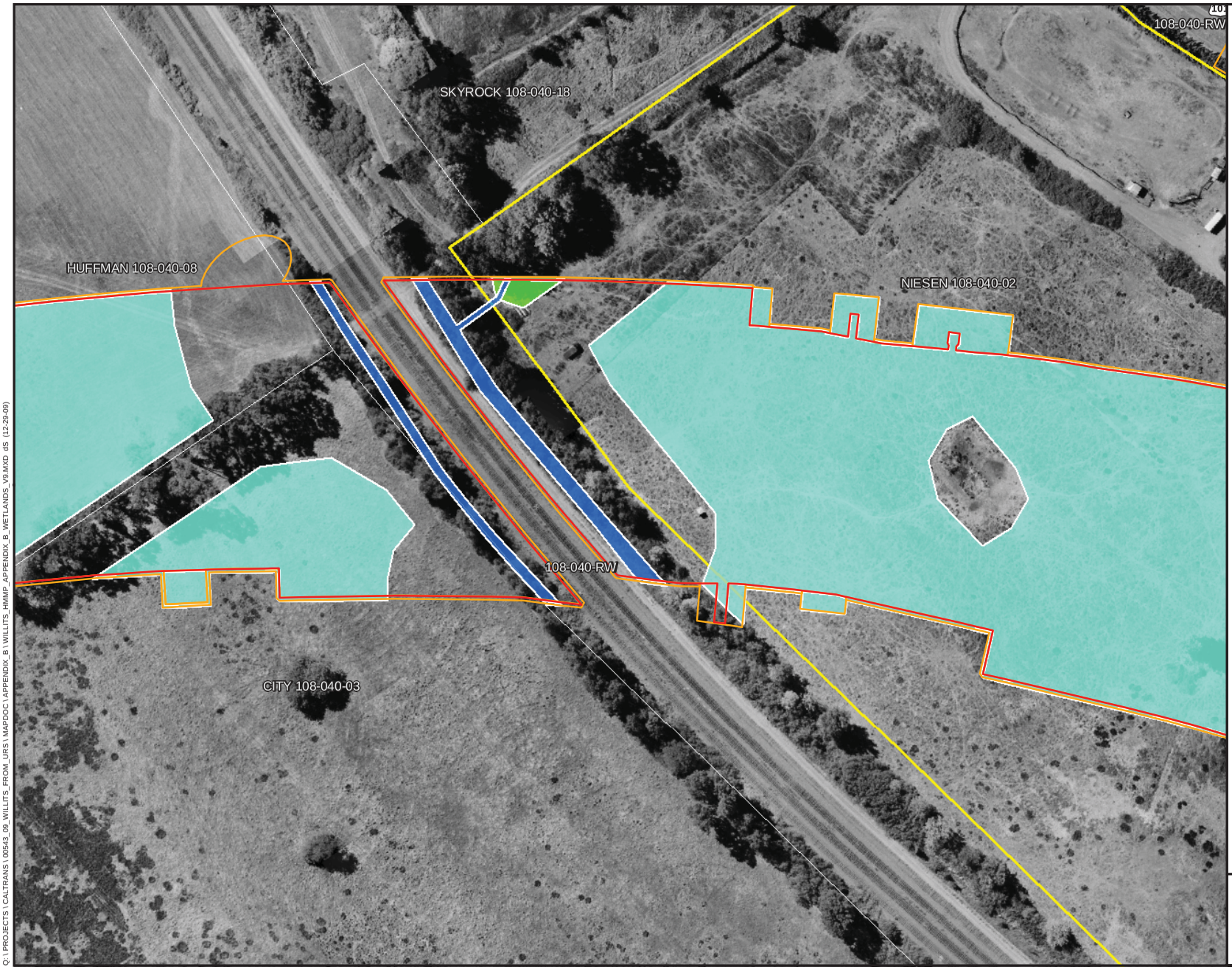
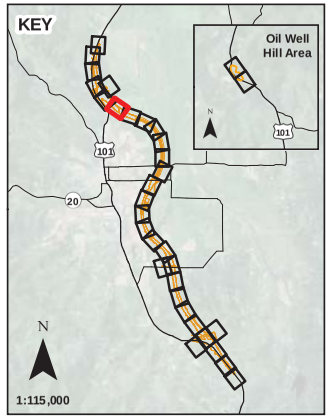


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-57

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

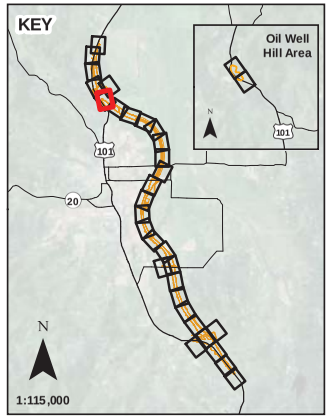
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

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Scale in Feet

Sheet B-60

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

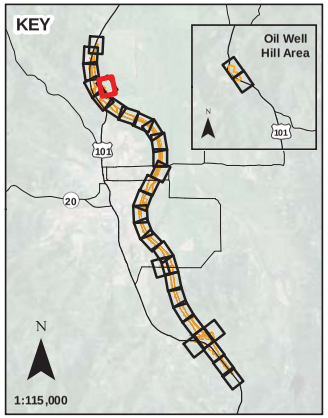
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

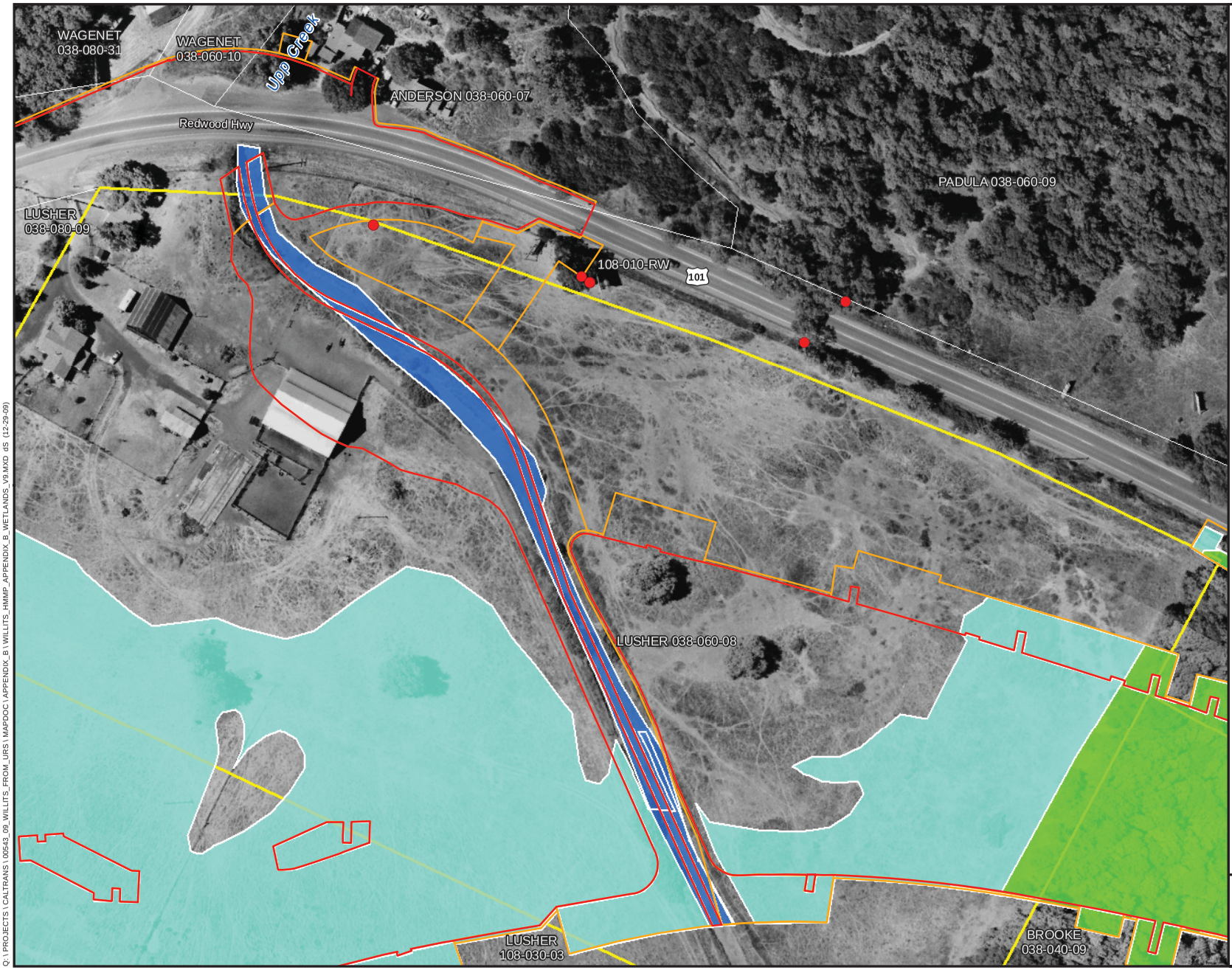
0 100

Scale in Feet

Sheet B-63

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

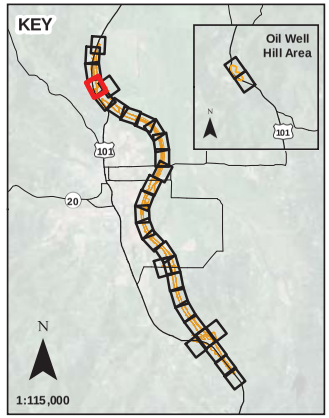


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

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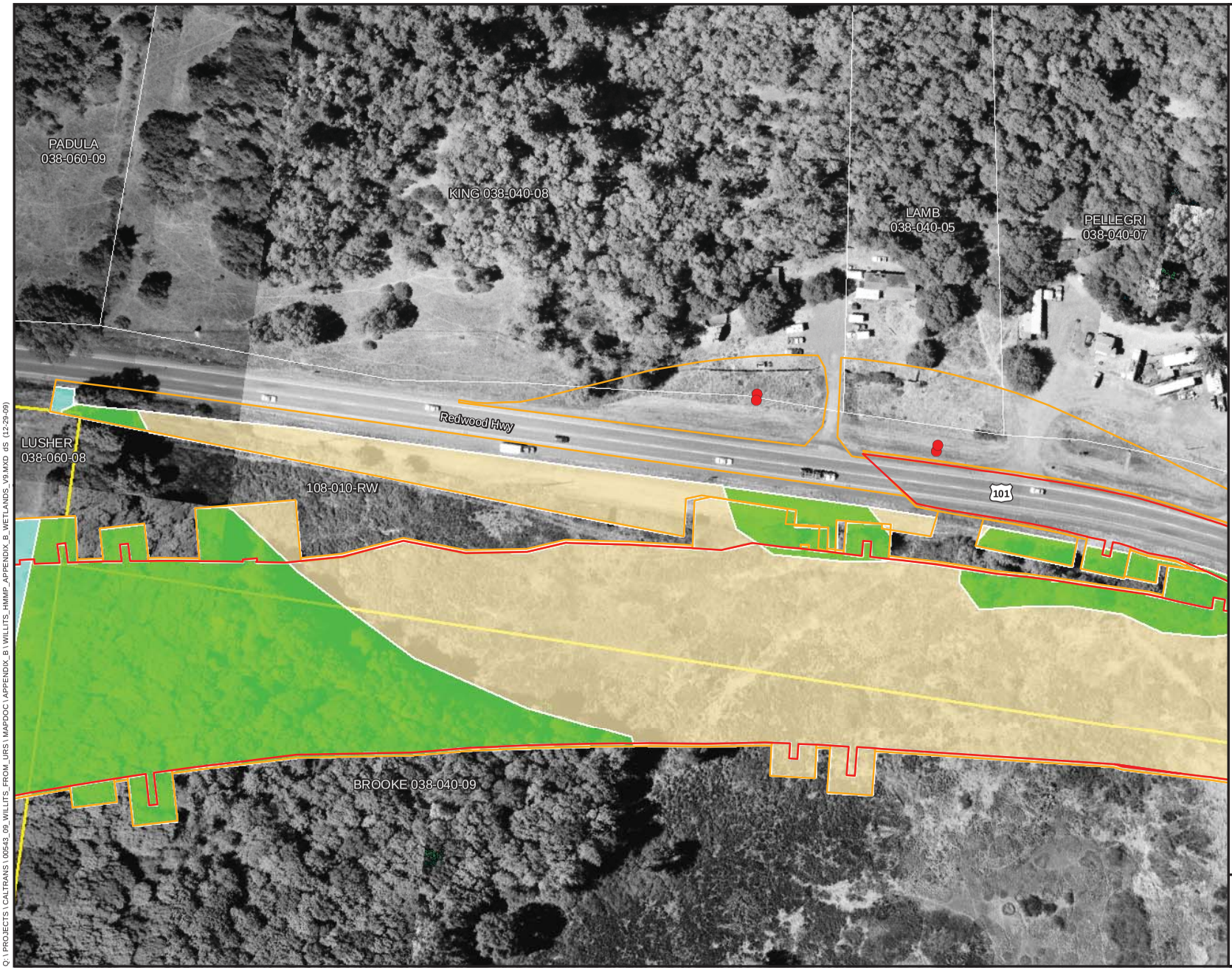
Scale in Feet

Sheet B-66

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

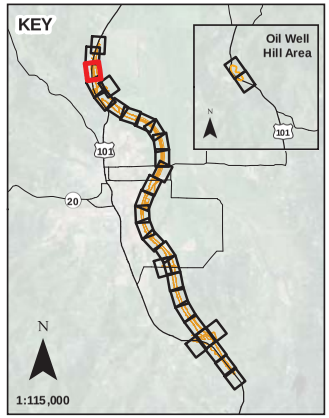


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-69

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

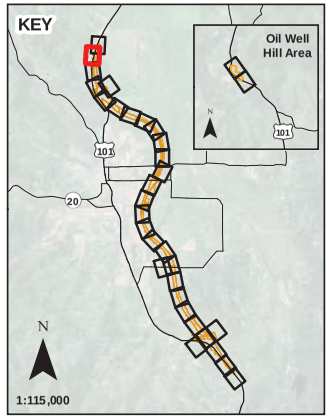
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-71

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

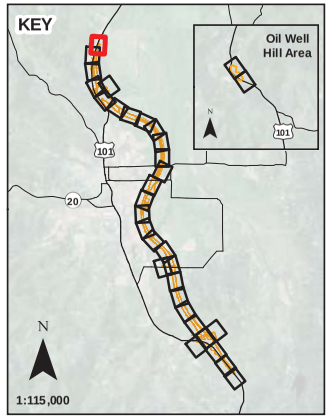
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

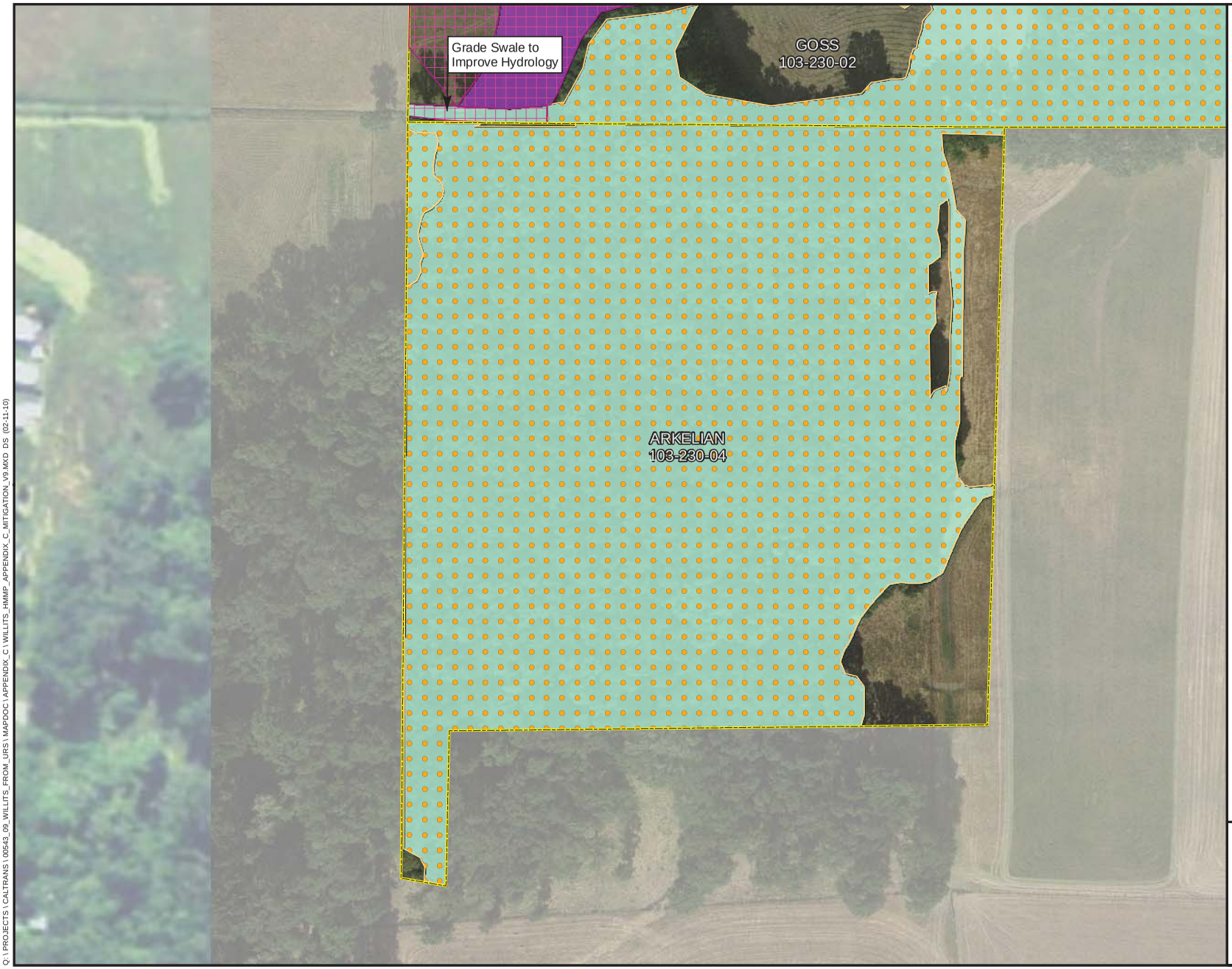
Scale in Feet

Sheet B-73

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Appendix B: Mitigation Actions Impact Maps (From Appendix C of the Willits Bypass Mitigation and Monitoring Plan)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

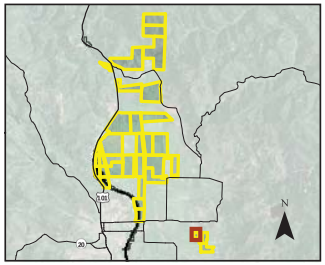
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



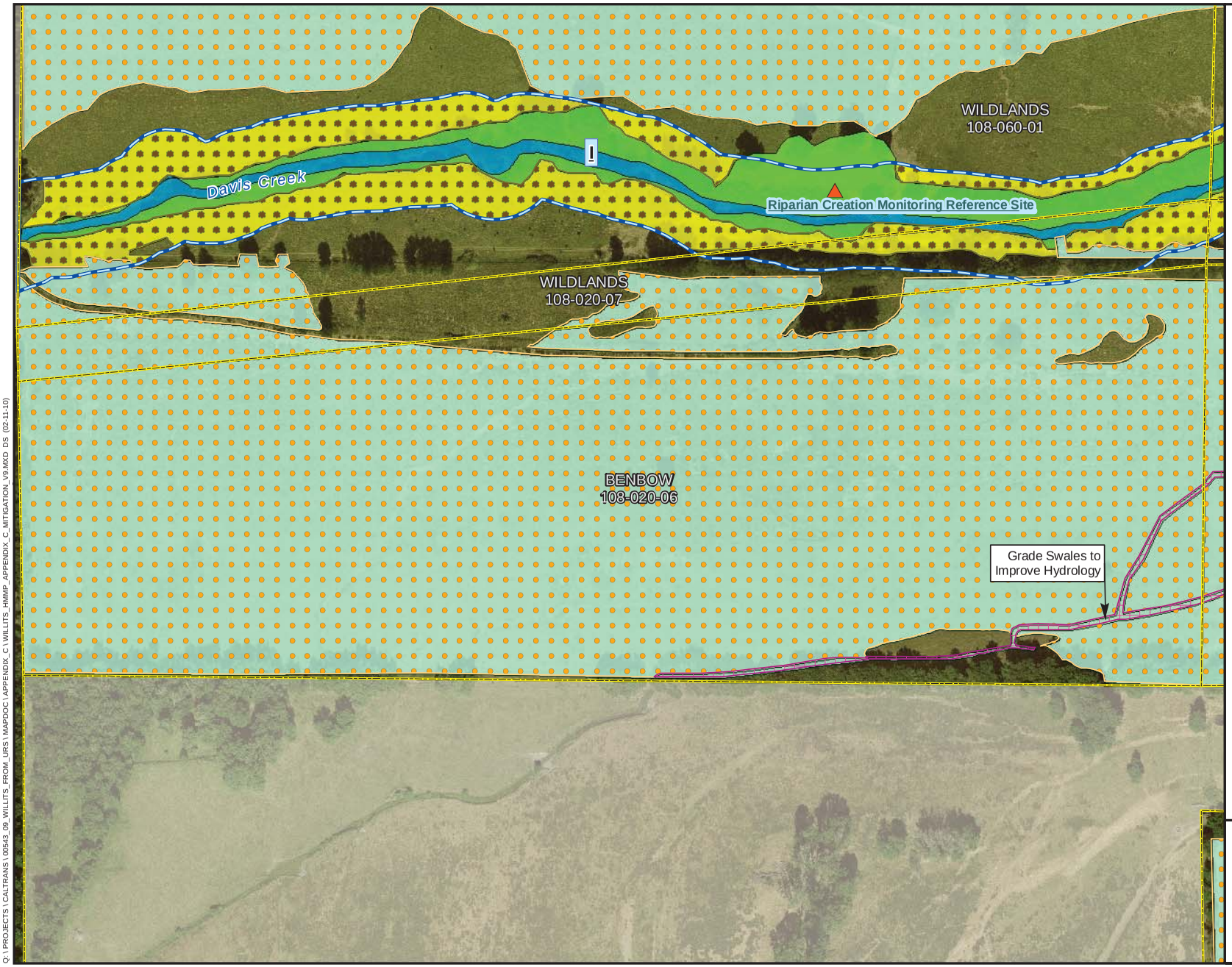
0 200

Scale in Feet

Sheet C-4
Mitigation Actions
Arkelian
APN 103-230-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

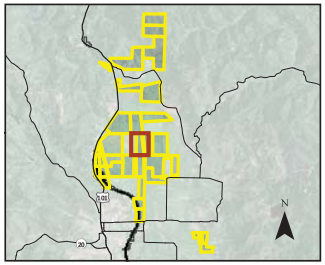
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



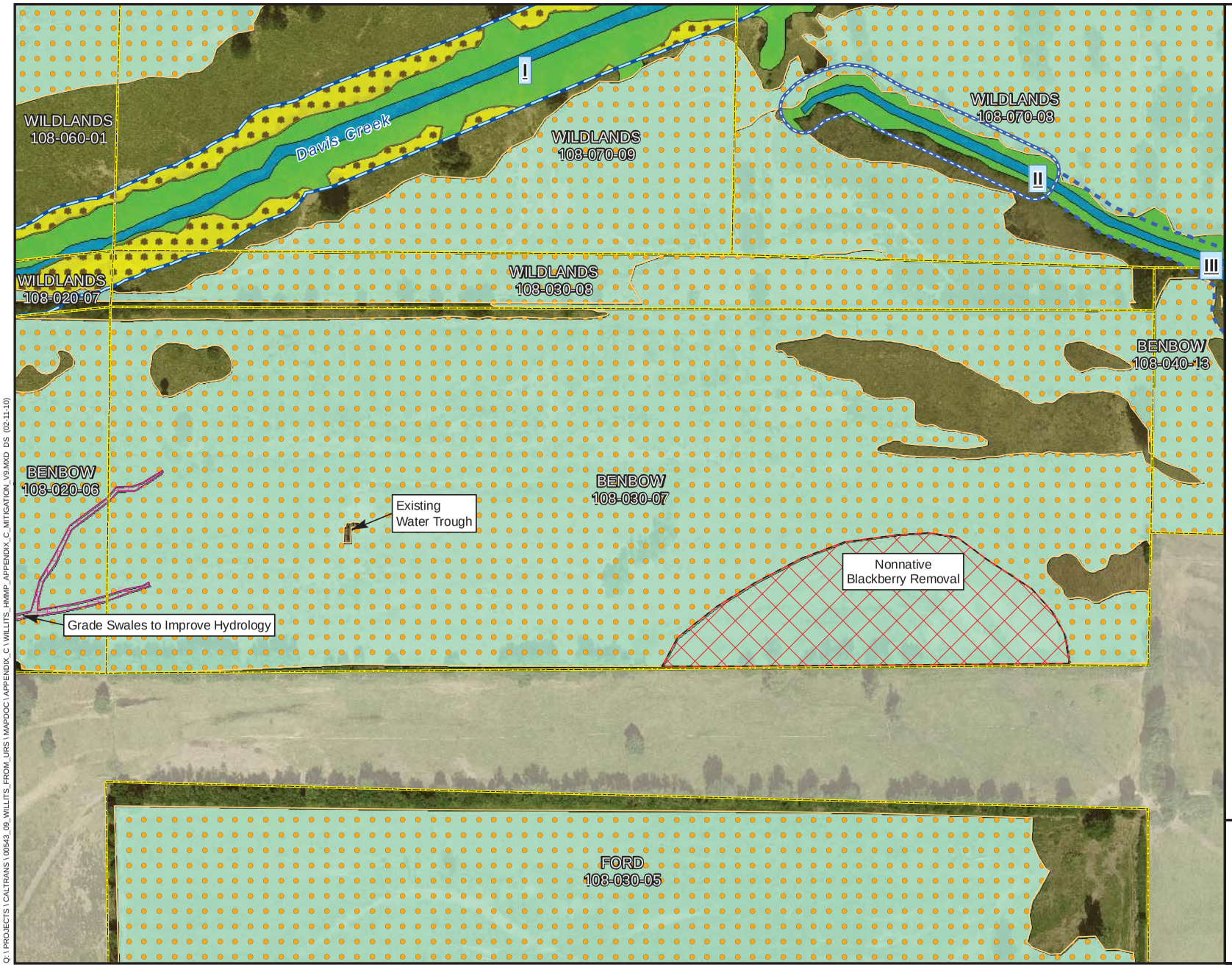
0 200

Scale in Feet

Sheet C-8
Mitigation Actions
Benbow
APN 108-020-06

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

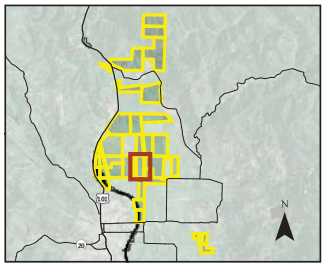
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-12
Mitigation Actions
Benbow
APN 108-030-07

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

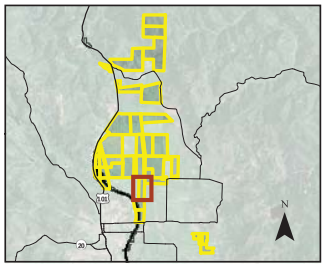
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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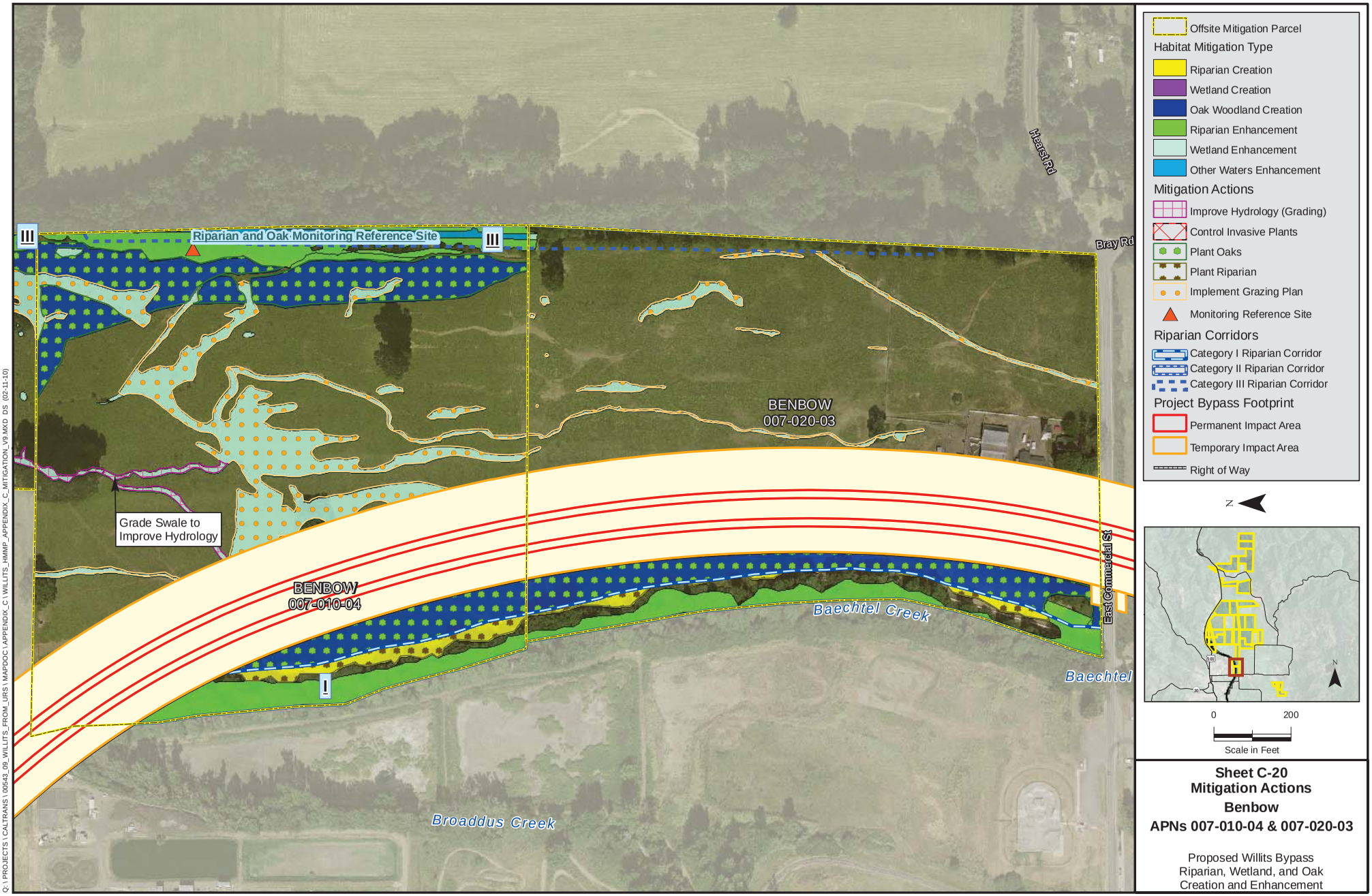
Scale in Feet

Sheet C-16
Mitigation Actions
Benbow
APN 108-040-13

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

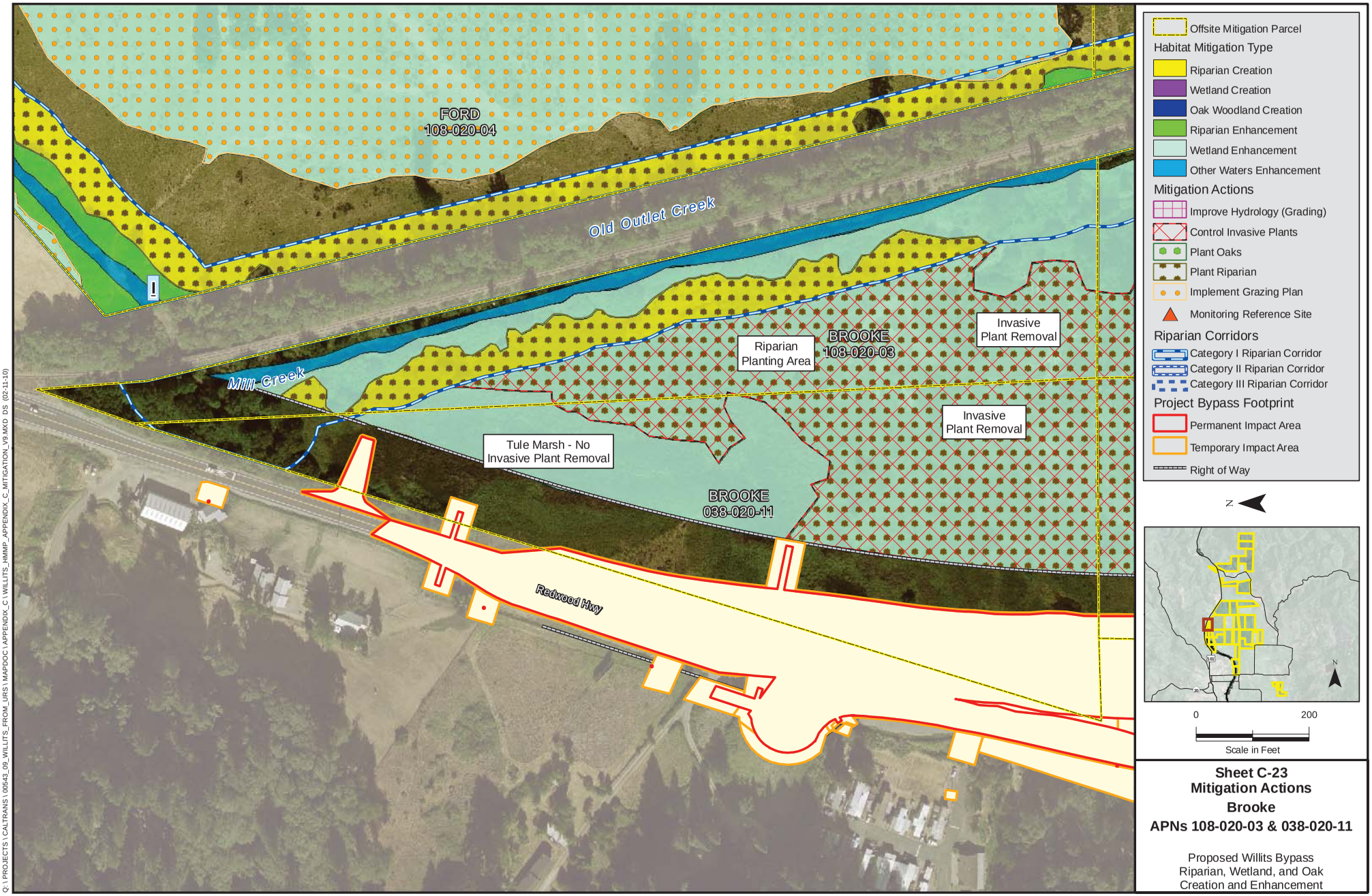
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Sheet C-20
Mitigation Actions
Benbow
APNs 007-010-04 & 007-020-03

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

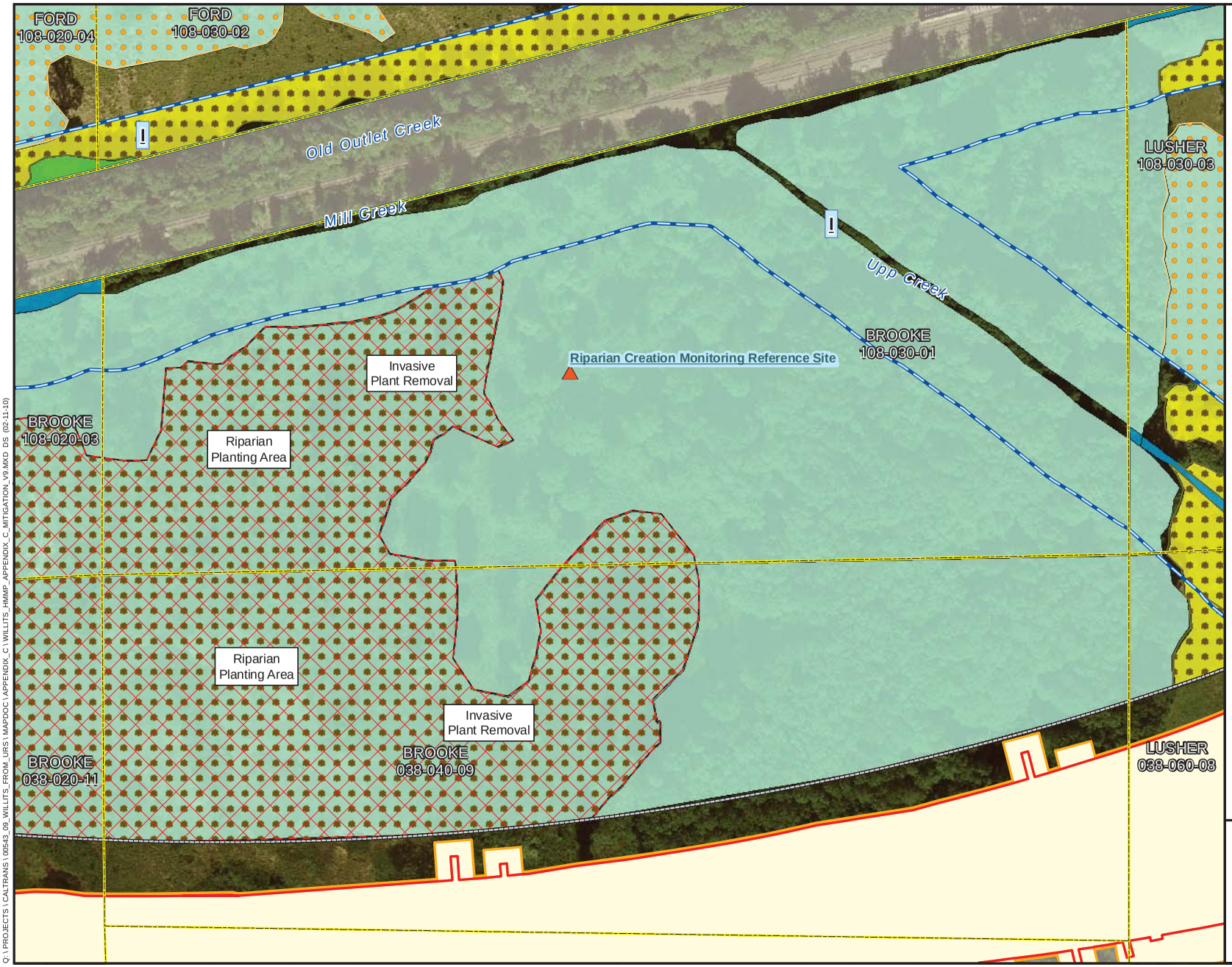
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Sheet C-23
Mitigation Actions
Brooke
APNs 108-020-03 & 038-020-11

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

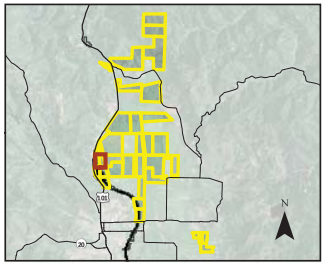
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-26
Mitigation Actions
Brooke
APNs 108-030-01 & 038-040-09

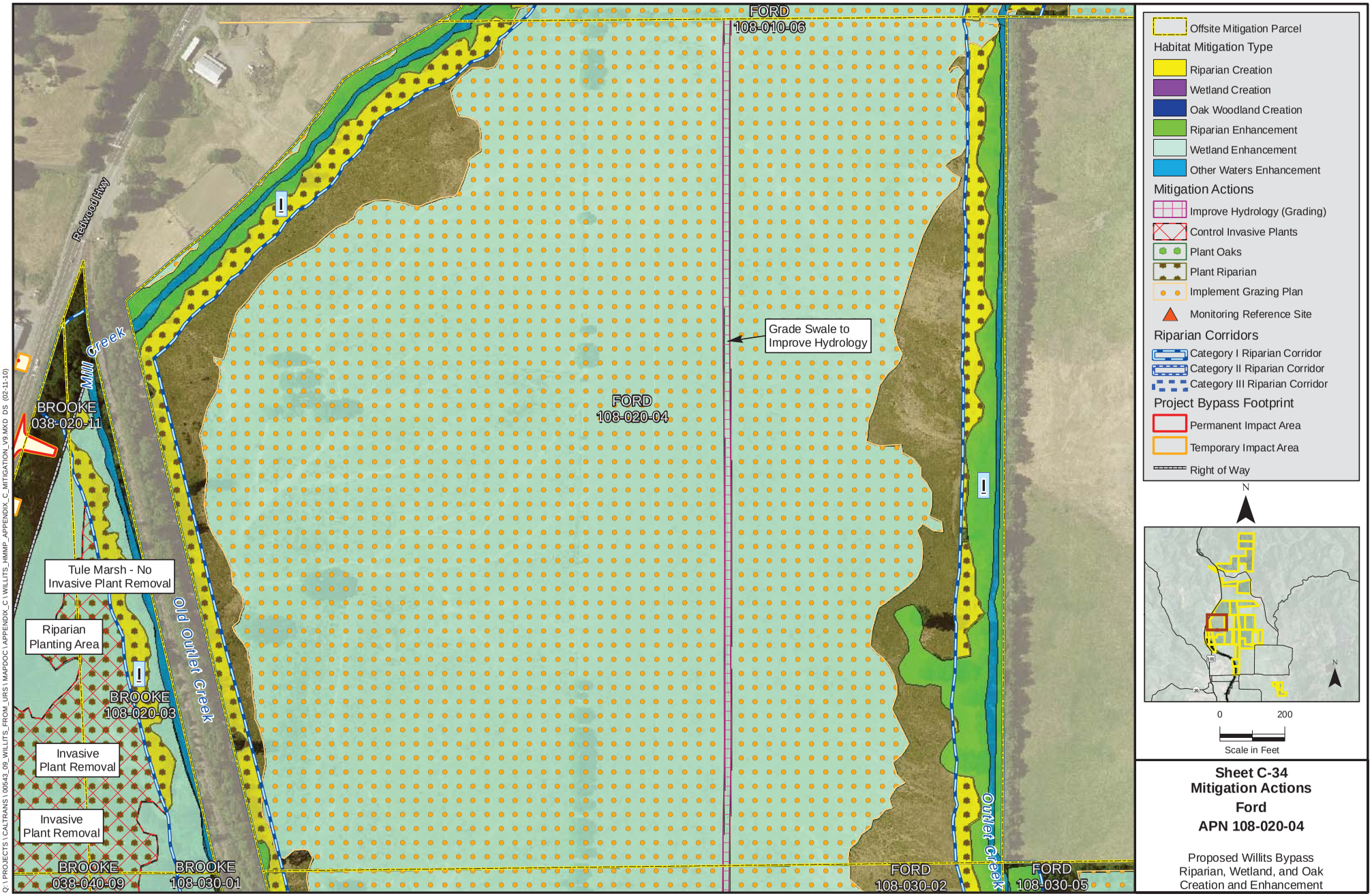
Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

Sheet C-30
Mitigation Actions
Ford
APN 108-010-06

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Sheet C-34
Mitigation Actions
Ford
APN 108-020-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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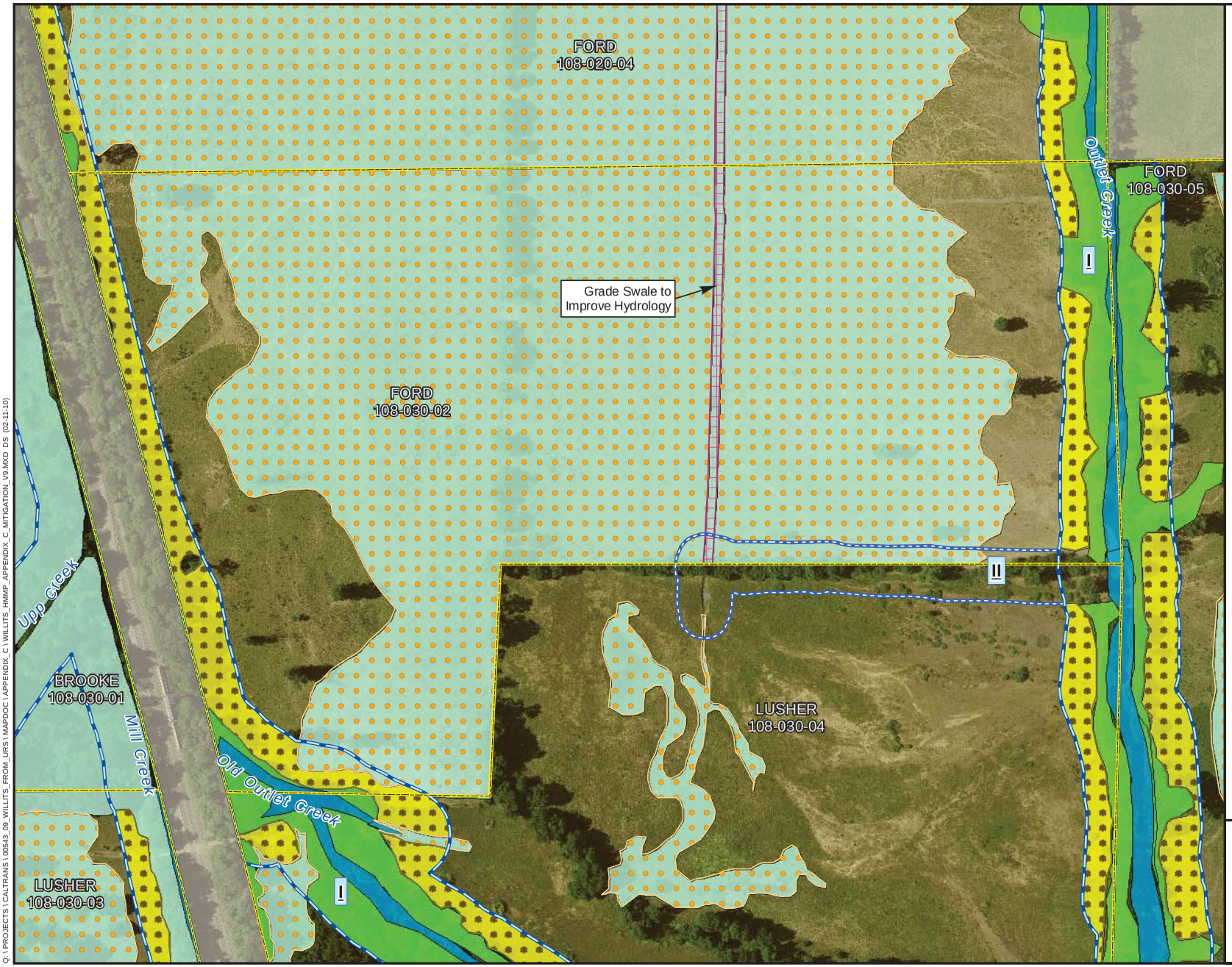


Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N

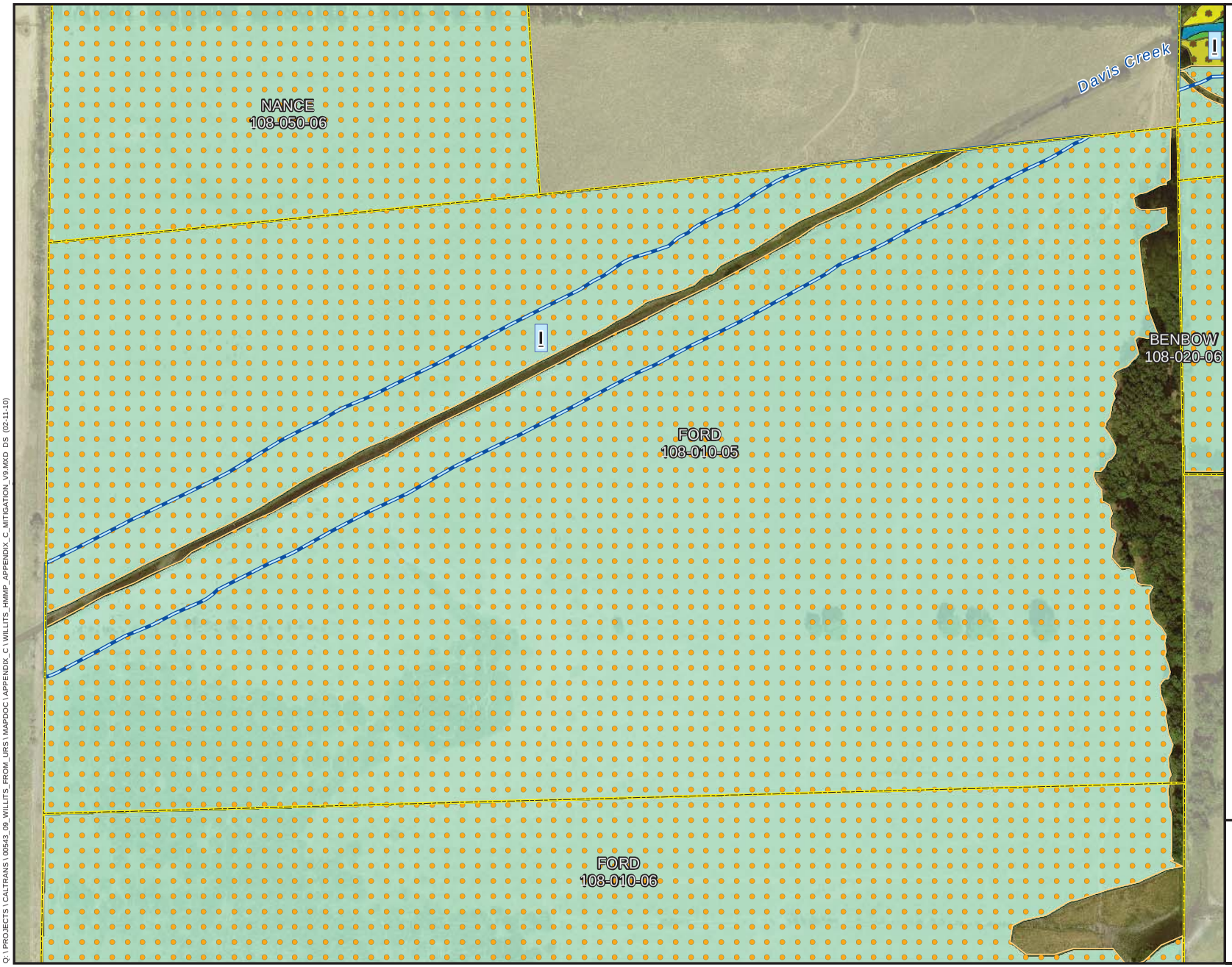
0 200

Scale in Feet

Sheet C-38
Mitigation Actions
Ford
APN 108-030-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

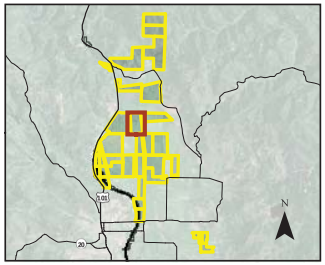
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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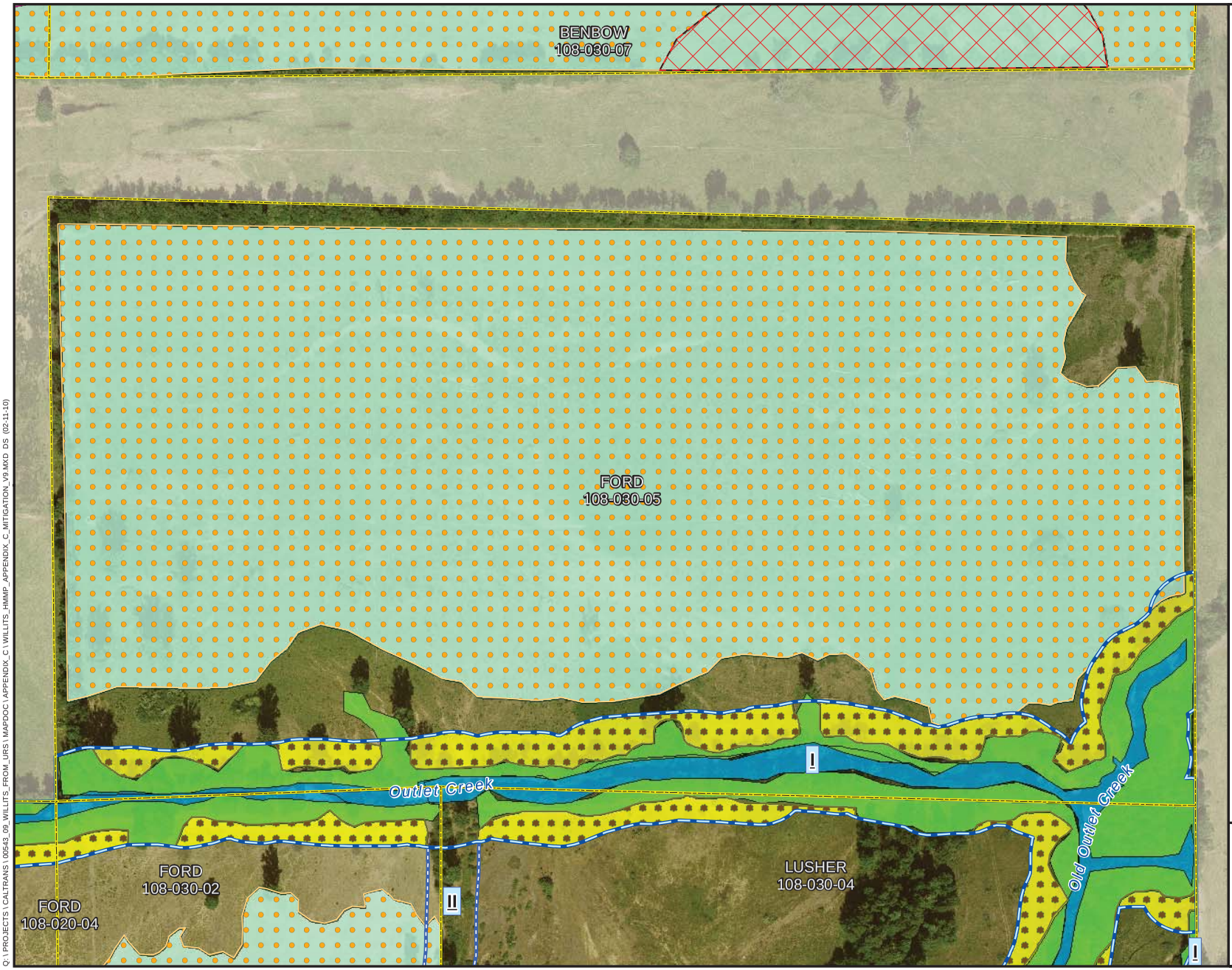
Scale in Feet

Sheet C-42
Mitigation Actions
Ford
APN 108-010-05

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

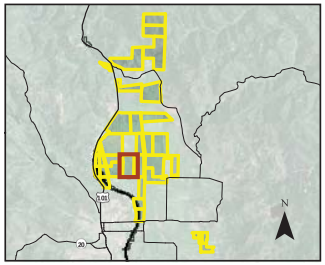
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



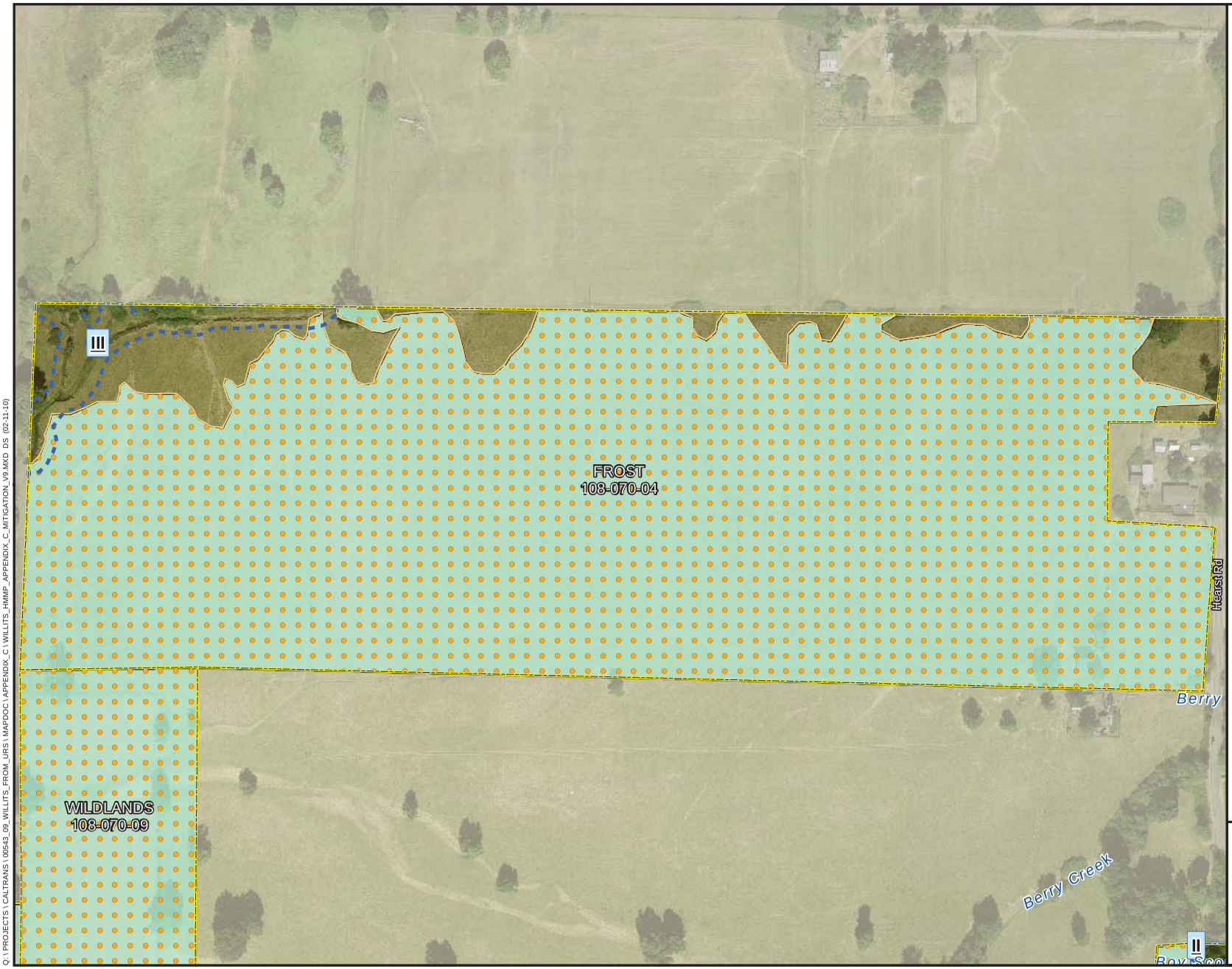
0 200

Scale in Feet

Sheet C-46
Mitigation Actions
Ford
APN 108-030-05

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

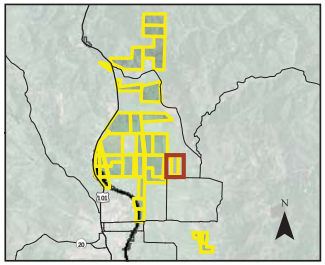
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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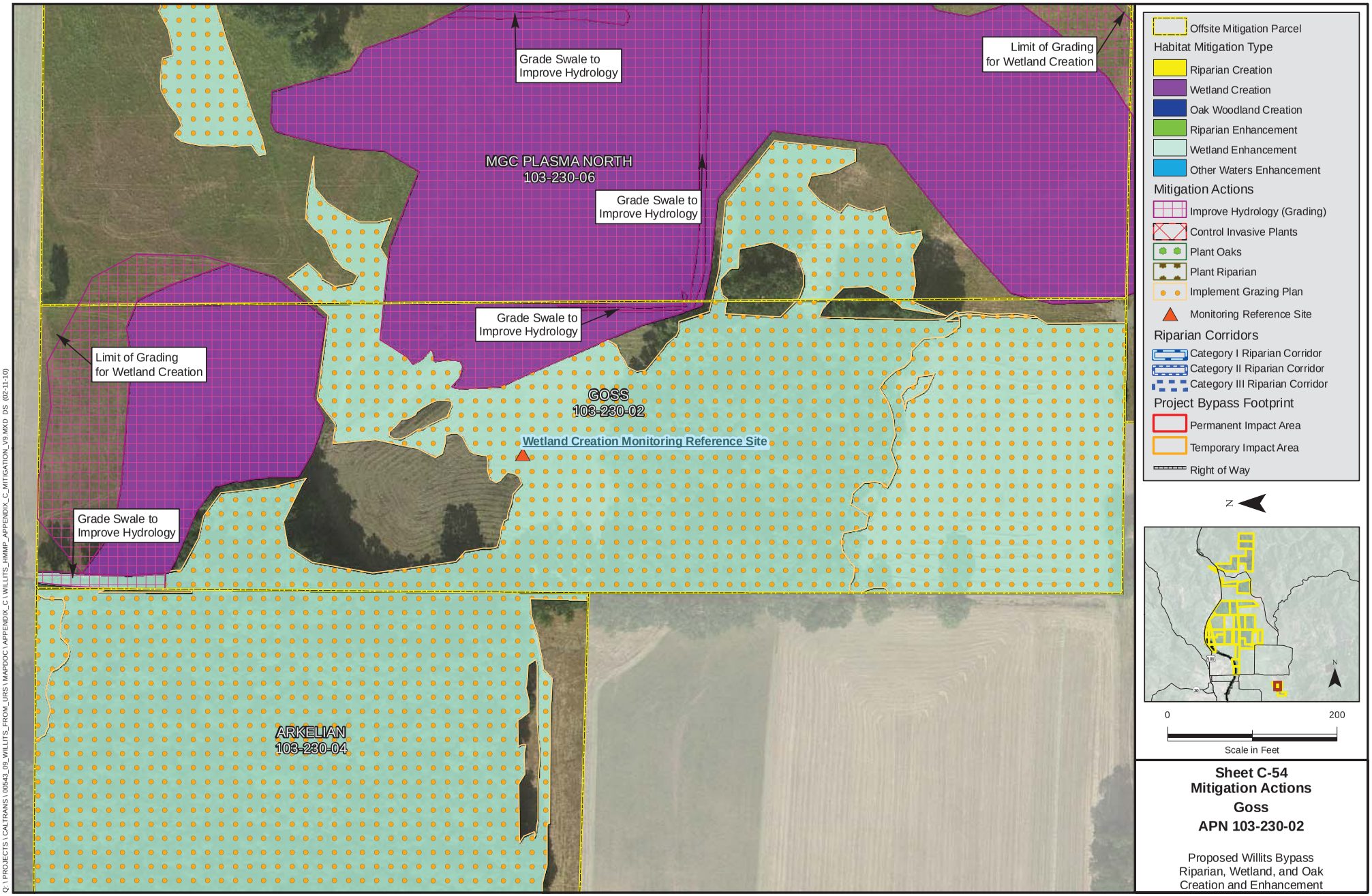
Scale in Feet

Sheet C-50
Mitigation Actions
Frost
APN 108-070-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

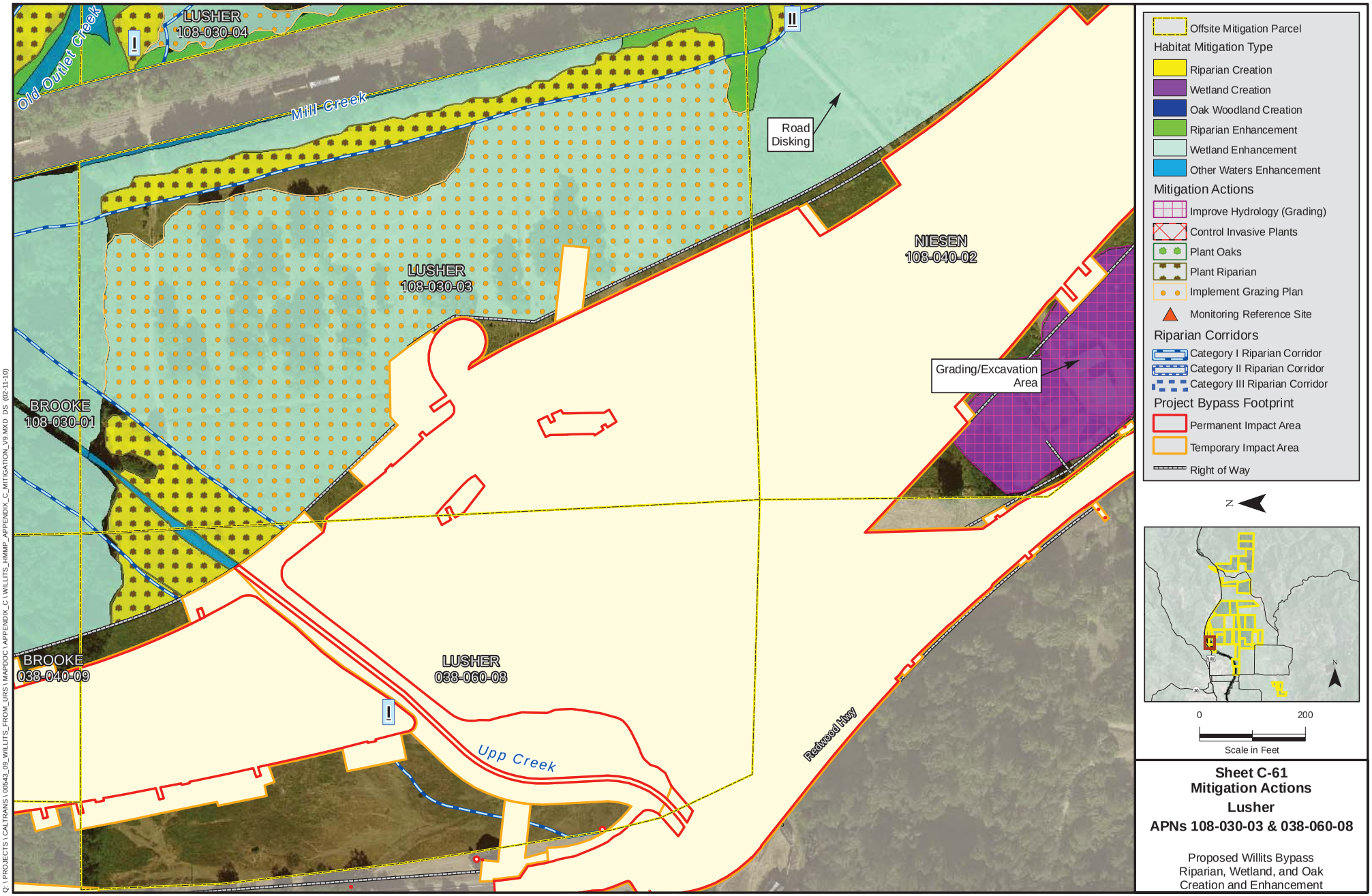
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Sheet C-54
Mitigation Actions
Goss
APN 103-230-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

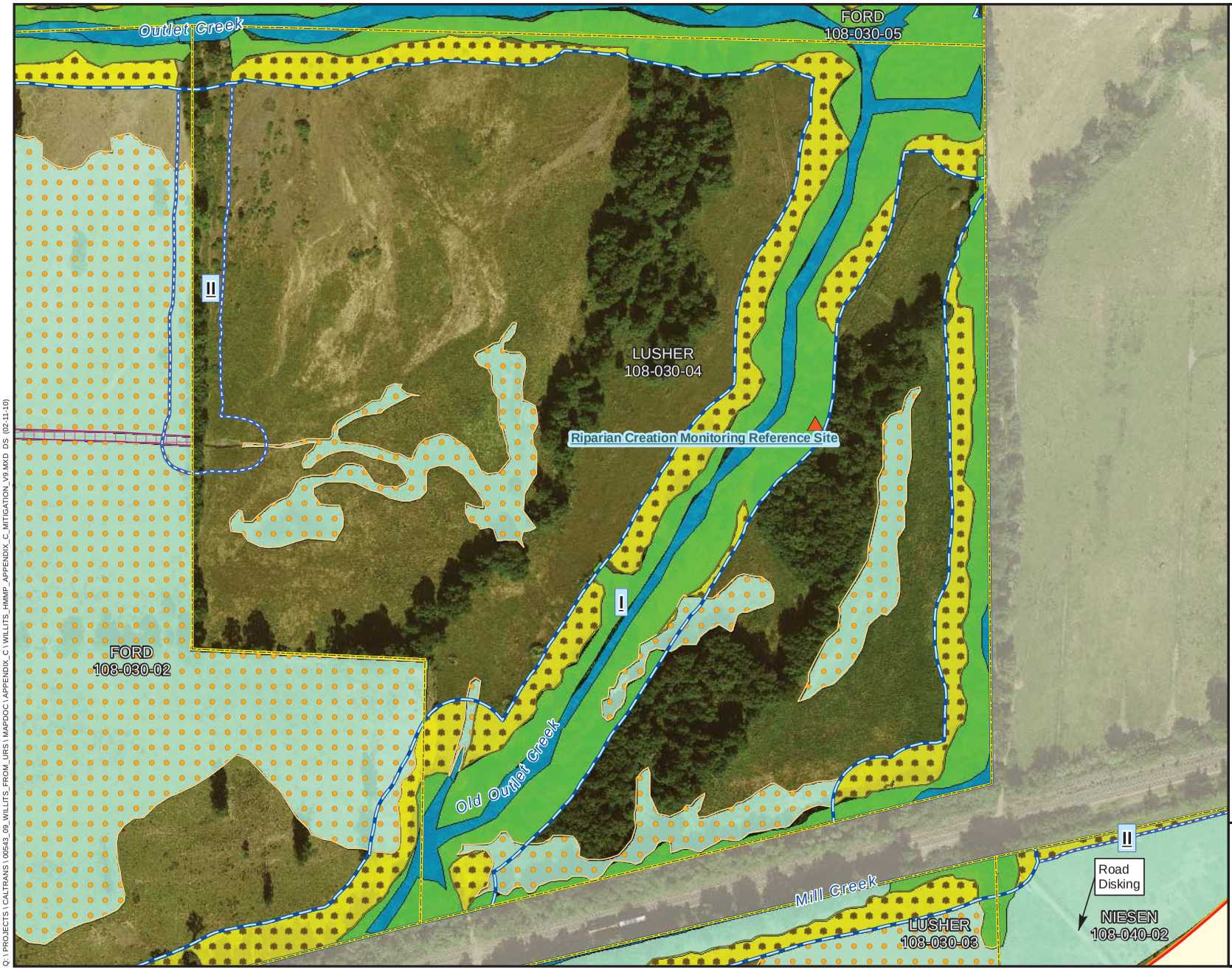
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Sheet C-61
Mitigation Actions
Lusher
APNs 108-030-03 & 038-060-08

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

O:\ PROJECTS\ CALTRANS\ 00543_09_WILLITS_FROM_URS\ MAPDOC\ APPENDIX_C\ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

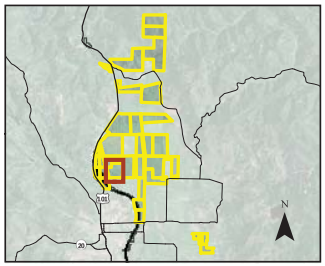
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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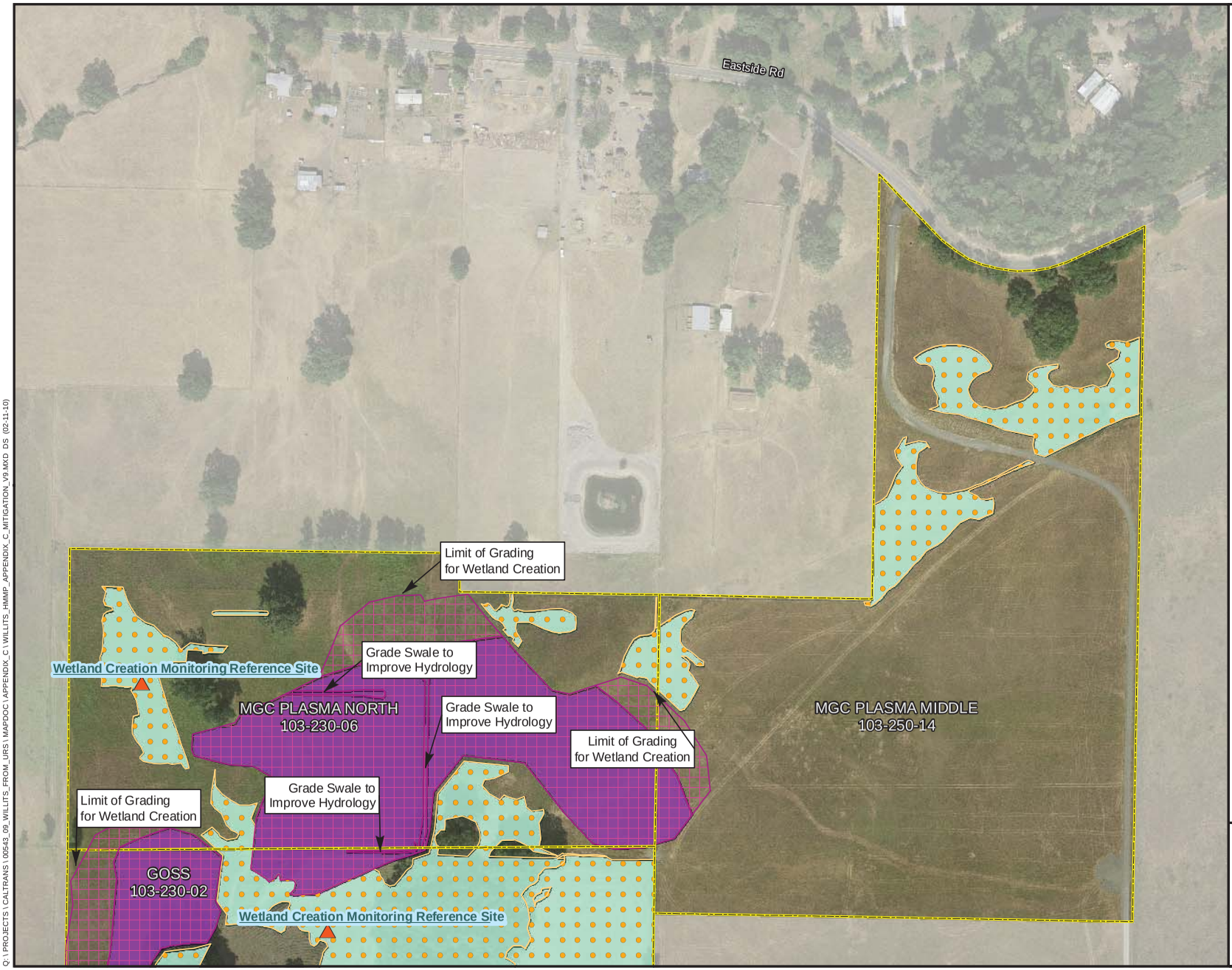
Scale in Feet

Sheet C-64
Mitigation Actions
Lusher
APN 108-030-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

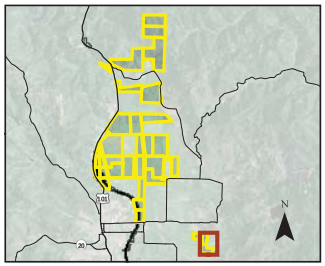
Habitat Mitigation Type
- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions
- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

Riparian Corridors
- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint
- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-68
Mitigation Actions
MGC Plasma-North & Middle
APNs 103-230-06 & 103-250-14

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N

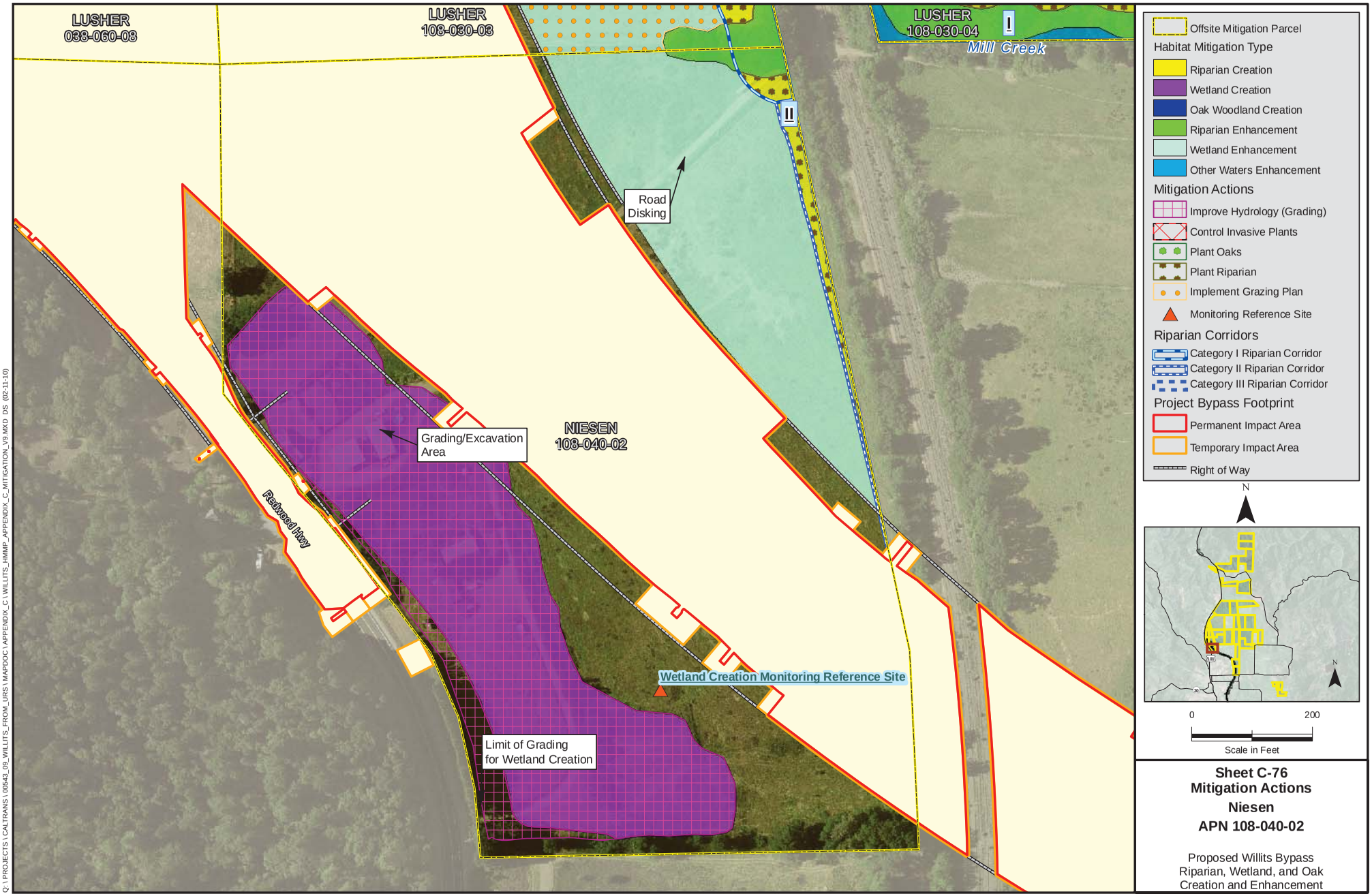
0 200

Scale in Feet

Sheet C-72
Mitigation Actions
Nance
APN 108-050-06

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

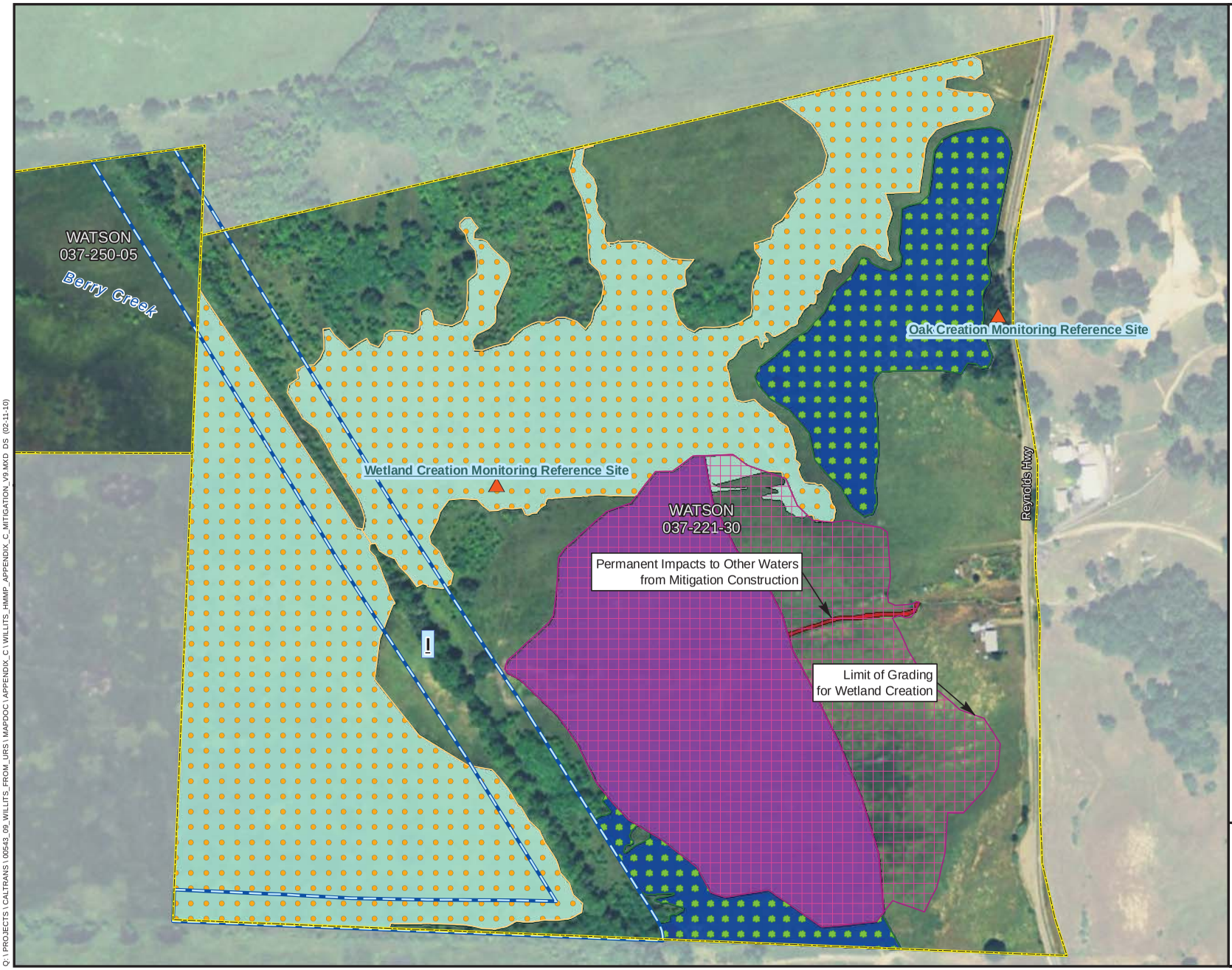
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Sheet C-76
Mitigation Actions
Niesen
APN 108-040-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N

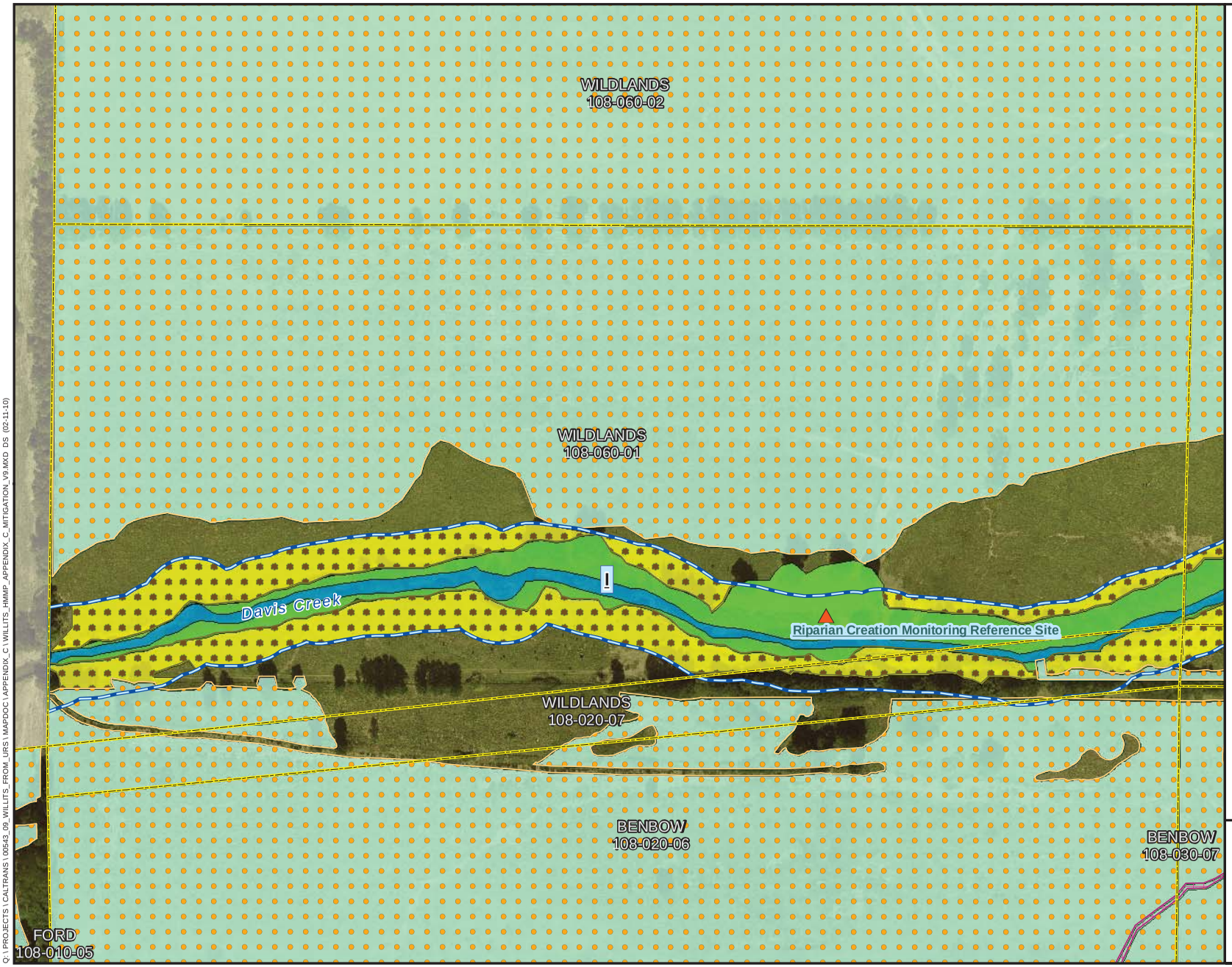
0 200

Scale in Feet

Sheet C-86
Mitigation Actions
Watson
APN 037-221-30

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

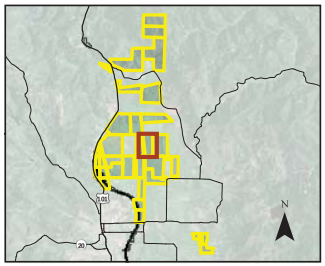
Habitat Mitigation Type
- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions
- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

Riparian Corridors
- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint
- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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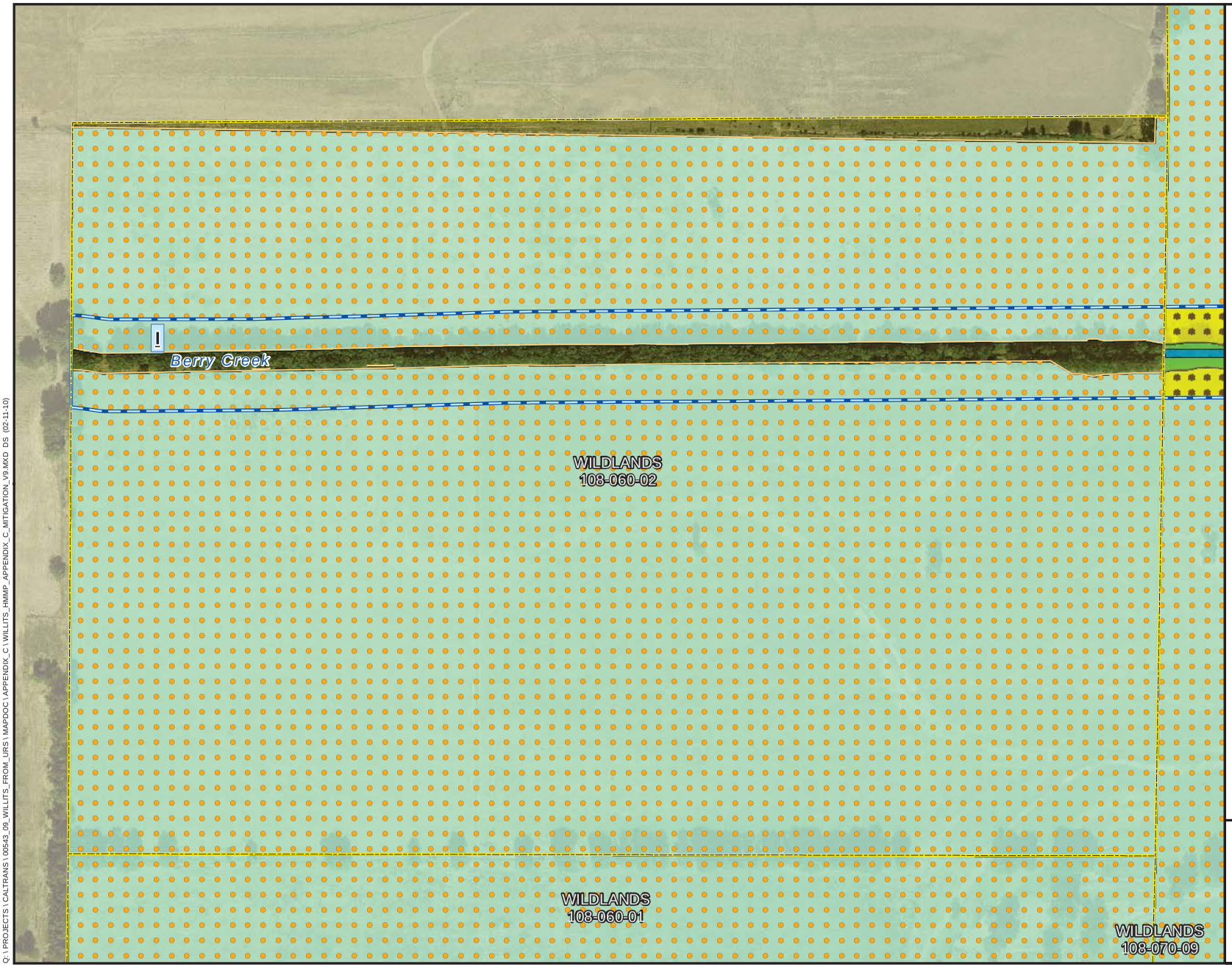
Scale in Feet

Sheet C-90
Mitigation Actions
Wildlands
APNs 108-060-01 & 108-020-07

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N

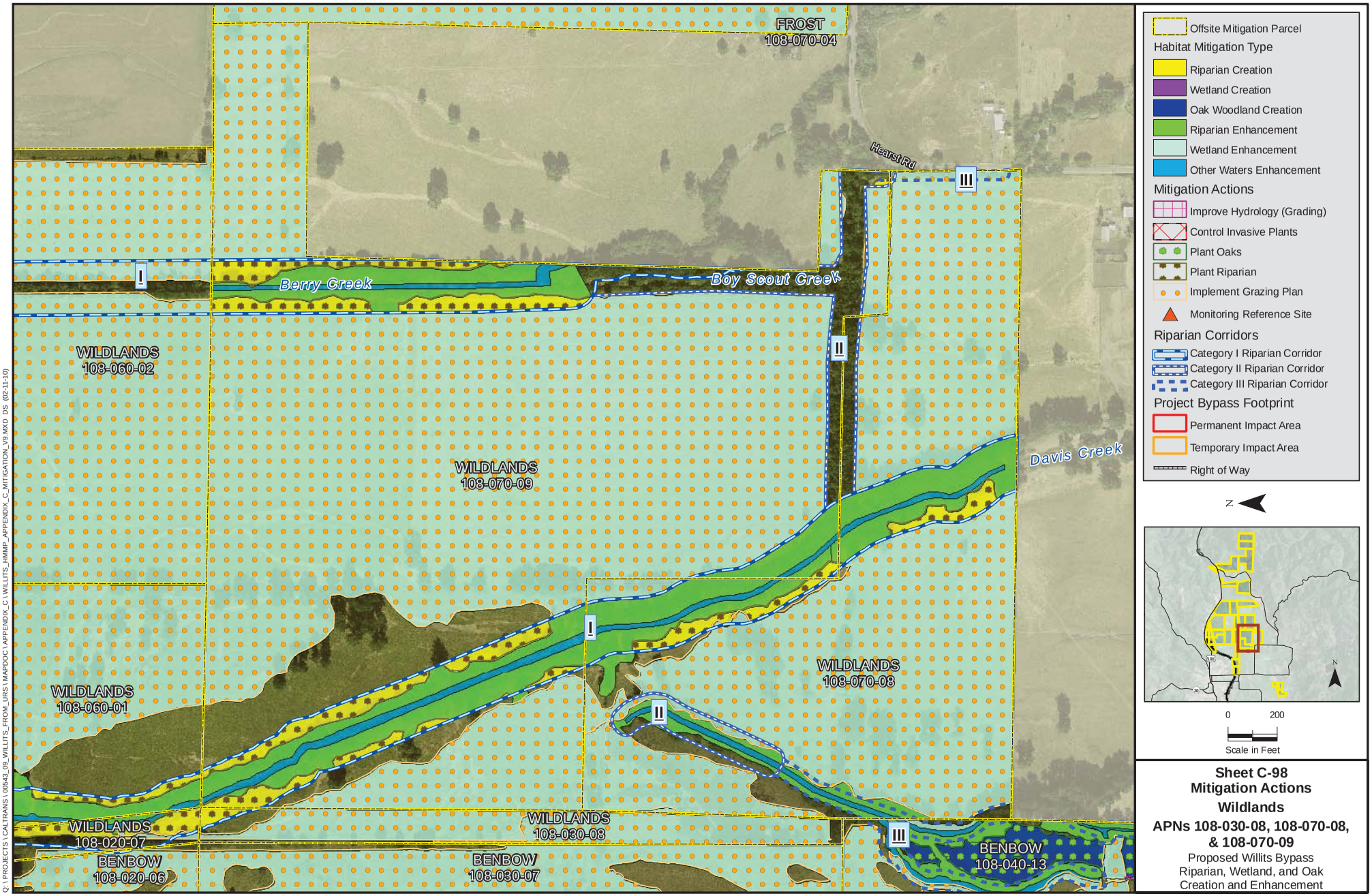
0 200

Scale in Feet

Sheet C-94
Mitigation Actions
Wildlands
APN 108-060-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS\ CALTRANS\ 00543_09_WILLITS_FROM_URS\ MAPDOC\ APPENDIX_C\ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Sheet C-98
Mitigation Actions
Wildlands
APNs 108-030-08, 108-070-08, & 108-070-09
Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS\ CALTRANS\ 00543_09_WILLITS_FROM_URS\ MAPDOC\ APPENDIX_C\ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

Appendix C: Byapss Impact Maps – Riparian and Oak Woodlands (From Appendix B of the Willits Bypass Mitigation and Monitoring Plan)

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

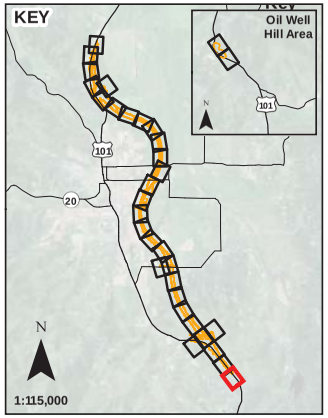
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-1

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dlS (02-11-10)

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

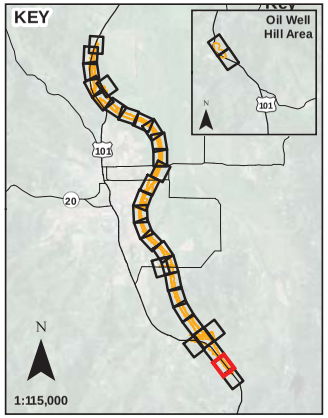
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-2

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

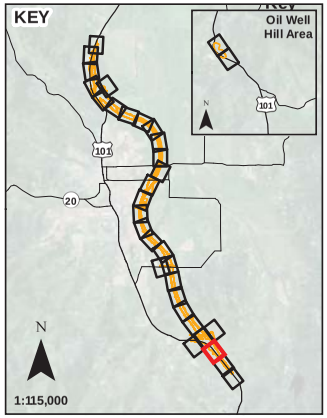
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-3

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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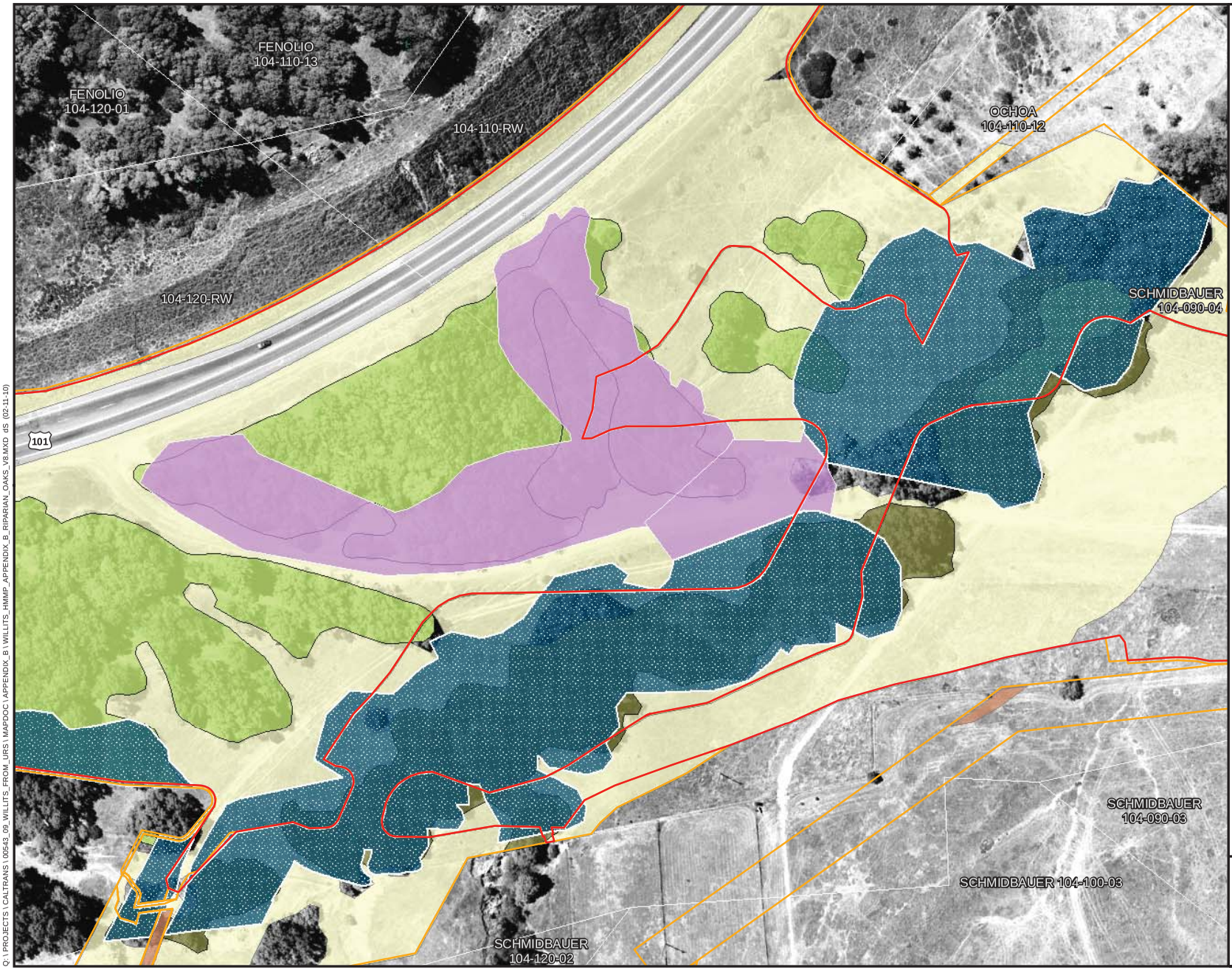


Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

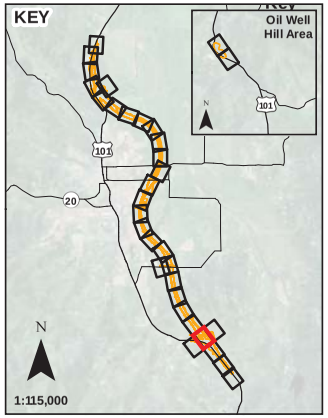
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-5

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

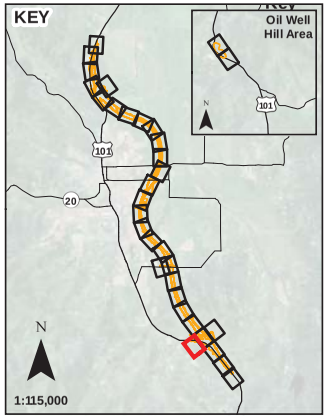
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-7

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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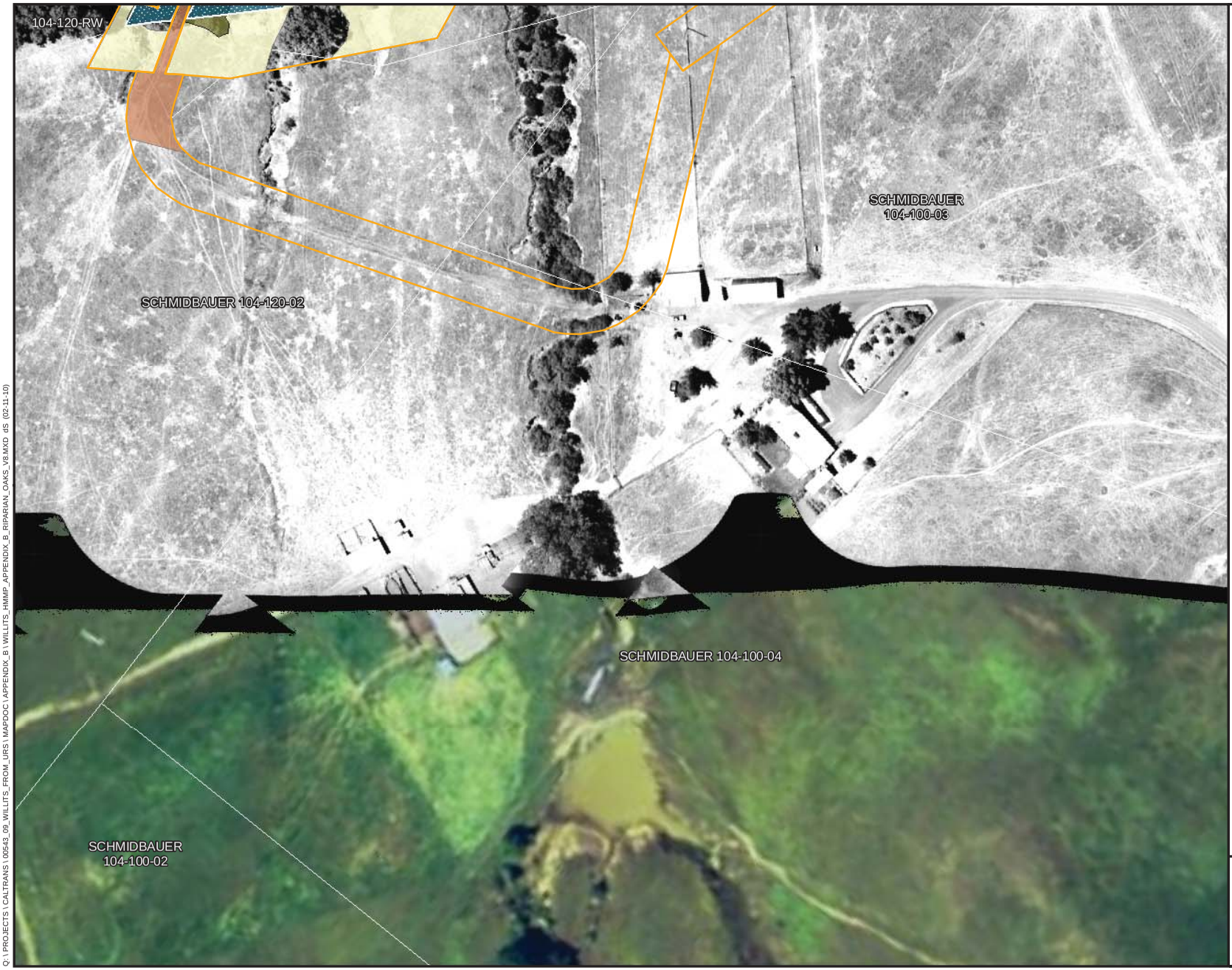


Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

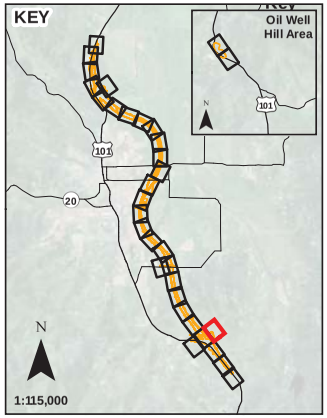
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-9

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

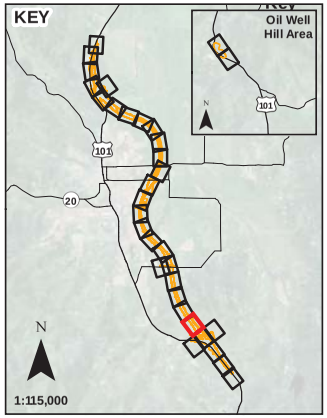
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-11

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

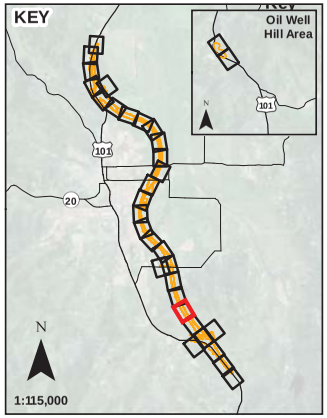
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-13

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

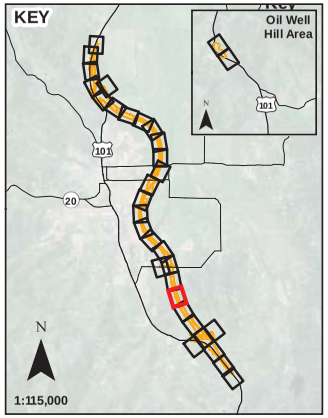
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-15

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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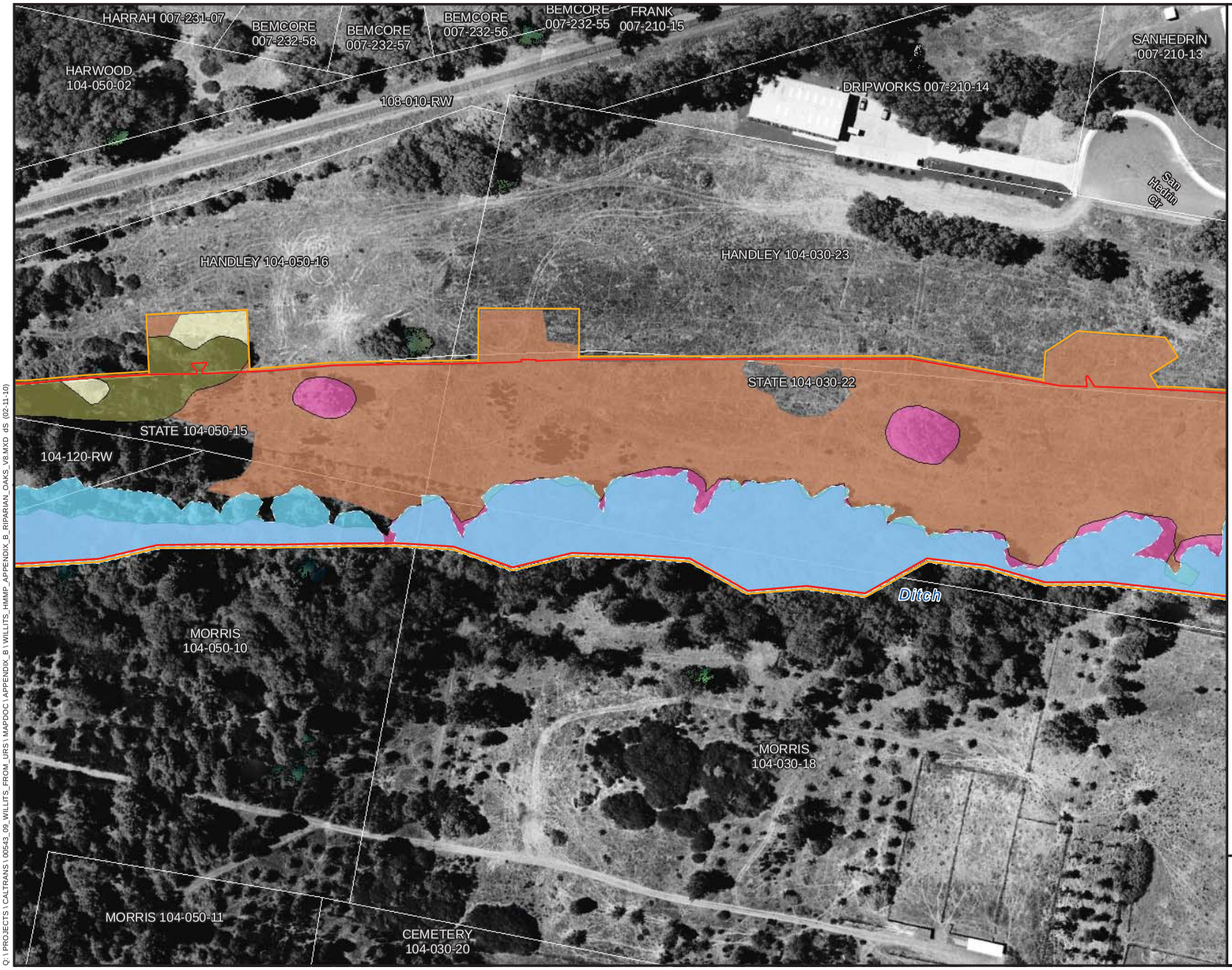


Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

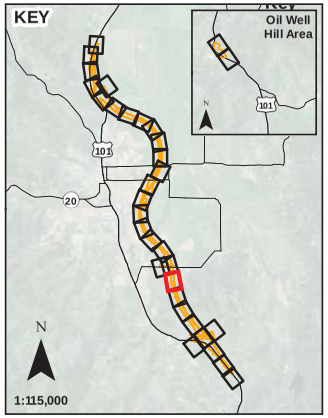
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-17

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

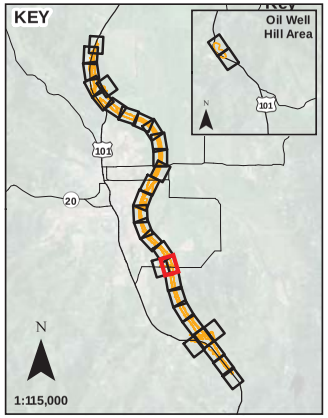
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-19

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

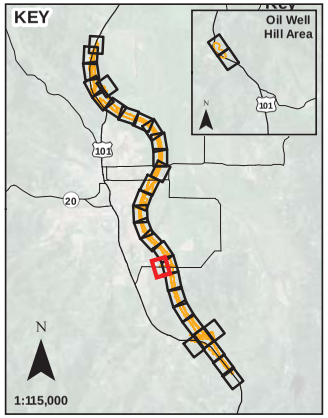
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-21

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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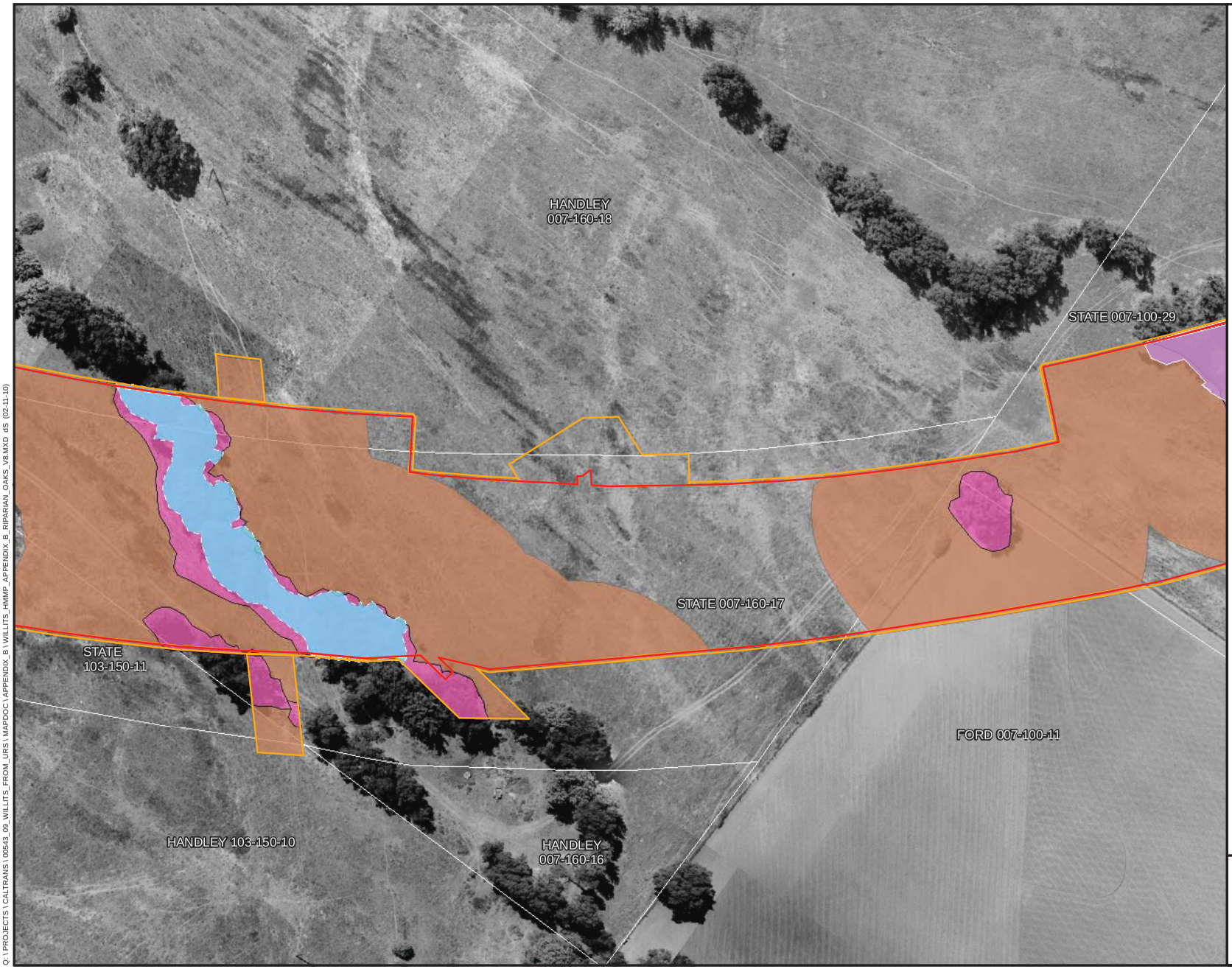


Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

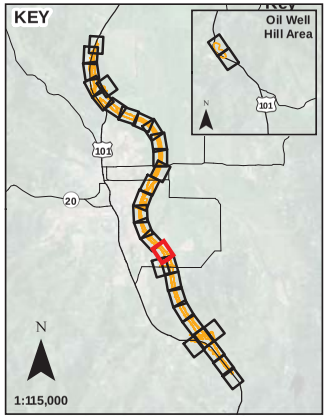
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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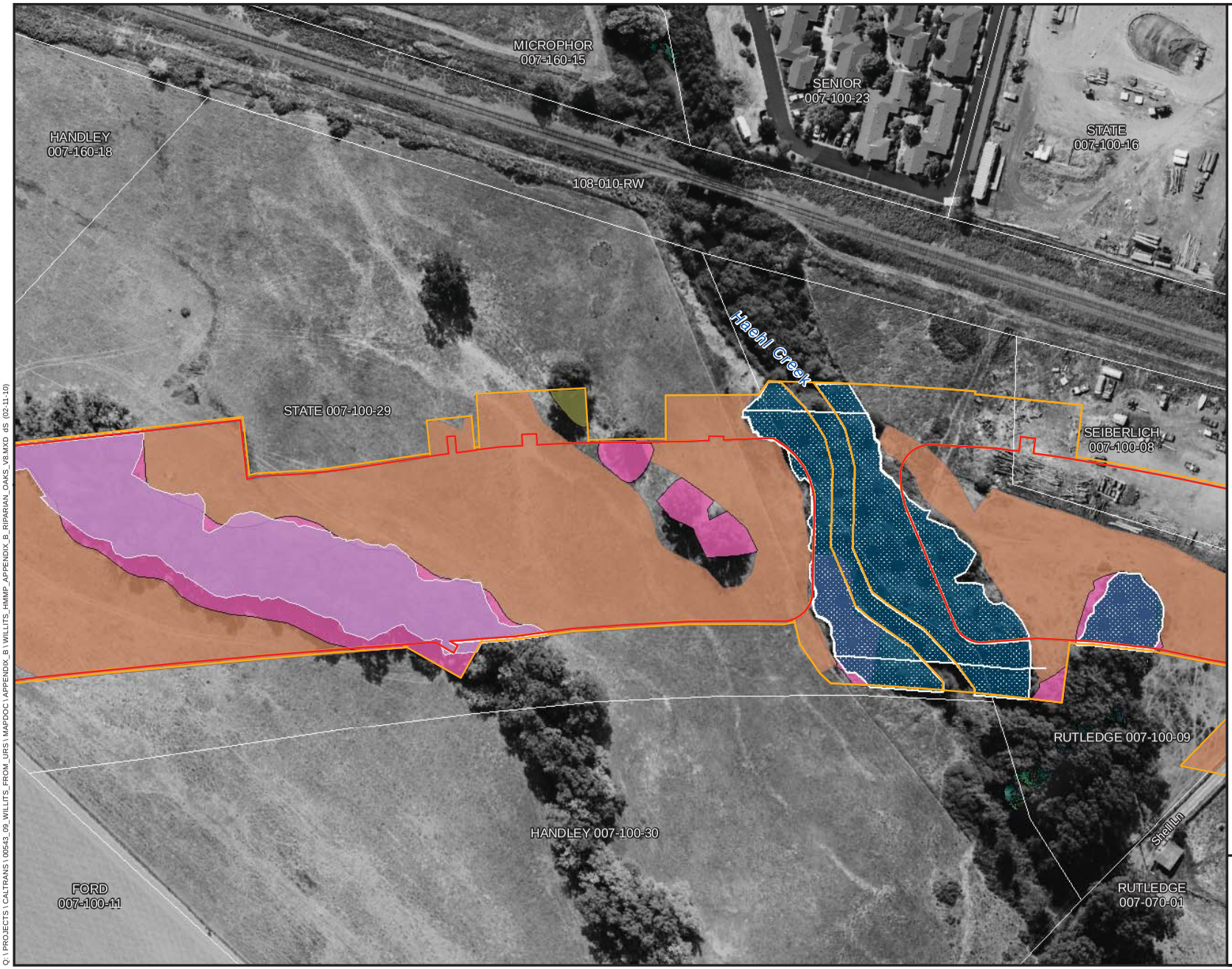
Scale in Feet

Sheet B-23

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dlS (02-11-10)



Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

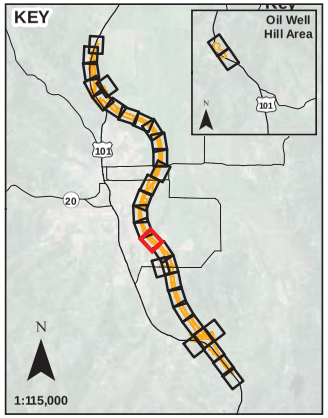
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-25

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

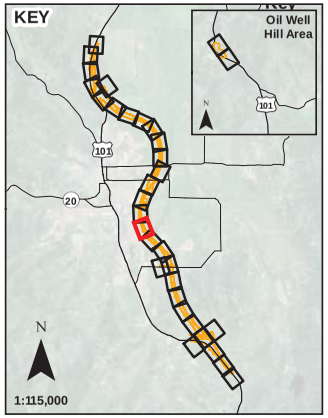
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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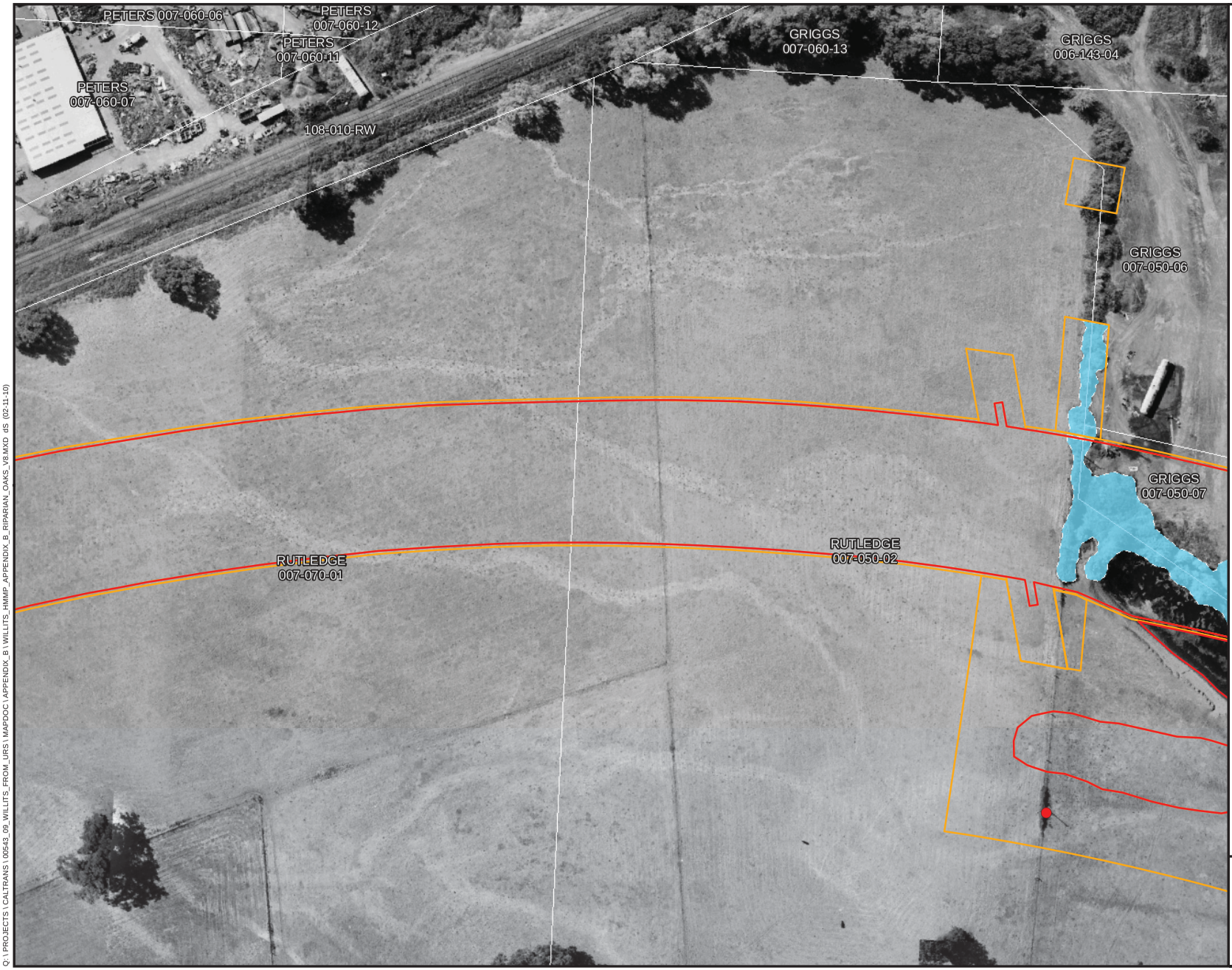
Scale in Feet

Sheet B-27

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)



Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

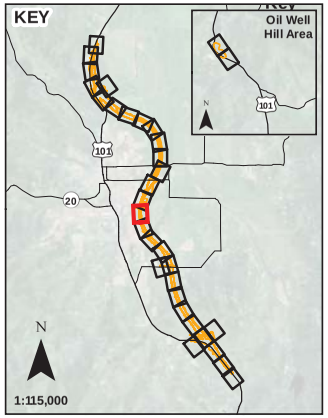
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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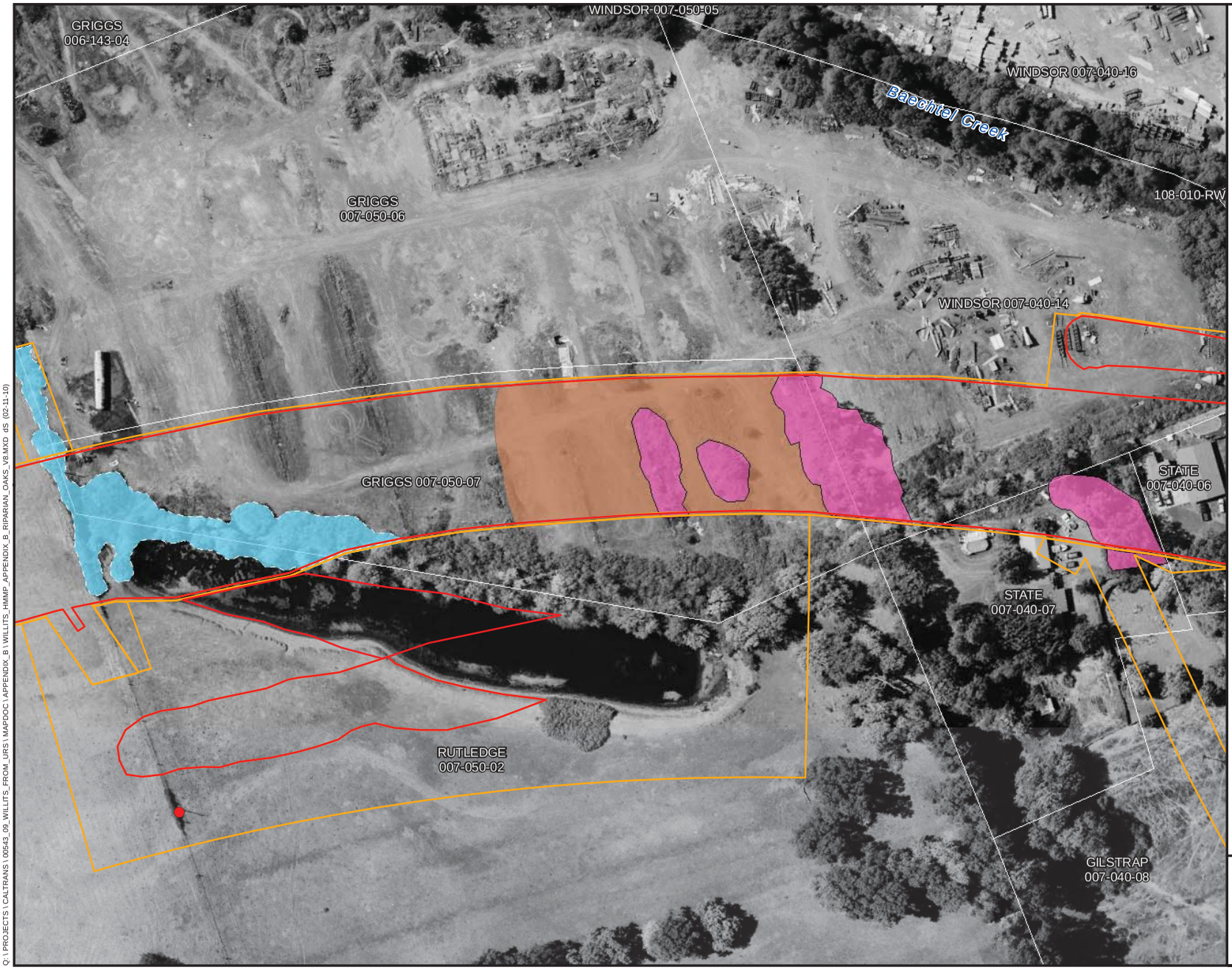
Scale in Feet

Sheet B-30

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dlS (02-11-10)



Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

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- Catagory III - Riparian Corridor

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Oak Woodland Grassland

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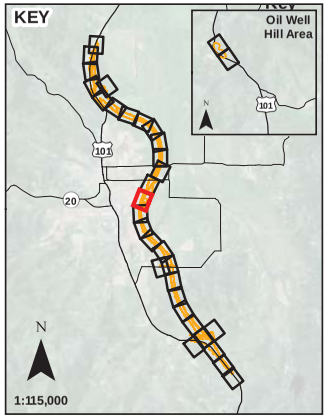

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Scale in Feet

Sheet B-33

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dlS (02-11-10)

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

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- Catagory III - Riparian Corridor

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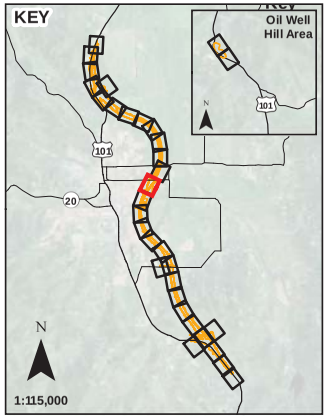

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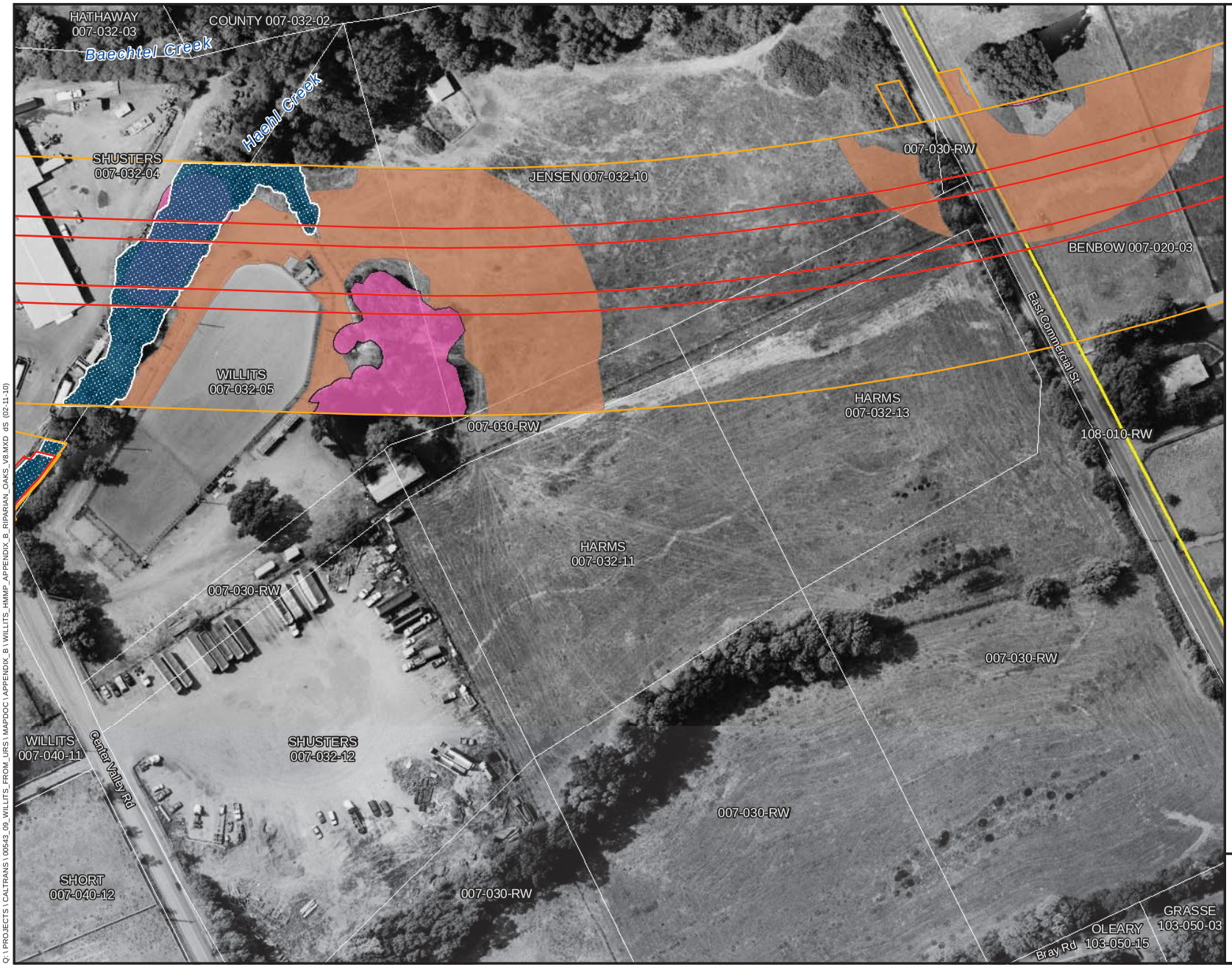
Scale in Feet

Sheet B-36

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 0543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dlS (02-11-10)



Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

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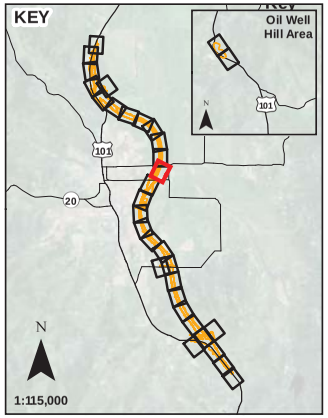
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Sheet B-39

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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Legend

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- Permanent Impact Boundary
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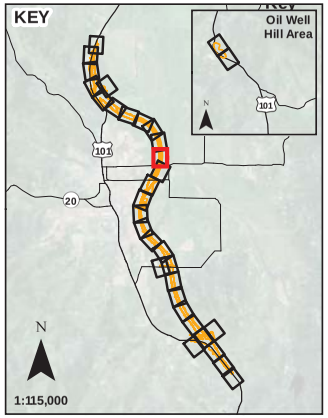

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Riparian and Oak Woodland Impacts

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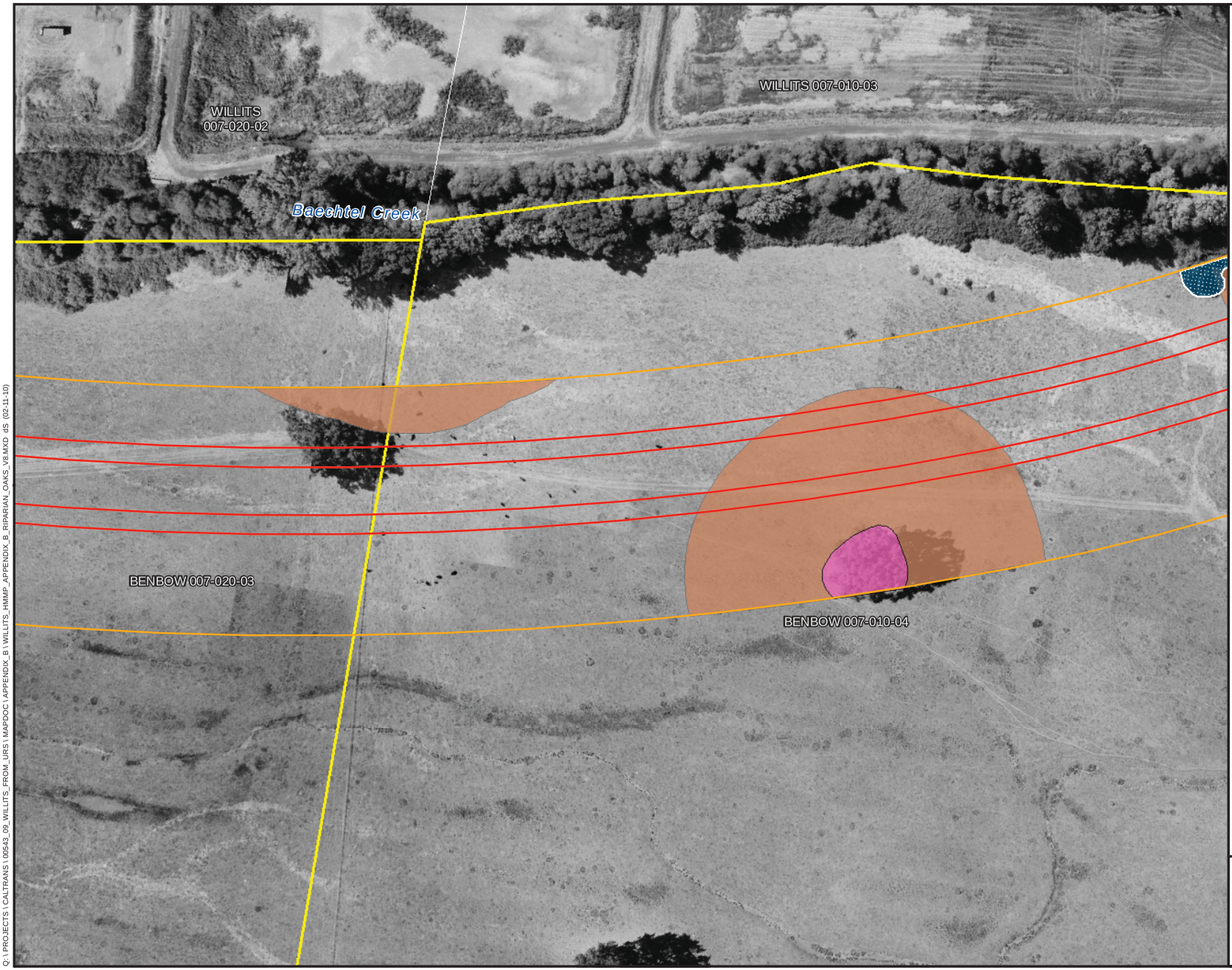

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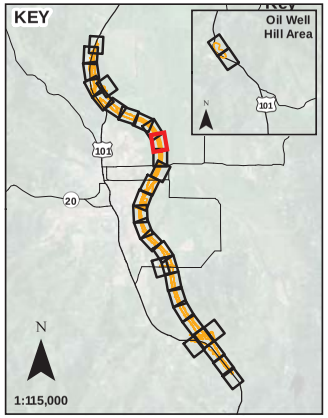

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Riparian and Oak Woodland Impacts

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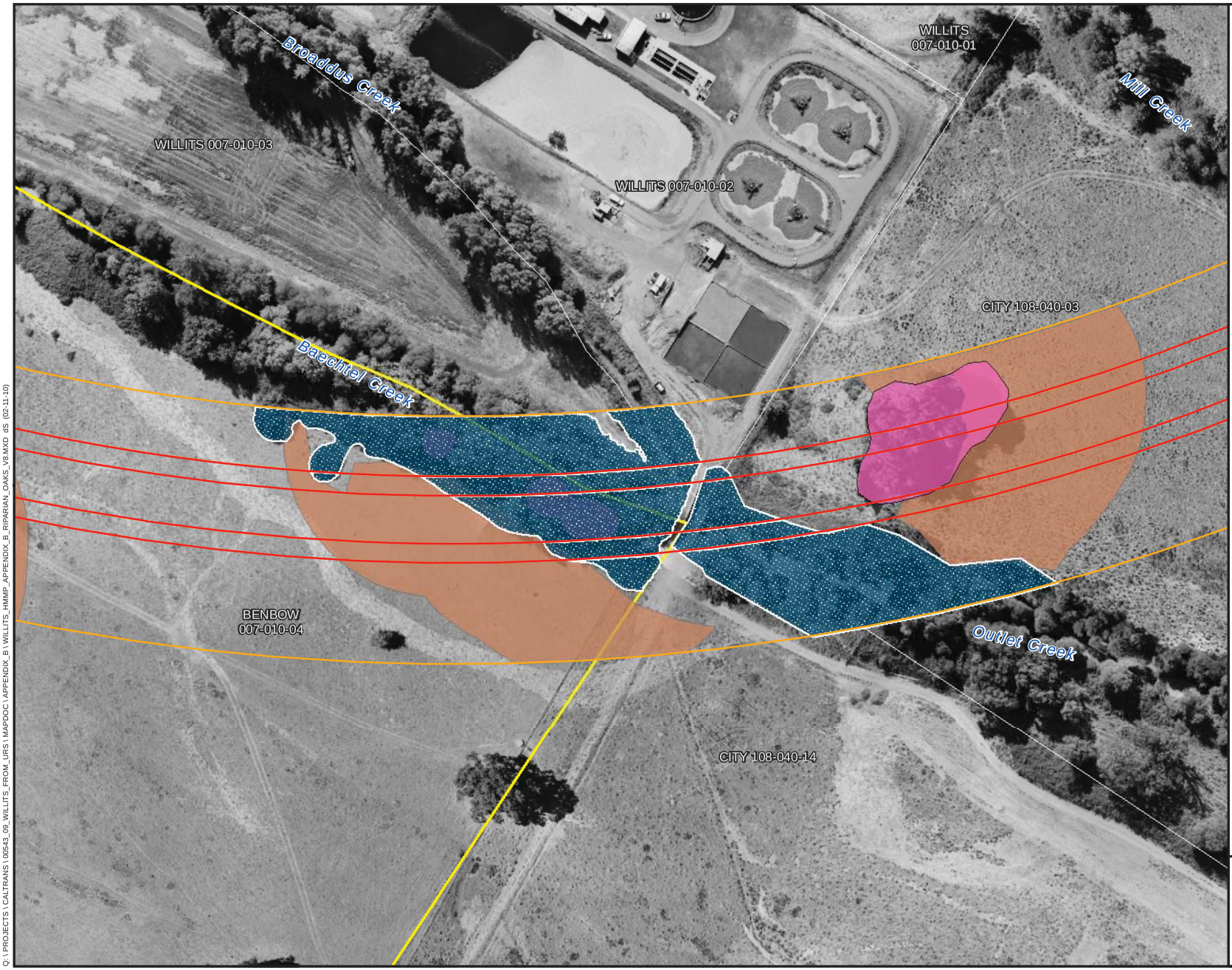

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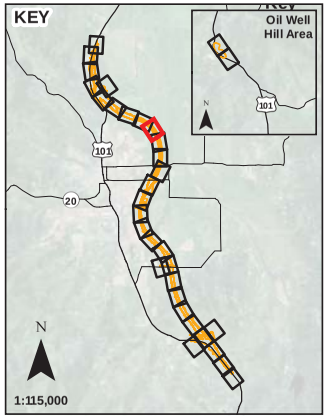

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Riparian and Oak Woodland Impacts

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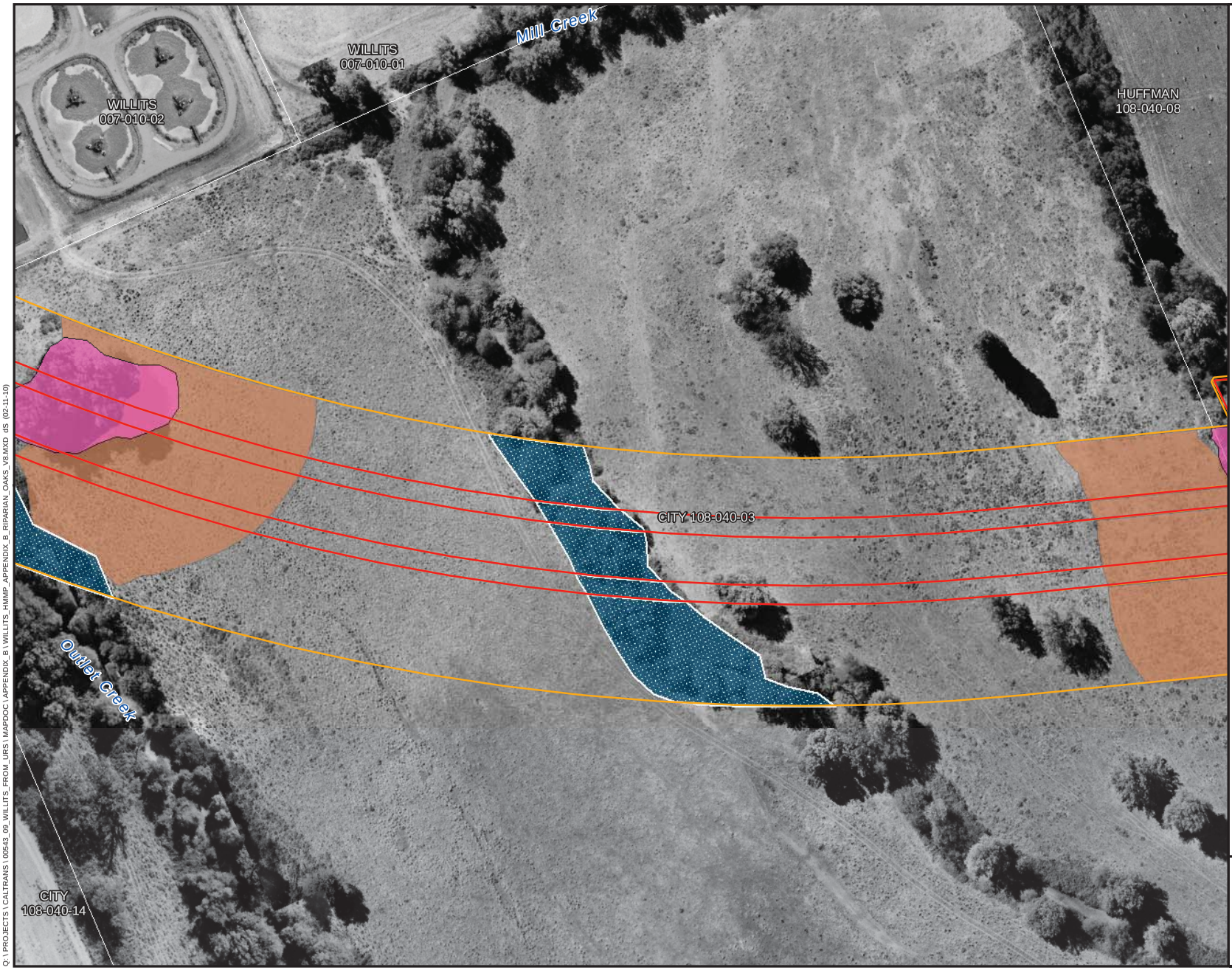

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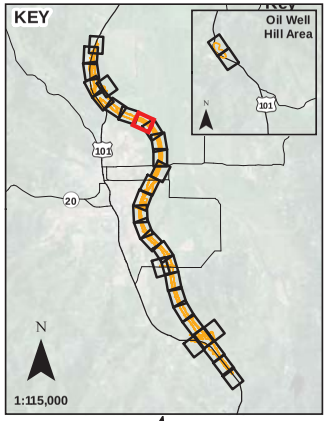

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Riparian and Oak Woodland Impacts

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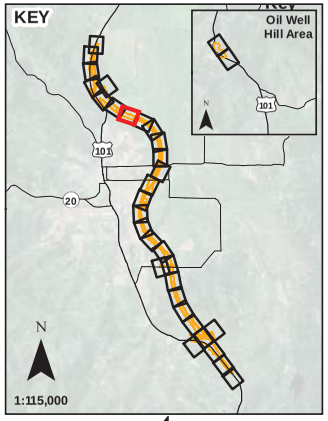

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Sheet B-53

Riparian and Oak Woodland Impacts

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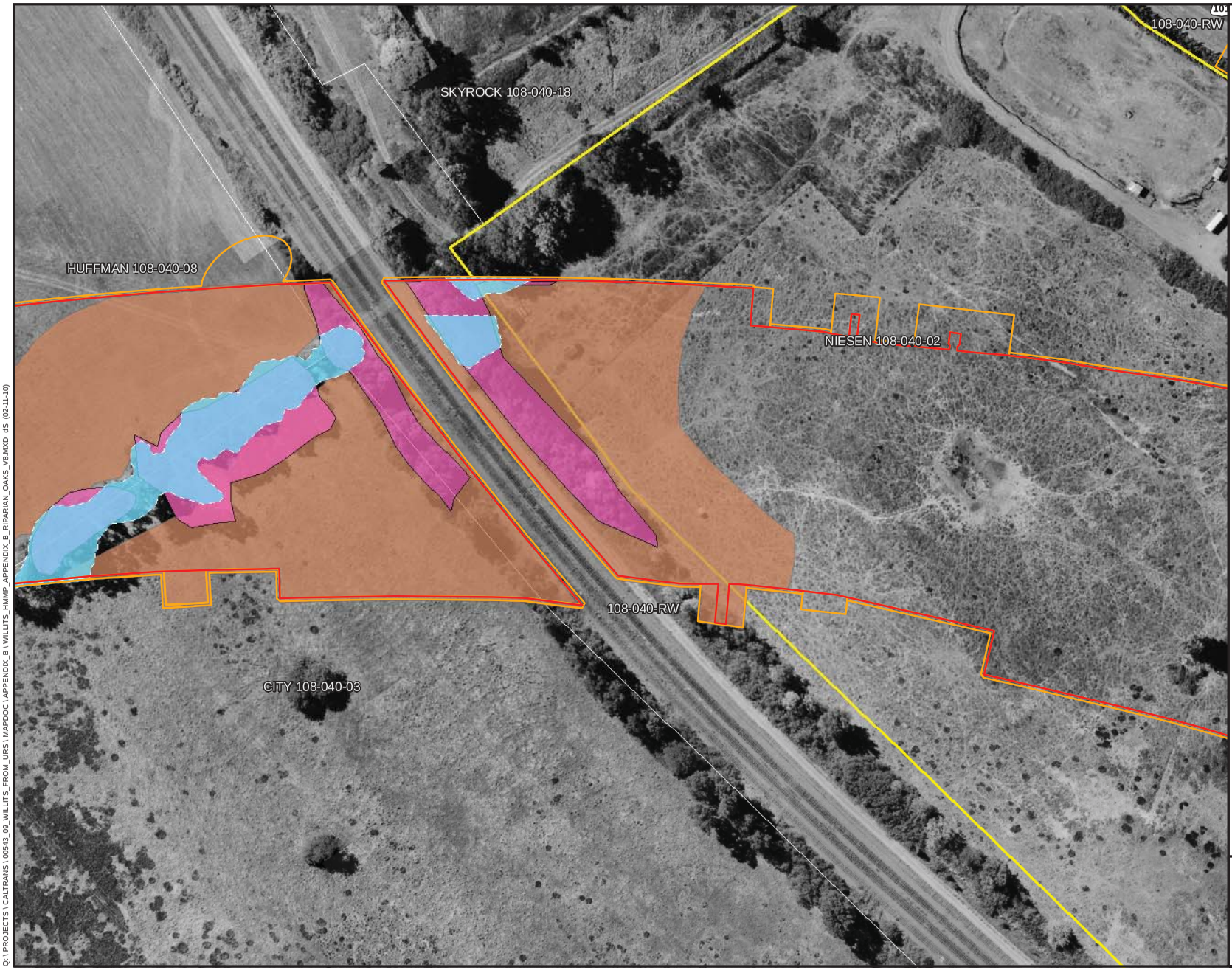

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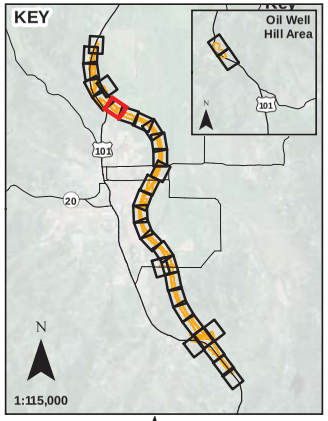

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Sheet B-56

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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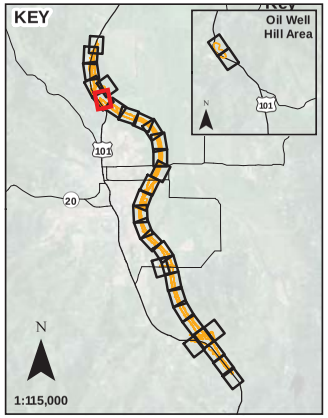

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Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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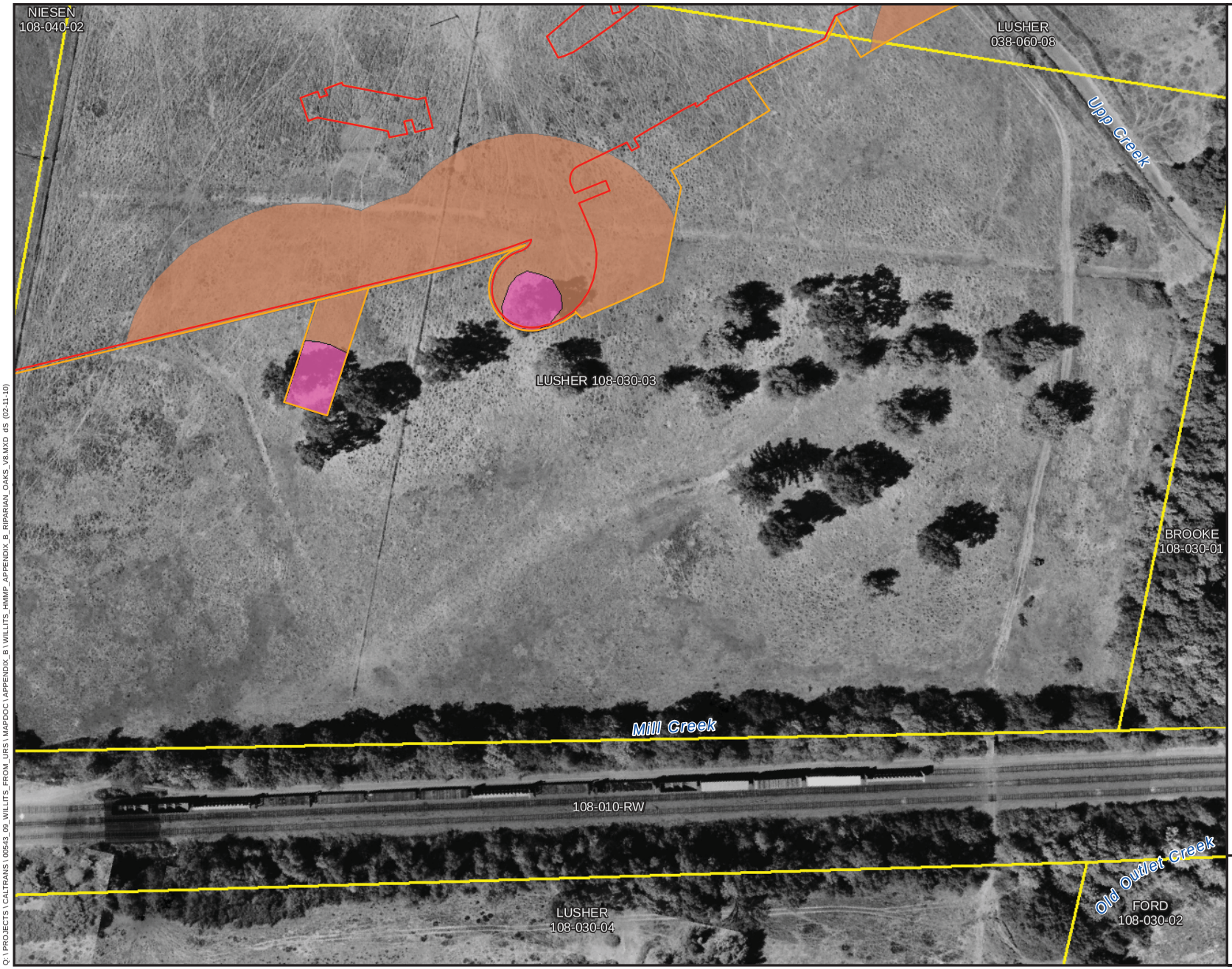

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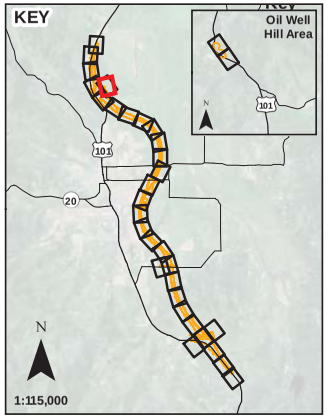

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Sheet B-62

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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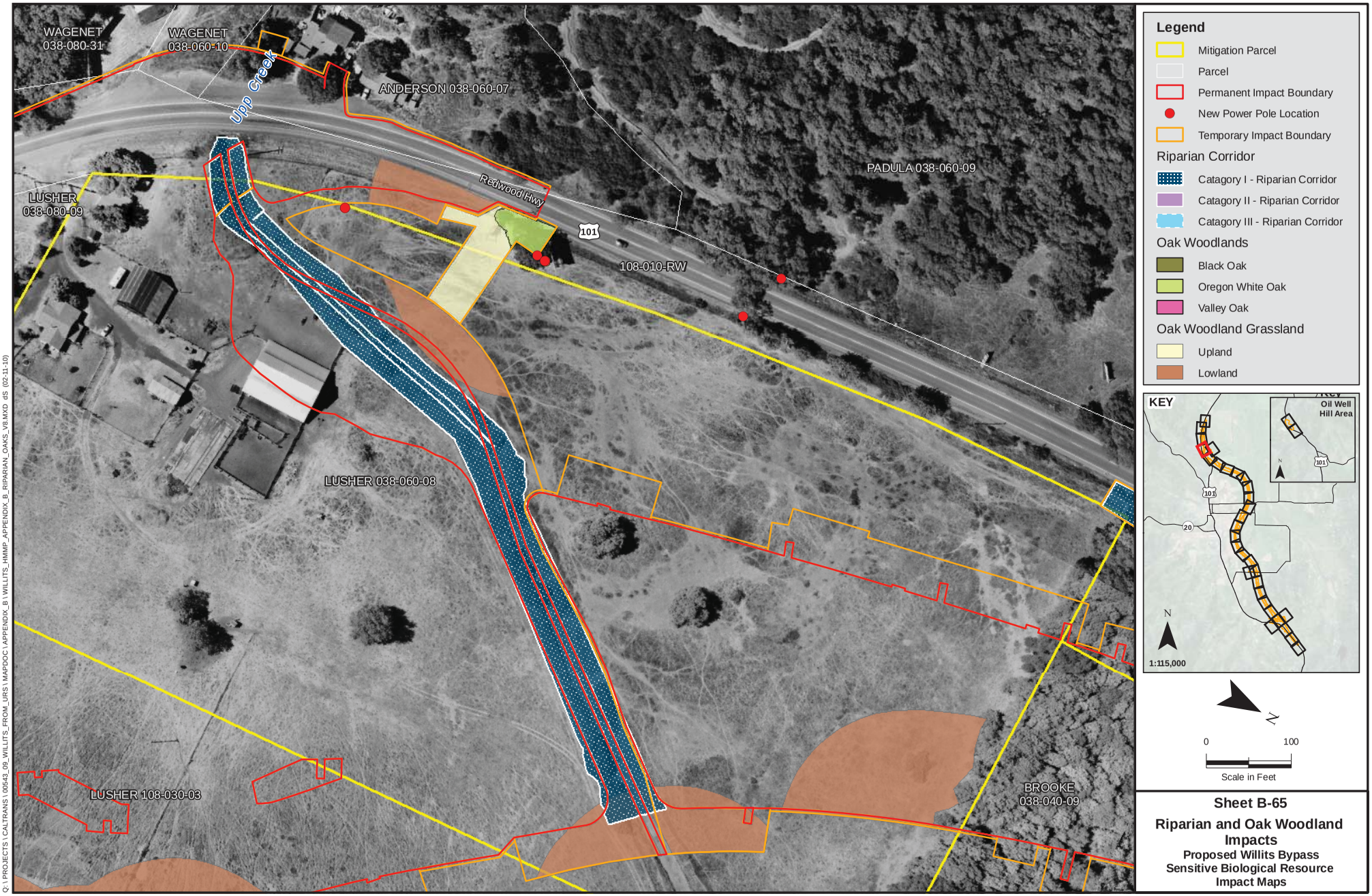

Sheet B-65

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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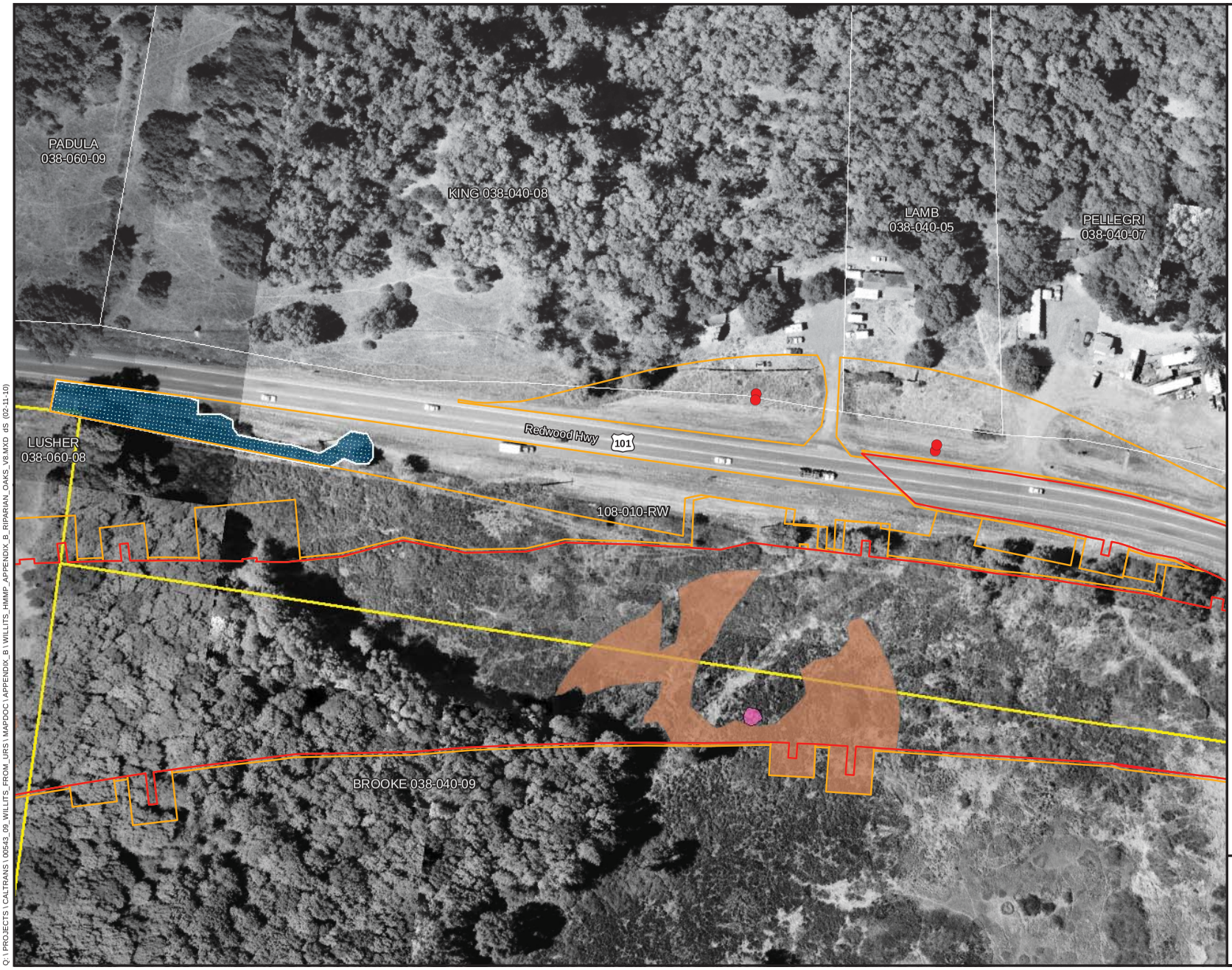

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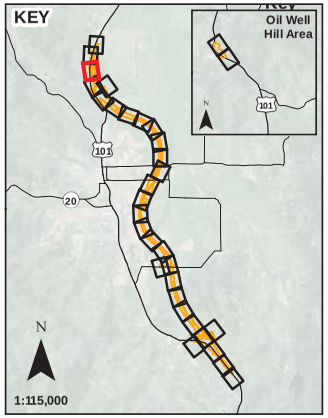

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Sheet B-68

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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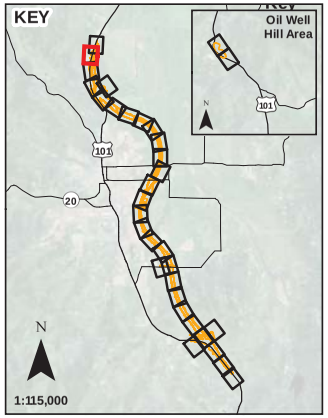

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Scale in Feet

Sheet B-70

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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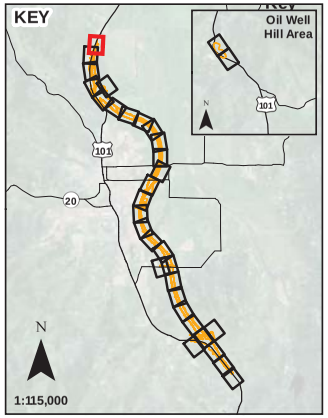

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Sheet B-72

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource
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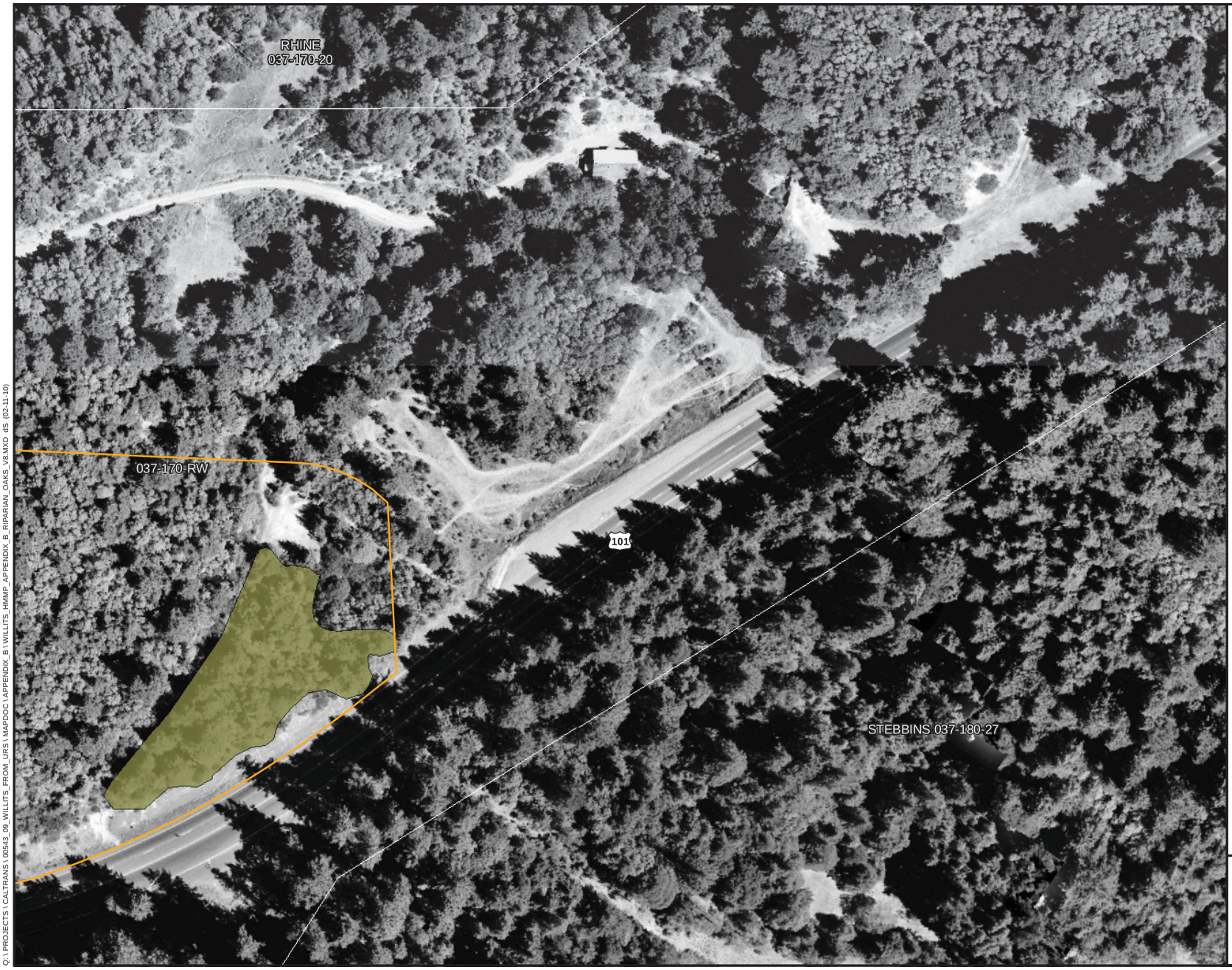

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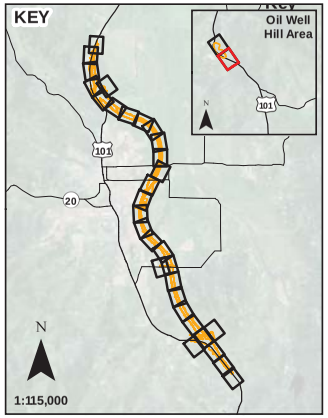

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Sheet B-74

Riparian and Oak Woodland Impacts

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Attachment 1: Supplemental Information

Block 3. Property Owners

A full and complete list of the adjacent property owners whose property adjoins the project features is provided in Attachment 6.

Block 8A. Project Location

The project will be located near the city limits of Willits in Mendocino County, California. The bypass will begin approximately 0.8 mile south the Haehl Overhead and end approximately 1.9 miles south of Reynolds Highway. The overall length of the bypass will be approximately 5.8 miles, starting near with post mile (PM)R43.1 and ending near R49.0 (Figure 1-1).

The optional proposed borrow site at Oil Well Hill is located on the east side of Highway 101 approximately 0.85-mile north of the intersection of Reynolds Highway and Highway 101.

Bypass Alignment

The proposed bypass will diverge from existing U.S. 101 at the Haehl Creek interchange and continue northwesterly on an embankment constructed with excess fill from a previous freeway project. The alignment would swing to the northeast and then travel back to the northwest, adjacent to the WWTP. Figures 1-2a to 1-2d illustrate the bypass alignment and locations of key project components. The purpose of the viaduct is to span regulatory floodway. Additional details regarding the viaduct are provided in the "Description of Specific Design Elements" section (Block 10A) of this permit application attachment.

Bypass Vertical Alignment

The vertical alignment of the bypass will begin with a gentle downgrade at the south end of the project and proceed northwesterly from the existing freeway section to approximately 0.5 north mile of East Hill Road. From this point to the Quail Meadows interchange, the flat valley floor will allow grades that are nearly flat except at structure approaches and departures. Throughout the valley, the project lies in the 100-year floodplain elevation and the surface of the highway will be a 16.5-foot minimum clearance above the estimated 100-year floodwater surface elevation.

Location of Key Project Components (Approximate)

- **Haehl Creek interchange:** 39°22'28.48" N, 123°19'29.11" W; T18N, R13W, S32
- **Quail Meadows interchange:** 39°25'31.29" N, 123°21'10.33" W; T18N, R13W, S7
- **Viaduct structures:** 39°24'32.07" N, 123°20'21.36" W; T18N, R13W, S18

Block 8B. Rivers, Streams or Lakes Affected

Jurisdictional Determinations

The U.S. Army Corps of Engineers (USACE) verified the U.S. Highway 101 Willits Bypass Project's (proposed project) delineation of waters of the United States on March 1, 2005 (File 194741N). This verification was for the Modified Alternative J1T Alignment study area. In January 2007 and April 2008, a request to amend the previously verified delineation was submitted to the USACE to include minor changes to the footprint of the proposed Haehl Creek interchange, the road alignment to the north, and the proposed borrow area at Oil Well Hill. The USACE confirmed the requested changes to the delineation on August 15, 2008 (File 191-19470N). In December 1, 2008, a request to verify a delineation was submitted to include the revision of the project footprint to avoid the expansion of the Willits wastewater treatment Plant (WWTP). The USACE provided a verification for this area on December 2, 2009. In addition to the delineations of waters of the United States associated with the bypass alignment, Caltrans also submitted delineations for various parcels that will be part of the project's mitigation plan. The USACE jurisdictional determinations are located in Attachment 3.

Name and Description of Affected Rivers, Streams or Lakes Affected

The project area includes numerous jurisdictional wetlands and other waters of the United States. Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks and their related tributaries and adjacent wetlands are considered waters of the United States given these waterways have connectivity to a traditional navigable water/territorial sea (Pacific Ocean). These waterways will be directly or indirectly affected by the bypass because they cross the bypass alignment as they convey water through the Little Lake Valley. Construction will also affect a number of smaller unnamed tributaries and ditches in the bypass area.

Wet meadows will be the most heavily affected jurisdictional waters, by area, within the bypass footprint**.** From south of East Hill Road to the second intersection with Haehl Creek, wet meadow, which includes some small vernal pool like features, is the dominant vegetation, occupying approximately 50% of the affected area. Wet meadows dominate the project area south of East Valley Road to the area north of Upp Creek, including the area near the Willits Wastewater Treatment Plant (WWTP). The Quail Meadows interchange at the northern end of the bypass will also affect wet meadows.

Marsh is the second-most widely affected wetland feature by area. A marsh area is located east of U.S. Highway 101 (U.S. 101) on the Brooke properties at the northern end of the bypass. A large area of riparian woodland is associated with this marsh area.

Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks are the major other waters of the United States affected by the bypass. All these creeks cross the bypass alignment as they convey water through Little Lake Valley. Construction will affect a number of smaller tributaries and ditches through the bypass area.

Block 10A. Project Description

The California Department of Transportation (Caltrans), in conjunction with the Federal Highway Administration (FHWA), proposes to construct a new segment of U.S. 101 that will bypass Willits in Mendocino County. The project will reduce delays, improve safety, and achieve a level of service (LOS) of "C" for interregional traffic on U.S. 101.

The FHWA is the federal lead agency under the National Environmental Policy Act (NEPA), with Caltrans acting as liaison and providing oversight for the NEPA process. Caltrans is the state lead agency under the California Environmental Quality Act (CEQA). A joint environmental impact statement/environmental impact report (EIS/EIR) has been prepared for the project.

The draft EIS/EIR was published in May 2002. According to regulations set forth in 23 Code of Federal Regulations (CFR) 771.129, a written evaluation of the draft EIS/EIR is required if the final EIS/EIR has not been submitted to the FHWA within 3 years of the date of the draft EIS/EIR circulation. Because 3 years have elapsed since circulation of the draft EIS/EIR, Caltrans submitted a written evaluation to the FHWA for review in April 2006. The purpose of this written evaluation was to determine whether it was necessary to circulate a new or supplemental EIS/EIR. Based on the information provided to the FHWA, it was determined that no new or supplemental EIS/EIR would be necessary for the project.

Caltrans approved the final EIS/EIR and filed a notice of determination on December 15, 2006. The FHWA approved the final NEPA document and filed a record of decision on December 18, 2006. A hard copy of the final EIS/EIR will be provided under separate cover. It can be also be viewed and downloaded at <http://www.dot.ca.gov/dist1/d1projects/willits/reports.feir.htm>. Copies of the record of decision and notice of determination are included as Attachment 4 of this permit application.

Background and Changes Since the Final EIS/EIR

Modified Alternative J1T (proposed project or bypass) was selected as the preferred alternative and evolved as a result of the NEPA/404 integration process. It was not specifically identified as an alternative in the draft EIS/EIR. Modified Alternative J1T shares similar project design elements of the J1T and LT alternatives discussed in the draft EIS/EIR and was proposed to further reduce community and environmental impacts.

Since publication of the final EIR/EIS in December 2006, Modified Alternative J1T has undergone several design revisions. The primary reasons for the design revisions were: 1) to avoid conflicts with the WWTP expansion project and 2) to accommodate phasing the construction of the bypass, as discussed below. Overall, the design revisions are relatively minor changes to Modified Alternative J1T as presented in the final EIR/EIS. The project remains a four-lane freeway bypass with several bridges spanning creeks and local roads, a viaduct spanning the regulatory floodway, and interchanges on either end of the bypass. The location and design elements of project revisions are described in more detail below.

Avoidance of the Willits Wastewater Treatment Plant Expansion Project

To avoid conflicts with the WWTP expansion project, the alignment was shifted slightly to the northeast around the WWTP using a triple compound curve instead of the single curve that was originally planned. The alignment returns nearly to the original alignment near the Northwestern Pacific Railroad (NWPRR) track crossing. The profile over the railroad has also been lowered, resulting in a significant reduction of the embankment footprint (and therefore a reduction in impacts on wetlands) between the end of the viaduct (Huffman/City of Willits property line) and the railroad crossing.

Phasing of Bypass Construction

Because of funding constraints, the decision was made to construct the bypass in two phases such that a functional interim two-lane facility will be constructed initially; when adequate funding becomes available in the future, the remaining lanes will be constructed to complete the four-lane bypass. The need to phase construction of the project has had design implications, resulting in the need to modify the Quail Meadows interchange. Phasing the construction of the original Quail Meadows interchange proved geometrically complex and wasteful of resources. Therefore, the interchange was shifted approximately 1,200 feet to the north and will be a two-lane interchange in Phase 1. In addition, a roundabout has been added to the west side of the interchange to connect two ramps to the local roads. An additional benefit of the roundabout is that an existing box culvert at Upp Creek can now be removed and, therefore, will allow for the restoration of this area. All crossings of Upp Creek, which were previously planned as box culverts, will now be bridges.

Although the project will be constructed in two phases, the ultimate project remains a four-lane freeway bypass. As funding allows during Phase 1, Caltrans intends to construct as much of the four-lane roadway embankment as possible to help facilitate the construction of Phase 2. The environmental study limits (ESL) and this Section 1602 Agreement application encompass the full four-lane project area. Right-of-way purchased for the project will satisfy the requirements of the full four-lane project and will be access-controlled. Although only the two southbound lanes will be constructed initially in Phase 1, Caltrans will implement mitigation for the impacts of the ultimate four-lane project with implementation of Phase 1. The project description below discusses the ultimate four-lane facility.

Description of Specific Design Elements

Roadway Design

The proposed project is designed to accommodate the predicted interregional average annual daily traffic in 2028 at a LOS C or better. The bypass will be a four-lane freeway with a 45.3-foot median separating the northbound and southbound lanes. Each lane will be 12 feet wide. The inside shoulder width (nearest the median) will be 5 feet, while the outside shoulder width will be 10 feet. The freeway was designed for a maximum speed of 68 miles per hour (mph) and will meet the purpose of providing at least an LOS of C. Where local roads are to be improved or constructed, there will be two 12-foot lanes and shoulder width meeting local design standards.

Interchanges

Two interchanges will be constructed for the project. The Haehl Creek interchange will be located at the south end of the project near Haehl Creek and connect the existing highway into Willits with the new facility. The Quail Meadows interchange will be located near the north end of Little Lake Valley and connect the new facility to the existing highway north of Willits. Interchange ramps will be single-lane.

Bridges and Structures

The bypass will cross creeks, riparian corridors, streets, and railroad rights-of-way using 22 bridges. Three retaining walls will be built. The following structures will be constructed with this project:

- Six bridges in the Haehl Creek interchange area, one for each of the following:
  - Northbound freeway lanes separation over State Route (SR) 20
  - Southbound freeway lanes separation over SR 20
  - Southbound off-ramp over Haehl Creek
  - Northbound on-ramp over Haehl Creek
  - Northbound freeway lanes over Haehl Creek
  - Southbound freeway lanes over Haehl Creek
- Two retaining walls in the Haehl Creek interchange area adjacent to Haehl Creek:
  - East side of northbound lanes
  - West side of northbound on-ramp
- Two bridges to cross East Hill Road:
  - One bridge for the southbound roadway lanes (Phase 1)
  - One bridge for the northbound roadway lanes (Phase 2)
- Two bridges to cross the middle reach of Haehl Creek south of Shell Lane:
  - One bridge for the southbound roadway lanes (Phase 1)
  - One bridge for the northbound roadway lanes (Phase 2)
- One retaining wall on the west side of the southbound roadway lanes just south of Center Valley Road.
- Two viaduct structures to span the floodway:
  - Southbound (Phase 1)
  - Northbound (Phase 2)
- Two bridges to cross over the NWPRR tracks in the Quail Meadows interchange area, one for each of the following:
  - Southbound roadway lanes (Phase 1)
  - Northbound roadway lanes (Phase 2)

- Two bridges to cross the new connector road to existing U.S. 101 in the Quail Meadows interchange area
    - One for the southbound roadway lanes (Phase 1)
    - One for the northbound roadway lanes (Phase 2)
- Six bridges to cross Upp Creek directly north of the Quail Meadows interchange, one for each of the following:
    - Southbound roadway lanes (Phase 1)
    - Northbound roadway lanes (Phase 2)
    - Northbound on-ramp (Phase 1)
    - Northbound on-ramp (Phase 2)
    - Southbound off-ramp
    - Roundabout local intersection

    Note that the northbound on ramp bridge constructed in Phase 1 would be replaced in Phase 2 by a different bridge.

Viaduct

The proposed alignment encroaches upon the 100-year floodplain. The design includes two elevated structures, which make up the floodway viaduct. The purpose of this design feature is to span the floodway. The final floodplain evaluation report concludes that project will not increase the base flood elevation of the floodway, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q).

The viaduct s will be located in the central part of the project area and will span Center Valley Road, the lower reach of Haehl Creek just upstream of the confluence with Baechtel Creek, Hearst-Willits Road, Baechtel and Broaddus Creeks at their confluence (beginning of the Outlet Creek designation), the WWTP, and Mill Creek.

The approximately 6,000-foot-long structures will consist of a separate northbound and southbound elevated viaduct superstructure. The total area of both viaducts would be 11.6 acres. Each of the viaducts will be approximately 42.6 feet wide. The edge-to-edge distance between the structures will be approximately 31.2 feet, and each will have a 16.5-foot minimum clearance underneath. The viaducts will require supporting columns, ranging in size from 4.5 to 7 feet in diameter.

Reinforced Concrete Box Culverts

Three large reinforced concrete box (RCB) culverts will be built as part of the proposed project. The first RCB culvert will cross Haehl Creek near the Haehl Creek interchange to provide access to a ranch isolated by the new bypass; the second and third will cross under Center Valley Road, near Shuster's Trucking, and will mitigate floodplain impacts due to roadway embankment south of Center Valley Road.

The Haehl Creek culvert for the ranch access will be a natural bottom arch culvert or a partially buried box culvert. The two culverts crossing Center Valley Road will be concrete boxes and will use turf reinforcement mats in lieu of rock slope protection (RSP) at the inlets and outlets where feasible.

Retaining Walls

Three concrete retaining walls will be constructed: two at the Haehl Creek interchange, and one just before the south end of the viaduct near Baechtel Creek. One of the Haehl Creek interchange walls will be located along the west side of the northbound on-ramp. The other will be located along the east side of the northbound lanes between the separation structure over SR 20 and the Haehl Creek bridge. The third retaining wall, near Baechtel Creek, will prevent potential undermining of the roadway embankment to be undermined by Baechtel Creek.

Excavation (Cut), Embankment (Fill), and Imported Borrow

The estimated embankment requirement for Phase 1 of the proposed project is approximately 1.4 million cubic yards. Because all soil excavated on-site will be reused as embankment, no disposal sites will be required for the project. Beginning just north of the Haehl Creek interchange to the south abutment of the viaduct, and from the north abutment of the viaduct to the terminus of the project, the alignment will be constructed largely on embankment (created using excavated soil and imported fill material). Cut slopes will generally vary between a 1:2 (vertical: horizontal) and 1:2.5 ratio. Fill slopes will vary between a 1:2 and 1:4 ratio. The plans will call for slope rounding at appropriate locations.

The bypass will require imported borrow material from outside the project area in addition to material excavated on-site. The construction contractor will have the option to determine whether the source of material for earthwork fill will be a Caltrans-designated borrow site (at Oil Well Hill), a commercial borrow site, or another site.

Caltrans has designated the borrow site at Oil Well Hill, just north of Little Lake Valley, as an optional source of material that the contractor may use for the project. The material in this area is good-quality and suitable for use in embankment construction. The right-of-way for U.S. 101 at the designated borrow site is sufficient to provide the necessary embankment material for earthwork. Potential excavation at the proposed designated borrow site at Oil Well Hill could result in the removal of up to 1.3 million cubic yards of material. The State Geology and Mining Board granted an exception to the Surface Mining and Reclamation Act (SMARA) permitting requirement on March 13, 2008.

The contractor may also choose to use available commercial borrow sites in the vicinity to obtain the required fill. Typically, commercial borrow sites hold pre-approved operating permits and do not require any additional environmental permitting when soil is exported. Should the contractor select an alternative, non-commercial borrow site for this project, the contractor will be responsible for conducting a separate environmental review for the site.

Fish Passage

One existing culvert in the upper Haehl Creek channel, located under the proposed highway bridge 10-0129R/L, will be permanently removed and restored as a natural drainage feature. A second existing culvert in upper Haehl Creek will be replaced and the area restored during improvement of the proposed new Schmidbauer Ranch access road. An existing RCB culvert in the vicinity of the proposed Quail Meadows interchange and passing under US 101 will be permanently removed and the creek contoured, re-graded, stabilized, and replanted; local traffic will cross Upp Creek on the new bridge that will be on the north leg of the roundabout.

Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) will consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements will comply with guidelines established by National Marine Fisheries Service (NMFS) and California Department of Fish and Game (CDFG).

An existing access road to the Schmidbauer Ranch will be improved. This access will be from the east side of the southern interchange. The existing culvert in upper Haehl Creek will be replaced with a natural bottom arch or box culvert. The culvert replacement will occur during summer, when this reach of Haehl Creek is normally dry. However, flows through the existing culvert have created an outfall pool that can retain water throughout the year. If water is present, a qualified fisheries biologist will survey the pool for the presence of salmonids. If present, the fish will be removed and relocated before removal and replacement of the culvert.

Landscaping

Disturbed upland areas such as the cut and fill slopes adjacent to the roadway and along interchange ramps, as well as the median between the inside roadway shoulders, will be revegetated with plants native to Little Lake Valley. For drivers' safety and in compliance with Caltrans design standards, no trees will be planted within the clear recovery zone where errant vehicles could hit them. Only soft shrubby and herbaceous native species may be planted in these areas to prevent abrupt slowing, redirection, or launching of stray vehicles.

Temporarily impacted areas will be revegetated to their pre-construction plant community type. They will be seeded and planted with plants native to Little Lake Valley.

Lighting

Highway lighting will be provided at both the Haehl Creek and Quail Meadows interchanges. No lighting will be provided along the viaduct.

Fencing

Fencing will be erected along the Caltrans right-of-way where appropriate.

Stream Bank Stabilization

To prevent bank erosion and damage to the bypass facilities, RSP will be required along short lengths of creek banks. The use of RSP will be minimized through the substitution of "Rolled Erosion Control Product" (RECP; netting) or "Turf reinforcement Mat" (TRM) in appropriate locations.

At locations where Haehl and Upp Creeks pass through the right-of-way, the stream channel will be contoured, re-graded, and designed for fish passage following the guidelines set forth by NMFS and CDFG.

Mitigation Construction

Bypass construction will result in temporary and permanent impacts on riparian and wetland habitat and permanent impacts on other waters and oak habitat. Temporary impacts on riparian and wetland habitat will be mitigated on site through the use of restoration techniques. Permanent impacts on riparian and wetland habitat will be mitigated off site through the use of creation, enhancement, and/or preservation techniques.

On site mitigation implementation will focus primarily on restoring temporarily affected riparian and wetland habitat within the bypass project footprint. In addition, on site minimization efforts related to state-listed plant species (e.g., seed collection, and topsoil harvesting and stockpiling) will be required. On site mitigation actions with the potential to result in impacts on wetlands, other waters, riparian habitat, listed plant species and/or listed fish will entail the following activities, and are summarized below (a full description of proposed mitigation actions is presented in the MMP):

- **Site Preparation**. Site preparation of on site mitigation sites will entail vegetation clearing and seed, rhizome, and topsoil salvaging. Vegetation clearing will be conducted within the bypass project footprint and will entail the use of heavy equipment to strip the existing vegetation. Prior to the beginning of ground-disturbing project construction activities, known populations of listed plant species to be affected by construction either will be salvaged for transportation to adjacent on site locations or salvaged for relocation to offsite mitigation parcels, where the harvested material will be used to topdress created wetlands.

- **Grading**. Temporarily affected locations will be graded as necessary to reestablish appropriate topography and site drainage. The disturbed locations will be configured to replicated preproject conditions as closely as possible. Grading will be limited to the dry season (late spring through early fall). Erosion control seed mixes will be applied after grading is complete but prior to the onset of wet season rains to prevent loosened material/sediment from entering wetlands or waters near the bypass project footprint.

- **Seeding**. Temporarily affected riparian and wetland locations will be seeded with an erosion control mix or a wetland seed mix, depending on location in the bypass project footprint. The seed will be from locally collected seed or plants (i.e., within Little Lake Valley). All temporarily affected riparian locations and wetland locations outside the viaduct construction area will be seeded with an erosion control mix. Temporarily affected wetlands in the viaduct construction area will be seeded with a wet meadow seed mix.

- **Planting**. Temporarily affected riparian and wetland locations in the viaduct construction area will be restored using container stock grown from locally collected seed or cuttings (i.e., in Little Lake Valley). Container plants will be placed in a planting hole that will be hand excavated or augured.

Mitigation on individual offsite mitigation parcels may include a combination of habitat restoration, creation, enhancement, and/or preservation. Off site mitigation actions with the potential to result in impacts on wetlands, other waters, riparian habitat, listed plant species and/or listed fish will entail similar ground-disturbing activities (e.g., site preparation, grading, seeding, and planting) as those described above for on site mitigation areas. In addition, grazing management plans will be developed for each of the off site mitigation parcels. The plans will include strategies to promote the establishment and preservation of target wetland communities and associated plant species and to support and potentially increase the extent of currently occurring listed plant species. Enhancement actions for each parcel may include repairing and replacing existing fences and gates to control livestock; developing and implementing rotational grazing strategies to promote the establishment and preservation of target liste plant species and wetland communities; installing permanent and/or temporary exclusion fencing around sensitive areas; installing water troughs in each grazing management unit to spread grazing across the entire unit; and locating salt licks away from drainages and areas to be protected.

Utility Relocation

The relocation of overhead and underground utilities will be required to construct the Willits Bypass. Utility relocation activities are proposed at the following locations:

1. An access easement on the Schmidbauer property (104-090-03, 104-100-03, and 104-120-02) will be primarily used to access future aerial electrical utilities for both installation and maintenance purposes. The route occurs along an existing unpaved driveway and then links up to a permanent overhead easement that will be located adjacent to the new freeway R/W. Activities will include truck traffic and the installation of 18–inch diameter holes approximately every 400 feet. Following installation of poles, occasional truck traffic will occur for maintenance purposes. Temporary access will also occur along a paved road and will be necessary for topping and removing poles.
2. An access easement on the Margie Lee Handley property (103-150-10 and 007-160-18) will be used primarily to access existing aerial utilities and adjust height profile (PG&E) or to relocate underground utilities for AT&T. Activities include truck traffic and trenching and backfill operations related to relocating the AT&T utilities. Trenching depths typically are limited to 4 feet.
3. An access easement located on the Mickey (007-100-08), Rutledge (007-100-09) and Harwood (007-050-04) parcels will be used to access existing aerials for the purpose of relocating them to higher elevations along the current alignment. Activities include truck traffic, pole removal and pole installation.
4. A temporary access on the Gilstrap property (007-040-10, 007-040-09 and 007-040-08) is needed to remove service poles and relocate poles within a permanent easement to the south of Center Valley Road. Activities include truck traffic and holes drilled approximately every 250 feet. On the north side of Center Valley Road, a combination of permanent overhead and underground easements are required. Activities will include track traffic and trenching operations.
5. Permanent easements both north and south of Hearst–Willits Road are needed for relocating aerial utilities underground along existing alignments. Activities will include track traffic mainly along the paved road and trenching operations.
6. In and around the vicinity of the northern roundabout (Quail Meadows interchange) temporary easements are needed to top and remove poles. Activities include short duration truck traffic.

7. Along the north end of the project mainline, temporary easements for pole removal are needed. Activities will include removing and installing poles and short duration truck traffic. Permanent aerial easements are required for installation access and occasional maintenance. Activities include truck traffic and the installation of 18–inch diameter holes approximately every 300 feet. Permanent underground easement activities include truck traffic and trenching operations.

Description of Specific Construction Elements

Roadway Construction

Staging Areas

The first phase of construction is the establishment of staging areas. Three staging areas are proposed, located in the south-central, central, and northern portions of the project corridor. The south-central staging area is located on state-owned property (Assessor's Parcel Number [APN] 007-100-08). The central staging area is state-owned property (APN 007-040-09) located south of East Valley Street, east of the south abutment of the floodway viaduct, and west of Haehl Creek. The northern staging area is located on state-owned property (APN 108-040-02) east of existing U.S. 101, west of the Quail Meadows interchange, and south of the roundabout. In addition to the staging areas described, the contractor will have use of right-of-way not being actively used for highway purposes., except for those environmentally sensitive areas to be protected by temporary orange fencing, designated as TFESA on the construction plans in enclosed with this permit application.

The staging areas will be used by the contractor to store equipment and materials and will provide the contractor easy access to the project corridor. Access roads from the staging areas to the project corridor will be constructed where necessary. It is anticipated that work will begin at several areas at the same time. Where staging areas are located adjacent to salmon-bearing creeks, a sufficient buffer will be maintained along with appropriate best management practices (BMPs) to ensure that no untreated storm runoff from these areas enters natural drainages. No riparian vegetation will be removed within the staging areas.

Access Roads

The construction of the bypass would require new access roads through some private properties near the project area. These private access roads would need to accommodate hay trucks, fire trucks, and other equipment. Roadway width for private access roads will be approximately 24 feet to allow for a two-lane roadway with no shoulders. It may be possible to reduce this width to about 20 feet; however, the design will need to conform to the Caltrans right-of-way requirement to "replace in kind or better" and be constructed to meet the California Department of Forestry's Fire Safe road standards as required by Mendocino County. Haul trucks delivering imported borrow from the Oil Well Site will utilize a haul road to reach the south end of the project area. The temporary haul road will begin near the Quail Meadows interchange and will be constructed adjacent to the floodway viaduct. The haul road will be removed after construction of the viaduct is complete and the footprint of the haul road has been restored to pre-construction condition.

Imported Borrow

Before the construction of the embankments, all environmentally sensitive areas will be fenced to prevent encroachment from the contractor's operations.

The proposed project will be constructed largely on fill material imported to the site. The bypass requires approximately 2.5 million cubic yards of fill (1.4 million cubic yards in Phase 1). The construction contractor will determine the source of material for earthwork.

Caltrans has designated a borrow site in the project area as a possible source of material that the contractor may use for the project. The site is located at Oil Well Hill, just north of Little Lake Valley and the U.S. 101 bridge over Outlet Creek. Material from the Oil Well Hill site could be transported to the project corridor by trucks, via U.S 101. Once the haul trucks reach the project site near the Quail Meadows interchange, they may travel on a haul road constructed within the ultimate roadway footprint.

Caltrans has prepared a site-specific reclamation plan that requires the borrow site be excavated by cutting the hillside back beginning at the toe and excavating back toward the top of the hill, creating a "cut slope." Prior to hillside excavation, all topsoil and duff will be harvested and stockpiled for reapplication on excavated areas. Once use of the borrow site is finished, cut slopes will be contour graded and stockpiled topsoil and duff will be reapplied. Soil will be amended with organic slow release fertilizer and compost as necessary. Cut slopes will be planted with native plants, propagated from local source material, to stabilize slopes and prevent erosion, and to protect water quality.

Wick Drains

Before any bridge or viaduct abutments can be constructed, the embankment for the abutments must settle. The estimated settling period ranges from 30 days to as long as 10 years. To accelerate the settling period, wick drains will be used.

Wick drains are vertical drains that provide an escape path for groundwater. The groundwater usually drains to a subsurface permeable layer, but some groundwater may reach the surface. Each drain is driven into the ground, and the surface ends of all the drains are connected with a strip drain that drains into a small catch basin. Any groundwater effluent collected in the catch basins will be pumped into holding tanks for disposal or used on the project for dust control.

Beginning with the north abutment of the floodway viaduct and continuing through the north abutments of the Upp Creek bridges, wick drains will be installed before the placement of embankment. Wick drains will be used for both the roadway embankment and the abutments.

Drainage

Highway drainage will be collected from the new impervious surfaces through the use of curbs and dikes, over-side drains, drop inlets, and culverts. This runoff is routed to detention basins, then treated and discharged.

Natural flows passing through the right-of-way that existed before the project will continue to flow through the right-of-way. Temporary cross culverts will be placed where they pass though embankments requiring settling periods. After the fill prism has finished settling, the permanent culvert will be jacked and bored through the embankment.

Pavement Construction

Pavement construction for the project consists primarily of placing and compacting layers of pavement materials consisting of aggregate base (AB), hot mix asphalt (HMA), and hot mix asphalt (open graded). The pavement will be placed sometime toward the end of construction, after all embankments have settled and structures have been completed. Aggregate for both the AB and HMA layers will most likely be obtained from a commercial rock quarry located near Ridgewood Grade south of Willits. The contractor may choose to construct a temporary HMA batch plant on-site to minimize haul time. The batch plant may be located on a property located south of East Valley Street, west of Haehl Creek.

Structures Construction

General Discussion

The permanent bridges will consist of separate southbound and northbound structures. Bridge sites will be cleared of vegetation before construction for a distance of approximately 75 feet upstream and 75 feet downstream of the structures. Removal of vegetation below the top of banks is required to provide access for large equipment, but will be minimized to the extent possible to maintain bank slope stability and to provide some shade for salmonids.

Bridge construction will begin with the approach fills, where necessary, followed by construction of the abutments. The abutment work will include excavation for the footings, pile driving or drilling for the foundations, formwork for concrete placement, steel reinforcement bar placement, concrete pouring, finishing, and curing. Each of the permanent bridge abutments may require 20 or more H piles, which will be placed by pile drivers, at or near the top of bank. After the concrete for the abutments has cured, the forms will be removed and construction of the superstructure falsework will begin. The temporary falsework will be constructed during the low-flow work window[1]. Falsework supports may consist of hollow steel pipe piles, H piles, or timber pads. Installation of these supports may require pile driving. The permanent bridge superstructure forms will then be erected and the concrete poured, finished, and cured. After the concrete has set and strengthened, the falsework will be removed, and other work, including bridge rail and approach work, will be completed.

[1] The low-flow work window is typically the period from April 15th through October 30th; however, Caltrans is requesting that work be allowed outside of this period given favorable weather conditions.

The use of temporary culverts for construction of the viaduct and bridges crossing salmonid-bearing streams is not anticipated. If dewatering is required at any of these stream crossings, cofferdams may be constructed in the channel.

Erosion protection will be required on disturbed slopes where new stream crossings are constructed. RSP will be required where scour potential is higher: on the banks of upper Haehl Creek; at the southbound off-ramp; and for the northbound on-ramp (on both banks). RSP will also be required on the south bank at the highway crossing over the middle reach of Haehl Creek, south of Shell Lane.

Floodway Viaduct

The floodway viaduct has 32 two-column supports (bents[2]), which require the installation of two footings each. Each footing measures approximately 16 feet by 16 feet and requires eight or nine 2-foot-diameter steel pipe piles. The floodway viaduct bents will require 240-inch hollow steel pipe piles, typically with nine piles per footing or column. The installation of the columns and deck construction will require a 100-foot-wide work area on the east side of the viaduct, and a 55-foot-wide work area on the west side of the viaduct. Access will also be required underneath the viaduct structure. The larger work area on the east side of the viaduct is required for access by large cranes and other equipment. Constraining the work area to 55 feet on the west side of the viaduct will serve to minimize loss of riparian habitat along Baechtel Creek. The temporary work areas will be used for vehicle access and for storage of equipment and materials, as well as foundation, column, and falsework erection and removal. Permanent fill in the floodplain will be limited to the total surface area encompassed by the column footings (i.e., approximately 1% of the area under the viaduct). Each viaduct structure will be constructed in sections of several spans each; as soon as one section is complete, work will start on the next section.

Construction of the viaduct over lower Haehl Creek will require removal of vegetation for a distance of 100 feet upstream and 55 feet downstream of the viaduct overcrossings.

The viaduct crossing over Baechtel and Broaddus Creeks will require the removal of vegetation for a distance of 100 feet downstream and 55 feet upstream of the viaduct structures. The top of the footing will be 8 feet below the bottom of the creek. This may require RSP that will be located on both banks under the structures and for a maximum distance of 25 feet upstream and 25 feet downstream of the structures. Placement of the RSP will require a toe trench below the ordinary high water mark (OHWM).

The viaduct crossing over Mill Creek will require vegetation removal only, for a distance of 100 feet downstream and 50 feet upstream of the structure. Piles could be located within 10 to 50 feet of top of bank, and RSP will not be required.

Depending on the time of year each footing is constructed, groundwater may be encountered during the excavation of the footings, requiring dewatering.

[2] A bent is a substructure unit supporting each end of a bridge span (also called a pier) made up of two or more columns or column-like members connected at their topmost ends by a cap, strut, or other member holding them in their correct position.

Dewatering

A single bent (two columns) will be constructed at the confluence of Baechtel and Broaddus Creeks ("Bent 24"). Dewatering will be necessary for installation. This will include the installation of a cofferdam for concrete footing construction, as described in the 2005 BA (Attachment E).

Installation of permanent and temporary piles during project construction may require stream dewatering. At each of the nine stream crossings, the maximum distance that streams will need to be dewatered at each site where piles are driven into creek channels will be 230 feet (70 meters).

The project will require that temporary H piles be driven into creek beds to support trestles associated with haul roads and falsework construction. Temporary piles may be driven in the creek bed at the middle and lower Haehl Creek, Baechtel Creek, Broaddus Creek, and Mill Creek crossings. Vibratory driving and proofing of temporary piles also may occur within the creek bed at Upp Creek; however, the Upp Creek channel is expected to be dry when pile-driving activities are initiated. Driving of temporary piles in creek beds may require that streams be dewatered 62 feet (19 meters) upstream and downstream of piles, based on results of sound level analyses undertaken for salmonid impact assessment. Because the actual distance that may need to be dewatered will vary with summer flow conditions at the time that pile driving is occurring, and the stream length requiring dewatering associated with driving of permanent piles will be reduced, it is not possible to accurately predict the total additional length of stream that may need to be dewatered during project construction. For stream segments requiring dewatering, cofferdams will be installed and water diverted through appropriately sized pipes. The cofferdams may be constructed with impermeable liners placed over clean, (i.e., washed) commercially available river gravel (i.e., rounded, not angular), ranging in size from approximately 1 to 3 inches (2.5 to 7.5 centimeters), or with sandbags, water filled rubber bladders, or other similar devices. Upon completion of construction at each crossing, material used for the cofferdams and water diversion will be removed from the channel and any imported washed river gravel will be spread over the channel..

The floodway viaduct has 32 two-column supports (bents) that require the installation of two footings each. Each footing is approximately 16 feet by 16 feet (4.88 meters by 4.88 meters) and encapsulates either eight or nine 2-foot-diameter steel pipe piles. Groundwater may be encountered and de-watering may be required during the excavation of footings for the viaduct structures depending on the time of year each footing is constructed.

Disposal methods may include pumping into holding tanks for site reuse and as a water source for use in construction activities in embankment construction or dust control, discharge into ground (upland) infiltration, discharge into receiving waters, or off-site disposal, as determined by the Contractor. Water that has come into contact with concrete must be pumped out of the cofferdam or other impoundment areas and disposed of outside the channel and away from the stream zone or any wetland area and in conformance with the North Coast RWQCB regulations.

Retaining Walls

To construct the retaining walls, some riparian vegetation will be removed and later replaced. A portion of these walls will require RSP. The RSP will be re-vegetated using a native seed mix for the establishment of riparian habitat and is included in the fish passage design. The wall foundation will require the installation of H piles by pile driving.

Concrete Batch Plant

The contractor may choose to minimize haul time by constructing a temporary Portland cement concrete plant near the project site. One possible site for a batch plant is state-owned property located south of East Valley Street, east of the south abutment of the floodway viaduct and west of Haehl Creek (APN 007-040-09). If a different location is selected, the contractor will be responsible for the environmental compliance associated with the establishment a batch plant.

Temporary Stream Crossings

Ten temporary bridges may be required to access portions of the project site at the initial stages of construction. The type and location of the temporary bridges would be determined by the contractor. Each temporary bridge would likely consist of a Bailey Bridge, railroad flatcar, or similar type of structure. Information on Bailey Bridges can be found at <http://www.baileybridge.com>[3]. Many of the crossings are too wide for a single structure and will require temporary trestle piles to support the spans. Once these temporary bridges are installed, the temporary piles and bridges will remain in place throughout the entire Phase 1 4-year construction period. There are projected to be 40 temporary H piles for trestle bents. The trestle crossings that will require installation of piles within the creek channels include:

- lower Haehl Creek (one bent consisting of five piles total),
- middle Haehl Creek (four bents consisting of 20 piles total),
- Baechtel Creek (two bents consisting of 10 piles total), and
- Mill Creek (one bent consisting of five piles total).

Temporary bridges will be located where minimal removal of vegetation is be neccessary. Where riparian vegetation is present, placement of these bridges will require removal of vegetation for a distance of 10 feet on both sides of the structure. The bridges will be installed during the low-flow season, usually June 15 through October 15. All areas of disturbed soil will be stabilized at the end of each season through implementation of BMPs in the storm water pollution prevention plan (SWPPP) and National Pollutant Discharge Elimination System (NPDES) permit.

Pile Driving

Driven piles will support the bridge abutments, columns, and retaining walls, and will be used to support the temporary falsework. All the bridge abutments will be located above the top of the bank except for Bent 24, which will require 18 pipe piles within the OHWM of the confluence of Baechtel, Broaddus, and Outlet Creeks. All other proposed piles will be located below the tops of the stream banks but not within the OHWM.

The selected Caltrans contractors will use pre-formed concrete pads or timber-grade beams set on the earth, or driven piles to support falsework. Generally, when contractors use piles to support the falsework, the piles are relatively small (about 15 inches or smaller in diameter) or equivalently sized H piles.

[3] Bailey bridges are built on site from a pre-engineered system of ready-to-assemble components. Utilizing standardized prefabricated components, Bailey bridges can be built to match a wide range of vehicular bridging applications.

Block 10B. Equipment and Machinery

The following equipment and machinery may be used during construction to complete the U.S. 101 Willits Bypass project:

- Bulldozer
- 18-Wheel Truck
- Flatbed Delivery Truck
- Dump Truck
- Hydroseeder
- Small Box Scraper
- Big Box Scraper
- Excavator
- Crane
- Bobcat with Auger/Trencher
- Backhoe
- Compactor
- Portable Generator
- Concrete Truck
- 10-Wheel Truck
- Hand Tools
- Front-end Loader
- Water Truck
- Dewatering Pumps
- Motor Grader

No lubricants, solvents, chemicals, or other materials not normally found on construction sites would be present on the project site.

Block 11A. Project Impacts

Section 1602 Jurisdictional Waters (Waters of the United States/ Waters of the State of California)

The proposed project will affect 5.50 acres of "other waters" of the United States (streams, ditches, and ponds) by placing approximately 13,745. 79 cubic yards of fill along 10,608.45 linear feet (LF) of "other waters" of the United States " during project construction and mitigation activities. The fills include 8306.39 cubic yards of permanent fill along 8047.10 LF of other waters" of the United States and 5439.40 cubic yards of temporary fill along 2561.35 LF of other waters" of the United States. The surface area (in acres) of "other waters" of the United States are summarized in Table 2 below. Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 1, below, lists the volume (temporary and permanent) and types of fill material that will be discharged to "other waters" of the United States as a result of the proposed project. Maps depicting impacted wetlands and "other waters" of the United States" are included in Appendix A and Appendix B of this permit application.

Table 1: Willits Bypass "Other Waters" of the US - Locations of features

Map Sheet	LF Perm	LF Temp	Feature Type	Comment/Location	Fill Volume Perm	Fill Volume Temp	Fill Type	Roadway Work	Structure Work
					(cu-yards)	(cu-yards)			
B-04	400.8	0	EPH	South of haehl Interchange, parallels west side of 101	9.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), Rock Slope Protection (RSP), RSP Fabric	Roadway fill, roadside ditch, Drainage System No. 5 (STA "A" 102+43.645) & Drainage Basin No. 1 (STA "A" 102+61.854)	
B-04	155.3	0	EPH	South of haehl Interchange, on east side of 101 (across from FID 0)	14.7	0	Imported borrow (fill), concrete (DI), Alternative Pipe Culvert (APC), Alternative Flared End Section (AFES), RSP, RSP Fabric	Roadway fill & Drainage System No. 6 (STA "A" 102+67.835)	
B-06	605.5	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101	8.7	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 13 (STA "U1" 106+30.000) & 14 (STA "U1" 105+50.000)	

B-08	309.3	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101, east of FID 4	3.1	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), Concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 8 (STA "H" 97+61.686)	
B-08*	8.6	3.4	EPH	Trib To Haehl Creek from Roadway Ditch culvert, north side of hwy 101	0.2	0.1	Import borrow (fill)	Roadway fill Drainage System No. 9 (STA "H" 97+96.641)	
B-06	144.9	0	EPH	Trib To Haehl Creek, north side of hwy 101	4.1	0	Cut	Roadway excavation, Begin STA "H" 99+13.723 - End STA "H" 99+32.816 & Drainage System No. 11 ("H" 99+31.464)	
B-06	99.5	0	EPH	Trib To Haehl Creek, north side of hwy 101. extension of FID 7	3.4	0	Import borrow (fill)	Roadway fill, Begin STA "A" 106+77.199 - End STA "A" 106+97.700	
B-06	96.4	3.4	EPH	Trib To Haehl Creek, conflunecing with Haehl Cr from NE	80.5	2.8	Import borrow (fill), roadway excavation, concrete (headwall), APC, RSP, RSP Fabric	Roadway fill, roadway excavation, Drainage System No. 18 (STA "U4" 106+35.000)	
B-06	577.6	0	EPH	Trib To Haehl Creek, parallels dirt road on north side of hwy 101	71.2	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (bridge abutment), RSP, RSP Fabric, Turf Reinforcement Mat (TRM)	Roadway fill, Begin STA "A" 105+35.903 - End STA "A" 107+46.190	
B-12	1006.6	0	EPH	On NE side of J1T align, NW of haehl interchange, “Schmidbauer”	362.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 30 ("A" 110+71.840)	
B-12	12.6	12.6	EPH	On Nw side of J1T align, NW of haehl interchange	3.2	3.2	Imported borrow (fill), APC, AFES, RSP, RSP Fabric	Roadway fill & Drainage System No. 30 ("A" 110+71.840)	

B-12	0	74.5	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 13, “Schmidbauer”	0	36.7	Import borrow (fill)	Roadside ditch	
B-14	920.3	0	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 15, “Schmidbauer”	274.5	0	Imported borrow (fill), RSP, RSP Fabric	Roadside ditch & Drainage System No. 33 ("A" 114+44.741)	
B-14	77	3.4	EPH	Trib runs to the NE, to “Schmidbauer”	8.1	0.4	Cut	Median ditch	
B-34	149.2	3.4	EPH	Ditches in Log Yard	11.9	0.3	Import borrow (fill)	Roadway fill	
B-34	118.6	3.4	EPH	Ditches in Log Yard	9.4	0.3	Import borrow (fill)	Roadway fill	
B-34	71.7	3.4	EPH	Ditches in Log Yard	5.7	0.3	Import borrow (fill)	Roadway fill	
B-34	55.9	3.4	EPH	Ditches in Log Yard	4.5	0.3	Import borrow (fill)	Roadway fill	
B-34	58.7	3.4	EPH	Ditches in Log Yard	4.7	0.3	Import borrow (fill)	Roadway fill	
B-34	74.3	3.4	EPH	Ditches in Log Yard	5.9	0.3	Import borrow (fill)	Roadway fill	

B-34	41.8	3.4	EPH	Ditches in Log Yard	3.3	0.3	Import borrow (fill)	Roadway fill	
B-34	90.9	3.4	EPH	Ditches in Log Yard	7.2	0.3	Import borrow (fill)	Roadway fill	
B-34	17.2	3.4	EPH	Ditches in Log Yard	1.4	0.3	Import borrow (fill)	Roadway fill	
B-34	123.2	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	11.8	3.4	EPH	Ditches in Log Yard	0.9	0.3	Import borrow (fill)	Roadway fill	
B-34	122.6	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	153.7	3.4	EPH	Ditches in Log Yard	12.2	0.3	Import borrow (fill)	Roadway fill	
B-06	59.3	1027.1	INT	Haehl Creek (Main Fork) – Re-Align	221.3	3832.6	Import borrow (fill), Concrete (headwall & wingwall), APC, RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (9402.7 m^3) 2. Sand & Gravel (1559.3 m^3) **Above OHW:** 1. RSP(4161.5 m^3) 2. Sand & Gravel (2611.3 m^3)	**Haehl Creek Bridges: Br No.** **10-0129F, 10-0129G & 10-0129RL** 1. Potential Temp. stream crossing (1 trestle bent in channel) at bridge 10-0129RL. 2. Potential Falsework (1 falsework bent in channel) at each structure .

									3. Potential stream Diversion/temporary culvert.
B-18	188.6	160.25	INT	"Schmidbauer"	53.3	47	Import borrow (fill)	Roadway fill	
B-24	401	6.8	INT	Crosses align north of east Hill road	404.7	6.9	Imported borrow (fill), roadway excavation & concrete (headwall)	Roadway fill & Drainage Basin No. 3 ("A" 127+50.000)	
B-57	433	6.8	INT	RR Ditch at RR x-ing, east side of tracks	262.2	4.1	Import borrow (fill)	Abutment fill, new ditch (to be design by Design) & temp. culvert	**Quail Meadows OH (Br No. 10-0171)** 1. Temp. dirt road across RR tracks (Temp Haul Road) 2. Temp. Culvert crossing
B-26	514.1	6.8	INT	East Fork Haehl Creek, Handley parcel, south of Shell rd.	2324.5	30.7	Imported borrow (fill), roadway excavation, APC, AFES, RSP, RSP Fabric	Roadway fill, Drainage Basin No. 4 ("A" 132+00.000), Drainage System No. 45 ("A" 132+52.219)	
B-40	65.13	26.3	INT	Heahl Creek, Near Baechtel Confluence – Under Viaduct, Just north of East valley Street	260.0 (culvert work)	105.0 (culvert work)	Trestle/falsework construction		**Haehl Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)

B-49	7	10	INT	Broadus, Baechtel, Outlet Confluence - Under Viaduct, NE of WWTP	54.0 (footing for bents?)	77.2 (falsework)	Concrete (Bent 24), RSP, RSP Fabric, Trestle/falsework construction		**Confluence of Broaddus/Baechtel Creek** 1. Footing Impact (329.9 m3) 2. Potential temp. stream crosssing (Baechtel Creek - 2 falsework bents in channel, Broaddus Creek - 1 falsework bent in channel, & Outlet Creek- 2 trestle bents in channel)
B-51	0	429.8	INT	Mill Creek - Under Viaduct	0	0 (access and veg removal only, no temp fills below OHWM)	Trestle/falsework construction		**Mill Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-37	0	403.1	INT	Baechtel Creek, south of center valley road, west side of J1T align	0	595.7		Current Design does not show any impact at this location.	
B-26	0	270.5	INT	West (Main) Fork Haehl Creek, along west side of handley parcel	0	692.6	RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (2857.9 m^3) 2. Sand & Gravel (348.1 m^3) **Above OHW:** 1. RSP(3444.9 m^3) 2. Sand & Gravel (2309.7 m^3)	**Haehl Creek (Br No. 10-0159)** 1. potential temp. stream crossing (4 trestle bents in channel). 2. potential temp. falsework (4 trestle bents in channel).

B-57	1172.6	82.4	INT	Upp Creek and RR ditch on west side of RR x-ing, and Mill Creek on the east side of RR x-ing	1817.5	127.7	Import borrow (fill), roadside ditch (RR), Concrete (bridge structures), APC, RSP (Fish Passage Design at Upp Creek)	**Upp Creek** **Below OHW:** 1. RSP (5848.5 m^3) 2. Sand & Gravel (1258.3 m^3) **Above OHW:** 1. RSP(3100.0 m^3) 2. Sand & Gravel (1325.1 m^3)	**Quail Meadows OH** **Br No. 10-0171** 1. Potential Temp. culvert crossing 2. Potential dirt road crossing over RR tracks (temp haul road) **Upp Creek Bridges** **Br No. 10-0305, 10-0174, 10-0174K & 10-0174S** 1. Potential Temp. stream crossing (1 trestle bent in channel) at Quail Meadows I.C. 2. Potential Falsework (1 falsework bent in channel) at each structure 3. Potential Stream Diversion at each structure
B-31 and B-34	139.8	3.4	POND	Rutledge Pond	2263.1	55	Class 3 Permeable Material Filter Fabric Embankment	Class 3 Permeable Material (3213 m^3) Filter Fabric (6802 m^2) Embankment (3505 m^3)	
C-86	**375.95**	288.16	EPH	Stream Entering Watson East Mitigation Parcel	29.59	0	Grading for wetland creation		
Totals:	**8860.48**	**2862.91**			**8306.39 yd^3**	**5439.40 yd^3**			

The proposed project will directly affect a total of 89.12 acres of wetlands and other waters of the United States, of which 56.23 acres will be permanently filled and 32.89 acres will be temporarily disturbed during project construction and mitigation activities. Fill types affecting wetlands include those listed in Table 1 for "other waters of the United States" (permanent fills consisting of roadway and structures fill, asphalt concrete, RSP, TRM and RECP, new culverts, culvert end and treatments; temporary fills consisting of temporary falsework and falsework supports, cofferdams, temporary roadway fills, stream re-alignments, and temporary access routes). Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 2 shows the surface area (acres) of the resources that will be affected by the bypass. Maps depicting impacted wetlands and "other waters" of the United States" are included in Appendix A and Appendix B of this permit application.

Table 2. Summary of Project Construction Impacts on Wetlands and Other Waters of the United States

Wetland Type / Other Waters	Project Impacts on Wetlands and Other Waters (acres)			Mitigation Impacts on Wetlands and Other Waters (acres)			Total Impacts on Wetlands and Other Waters (acres)
	Temporary	Permanent	Total	Temporary	Permanent	Total	Total
Marsh	1.38	8.15	9.53	0.49	0.00	0.49	**10.02**
Riparian Scrub	0.17	0.21	0.38	0.00	0.00	0.00	**0.38**
Riparian Woodland	1.61	3.21	4.82	0.07	0.02	0.09	**4.91**
Swale	0.03	0.00	0.03	0.26	0.05	0.31	**0.34**
Vernal Pool	0.05	0.16	0.21	0.00	0.00	0.00	**0.21**
Wet Meadow	20.69	41.64	62.33	4.98	0.45	5.43	**67.76**
Subtotal Wetlands	**23.93**	**53.37**	**77.30**	**5.80**	**0.52**	**6.32**	**83.62**
Other Waters	3.10	2.25	5.35	0.06	0.09	0.15	**5.50**
Total	**27.03**	**55.62**	**82.65**	**5.86**	**0.61**	**6.47**	**89.12**

1602 Jurisdiction Riparian Vegetation

In addition, the proposed project would impact a total of 21.00 acres of riparian habitat (15,227.3 linear feet). Effects to riparian vegetation include 10.88 acres (8534.70 linear feet) of permanent impacts due to permanent vegetation removal, and the placement of roadway and structures fills and the installation of permanent drainage features. An additional 10.12 acres (6692.60 linear feet) of riparian vegetation will be temporarily impacted due to temporary vegetation removal (followed by revegetation) and vegetation trimming during the course of project construction and along temporary access routes. All temporary impacts would be returned to pre-project contours and elevations prior to completion of the project. See Table 3 for the surface area affected by the bypass. Maps depicting impacted riparian resources are included in Appendix C of this permit application.

Table 3. Project Construction Impacts to Section 1602 Jurisdiction Riparian Vegetation

Resource	Project Impacts (acres)			Mitigation Impacts (acres)		
	Temporary Impact[a] Area	Permanent Impact[a] Area	Total	Temporary[b]	Permanent[b]	Total
Category I Riparian Corridor[d]	9.49	2.50	11.99	none	none	none
Category II Riparian Corridor[d]	0.23	3.74	3.97	none	none	none
Category III Riparian Corridor[d]	0.40	4.64	5.04	none	none	none
Total	**10.12**	**10.88**	**21.00**	**0**	**0**	**0**

[a] Temporary impacts—Direct impacts outside the permanent impact area (bypass footprint), as depicted in the map set in Appendix B. Includes temporary access roads and staging areas. Permanent Impacts—Direct impacts within the bypass footprint as depicted in Appendix B.

[b] Temporary mitigation impacts—Impacts caused by the construction and installation of offsite mitigation for the bypass project.

[c] Category I Riparian Corridors—Areas of salmonid streams (Haehl, Baechtel, Broaddus, Mill, and Upp Creeks, tributaries of Outlet Creek) and adjacent riparian areas extending laterally from the ordinary high water mark (OHWM)100 feet (30.5 m) on each bank. Category II Riparian Corridors—Tributaries of Category I Riparian Corridors that are within 1,000 feet (304.8 m) of the confluence with a Category I Stream, extending 50 feet (15.2 m) from the OHWM on each bank. Category III Riparian Corridors—Tributaries of Category I Riparian Corridors that are more than 1,000 feet (304.8 m) upstream of the confluence with the Category I Stream, extending 25 feet (7.6 m) from the OHWM on each bank.

[d] Upland oak—Oak woodlands identified as Oregon white oak, black oak/Douglas-fir, Oregon white oak/Douglas-fir/California fescue, and Douglas-fir/canyon live oak alliances were counted as upland oak. Lowland oak—Oak woodlands identified as valley oak and black oak/valley oak alliances were considered lowland oaks. 50% of the areal canopy in the Douglas-fir/oak alliances was counted as upland oak woodland.

[e] All oak woodland impacts are considered permanent because of the long-term loss of oak woodland functions in areas where oaks would be removed.

Block 11B. Vegetation Type and Tree Removal

In addition to USACE and CDFG jurisdictional habitat that would be impacted by the project (outlined in Tables 1, 2, and 3), the proposed project would also result in the following impacts to non-jurisdictional habitat:

- Oak Woodland – aerial canopy: 15.60 acres total (15.35 acres permanent impact for Bypass construction; 0.25 acre permanent impact for mitigation construction)
- Oak Woodland – grassland: 54.27 acres total (49.02 acres permanent for Bypass construction; 4.45 acres temporary impact for mitigation construction; 0.80 acres permanent impact for mitigation construction)

Maps depicting impacted oak woodland and oak woodland grasslands are included in Appendix C of this permit application.

Block 11C. Special-Status Species

The project area contain suitable habitat for 11 federal and/or state listed special-status species The following federally and/or state listed special-status species have the potential to occur in the project sites and could be affected by project activities:

- Northern Spotted Owl (federal threatened)
- Pacific Fisher (federal candidate)
- Red Tree Vole (California non-listed special-status species)
- White-Tailed Kite (California fully protected)
- Northwestern Pond Turtle
- Central California Coast Chinook Salmon (federal threatened)
- Southern Oregon/Northern California Coho (federal endangered, state endangered)
- Northern California Steelhead (federal threatened)
- Baker's Meadowfoam (state rare)
- Rodericks's Fritillary (state endangered)
- North Coast Semaphore Grass (state threatened)

Accordingly, potential effects to federally listed species are addressed in the project's Biological Assessments and EIS/EIR (refer to Attachment 4: ROD/NOD and to the Final EIR/EIS enclosed as a CD with this permit application). The Biological Assessments were used in support of USACE's consultation with the U.S. Fish and Wildlife Service and NMFS pursuant to Section 7 of the Endangered Species Act. Federal and state dual-listed species (threatened or endangered) will require a 2080.1 consistency determination from the CDFG. Species solely listed by the state will require a 2081 incidental take permit from the CDFG.

Block 12A. Techniques Used to Prevent Sediment From Entering Watercourse During Construction

In addition to preparation of a SWPPP, Caltrans will implement the following measures to minimize disturbances of aquatic resources:

- In-channel construction, including creek bank and channel-bed construction below the OHWM at each of the flowing creek crossings will be implemented between June 15 and October 15 of each year, unless earlier and/or later dates for construction activities at the creek crossings are approved by NMFS, the California Department of Fish and Game, and the North Coast Regional Water Quality Control Board on a year-by-year basis;
- All construction-related materials will be stored in designated staging areas at least 100 feet from waterways and drainages.
- Refueling and vehicle maintenance will be performed at least 100 feet from creeks and other water bodies.
- Operation of heavy equipment will be minimized in waterways to the greatest extent possible.
- Temporary sedimentation barriers, such as sandbags or siltation fencing, will be installed to minimize the amount of silt entering the creeks and any ephemeral/intermittent drainages with water present in the channel. The locations of these barriers will be determined by the resident engineer and environmental monitor, and will be clearly marked in the field before construction activities begin.
- Additional BMPs will be implemented to prevent runoff from adjacent lands from flowing across construction areas, slow down the runoff traveling across construction sites, remove sediment from on-site runoff before it leaves the site, and provide soil stabilization.
- To address potential water quality impacts during construction, Caltrans will require the contractor to use a combination of BMPs to control potential erosion and sedimentation that could result from construction activities. Caltrans has developed a suite of construction site BMPs that will be implemented on the proposed project. The construction site BMP manual can be downloaded at: http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm
- Caltrans will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters. For example, on this project, equipment operating in water bodies will be required to be steam cleaned prior to arrival onsite, and be maintained in a clean condition during the length of activities.
- Following the construction process, the contractor will stabilize disturbed soil areas through permanent revegetation or other means. An appropriate design will be used that will allow all finished slopes to achieve stabilization, even under severe conditions, and also provide erosion control BMPs at all point source discharges of stormwater runoff. Treatment BMPs, such as biofiltration, will be incorporated where feasible.
- As part of standard operation and maintenance procedures, Caltrans has developed a standard Hazardous Waste and Spill Response Plan, which Caltrans will ensure is implemented during the project. These BMPs address water quality issues associated with accidental spills.

Measures designed to further control sedimentation and turbidity within waters of the U.S. and State, including BMPs for operation of heavy equipment in wetlands and waterways will include:

- Non-rainy season BMPs will be implemented in accordance with the SWPPP, including inspection, maintenance and repair, to minimize delivery of soil to the stream channels;
- The use of vehicles and heavy equipment in areas below the top of bank will be limited to the extent feasible; equipment may enter the stream reaches that are normally dry during the summer months (upper Haehl Creek and Upp Creek) to facilitate construction; however, no vehicles or heavy equipment will be allowed below the OHWM for the other crossings where flowing water is likely to occur, at any time, either for crossing the creeks or for construction activities (with the exception of installing a cofferdam to isolate work areas from flowing or standing water);
- The project's contractor will be required to implement appropriate BMPs to prevent the discharge of equipment fluids to the stream channel; the minimum requirements will include:
  - storing hazardous materials outside of the stream banks;
  - checking equipment for leaks and preventing equipment with leaks from accessing any areas below the top of bank or from going onto the falsework structures;
  - pressure washing equipment to remove fluid residue on any of its surfaces prior to its entering the live channel (if equipment is needed in the channel to establish a flow diversion);
  - maintaining spill response material and suitably trained personnel at the project site;
  - responding immediately to any fluid releases and applying containment booms and absorbent materials as appropriate; and
  - notifying the RWQCB of releases and discharges; or minor accidental releases of equipment fluid to the dewatered channel, the contractor will be required to remove and properly dispose of contaminated material;
- Equipment will not be stored in the channel when not in use; all equipment will be removed from the channel at the end of each work day; all equipment will be fueled, maintained, and repaired at sites well away from the streambanks;
- Where feasible, Rolled Erosion Control Product (RECP; netting) will be substituted in as many locations as possible that traditionally would receive RSP. Unlike RSP, RECP allows native riparian vegetation to grow through the mat structure while providing erosion protection for affected banks and bridge abutments; and
- Erosion control measures will be implemented at the end of each work window or completion of project activities to prevent material from entering watercourses.

Block 12B. Avoidance and/or Minimization Measures to Protect Fish, Wildlife and Plant Resource

In addition to the creation, enhancement, and preservation strategies included in the MMP, Caltrans has incorporated numerous minimization measures into the project design. The following minimization measures have been incorporated into the design since the final EIS/EIR:

- The bypass re-alignment will avoid conflicts with the planned WWTP expansion project which will allow the WWTP to avoid impacts to waters of the United States; specifically, the profile over the railroad has been lowered, resulting in a significant reduction of the embankment footprint and corresponding reduction in wetlands impacts between the end of the viaduct and the railroad crossing;
- The bypass's profile over the railroad was lowered, resulting in a significant reduction of the embankment footprint and therefore a reduction in impacts on wetlands;
- An existing box culvert at Upp Creek can will be removed given the implementation of the roundabout and, therefore, will allow for the restoration of this area;
- The roundabout at the Quail Meadows interchange allows for an existing box culvert at Upp Creek to be removed, and all of the Upp Creek crossings will now be bridges rather than box culverts;
- Construction of the viaduct minimizes impacts to floodplain and special-status species (preserving connectivity);
- The project was redesigned to avoid direct impacts to park and recreation complex and a business park;
- The highway median was reduced to 45.3 feet which will reduce the project's area of impact;
- Omission of a second passing lane on the interchange ramps will reduce the project's area of impact; and
- The proposed Oil Well Hill borrow site has been reduced from approximately 40 ac to 12.17 ac (4.93 ha) and has been configured to avoid impacts on jurisdictional wetlands, and other waters of the United States, and riparian habitat including Category I– III riparian corridor .
- Environmental Sensitive Areas (ESA), such for wetlands and waters (State and U.S.) and to protect trees, is to be identified in the contract plans and to be delineated by Temporary Fence (Type ESA) through out the limits of the project. The locations of the ESAs will be determined by the Resident Engineer and Environmental Monitor and will be installed prior to commencement of ground disturbing activities.

The following is a summary of the conservation measures Caltrans would implement to avoid and minimize impacts to fish, plant, and wildlife resources during construction activities. Refer to the project's EIS/EIR and Biological Assessments for a full description of the proposed avoidance and minimization measures.

- Establish Environmentally Sensitive Areas on all project plans.
- Implement an environmental awareness and training program.

- Biological monitoring during construction.
- Avoid work in live stream channels.
- Avoid impacts to nesting birds.
- Implement invasive non-native plant program.

Block 12C. Mitigation and Compensation Measures to Protect Fish, Wildlife and Plant Resources

Mitigation and Monitoring Proposal

Caltrans developed a mitigation and monitoring proposal (MMP) for impacts of the bypass on jurisdictional wetlands, other waters of the United States, riparian habitat, state-listed plants, and oak woodlands. In addition to compliance with federal Clean Water Act (CWA) Section 404 permitting, the MMP will provide compliance with CWA Section 401, Section 1602 of the California Fish and Game Code (FGC), and Section 2081 of the California Endangered Species Act (CESA).

The overall goal of the MMP is to compensate successfully for impacts resulting from bypass construction on sensitive biological resources resulting from bypass construction by restoring some of the historical ecological functions and values to habitat in Little Lake Valley through a combination of habitat restoration, creation, enhancement, and preservation. Additionally, the MMP aims to restore and enhance many previously lost or degraded wetland functions and values and to help offset past damage to parts of the Outlet Creek Basin. As stated in Block 11A, construction of the bypass will result in temporary and permanent impacts on wetlands and other waters of the United States. Table 4 shows the total amount of jurisdictional habitat that will be created, enhanced, or preserved as compensation for the proposed project's impacts on sensitive resources.

Table 4. Mitigation Approach

Resource (Order of Mitigation Importance)	Mitigation Acres			
	Creation	Enhancement	Preservation	Restoration
Special-Status Plants				
Baker's Meadowfoam	0	0	1,068.3	17.83
North Coast Semaphore Grass	0	0	6.21	0
USACE-Jurisdiction				
Wetlands	33.4	1032.90	1122.11	5.96
Other Waters	0	17.32	24.7	0.06
CDFG-Jurisdiction				
Category I Riparian Corridor	47.70	51.33	102.38	0
Category II Riparian Corridor	1.76	0.84	9.44	0
Category III Riparian Corridor	0.02	3.57	9.45	0

The proposed project's MMP will be provided in its entirety in a separate transmission.

Block 13. Permits

Table 3 below presents a list of approvals and consultations that may be required before project implementation.

Table 3. List of Authorizations, Approvals, and Consultations That May Be Required

Agency	Type of Approval	Identification No.	Date Applied	Date Approved	Date Denied
U.S. Army Corps of Engineers	CWA Section 404 Individual Permit	–	March 2010	–	–
North Coast Regional Water Quality Control Board	CWA Section 401 Water Quality Certification (Attachment 7)	–	March 2010	–	–
California Department of Fish and Game	FGC Section 1602 lake and Streambed Alteration Agreement	–	March 2010	–	–
	FGC Section 2080.1 consistency determination	–	March 2010	–	–
	FGC Section 2081 CESA Incidental Take Permit	-	March 2010		
U.S. Fish and Wildlife Service	Federal Endangered Species Act (ESA) Section 7 consultation; biological opinion (Attachment 5)	1-14-1998-0095	September 2005	March 2005	–
National Marine Fisheries Service	ESA Section 7 consultation; Biological Opinion (Attachment 5)	2005/07370:TKD	October 2005	September 2006	–
National Marine Fisheries Service	ESA Section 7 consultation addendum; Biological Opinion		March 2010		
California State Office of Historic Preservation	Concurrence	FHWA000717A	November 2005	December 2005	–
Mendocino County	SMARA exception	–	–	March 2008	–

Attachment 2: Figures

Figure 1-1
Regional Location

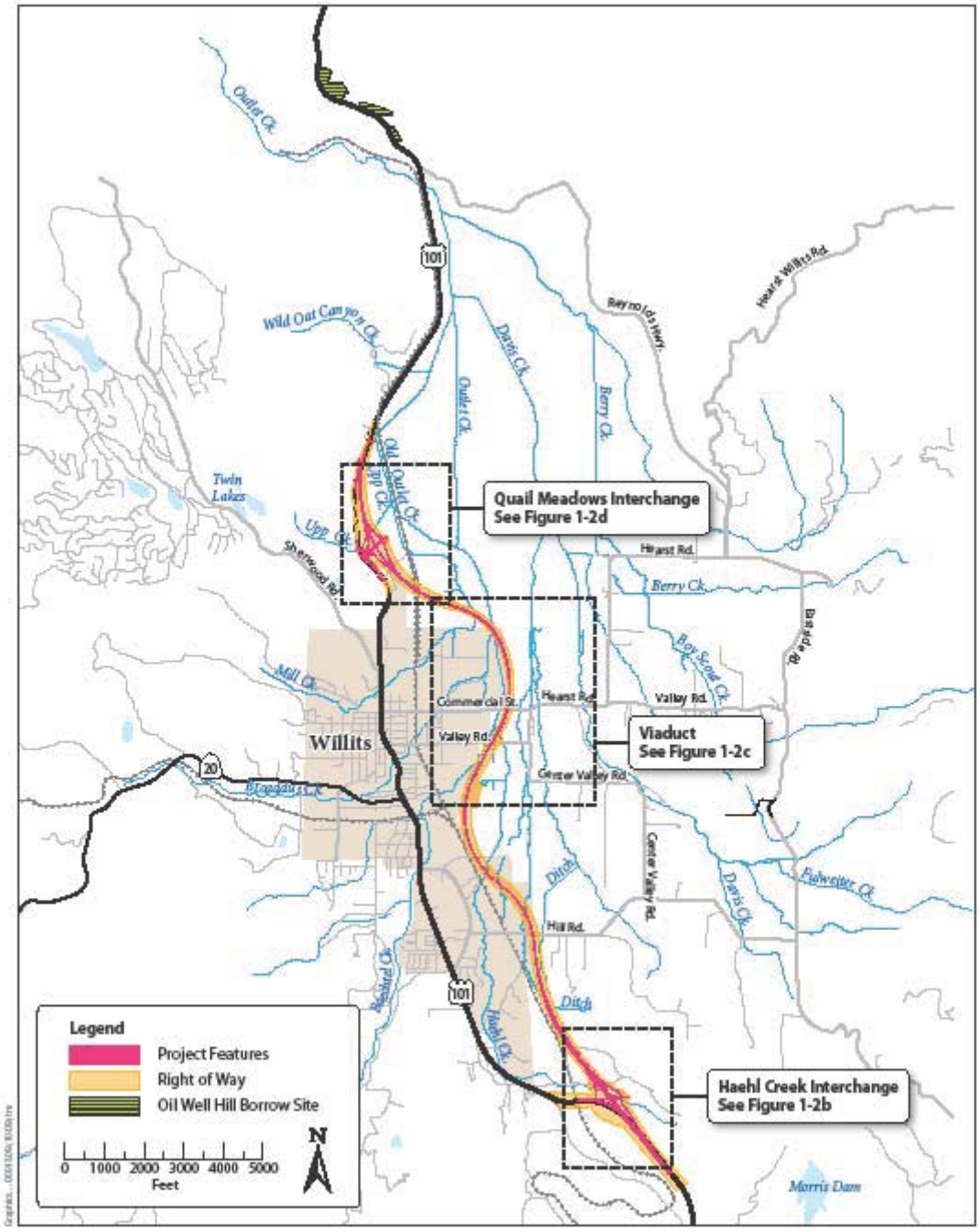

Figure 1-2a
Project Features—Overview Phase 1

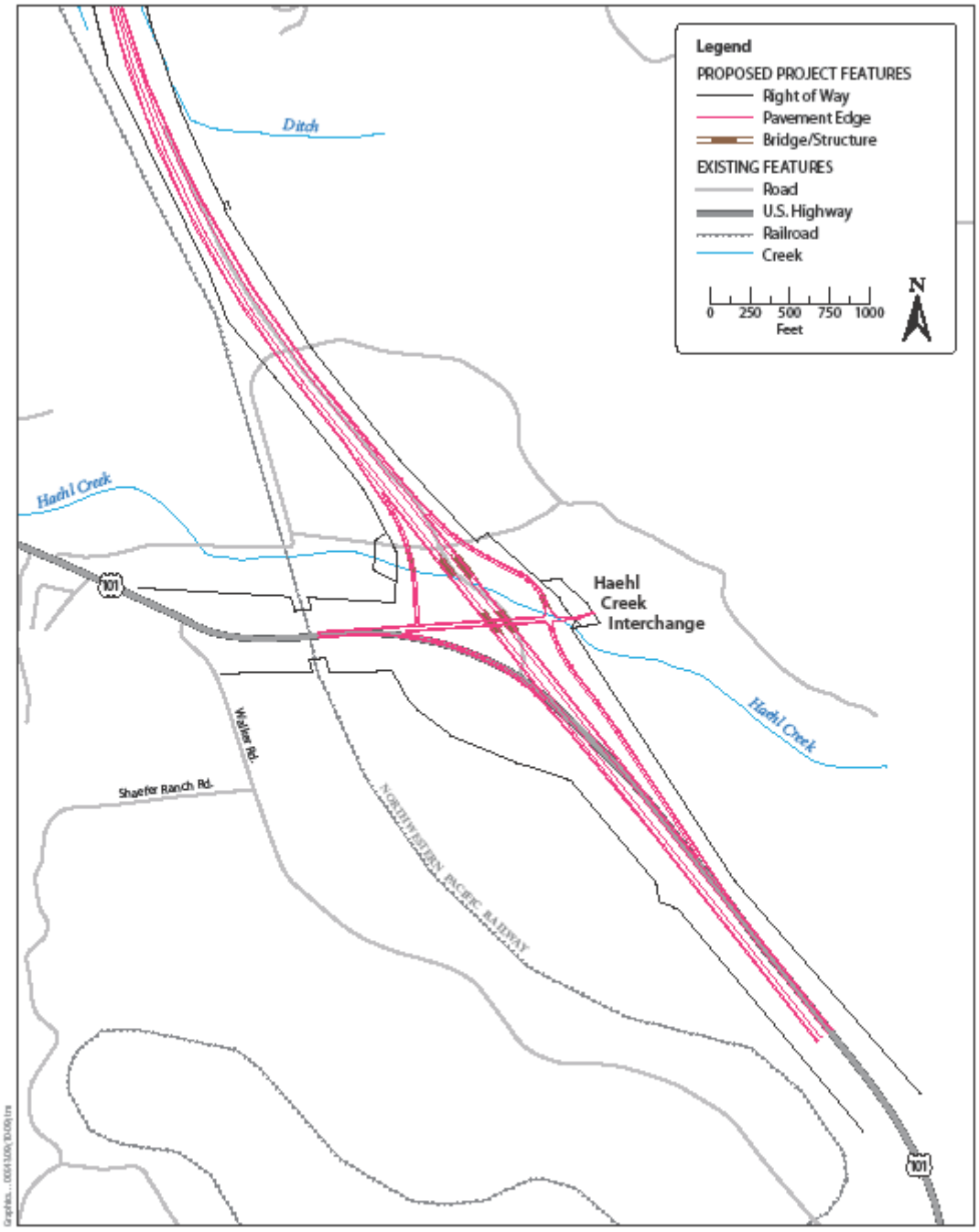

Figure 1-2b
Southern End Project Features—Haehl Creek Interchange Phase 1

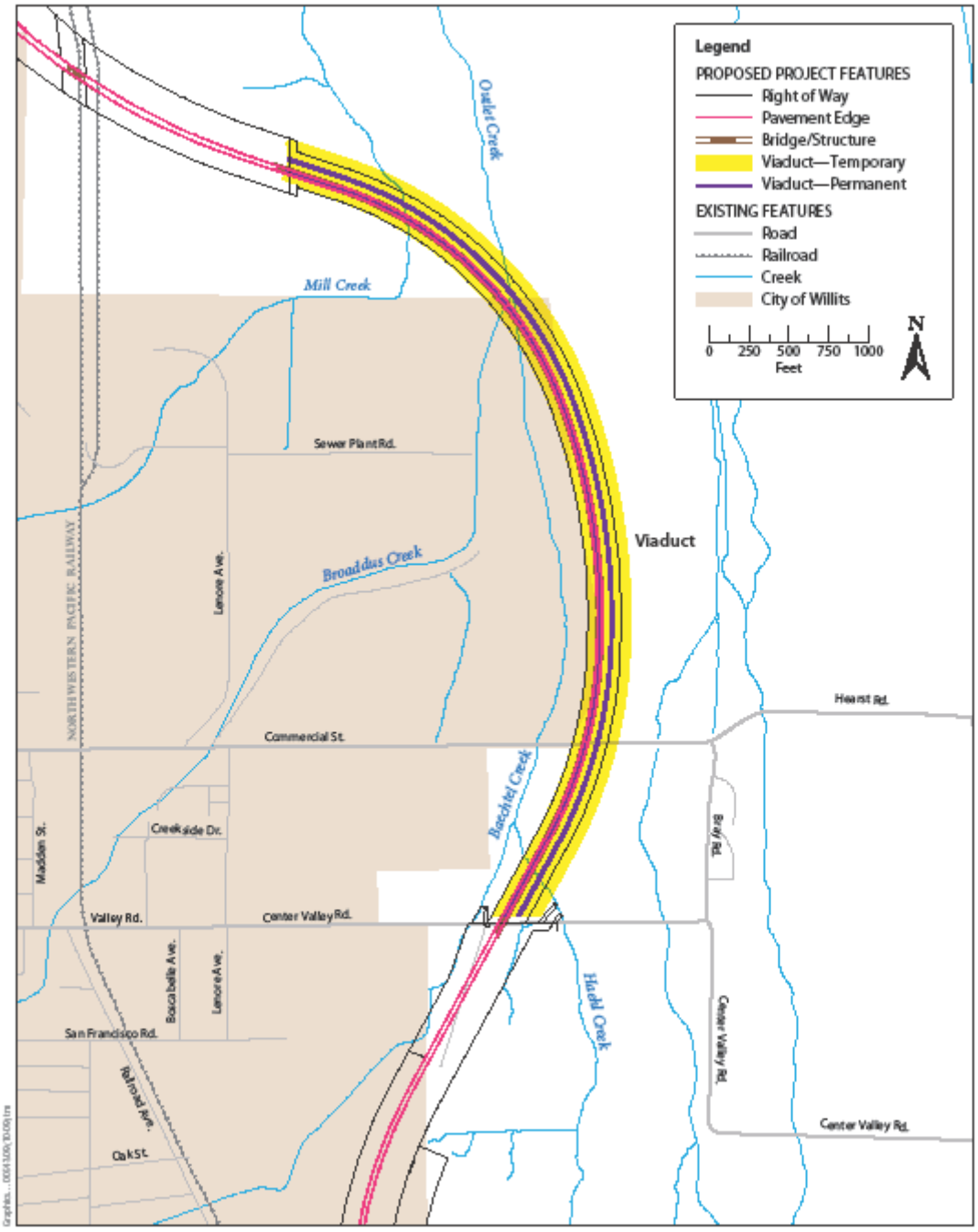

Figure 1-2c
Middle Project Features—Viaduct Phase 1

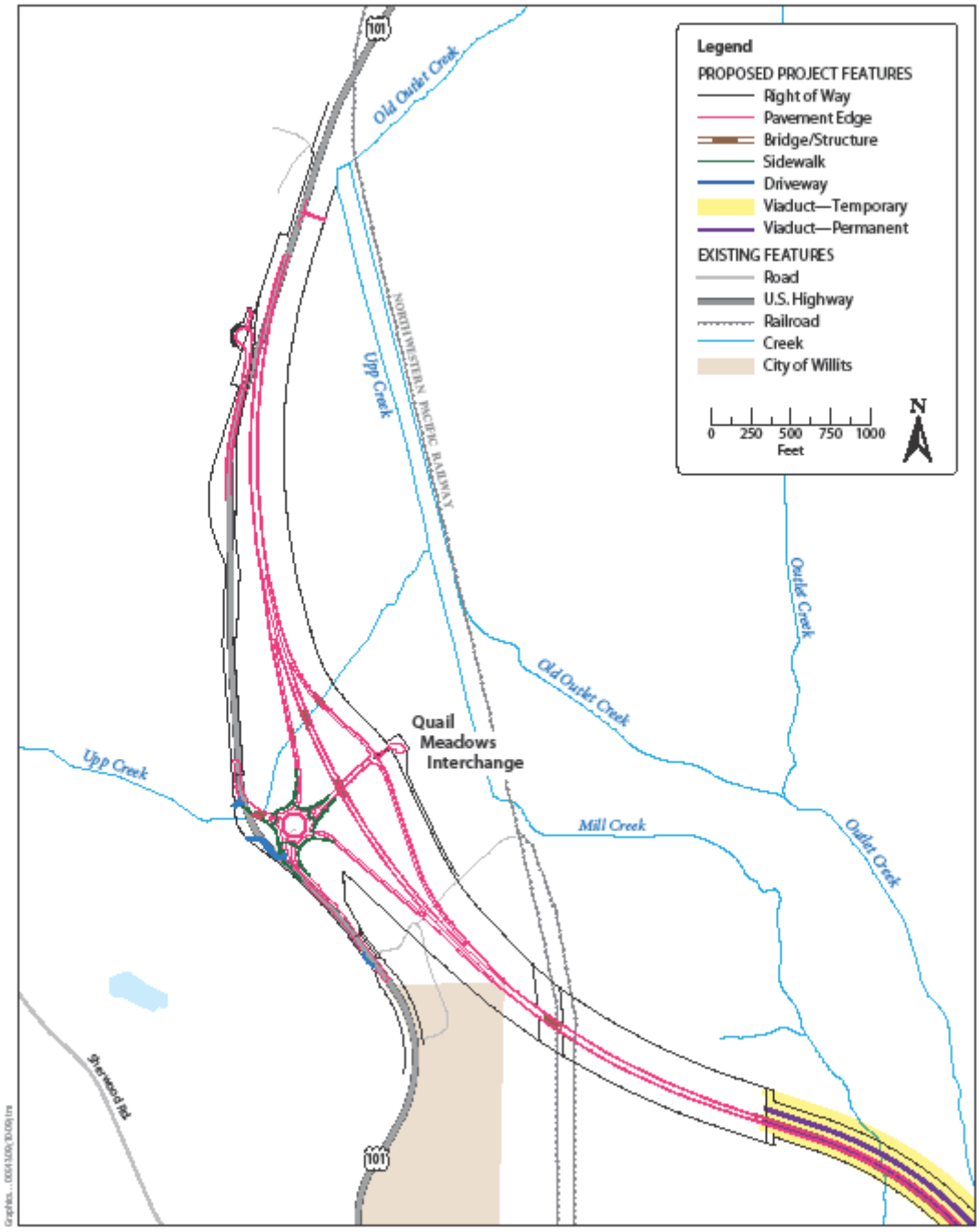

Figure 1-2d
North End Project Features—Quail Meadows Interchange Phase 1

Attachment 3: Jurisdictional Determinations

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
333 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94105-2197

REPLY TO

MAR 0 1 2005

Regulatory Branch

Subject: File No. 194741N

Mr. Jeremy Ketchum
California Department of Transportation
District 3-Sacramento Office
Office of Environmental Management, S-1
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letters of February 11, 2004, and February 6, 2005, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring within the Modified J1T Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California.

The enclosed map entitled, "Potential Jurisdictional Wetlands and Waters of the United States Within Alternative Modified J1T," in five (5) sheets date certified February 23, 2005, accurately depicts the extent and location of Corps jurisdiction within the project alignment study area. The jurisdictional delineation is based on the current conditions of the site, as verified during field investigations of April 20-22, June 1-3, and July 13, 2004, and January 19, 2005, and other data included with your submittals. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change in field conditions warrants a revision to the delineation map prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States and within the lateral extent of wetlands adjacent to these waters will require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters, and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce. Section 404 waters within the project alignment study area include both seasonal and perennial wetlands, and numerous intermittent and perennial drainages, including Haehl, Broaddus, Mill, and Upp Creeks, that are tributary waters to Outlet Creek and ultimately the Eel River. The wetland basins and swales are adjacent (neighboring or bordering) to these tributary waters, and their lateral extents are defined by the presence of hydrophytic vegetation,

hydrology, and hydric soils. The plane of ordinary high water of the tributary waters is defined by the presence of shelving, debris lines, and transitional vegetation on the banks.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 CFR Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. Peter Straub of my staff by telephone at 415-977-8443 or by e-mail at peter.s.straub@spd02.usace.army.mil. All correspondence should be addressed to the Regulatory Branch, North Section, referencing the file number at the head of this letter.

Sincerely,

Jane M. Hicks

Jane M. Hicks
Acting Chief, Regulatory Branch

Enclosures

Copy Furnished:

US EPA, San Francisco, CA (w/o encls)

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

AUG 15 2008

REPLY TO

Regulatory Division

Subject: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letters of January 26, 2007, and April 10, 2008, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring in portions of the Modified J1T Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California. This request is related to minor changes to the footprint of the proposed Haehl Creek Interchange and the road alignment to the north, and the inclusion of the proposed borrow area at Oil Well Hill.

The enclosed maps entitled, "Figures 3-4, Oil Well Hill Wetland Delineation," "Figure 5, Haehl Creek Interchange Expanded Area Wetland Delineation," "Figure 6, Existing Embankment Creek Expanded Area Wetland Delineation," in four (4) sheets date certified August 1, 2008, accurately depict the extent and location of Corps jurisdiction within the project boundary area. The jurisdictional determination is based on the current conditions of the site, as verified during a field investigation of February 13, 2008, and other data included with your submittal. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation maps prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States, or below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters, require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce.

Section 404 waters within the expanded project alignment study area include both seasonal and perennial wetlands, and several intermittent and perennial unnamed streams and drainages that are tributary waters to Outlet Creek and ultimately the Eel River and the Pacific Ocean. The additional wetland basins and swales are adjacent (abutting) to these tributary waters, and their lateral extents are defined by the presence of hydrophytic vegetation, hydrology, and hydric soils. The plane of ordinary high water of the tributary waters is defined by the presence of scouring, sediment deposits, shelving, debris lines, and transitional vegetation on the banks. This jurisdictional determination is presumed to be consistent with the official interagency guidance of June 5, 2007, interpreting the Supreme Court decision, *Rapanos v. United States*, 126 S. Ct. 2208 (2006).

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. Peter Straub of my Regulatory staff by telephone at 415-503-6774 or by e-mail at peter.s.straub@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

Peter S. Straub

for Jane M. Hicks
Chief, Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 02 2009

Regulatory Division

Subject: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letter of September 29, 2009, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring within the W-Line Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California.

The enclosed map entitled, "Potential Jurisdictional Wetlands and Waters of the United States Within the W-Line, " in seventeen (17) sheets date certified December 1, 2009, accurately depicts the extent and location of Corps jurisdiction within the project alignment study area. The jurisdictional determination is based on the current conditions of the site, as verified during field investigations of August 6, 2009, and other data included with your submittals. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation map prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States and within the lateral extent of wetlands adjacent to these waters will require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters, and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. David Wickens of my Regulatory staff by telephone at 415-503-6787 or by e-mail at david.m.wickens@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

Jane M. Hicks
Chief, Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 01 2009

Regulatory Division

Subject: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letter of September 29, 2009, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring within the following proposed mitigation sites for the State Highway 101 Willits By-Pass Project: MGC Plasma North Parcel, MGC Plasma South Parcel, and the Frost Parcel. The aforementioned study areas are located in Little Lake Valley, Mendocino County, California.

The enclosed map entitled, "Caltrans Willits Bypass Project Potential Mitigation Sites, Modifications for Verification," in eight (8) sheets updated by Jason Meigs, Caltrans District 3 on April 6, 2009, accurately depicts the extent and location of Corps jurisdiction within the project alignment study area. The jurisdictional determination is based on the current conditions of the site, as verified during field investigations of February 18, 2009, and other data included with your submittals. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation map prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States and within the lateral extent of wetlands adjacent to these waters will require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters, and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. David Wickens of my Regulatory staff by telephone at 415-503-6787 or by e-mail at david.m.wickens@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

for

Jane M. Hicks
Chief, Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 16 2009

Regulatory Division

SUBJECT: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2800 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to a previous Jurisdictional Determination letter you received from our office regarding your proposed "Modified J1T Alignment" dated March 1, 2005. The aforementioned letter confirmed the Corps jurisdiction within the Modified J1T Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California. This letter re-confirms the Corps jurisdiction within the Modified J1T Alignment Study Area.

Enclosed are five (5) sheets titled, "Potential Jurisdictional Wetlands and Waters of the US Within Alternative Modified J1T." These drawings were originally date certified by the Corps February 23, 2005. They continue to accurately depict the extent and location of the Corps jurisdiction. Therefore, the enclosed drawings have received a new certification date of November 19, 2009. The jurisdictional determination is based on the current conditions of the site as verified during field investigations of April 20-22, June 1-3, and July 13, 2004, and January 19, 2005. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation maps prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States, or below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters, require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce. This jurisdictional determination is presumed to be consistent with the official interagency guidance of June 5, 2007, interpreting the Supreme Court decision, *Rapanos v. United States*, 126 S. Ct. 2208 (2006).

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. David Wickens of my Regulatory staff by telephone at 415-503-6787 or by e-mail at david.m.wickens@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

Jane Monaus
for

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Attachment 4: Record of Decision, and Notice of Determination (Final EIS/EIR included on separate CD)

NOTICE OF DETERMINATION

TO: Office of Planning and Research
PO Box 3044, 1400 Tenth Street, Room 222
Sacramento, CA 95812-3044

FROM: California Department of Transportation
1120 N Street
Sacramento, CA 95814

Subject:
Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code

Project Title

Willits Bypass Project

State Clearinghouse Number	Lead Agency Contact Person	Area Code/Telephone
1990030006	Jeremy Ketchum	916-274-0621

Project Location (include County)

The project, which involves bypassing a segment of existing U.S. 101, is located in the vicinity of the City of Willits, Mendocino County, California.

Project Description:

The California Department of Transportation, in conjunction with the Federal Highway Administration, proposes to construct a new segment of U.S. 101 that would bypass the City of Willits in Mendocino County. The proposed bypass would be a four-lane freeway with full access control and grade separation. The existing U.S. 101 facility within the project study limits is a two-lane conventional highway, which currently serves as the Main Street through the town of Willits. The purpose of the project is to reduce delays, improve safety, and achieve a minimum level of service (LOS) of at least 'C' for interregional traffic on U.S. 101 within the vicinity of Willits through the 20-year design period (i.e., 2028). One no-build alternative and four build alternatives (E3, C1T, J1T, and LT) were considered in the Draft EIS/EIR. Since public circulation of the Draft EIS/EIR, revisions were made to one of the build alternatives, which resulted in the *Modified Alternative J1T*. The Modified Alternative J1T has been selected as the preferred alternative because it would have the least overall impact to the environment. The proposed new U.S. 101 bypass would diverge from the existing facility approximately 0.8 mi south of the Haehl Overhead (Post Mile R43.1). The alignment would then traverse the valley east of Willits and converge back with the existing facility 2.9 km south of Reynolds Highway (Post Mile R49.0). The overall length of the bypass would be approximately 5.8 miles.

This is to advise that the California Department of Transportation has approved the above-described project on (date) **12/15/06** and has made the following determinations regarding the above-described project:

1. The project [☐ will ■ will not] have a significant effect on the environment.
2. ■ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☐ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [■ were ☐ were not] made a condition of the approval of the project.
4. A Statement of Overriding Considerations [☐ was ■ was not] adopted for this project.
5. Findings [■ were ☐ were not] made pursuant to the provisions of CEQA.

The ■ certified EIR or ☐ adopted ND with comments and responses and record of the project approval is available to the general public at:

Willits Public Library – 390 East Commercial Street, Willits, CA

Ukiah Public Library – 105 North Main Street, Ukiah, CA

Fort Bragg Public Library – 499 East Laurel Street, Fort Bragg, CA

Caltrans District 1 Office – 1656 Union Street, Eureka, CA

Caltrans Website – http://www.dot.ca.gov/dist1/d1projects/willits/reports.feir.htm

Signature (California Department of Transportation)	Date	Title
Wells	12/15/06	Environmental Manager

Date received for filing at OPR:

RECEIVED
DEC 18 2006
STATE CLEARING HOUSE

FHWA-CA-EIS-02-02-F
P56038

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

RECORD OF DECISION

Willits Bypass
Mendocino County

This Record of Decision (ROD) was developed pursuant to 40 CFR 1505.2 and 23 CFR 771.127. The California Department of Transportation (Caltrans), in cooperation with the Federal Highway Administration (FHWA), has identified the need to reduce delays, improve safety, and achieve a minimum level of service (LOS) "C" for interregional traffic on U.S. Highway 101 in the vicinity of the City of Willits, Mendocino County, California.

The project's purpose and need are described in Chapter 2 of the Willits Bypass *Final Environmental Impact Statement* (FEIS), approved by FHWA on October 25, 2006. The FEIS is incorporated into the ROD by reference. The Notice of Availability for the FEIS was published in the *Federal Register* on November 9, 2006.

A. Decision

This ROD approves the preferred alternative identified in the Willits Bypass FEIS. After reviewing public comments, as well as coordinating with the regulatory agencies and local stakeholders, including the City of Willits in Mendocino County, California, it was determined that the **Modified Alternative J1T** is the Least Environmentally Damaging Practicable Alternative (LEDPA). The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency have concurred in this determination. The Modified Alternative J1T has, therefore, been identified as the selected alternative. This decision is based upon information in the Draft and Final EIS, as well as comments from other Federal and state agencies, elected officials, and members of the public. Following approval of this ROD, the project will be advanced to final design, right-of-way acquisition, and construction.

All practicable measures to avoid or minimize harm to the environment have been employed in the design of this project and are described in Section D of this document.

The Department could design and construct all or part of the proposed project depending on funding availability. In an effort to balance potential funding limitations and the need for the project, the Willits Bypass could be constructed in phases, whereby a functional interim facility would be constructed initially, and completion of the full facility would occur at a later date when additional funding is available.

B. Alternatives Considered

Based on input from the community and the resource agencies, as well as on engineering and environmental analyses, the **Modified Alternative J1T** has been identified as the Preferred Alternative for the proposed Willits Bypass project. In accordance with Section 404(b)(1) of the Clean Water Act, a Final Alternatives Analysis, which compares the alternatives considered in the DEIS/EIR, was completed in April 2005 (see FEIS, Appendix G). As a result of the Final Alternatives Analysis, the Modified Alternative J1T, which shares design elements with Alternatives LT and J1T, was identified as the LEDPA for the proposed project. Modified Alternative J1T was determined to be the LEDPA/Preferred Alternative because it would have the least overall impact to both natural and community resources, while still meeting the purpose and need for the project. The factual determinations in the Final Alternatives Analysis demonstrate the following:

Alternative E3, which would affect approximately 15 acres of wetlands and other waters, should be eliminated from consideration as the LEDPA for the following reasons: (a) it has the greatest potential to degrade water quality because of highly erosive soils and numerous of stream crossings, as well as the extensive earthwork required, and therefore; (b) it has the greatest potential to affect local populations of three federally listed salmonid species; (c) it would have the largest direct impact to foraging habitat for northern spotted owl because of the removal of approximately 300 acres of coniferous forest; (d) it would displace the largest number of homes and businesses (133); (e) it has the potential to affect the largest number of archaeological sites (18); (f) it would convert a large amount of Williamson Act Contract farmland (59.3 ha/146.6 ac); and (g) it would impact larger areas of upland/foothill habitats, including oak woodland which is more difficult to replace, than the other alternatives.

Alternatives C1T and L/C (the south segment of Alternative LT plus the north segment of Alternative C1T) should be eliminated from consideration as the LEDPA because of substantial impacts to wetlands and other waters of the U.S. and to federally-listed fish species. The impacts associated with Alternatives C1T and L/C include the greatest direct impact to jurisdictional wetlands and other waters of the U.S. when compared to the other build alternatives: 52.7 ha (130.2 ac) for Alternative C1T, and 48.5 ha (119.9 ac) for Alternative L/C. Both alternatives would require realignment of approximately one mile of salmon-bearing creek, which is critical habitat for three federally-listed fish species.

Alternative LT should be eliminated from consideration as the LEDPA because it would directly impact approximately 29.9 ha (73.8 ac) of jurisdictional wetlands and other waters of the U.S. Alternative LT would also result in fragmentation of the largest stand of valley oak riparian woodland in the valley.

Alternative J1T does not meet LEDPA criteria because, while it has impacts to wetlands and other waters of the U.S. comparable to those of Modified Alternative J1T, it creates

unacceptable impacts to the local and regional park/recreation complex ("human use characteristics" under Section 404(b)(1) Subpart F of the Clean Water Act) and the Sanhedrin industrial park. In addition impacts to the industrial park would result in the loss of businesses that would not or could not relocate in Willits. Thus, even though wetlands impacts would be comparable impacts to those of Modified Alternative J1T, Alternative J1T is the more environmentally damaging of the two alternatives.

Modified Alternative J1T meets LEDPA criteria because it would result in the least overall environmental harm. The Draft Alternatives Analysis had identified Alternatives J1T and LT as potential candidates for the LEDPA; however, it became necessary to develop a modified alignment that incorporated portions of these two alternatives in order to avoid important community and biological resources. The Modified Alternative J1T would have comparable wetlands impacts to those of Alternative J1T, but it avoids the important community resources that Alternative J1T would have otherwise impacted. Modified Alternative J1T has fewer impacts to wetlands than Alternative LT and avoids a large stand of valley oak riparian woodland that would have been impacted and fragmented by Alternative LT.

No-Build Alternative is not a practicable alternative because it does not meet the purpose and need of the project.

The U. S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (USEPA) have issued letters of concurrence that Modified Alternative J1T is the LEDPA (see FEIS, Appendix C). Both the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) have issued Biological Opinions (BOs), which state that construction of the Preferred Alternative is not likely to jeopardize the continued existence of federally listed species (see FEIS, Appendix D).

C. Section 4(f)

The Modified Alternative J1T avoids impacts to Section 4(f) properties; therefore, no formal Section 4(f) evaluation is required for this project.

D. Measures To Minimize Harm

All practicable measures to avoid or minimize environmental harm have been incorporated into the decision and are described as follows.

Air Quality

The bypass project would not generate any additional long-term carbon monoxide (CO) emissions to local air quality. Activities during construction would produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and vehicles transporting the construction crew. The use of construction equipment on site would result in localized exhaust emissions. The Department's standard specifications for

construction would be adhered to in order to reduce construction related emissions. Dust emissions during construction, could also have a substantial temporary impact on local air quality. Dust emissions would result from earthmoving (dust generation) and heavy equipment use. Such dust emissions could be generated from land clearing, ground excavation, cut and fill operations, and the construction of the roadway itself. Dust emissions would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing weather. A major portion of these emissions probably would result from equipment traffic over temporary construction roads. The following measures, which are standard best management practices and comply with Rule 430 (Mendocino Air Quality Management District), will minimize construction-related air quality impacts due to dust emissions. Naturally Occurring Asbestos (NOA) is not known to occur in the vicinity of Oil Well Hill; however, measures are in place in the event NOA is encountered during construction. The following measures will avoid or minimize impacts to air quality:

- The contractor will apply water and/or chemical dust suppression on dirt haul roads and surfaces over which equipment will travel.

- The contractor will cover and/or water exposed dirt storage piles to inhibit wind erosion.

- The contractor will stagger the time and location of fugitive dust-generating activities.

- Caltrans Standard Special Provisions for the identification and handling of soils containing NOA will be included in the construction contract documents.

- The contractor will ensure that grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.

- The contractor will utilize electric powered equipment in lieu of gasoline-powered engines where feasible.

- The contractor will ensure that grading plans include a statement that work crews will shut off equipment when not in use.

- The contractor will time the construction activities so as not to interfere with peak hour traffic and minimize obstruction of through traffic lanes adjacent to the site. If necessary, a flag person shall be retained to maintain safety adjacent to existing roadways.

- The contractor will support and encourage ridesharing and transit incentives for the construction crew.

Cultural Resources

Two historic properties were identified within the Area of Potential Effects (APE) established for the Modified Alternative J1T alignment (one archaeological site and one built environment property). The cultural resource investigation conducted for the project concluded that the two cultural resources could be avoided and would not be adversely affected by the project. An Environmentally Sensitive Area (ESA) Action Plan has been developed, as part of the SHPO-approved cultural resource compliance documents, to further ensure the avoidance and protection of cultural resources during the construction phase of the project. The following measures will avoid or minimize potential impacts to cultural resources.

- It is Caltrans' standard policy to avoid cultural resources whenever possible. If buried cultural materials are encountered during construction, it is Caltrans' policy that all work in that area must halt until a qualified archaeologist can evaluate the nature and significance of the find (Caltrans Environmental Handbook, Volume 2, Chapter 1).

- If human remains are unearthed during construction, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur, in the immediate vicinity of the discovery, and the county Coroner shall be notified so that a determination can be made as to origin of the remains. If the Coroner determines that the remains are associated with a Native American archaeological site, the provisions of California Public Resources Code 5097.98 shall be followed to notify the Native American Heritage Commission and to identify the Most Likely Descendent from the local Native American community.

- The ESA Action Plan, which is included as part of the Historic Property Survey Report, has been developed to ensure the avoidance and protection of historic properties during project construction. The ESA Action Plan details the protective measures to be employed at various stages of the project (before, during, and after construction) and identifies the parties responsible for the implementation of such measures, which include the placement of protective fencing and monitoring by a qualified archaeologist. The ESA Action Plan will be included in the Resident Engineer pending file.

Biological Resources

Modified Alternative J1T, as well as the designated borrow site at Oil Well Hill, would result in direct impacts to the following biological resources: Sensitive plant communities and habitats, including wetlands and other waters of the U.S., oak woodland, and riparian woodlands; Three listed salmonid species; One listed plant species (Baker’s meadowfoam); One listed wildlife species (Northern spotted owl); and Seven non-listed plant and wildlife species (white-tailed kite, Cooper’s hawk, yellow-breasted chat, California yellow warbler, foothill yellow-legged frog, northwestern pond turtle, and red tree vole). The following measures will avoid, minimize, or compensate for impacts to biological resources resulting from construction of the Willits Bypass, Modified Alternative J1T, project:

- The project will comply with the terms and conditions provided by the USFWS and NMFS, in their BOs. Caltrans will also comply with conditions of the permits issued by all of the resources agencies, and will implement mitigation and monitoring measures provided in the Conceptual Mitigation Plan (CMP; see FEIS, Appendix L). The CMP includes measures that would compensate for impacts to wetlands and other waters; riparian woodlands, oak woodlands, listed salmonids; northern spotted owl and Pacific fisher; Baker's meadowfoam and non-listed special-status species.

- Compensatory mitigation would include the creation, restoration, enhancement, and/or preservation of sensitive habitats affected by the project. Conceptual mitigation ratios are provided in the CMP for the Modified Alternative J1T alignment. These ratios were developed through consultation with the USACE, USFWS, NMFS, USEPA, the California Department of Fish & Game (CDFG), and the Regional Water Quality Control Board (RWQCB). A number of mitigation sites have been considered and evaluated for their potential for the creation, restoration, enhancement and/or preservation values. A Final Mitigation and Monitoring Plan will be developed and adopted after approval and distribution of the Final Environmental Impact Report/Environmental Impact Statement.

- During the final design phase of the Modified Alternative J1T project, Caltrans biologists, Caltrans design engineers, and resource agency staff will work together on additional design solutions that will avoid or minimize impacts to sensitive biological resources.

- ESAs will be established and delineated on project plans and specifications to protect sensitive biological resources adjacent to the construction corridor by prohibiting construction activities in those areas.

- Caltrans/FHWA will develop and implement an environmental awareness and training program that informs the contractor and construction workers of the environmental regulations with which Caltrans is committed to comply and measures established for the project to minimize and avoid sensitive habitats and species.

- Qualified biologists will monitor construction activities in sensitive biological resource areas to ensure adherence to permit conditions and mitigation requirements.

- Working in live stream channels to the extent feasible will be avoided. Construction associated with stream crossings (bridges, viaduct, and culvert) would conform to the work window of June 15 though October 15 of each year for work associated with bridge, viaduct, and culvert construction over salmonid bearing streams.

- Oak woodland occurring in the project corridor consists of valley oak woodland, Oregon white oak woodland, and black oak woodland. Minimization efforts during construction would consist of the removal of only the minimum number of trees necessary to allow for efficient project construction. ESA fencing would be installed around oak woodlands adjacent to the work areas. Any encroachment beyond the ESA fencing during construction (including driving, material or equipment storage and vehicle parking) would be prohibited. The ESA fencing would be accurately depicted on the final contract drawings. Compensation for the permanent loss of oak woodland would consist of in-kind creation/restoration, enhancement, and preservation of oak woodlands on newly acquired parcels. These parcels would be purchased in fee or by a conservation easement and be preserved in perpetuity. On sites where creation/restoration or enhancement is to occur, oak trees would be initially planted in these areas at the ratio of five new saplings for each oak lost with the goal of three of them surviving after a ten-year monitoring period. Other compensation options may include: 1) a monetary contribution to the California Oak Woodlands Conservation Fund, administered by the State Wildlife Conservation Board for the purpose of purchasing oak woodland conservation easements, or; 2), if there is an established CDFG oak woodland mitigation bank, the mitigation bank could be used to fulfill the off-site compensation requirements (refer to Conceptual Mitigation Plan; Appendix L of FEIS).

- Riparian woodlands within the project corridor are divided into three categories for management purposes (CMP; see FEIS, Appendix L). Category I riparian woodlands are associated with salmonid bearing streams, and Categories II and III riparian woodlands are other riparian woodlands that are not associated with salmonid streams. Minimization measures that would occur during construction would include: (1) removing the minimum amount of vegetation necessary; (2) installing ESA fencing, and enforcing protection of riparian vegetation located within established protected areas; (3) implementation of appropriate BMPs; and (4) pre-construction training sessions to inform contractors and construction workers of the status of sensitive habitats and special-status species and the requirements for avoidance of protected areas. Mitigation for all affected riparian woodlands would be implemented through creation/restoration, enhancement, and preservation within Little Lake Valley. Local native plant species would be used for the revegetation of impacted riparian zones along salmonid streams within the project limits, as well as off-site mitigation areas. Mitigation would be in-kind, and plant propagules would be collected in Little Lake Valley. Riparian trees would be replanted initially, and associated shrubs, herbaceous plants, and annuals would be seeded or planted along with the riparian trees. Planting methods would include the installation of stem (pole) cuttings from plants such as willows, cottonwood, thimbleberry, coyote bush, or other species capable of easy rooting from cuttings. Pole cuttings would also be used to revegetate areas where Rock Slope Protection (RSP) is required on the stream banks. In mitigation areas where some riparian vegetation is already present, additional vegetation would be

planted. Revegetation of unvegetated stream banks would be considered creation. Removal of invasive exotic vegetation and planting of additional vegetation on sparsely vegetated streambanks would be considered enhancement.

- Modified Alternative J1T would temporarily and permanently affect two populations of Baker's meadowfoam, one in the central portion of the project (in the area of the Colli Ranch) and one in the northern portion of the project, in the vicinity of the Quail Meadows Interchange. The project would avoid most of the central population of Baker's meadowfoam, but would impact the majority of the northern population. Impacts to Baker's meadowfoam plants would be mitigated by off-site preservation of existing populations and habitat, as well as by creation/enhancement of new habitat for populations occurring on upland sites and on wetland sites (refer to CMP, FEIS, Appendix L). Portions of temporarily impacted Baker's meadowfoam habitat could be restored where feasible. Baker's meadowfoam habitats occurring within jurisdictional wetlands would be mitigated by a combination of creation/restoration at the same ratios as jurisdictional wetlands, and preservation. Baker's meadowfoam creation/restoration parameters would be based on specific hydrologic and soil conditions specified and described for the species in a formerly prepared study titled "Hydrologic and Soil-Geomorphic Conditions Associated with Baker's Meadowfoam in Little Lake Valley, Mendocino County, California". Baker's meadowfoam preservation sites would be acquired within Little Lake Valley. Additionally, funds would be necessary in order to set up a long-term management and maintenance program. The Baker's meadowfoam preserves would be maintained in perpetuity and their management could be transferred to CDFG or a mitigation bank (refer to FEIS, Appendix L).

- To comply with the provisions of the Migratory Bird Treaty Act, vegetation required for removal will be removed or trimmed during the fall and/or winter months, to the extent possible, to avoid impacts to nesting birds. If vegetation cannot be removed during the non-breeding season, Caltrans will arrange to have a qualified biologist conduct preconstruction surveys of impact areas to check for nesting activity of all bird species. If nesting activity is detected, Caltrans will, if possible, establish a buffer around the nest(s). The buffer width would be determined through consultation with USFWS and CDFG. The buffer will be maintained and construction activities will avoid nest sites until the biologist determines that the young have fledged or nesting activity has ceased.

- Excavation at the designated borrow site at Oil Well Hill could affect a maximum of 40 acres of Northern spotted owl (NSO) foraging and dispersal habitat. Caltrans will conduct additional pre-construction protocol-level surveys to determine the status of NSO in the vicinity of the Oil Well Hill borrow site. If NSO is found nesting within 1.3 miles of the borrow site, Caltrans/FHWA will consult with the USFWS (refer to USFWS Biological Opinion, FEIS, Appendix D). Caltrans/FHWA will document the results of all protocol surveys conducted

for NSOs. Caltrans will implement measures provided in the USFWS BO for NSO, which include: **(1)** All large trees that can reasonably be avoided at Oil Well Hill will be protected; **(2)** Vegetation removal at Oil Well Hill will occur during the non-breeding season (September 15 – February 1), to the extent feasible, to minimize potential impacts to NSOs. Vegetation will be removed incrementally (i.e., only on those portions of the site that are needed for borrow material), rather than removing all vegetation on the approximately 16 ha (40 ac) site prior to excavation; **(3)** Planting the same tree species that occurred at the borrow site following excavation, if feasible, could restore vegetation at Oil Well Hill; **(4)** If an active NSO nest is found within 0.8 km (0.5 mi) of any proposed construction activity, USFWS may require that Caltrans establish a 0.8 km (0.5 mi) diameter buffer around the activity center during the breeding season (February 15 to August 31).

- If non-listed special-status wildlife species are found nesting on or near the project site, including California yellow warbler, yellow-breasted chat, and raptors, Caltrans will establish buffers around each nest. The buffer width will be determined through consultation with CDFG. The buffer shall be maintained and construction activities shall avoid nest sites until the Caltrans biologist determines that the young have fledged or nesting activity has ceased. For white-tailed kites and other raptors, Caltrans shall conduct a pre-construction survey during the spring or early summer (April-early July) to determine whether nesting raptors (e.g., white-tailed kites, Cooper's hawks, red-tailed hawks, red-shouldered hawks) are present on or within 0.40 km (0.25 mi) of the selected alternative. If the survey detects nesting raptors on or within 0.40 km (0.25 mi) of the selected alternative, Caltrans will maintain buffer areas and seasonal construction constraints (e.g., no work during active nesting periods) in coordination with USFWS and CDFG.

- The proposed viaduct and bridge crossings would provide access for wildlife to cross under the proposed alignment. Caltrans may construct additional wildlife under-crossings, if feasible, that would be suitable for use by deer and other wildlife species. If the construction of other wildlife crossings were feasible, the location, number and design of the under-crossings would be determined through consultation with CDFG.

- In addition to requiring the contractor to prepare a Storm Water Pollution Prevention Plan (SWPPP), Caltrans will implement the following measures to minimize disturbances to aquatic resources: **(1)** All construction-related materials shall be stored in designated staging areas at least 100 feet from perennial waterways and drainages; **(2)** Refueling and vehicle maintenance shall be performed at least 100 feet from creeks and other water bodies; **(3)** Operation of heavy equipment shall be minimized in perennial creeks (to the greatest extent possible). If equipment must access perennial creeks, this will occur during the late summer months when the stream flows are low, or when no water is in the channels. If water is flowing, the channels will be dewatered; **(4)** Temporary sedimentation barriers, such as sandbags or siltation fencing, shall be installed to

minimize the amount of silt entering the creeks and any ephemeral drainages with water present in the channel. The location of these barriers shall be determined by the resident engineer and environmental monitor, and shall be clearly marked in the field before construction activities begin; **(5)** Additional Best Management Practices (BMPs) shall be implemented to prevent runoff from adjacent lands from flowing across construction areas, slow down the runoff traveling across construction sites, remove sediment from onsite runoff before it leaves the site, and provide soil stabilization.

- To reduce the spread of invasive non-native plant species and minimize the potential for disturbance activities to decrease palatable vegetation for wildlife species, Caltrans will implement the following protection measures to comply with Executive Order (EO) 13112: **(1)** Prior to construction, Caltrans will conduct surveys in the construction corridor of the NEPA/404 preferred alternative for populations of plants listed on the California Department of Food and Agriculture (CDFA) noxious weed list. Populations of noxious weeds will be mapped. This will establish a baseline from which to evaluate the possible impacts of this construction on the spread of these invasive exotic plants or the establishment of other invasive exotic plants; **(2)** Caltrans will not allow disposal of soil and plant materials from any areas that supports invasive species in areas that support stands dominated by native vegetation; **(3)** Plant species used for erosion control will consist of native, non-invasive species or non-persistent hybrids that will serve to stabilize site conditions and prevent invasive species from colonizing; **(4)** All off highway equipment used on the project shall be free of mineral soil and vegetation. Evidence of high pressure washing or steam cleaning, prior to initial entry to the project limits, will be required to minimize the potential for the spread of invasive weeds from outside the Little Lake Valley area. Contract language will inform Contractors and Caltrans inspection staff of the methods to be used to control and prevent the spread of identified invasive non-native species. Gravel and/or fill material from borrow areas and commercial sources will come from weed free sources. Certified weed-free, landscape and erosion control materials will be used; **(5)** Following construction, Caltrans will conduct a three-year program of invasive exotic weed monitoring, which will consist of conducting surveys every six months during the spring and late summer. The percent cover of invasive exotic plant species occurring within the construction corridor must not exceed the cover of invasive exotic plant species found outside the construction corridor, or the cover found in the construction corridor prior to construction. Monitoring potential invasive species will occur only where ground was disturbed within the construction corridor; **(6)** If, during the three-year monitoring program, invasive weeds show evidence of spreading, Caltrans will develop an Invasive Weed Eradication Plan, targeting identified invasive species on the CDFA list. Herbicides would not be used since Caltrans does not use herbicides in Mendocino County.

- During pile driving activities below the top-of-bank and within 15 m (50 feet) of salmonid bearing streams, Caltrans will dewater the stream (including relocating fish), and a qualified fisheries biologist will monitor underwater noise levels both

upstream and downstream of the dewatered area. If noise levels exceed 187 dB_{SEL} or 208 dB peak, Caltrans will cease pile driving at this location and immediately contact NMFS to discuss further reasonable and prudent measures to minimize potential impacts to fish, which could include additional fish relocation and dewatering. Dewatering could be required for six weeks or more at some stream crossings. See also NMFS Biological Opinion (FEIS, Appendix D).

Business and Residential Relocation

Modified Alternative J1T would require the relocation of 10 residences. The Final Relocation Impact Statement (FRIS) prepared for this alternative concludes that replacement housing would be available for all impacted households in the replacement area and would not dramatically alter the local housing market. Modified Alternative J1T would also impact six industrial businesses and one non-profit organization. Adequate relocation facilities exist in Willits and the surrounding valley for these business uses. The following measures will reduce impacts related to residential and/or business relocations.

- Caltrans will provide relocation assistance payments and counseling to persons and businesses in accordance with the Federal Uniform Relocation Assistance and Real Properties Acquisition Policies Act, as Amended, to ensure adequate relocation and a decent, safe, and sanitary home for displaced residents (see Volume 3, DEIS/EIR, Appendix J for a detailed discussion). All eligible displacees will be entitled to moving expenses. All benefits and services will be provided equitably to all residential and business relocatees without regard to race, color, religion, age, national origins and disability as specified under Title VI of the Civil Rights Act of 1964.

- Caltrans will arrange for Last Resort Housing payments to displaced residents unable to utilize standard relocation benefits to locate existing housing within the project area.

- Caltrans will work with potentially displaced residents and local agencies to develop a comprehensive Relocation Plan to provide displaced residents with the greatest possible use of relocation benefits and Last Resort Housing payments.

Farmland

The Modified Alternative J1T does not exceed the 160-point impact threshold in its conversion of Prime and Unique farmland to other uses; however, this alternative would have several irreversible impacts on agriculture in this area. It would convert over 100 acres of Prime and Unique farmland to non-farm uses, relocate one ranch, and affect over 50 acres of land held in Williamson Act contracts. The following mitigation measures are proposed to offset these impacts.

- The Purchase of Agricultural Conservation Easements (PACE) program enables the landowners to separate and sell their right to develop land from their other property rights. After selling easements, the landowner retains all other rights of

ownership, including the right to farm the land, prevent trespass, and sell the land. Caltrans may purchase an agricultural conservation easement in or near the project area, consisting predominantly of Prime Farmland, which will ensure preservation of the land for farming uses in perpetuity. This mitigation may be combined with mitigation for lost wetlands, assuming that wetlands are suitable for grazing purposes. Easement titles could be deeded to non-profit environmental organizations or to organizations such as the American Farmland Trust.

- Caltrans will stockpile as much topsoil as is feasible for local and re-vegetation use to conserve valuable Prime Farmland (soils). The use of topsoil facilitates the reestablishment of plant communities on disturbed soils and reintroduces this important resource back into the local ecosystem. The topsoil will be stored at an environmentally approved site. Possible applications for the topsoil include: mitigation sites; landscaping the Willits bypass project corridor; and use by the City of Willits, Mendocino County, and local/county residents/businesses/ farming operations.

- Caltrans may contribute to the Department of Conservation's Farmland Conservancy Fund, in an amount to be determined in coordination between Caltrans and the Department of Conservation. The fund provides grants for projects that use and support agricultural conservancy easements for protection of agricultural lands. Caltrans can buy "credits" per Public Resources Code 10231.5, which states "the Department may accept donations of funds if the department is the designated beneficiary of the donation and agrees to use the funds for the purposes of the program in a county specified by the donor." The Department of Conservation, which oversees the Farmland Conservancy Fund can accept funds and apply them within a designated area (Little Lake Valley or near the Willits Bypass Project).

Floodplain

The construction of Modified Alternative J1T within the floodplain would have minimal impact related to additional impervious surface area or to beneficial floodplain values. The following measures will minimize potential floodplain impacts.

- According to FEMA, the floodway is "the area of the floodplain that should be reserved (kept free of obstructions) to allow floodwaters to move downstream." For each valley alternative, the Floodway Viaduct (bridge) spans the floodway. The only encroachments in the floodway are the columns supporting the structure. In addition, the structure designs have relatively long spans, in the range of 30 m (100 ft). These structure design features limit the impacts on the floodplain by minimizing the actual footprint of the impacts and obstructions to flow.

- The valley alternatives include equalizing culverts at periodic points along the embankments, which should minimize the redirection of flows, maintaining the existing flood patterns. The culverts will not, however, be included if detailed

hydraulic studies indicate the culverts would cause other problems with flood patterns.

- The cross sectional design of the facility, the side slopes, median, pavement widths, and so forth, has been established to limit impacts to floodplains as well as other resources. The median width, at 13.8 m (45 ft), is 4.8 m (16 ft) less than Caltrans' current design standard. This median width reduces the footprint of impact along the entire alignment, including the floodplain. Sideslopes are the slopes connecting the roadbed with the existing ground. When the embankment is low, the sideslopes can be constructed at relatively low angles without extending an unreasonable distance from the roadbed. But as embankments increase in height, sideslopes constructed at the same angles would cover much wider areas and add to the volume of earth to be placed. To reduce the earthwork and footprint of higher embankments, sideslopes are constructed at steeper angles. In the floodplain, the higher embankments occur at bridge approaches, and the steeper sideslopes constructed in connection with these higher embankments limit the impacted areas.

- The use of tight diamond interchanges rather than spread diamonds reduces the footprint of impacts on the floodplain.

Geology and Soils

Geologic conditions in the project area consist of active faults, shallow groundwater, and soil deposits that could be subject to liquefaction, shear failures, and settlement. Based on sampling and data analyses, the primary geotechnical considerations for the Modified Alternative J1T is the potential for differential settlement. The following measures will reduce potential impacts related to these geologic conditions:

- If necessary, Caltrans will incorporate special design considerations into the project, such as specialized foundation treatments, specialized cut slope and fill slope design, mechanically reinforced embankments, stabilization trenches, catchment areas, and specialized subsurface drainage techniques.

- Where deposits are highly erodible and prone to landsliding, Caltrans will design the project to include specific slope ratios, special foundation treatments, and other engineering solutions.

- To minimize or prevent settlement, Caltrans will incorporate foundation treatments or long-term settlement periods into the design and construction of the project.

- For any structures overlying potentially liquefiable deposits, Caltrans will design the project to be constructed on foundation piles that could be extended through the susceptible zones into structurally competent materials.

Hazardous Materials

No hazardous waste issues have been identified within the Modified Alternative J1T alignment, and no hazardous waste/materials issues have been identified at the Oil Well Hill borrow site area. On a short-term basis, during construction/demolition activities, the Modified Alternative J1T has potential for the presence of asbestos-containing building materials (ACBM) and lead-based paint in the buildings within the project boundaries. The following measures will avoid or minimize hazardous waste impacts:

- Caltrans will complete an asbestos and lead-based paint survey prior to demolition activities. Caltrans will obtain a Mendocino County Air Quality Management District permit (i.e., NESHAP permit – National Emission Standards for Hazardous Air Pollutants), which is required for demolition.

- Inspections for a NESHAP permit are done by Cal/OSHA certified inspectors. Regulated Asbestos Containing Materials (RACMs), Category I and II materials, are identified during the survey and are noted on NESHAP permit**.** Caltrans will have all Regulated Asbestos Containing Materials (RACM) and lead-based paint abated by a licensed asbestos and lead-based paint contractor.

Noise

Projected noise levels for the Modified Alternative J1T are below the Noise Abatement Criteria; therefore no abatement is to be undertaken under Title 23, Part 772, Code of Federal Regulations, "Procedures for Abatement of Highway Traffic Noise". During the construction phase of the project, noise from construction activities would dominate the noise environment in the immediate area. Activities involved in construction would generate noise levels ranging from 70 to 90 dB at a distance of 15 m (50 ft). Construction activities would be temporary in nature, typically occurring during normal working hours. Noise levels related to pile driving activities would exceed this range, but would vary depending upon the type of equipment, the size/type of piles, and the soil conditions where the work is occurring. The following mitigation measures are proposed to address noise impacts during construction.

- The contractor shall comply with all local sound control and noise level rules, regulations and ordinances, which apply to any work performed pursuant to the contract (Caltrans Standard Specifications Section 7-1.01(I) "Sound control requirements").

- Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without the muffler (Caltrans Standard Specifications Section 7-1.01(I) "Sound control requirements".

- Although standard practice requires that construction be restricted to between the hours of 7:00 am and 7:00 pm (8:00 am and 7:00 pm on Saturdays), some

nighttime work may be needed. Standard practice precludes construction work on Sundays and federal holidays.

- Stationary construction equipment, such as compressors and generators, will be shielded and located as far away as feasible from receptor locations.

- Place any maintenance yard, batch plant, haul roads, and other construction operations as far as possible from sensitive receptor locations.

- Caltrans will keep area residents informed regarding construction work, the time involved, and control measures that will be used to reduce construction-related impacts.

- A Traffic Management Plan will provide methods and restrictions to minimize construction traffic impacts to residents.

Public Services

During construction of the project, traffic delays would not be anticipated since most of the project would be constructed on new alignment, and therefore, would have minimal impact on local roadways. However, to reduce conflicts with emergency services providers and other public services, and local traffic, the following measures are proposed:

- Caltrans will make preconstruction contacts with the fire department, law enforcement, and ambulance services.

- Caltrans will notify concerned agencies of the construction schedule.

- Caltrans will implement a traffic management plan to minimize impacts to roadway users during construction of the project.

SMARA/Grading Permit (Disposal, Borrow, Staging)

Removal of embankment material from the designated borrow site would result in impacts to some biological resources. The biological measures described above will avoid or minimize impacts, as will the following:

- Caltrans/FHWA will obtain a permit pursuant to the State Mining and Reclamation Act (SMARA), if required, before construction activities begin. Caltrans will submit a permit application, a Mendocino County-approved Reclamation Plan, and financial assurance to the Department of Conservation, Office of Mine Reclamation. Caltrans will implement the reclamation plan, which will include steps for maintaining water and air quality, minimizing flooding, erosion and damage to wildlife and aquatic habitats caused by the surface mining. The reclamation process will include topsoil replacement and revegetation with suitable plant species. The reclamation plan also will contain measures to mitigate visual impacts.

Visual Resources

The Modified Alternative J1T would have a less than adverse visual impact to the South Valley, Little Lake Valley, Miracle Mile, and Historic District Landscape Assessment Units (LAUs), and no visual impact to the Brooktrails LAU. At the designated borrow site, one home near the excavation on the east side of the highway and higher on the hill could be impacted visually. The following measures are proposed to minimize visual impacts:

- Caltrans will have the contractor avoid and preserve trees and vegetation where feasible. Native vegetation that is removed for construction of the project will be replaced with like varieties to blend the freeway into the landscape. Tree mitigation is discussed under Biological Resources.

- Caltrans will use stockpiled topsoil in revegetation efforts.

- Slope protection will blend with existing features, simulating natural forms (i.e., rounding tops and bottoms of cut and fill slopes).

- The contractor will avoid/preserve large rock formations that do not interfere with construction of the project.

- Caltrans will provide plantings in appropriate locations, including adjoining highway slopes, to reduce visual impacts. Plant materials will include a combination of native oaks, pines, and/or redwood trees, as well as native shrubs and ground covers, where appropriate.

- For Oil Well Hill only: Caltrans will incorporate into the project design slope rounding, contour grading, and to the extent feasible, leaving a vegetative buffer between the highway and cut slope. At the time of final design, the Caltrans Office of Landscape Architecture will provide specific design solutions for slope treatment.

- For Oil Well Hill only: Caltrans will provide screen planting for the home closest to excavation at the designated borrow site.

- Caltrans Structures and Aesthetics Division, in cooperation with the Office of Landscape Architecture, will provide design treatments for project structures, such as bridges and viaduct, and to highway appurtenances.

- Landscape Plantings for the South Valley Landscape Assessment Unit: After the initial erosion control seeding, Caltrans may provide permanent landscape plantings for this area. Plant material selection is to include native species. Plantings must be concentrated at areas where existing groves of trees occur and leaving open areas unplanted. This method will preserve the existing grassland and horizontal views, which are unique to this landscape unit.

Water Quality

Construction of the bypass would increase the overall impervious surface within Little Lake Valley, which could result in a higher volume of storm water runoff. This will, to some degree, modify the drainage patter near the proposed alignment, which can increase the potential for erosion. Generally, the increase in storm water runoff can increase the potential for erosion due to point discharges, overland flow, and stream bank erosion. Storm water runoff, both during and after construction, and other long-term maintenance activities could potentially introduce chemicals, oil, and grease to surface waters. Construction activities, including the removal of embankment material at Oil Well Hill, would result in soil and ground disturbances, creating loose or unprotected soil that could be transported by storm water runoff or wind to nearby watercourses. Such increases in sediment and turbidity could impact receiving water quality. Modified Alternative J1T does not propose stream channel realignments for any salmonid bearing streams therefore, impacts due to loss of canopy cover and elevated stream temperatures are significantly reduced, compared to the other build alternatives.

- To address potential water quality impacts during construction, Caltrans will require the contractor to use a combination of Best Management Practices (BMPs) to control potential erosion and sedimentation from the project site. Caltrans has developed a suite of construction site BMPs that will be implemented on the proposed project. The Plans, Specifications and Estimates (PS&E) developed for the project will require the contractor to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP), and other project specific construction BMPs, which will effectively reduce potential pollutants of concern in storm water discharges. The SWPPP will be reviewed and approved by the Caltrans Resident Engineer to ensure all the necessary BMPs are incorporated. The SWPPP will also include a final Revegetation Plan to be implemented at the end of construction activities.

- Caltrans' Standard Special Provisions (SSPs) will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters. For example, on this project, equipment operating in water bodies will be required to be steam cleaned prior to arrival on site, and be maintained in a clean condition during the length of activities.

- Where vegetation along streams is removed or severely trimmed back, Caltrans will plant replacement vegetation using native species for shading of creeks to reduce temperature related impacts to water quality.

- Following the construction process, the contractor will stabilize disturbed soil areas through permanent re-vegetation or other means. The Storm Water Quality Handbook, Project Planning and Design Guide (revised July 2005), provides detailed procedures for design of permanent slope stabilization controls, design pollution prevention, and permanent treatment BMPs. The procedures are intended to ensure that an appropriate design is developed that will allow all finished slopes to achieve stabilization, even under severe conditions, and also

provide erosion control BMPs at all point source discharges of storm water runoff. Treatment BMPs, such as biofiltration, will be incorporated where feasible.

- The placement of sand on roads in the Willits area occurs relatively infrequently. When applied, Caltrans uses clean sand and follows the practices and procedures in Maintenance BMP (R1) Snow and Ice Control.

- As part of standard operation and maintenance procedures, Caltrans has developed a standard Hazardous Waste and Spill Response Plan (HW&SRP), which Caltrans will ensure is implemented during the project. These BMPs address water quality issues associated with accidental spills.

Wetlands Only Practicable Alternative Finding

Pursuant to Executive Order 11990 [23 CFR 771.125(a)(1)], Caltrans/FHWA has determined that there is no practicable alternative to constructing the project in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands, which may result from such use. The analysis for this Wetlands Only Practicable Alternative Finding is located in Appendix J of the FEIS.

E. Monitoring or Enforcement Program

In cooperation with the NEPA/404 resource agencies, Caltrans has prepared a Conceptual Mitigation Plan (CMP; see FEIS, Appendix L), which contains detailed information about: the biological resources identified within the project area; how these resources would be impacted by the proposed project; the avoidance and minimization measures to be implemented; and a conceptual plan for the compensatory mitigation of project-related impacts. The USACE, USEPA, USFWS, and NMFS have issued letters of concurrence that the CMP, which will serve as the basis for the Final Mitigation Plan, is adequate (see FEIS, Appendix C). Caltrans will continue to work with the resource agencies to develop the Final Mitigation and Monitoring Plan, which will detail the location and extent of all biological mitigation requirements to be implemented for the project.

The USFWS and NMFS have each issued the BO, which states that the proposed project is not likely to jeopardize the continued existence of Northern spotted owl, Pacific fisher, and three listed salmonid species, after implementation of mitigation measures. The BOs issued by the USFWS (March 2006) and NMFS (September 2006) can be found in Appendix D. The project shall comply with the terms and conditions of the USFWS and NMFS BOs to further minimize impacts to these resources.

F. Comments on Final EIS

This portion of the ROD includes comments received by Caltrans on the Final EIS for the Willits Bypass. The Final EIS was approved by FHWA on October 25, 2006. A Notice

of Availability of the FEIS was published in the Federal Register on November 9, 2006, with the wait period ending December 11, 2006.

Four letters were received in response to the notice in the Federal Register.

Letter Number	Letter From	Date Sent
1	Federal Emergency Management Agency (FEMA)	11/21/06
2	Individual Citizen (Mr. Freddie Long)	11/28/06
3	Willits Environmental Center	12/8/06
4	United States Environmental Protection Agency	12/11/06

Caltrans and FHWA have reviewed the comment letters and have concluded that all substantive comments in the letter have been addressed and FHWA has considered all Final EIS comments before reaching the decisions documented in this ROD.

Letter 1

The FEMA letter contained four recommendations (bold). The following are the recommendations and Caltrans and FHWA's response:

1. **All buildings constructed within a riverine floodplain must be elevated so that the lowest floor is at or above the Base Flood Elevation level in accordance with the effective Flood Insurance Rate Map (FIRM).**

   As stated in Section 2.3 of the FEIS, the highway will be built on elevated structures above the 100-year floodwater surface level.

2. **If the area of construction is located within a Regulatory Floodway as delineated on the Flood Insurance Rate Map, any development must not increase base flood elevations.**

   A detailed hydraulics study has been conducted. Results of the study were included in Section 3.6 of the FEIS. Construction of the floodway viaduct will avoid any increase in the floodway water surface elevation.

3. **Areas within a coastal high hazard area must be elevated on pilings and columns, so that the lowest horizontal structural member is elevated to or above the base flood elevation level.**

   The project is not within a coastal area.

4. **Upon completion of any development that changes existing Special Flood Hazard Areas, the National Flood Insurance Program directs all**

participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision.

Caltrans will complete and submit necessary hydrologic and hydraulic data as appropriate upon completion of the project.

Letter 2

Mr. Long's letter contained the following comments (bold) with Caltrans and FHWA's response below them.

The demand for oil is outstripping the supply resulting in higher fuel prices. As a result traffic levels on 101 will be lower rather than higher in the future. The funds for the project should be spent on pedestrian and bicycle improvements, thereby saving money and impacts to the environment.

There is no data available that shows a substantial change in the mode of transportation in the Willits area in the foreseeable future. A discussion on the appropriateness of a 4-lane bypass has been addressed in General Response 1.10 Two-Lane Bypass in Volume 2 of the FEIS.

Letter 3

The Willits Environmental Center letter contained three comments. The following are the comments and Caltrans and FHWA's response:

1. **The 2-lane Alternative has inappropriately been dismissed as a practical alternative.**
   General Response 1.10 in Volume 2 of the FEIS addresses the suggestion of a 2-lane bypass.

2. **Cost estimates fall short of true costs of the project.**
   Project costs have been continually updated using the best available information to Caltrans staff. Estimates do include funding set aside for mitigation. As stated in Section 1.2 of the FEIS, a combination of funding strategies will be utilized to bridge the gap between construction estimates and programmed amounts. The project may be constructed in full or in part depending on funding availability.

3. **The final mitigation plan does not disclose specific proposed methods for mitigating environmental impacts.**
   The comment that mitigation measures proposed by the project are too conceptual in nature was presented as a comment to the DEIS. General Response 1.14 in Volume 2 of the FEIS addresses this comment.

4. **The project does not address the issue of global warming and rising oil prices. The Environmental documents do not address the community**

responses to these issues, which include increased public transit, reducing vehicle use and greenhouse gases.
Please see the response to letter 2 for the issue on rising oil prices and anticipated public reaction. As for global warming and greenhouse gases, the project has been reviewed pursuant to all applicable air quality regulations. The results of these studies are included in Section 3.12 of the FEIS.

Letter 4

The Environmental Protection Agency letter contained one recommendation. The following are the recommendations and Caltrans and FHWA's response.

The EPA recommends Caltrans to continue to work collaboratively with the City of Willits and resource and regulatory agencies on this project on the development of a final detailed mitigation plan. Caltrans is also encouraged to work jointly with the City and EPA on exploring mitigation opportunities for the bypass and wastewater treatment facility.

Caltrans intends to continue its collaboration with the City and resource and regulatory agencies during the development of the final mitigation plan and with respect to the wastewater treatment plant.

G. Record of Decision Approval

Based on the analysis and evaluation contained in the proposed project's FEIS and after careful consideration of all the identified social, economic, and environmental factors and project commitments outlined in this ROD, it is the decision of FHWA to approve the Modified Alternative J1T as the Selected Alternative for the Willits Bypass Project.

12/18/06
Date of Approval

Gene K. Fong
GENE K. FONG
Division Administrator
Federal Highway Administration

Attachment 5: Section 7 Concurrence Documents

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Arcata Fish and Wildlife Office
1655 Heindon Road
Arcata, California, 95521
Phone: (707) 822-7201 Fax: (707) 822-8411

In Reply Refer To:
1-14-1998-0095

MAR 3 0 2006

Gene K. Fong
Division Administrator
Federal Highway Administration
California Division
650 Capitol Mall, Suite 4-100
Sacramento, California 95814

Subject: Formal Consultation on the Proposed Willits Bypass Project, on U.S. Highway 101, Mendocino County (EA 01-262000, Document # P53181)

Dear Mr. Fong:

This correspondence transmits the Fish and Wildlife Service's (Service's) biological opinion, based on our review of the Federal Highway Administration's (FHWA's) proposed action, construction of the Willits Bypass Project, located between post miles (PM) 43.1 and 52.3, on U.S. Highway 101, in Mendocino County, California, and its effects on the threatened northern spotted owl (*Strix occidentalis caurina*) (spotted owl). You determined that the proposed action may affect and is likely to adversely affect the spotted owl. You also determined that the proposed action may affect but is not likely to adversely affect the threatened bald eagle (*Haliaeetus leucocephalus*). In this response, we also transmit the Service's concurrence with your determination of effects to the bald eagle. This document is prepared in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 O.K. 1531 et seq.) (Act). We received your September 7, 2005, request for consultation on September 12, 2005.

The proposed action is not located within critical habitat designated or proposed for any listed or proposed species, and will not affect any primary constituent element of critical habitat. Therefore, critical habitat need not be addressed further in this consultation.

This consultation is based on information you provided in the August 2005 biological assessment (BA) and its appendices submitted with your request, telephone conversations between staff biologists of the Service's Arcata Fish and Wildlife Office (AFWO) and the California Department of Transportation (Caltrans), field visits to the site of the proposed construction

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project, and other sources of information. A complete administrative record of this consultation is on file at this office.

Consultation History

As early as 1995, Caltrans and other Federal and State agencies began planning numerous design and alignment alternatives for the Willits Bypass project. Various studies and documents have been published by Caltrans since that time. A complete list of those documents can be found on page 14 of the BA. More intensive planning has occurred since 1998, and especially during the most recent five-year period. Field visits to the Willits Bypass project area occurred on several occasions during the years 2002 through 2005, including a visit to the proposed excavation site. The purpose of those field visits was to gain a better understanding of the effects of the proposed project on wetlands in Little Lake Valley, the potential spotted owl suitable habitat in the vicinity of Oil Well Hill, and the effects of design alternatives on fish, wildlife and plant habitat. Several meetings of the project development team (PDT) occurred during this time period as well to discuss project design alternatives, potential effects to wetlands and listed species, and community needs. Additional meetings among Federal, State and local agency representatives were held to discuss effects of various design alternatives, mitigation measures for impacts to wetlands, and scheduling of planning and construction activities. On September 27, 2005, FHWA submitted a request for formal consultation on the Willits Bypass project to AFWO. A biological assessment, dated August 2005, was enclosed with that request.

Concurrence on Effects to Bald Eagle

FHWA determined that the Willits Bypass Project may affect bald eagles in or near Little Lake Valley. These potential effects are analyzed in the August 2005 BA. Based on this analysis, FHWA determined that the proposed action may affect but is not likely to adversely affect the bald eagle. The following discussion documents the Service's concurrence with FHWA's determination. The proposed action is briefly described in the biological opinion which follows, and is discussed in detail in the BA, and will not be repeated here. The reader is referred to the BA for details regarding location, extent of effects, and timing of the proposed action.

Bald eagle nest sites are always associated with a lake, river, or other body of water, and usually occur within approximately 1 mile (1.6 km) of these water bodies (Lehman 1979). Nests are usually constructed in a tree that provides an unobstructed view of the water body and that is almost always the dominant or co-dominant tree in the surrounding stand (Lehman 1979). Snags and dead-topped live trees are important habitat components in a bald eagle nesting territory and provide perch and roost sites. Bald eagles winter along rivers, lakes, or reservoirs that support adequate fish or water bird prey, and that have mature trees or large snags available for perch sites. They often roost communally during the winter, typically in mature trees or snags with open branching structures that are isolated from human disturbance.

No bald eagle nests were observed during field surveys, and no bald eagles are known to nest in the Little Lake Valley area (Caltrans 2000). One adult bald eagle was observed incidentally during other surveys conducted in winter 1993 (Caltrans 1997). Scott Harris (CDFG fisheries biologist, pers. comm., cited in BA) has observed bald eagles in Little Lake Valley on only three

or four occasions over the past 10 years while conducting salmonid surveys in Little Lake Valley, and noted that these birds did not remain in the area for any length of time.

The proposed project will permanently affect approximately 48 acres of wetlands, with approximately 81 percent (39 acres) consisting of wet meadow habitat, and approximately 5.4 acres (11 percent) of mixed marsh. The remaining 8 percent of wetlands affected consist of jurisdictional riparian woodland and scrub habitat. These wetlands are located primarily in the central and southern portions of the valley, and are in the topographically higher central portion of the valley, where flooding occurs only during the wettest years. Hence, these wetlands would provide lower quality habitat for waterfowl, used only during very wet periods. In addition, the majority of the stream reaches within the Modified Alternative J1T project corridor that support salmonids have a fairly dense riparian woodland canopy cover over the creeks, which would restrict the use of these streams by eagles, which require open water to capture their prey.

The northern portion of the valley, north of the project corridor, is topographically lower than the rest of the valley, and standing water in this portion of the valley occurs more regularly, is deeper, and remains longer during the winter months. Approximately 700 acres of higher quality winter waterfowl habitat were identified in the northern portion of the valley outside the action area, which provides the primary habitat for wintering waterfowl in Little Lake Valley (Caltrans 1997). Also, riparian vegetation is sparse along the reach of Outlet Creek north of the project corridor, which would facilitate access to migrating fish by eagles. These areas, which comprise the significant foraging habitat for bald eagles in Little Lake Valley, would not be affected by the proposed action.

Due to the low number of observations of bald eagles in Little Lake Valley, the absence of nesting activity, and the absence of higher quality foraging habitat in and near the proposed project corridor, it is likely that bald eagles observed in the valley are individuals that are occasional winter visitors that forage opportunistically during wet winters, when waterfowl or other suitable prey are present. Hence, project related impacts to wetlands and the streams reaches in the central and southern portions of the valley are not expected to result in a significant loss of foraging habitat for bald eagles.

The Service concurs with your determination that the proposed action may affect but is not likely to adversely affect the bald eagle, based on the following factors:

1. No forest habitat that currently functions as nesting habitat for the bald eagle will be removed, degraded or downgraded. The bald eagle does not currently nest in Little Lake Valley or on Oil Well Hill, and no nest trees currently used or known to have historically been used will be removed as a result of this proposed action.

2. The proposed action will not result in noise or visual disturbance to the species. Bald eagles use Little Lake Valley sporadically during some winters as foraging habitat, and may roost on occasion in or near the valley. However, no communal roosts are known to exist in the valley, so none will be subject to noise or visual disturbance. As indicated above, bald eagles are not known to nest in Little Lake Valley, so nesting bald eagles would not be subject to disturbance.

3. The proposed action will not result in injury or death of any individuals of the species.

4. The action will not result in adverse effects to any primary constituent element of critical habitat, since critical habitat is not designated for the species.

BIOLOGICAL OPINION

The following biological opinion addresses the effects of the proposed action on the northern spotted owl. No other species has been determined by FHWA and Caltrans to be adversely affected by the proposed action. Hence, no other species need be addressed by this opinion.

DESCRIPTION OF THE PROPOSED ACTION

Introduction

A complete description of the proposed action, including construction activities and equipment necessary to complete this action, can be found in the August 2005 BA and its appendices. That document is hereby included by reference. The following discussion provides a brief description of the construction activities most pertinent to this consultation. The reader is referred to the BA for complete details and additional clarification regarding the proposed activities.

Scope of Activities

FHWA and Caltrans propose to construct a bypass highway through Little Lake Valley around the community of Willits. The purposes of this project are to improve the level of service and safety for travelers along U.S. Highway 101; reduce delays for interregional traffic; and improve traffic flow and safety on Main Street, which currently functions as Highway 101 through the city. Caltrans proposes to construct a four-lane, divided highway along an alignment to the east of the city limits. This alignment, referred to as the Modified J1T alternative, would be constructed on a combination of imported fill material and elevated viaduct. Two interchanges are proposed, one each on the south and north ends of the new alignment, to access the community along the existing Highway 101/Main Street.

Construction activities along the proposed alignment through Little Lake Valley will not occur within or near habitat currently occupied, or likely to be occupied in the foreseeable future, by listed species under the regulatory jurisdiction of the Service. However, the road alignment passes through substantial wetlands, and may affect several streams in Little Lake Valley currently occupied by listed salmonid fishes under the jurisdiction of the National Marine Fisheries Service (NOAA Fisheries). Section 7 consultation has been initiated with NOAA Fisheries for those species.

In order to obtain enough fill material to construct the elevated roadway through the valley, Caltrans proposes to import fill material from a major excavation site north of the main roadway construction area and adjacent to the existing highway on Oil Well Hill north of Outlet Creek. Figures 1-3 and 1-4 of the BA, Appendix I, depict the location of the excavation site. Although

Caltrans anticipates that the contractor will obtain fill material from this site, the contractor may choose to import fill from another site if feasible. Caltrans requires that any use of an alternative site comply with all local, state and federal environmental and permitting use regulations, and requires the contractor to prepare and submit documentation of compliance to the Caltrans Resident Engineer. The present consultation addresses only the proposed excavation site on Oil Well Hill, and does not address effects to listed species that may arise from use of any alternative extraction site.

The Oil Well Hill borrow site is immediately adjacent to Highway 101 and north of Outlet Creek. It has been designated as a proposed borrow site because of its proximity to the project corridor, its location within the existing Caltrans right-of-way, and the presence of soil material suitable for use as fill for this project. Other sites were not proposed as designated borrow site(s) for this project due to the cost involved in acquiring land and the distance from the proposed project corridor.

Proposed Construction Activities

Fill material extraction at the Oil Well Hill site would require the removal of forested habitat. This habitat removal has the potential to remove, downgrade or degrade habitat suitable for the spotted owl. Hence, activities related to the extraction and transport of this fill material from Oil Well Hill to the proposed highway alignment in Little Lake Valley are the focus of the following description of proposed activities.

Caltrans proposes to extract soil fill material on a maximum of 40 acres (16.2 ha) for use in constructing the roadbed of a major portion of the Willits Bypass. Caltrans estimates the fill requirements for the Modified J1T alignment to be 1.9 million cubic meters (2.5 million cubic yards), although revisions to the final design standards could reduce the actual acreage and volume of excavated materials. For purposes of this consultation, the estimate of 40 acres of habitat removal and 1.9 million cubic meters of fill are assumed to be reasonable worst case figures. Although the exact amount of fill material to be excavated, and the acreage of forest habitat to be removed, are not precisely known at this time, the extent of habitat removed will be minimized to the extent practicable. As indicate above, some or all of this fill material may come from alternative sites at the discretion of the contractor, provided Caltrans-specified conditions are met.

The material will be excavated by using heavy equipment, assumed to include large excavators, bulldozers, loaders, and large dump trucks, as well as a variety of small power tools and equipment. The material will be transported by truck to the abandoned truck scale area, located about two miles south of the borrow site, via Highway 101, and from there along the new road alignment to its final deposition site. Use of this equipment will modify existing traffic noise dynamics at the excavation site, especially on the east side of extraction area which currently is buffered from the direct noise effects of existing highway use. Changes to the noise dynamics will occur along the haul route as well. The actual effects of these changes to the sound regime on listed species are discussed in detail in the Effects to the Species section of this biological opinion.

Excavation of fill material at Oil Well Hill may require the use of explosives. The number and frequency of charges will be determined by the contractor. The charges will be set below ground to fracture and loosen rock; above-ground use is not anticipated.

Excavation will remove portions of the cut slope on the east side of the existing highway and establish a new cut slope a maximum of 183 meters (600 feet) east of the highway. Caltrans anticipates that these changes will result in minimal alteration of the sound regime within the remaining spotted owl habitat.

Night work is proposed at the excavation site to reduce the cost and time period for construction. Limiting the excavation activities to daylight hours would extend the duration of construction from 2 years to a total of 4 years, and are anticipated to increase costs by approximately $5 million per year of extension (Dave Kelley, Caltrans, pers. comm., as cited in BA).

The area where this fill material would be extracted is currently covered by forested habitat, primarily of the Douglas-fir series. As indicated above, up to 40 acres of forest habitat may be removed to allow the extraction of fill material, although this figure may be reduced to less than 20 acres should substantial modifications be made to the project design. No provisions are identified to reestablish forest habitat on the excavation site due to the permanent removal of suitable topsoil during bypass construction, and the potential use of some of the excavation area for future highway expansion. However, some vegetation reestablishment, including grasses, herbs, and shrubs, is likely as a result of natural colonization. This natural colonization is not expected to result in the establishment of forest habitat in the foreseeable future.

Caltrans anticipates that no disposal sites are needed for this project, as no excess fill material will be generated.

Minimization Measures

Caltrans proposes the following minimization measures at the excavation site to minimize adverse effects:

- The amount of fill material will be minimized to that necessary to complete the proposed project.
- During all timber clearing operations at the proposed Oil Well Hill excavation site, monitoring for the presence of spotted owls will be conducted by a Service-approved biologist to assess potential adverse effects to roosting or nesting adults, their eggs, or juvenile spotted owls. If spotted owls are found on or within 0.8 km (0.5 mile) of the borrow site during timber clearing, Caltrans will consult with the Service immediately to develop a strategy for minimizing impacts to the species.
- All equipment will have sound control devices that are no less effective than those provided by the manufacturer of the equipment.
- All equipment will be operated and maintained to minimize noise generation, and no equipment will have unmuffled exhaust systems.
- Acoustic barriers will be installed around all stationary construction noise sources.
- All large trees that can be avoided will be protected.

- During each construction season, the contractor will limit the removal of vegetation to those portions of the borrow site necessary to provide fill material for that season's construction needs.

Appropriate Best Management Practices (BMP's) would be implemented to minimize impacts to spotted owls and other sensitive resources in the area, and could include: Preservation of Existing Vegetation; Hydroseeding (where feasible); Silt Fencing; Sandbag Barriers; Stabilized construction Entrances/Exits; Material Delivery and Storage; Stockpile Management; Spill Prevention and Control; Solid Waste Management; Hazardous Waste Management; and Sanitary/Septic Waste Management (BMP descriptions are attached as Appendix G of the BA).

A 2-year protocol-level survey will be conducted prior to the start of construction to determine the status of spotted owls in the vicinity of the borrow site prior to excavation. Surveys are anticipated to occur during the years 2007 and 2008. Survey results will be provided to the Service each year upon completion of each survey. If spotted owls are found nesting within 0.8 km (0.5-mile) of the borrow site, Caltrans will reinitiate consultation with the Service to develop a strategy for minimizing adverse impacts.

Conservation Measures

When used in the context of the Act, "conservation measures" represent actions pledged in the project description that the action agency will implement to further the recovery of the species under review. Caltrans is not proposing to include any conservation measures as part of the proposed action.

Action Area

The regulations governing section 7 consultation define "action area" as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). Delineating the analysis area enables the Service to more fully understand the cumulative, interrelated, and interdependent effects of the action within a more appropriate landscape context.

The action area for this proposed action is located in a rural area of Mendocino County, California in the Coast Range Mountains east and north of the community of Willits. The action area includes the existing roadway of U.S. Highway 101 through Willits, as well as the proposed new alignment of the highway as described in planning alternative Modified J1T. The action area also includes the proposed site of fill material excavation adjacent to and east of the highway alignment north of Willits on the grade known as Oil Well Hill.

Areas to be directly affected by the proposed project include the existing road alignment, the proposed new road alignment, and all newly created road cuts, roadbed fills, shoulders, and turnouts. Further, the action area includes all areas affected by the extraction of fill material on the proposed excavation site adjacent to the existing highway on Oil Well Hill. This portion of the action area is also referred to as the "construction footprint".

The action area also extends into a band of natural habitat immediately adjacent to both sides of the road, to a distance of up to one-half mile. This portion of the action area may be subject to elevated sound levels generated by the construction activities, including blasting, heavy machinery, and other sources that have a potential to adversely affect listed species.

STATUS OF THE SPECIES

NORTHERN SPOTTED OWL

Legal Status

The Service listed the northern spotted owl under the Act as a threatened species on June 26, 1990, due to widespread habitat loss across the entirety of its range and the inadequacy of existing regulatory mechanisms to provide for its conservation (USFWS 1990b).

Life History

Taxonomy

The northern spotted owl is one of three subspecies currently recognized by the American Ornithologists' Union, and is the subspecies with the most northerly distribution. The taxonomic separation of these three subspecies is supported by genetic (Barrowclough and Gutiérrez 1990), morphological (Gutiérrez et al. 1995) and biogeographic information (Barrowclough and Gutiérrez 1990). More detailed accounts of the taxonomy, ecology, and reproductive characteristics of the spotted owl are found in the 1987 and 1990 Status Reviews (USFWS 1987, 1990a); the 1989 Status Review Supplement (USFWS 1989); the Interagency Scientific Committee (ISC) Report (Thomas et al. 1990); the Forest Ecosystem Management Assessment Team (FEMAT) Report (Thomas and Raphael 1993); the final rule designating the spotted owl as a threatened species (USFWS 1990b); and the Scientific Evaluation of the Status of the Northern Spotted Owl (Courtney et al. 2004).

Physical Description

The northern spotted owl, the largest of the three subspecies of spotted owl, is medium sized, approximately 46-48 cm in length and 490-850 g in weight (Gutiérrez et al. 1995). The body is dark brown, with a barred tail and white spots on the head and breast. A prominent facial disk surrounds dark brown eyes. Three age classes are distinguishable, based on plumage characteristics (Forsman 1981, Moen et al. 1991). The spotted owl closely resembles the barred owl (*S. varia*), a congeneric species with which it occasionally hybridizes (Kelly et al. 2003). Hybrids exhibit characteristics of both species (Hamer et al. 1994).

Current and Historical Range

The current range and distribution of the spotted owl extends from southern British Columbia through western Washington, Oregon, and California, as far south as Marin County (USFWS 1990a). The southeastern boundary of its range is the Pit River area of Shasta County,

California. The range of the spotted owl is partitioned into 12 physiographic provinces (provinces), based upon recognized landscape subdivisions exhibiting different physical and environmental features (Thomas et al. 1993). These provinces are distributed across the range as follows: four provinces in Washington (Washington Cascades East, Olympic Peninsula, Washington Cascades West, Western Lowlands); five provinces in Oregon (Oregon Coast Range, Willamette Valley, Oregon Cascades West, Oregon Cascades East, Klamath Mountains); and three provinces in California (California Coast, California Klamath, California Cascades). The current range of the spotted owl is similar to its historical range where forested habitat still exists. The relatively contiguous distribution is influenced by the natural insularity of habitat patches within the geographic provinces and by natural and man-caused fragmentation of vegetation. The spotted owl is extirpated or rare in some areas within its historic range, such as southwestern Washington and British Columbia. Timber harvest activities have eliminated, reduced or fragmented spotted owl habitat sufficiently to decrease overall population densities across its range, particularly within the coastal provinces where habitat reduction has been concentrated (Thomas and Raphael 1993).

Behavior

Spotted owls are territorial. However, home ranges of adjacent pairs may overlap (Forsman et al. 1984, Solis and Gutiérrez 1990), which suggests that the area defended is smaller than the areas used for foraging. Territorial defense is primarily effected by hooting, barking and whistle type calls.

Spotted owls are monogamous and usually form long-term pair bonds. "Divorces" occur but are relatively uncommon. There are no known examples of polygyny in this species, although associations of three or more birds have been reported (Gutiérrez et al. 1995).

Habitat Relationships

Home Range

Spotted owl home range size varies by province. Home range generally increases from south to north, which is likely in response to decreasing habitat quality (USFWS 1990a). Home range size is linked to habitat type, availability, and abundance of prey (Zabel et al. 1995).

Based on available radio-telemetry data (Thomas et al. 1990), the Service estimated median annual home range size for the spotted owl by province. Because the actual configuration of the home range is rarely known, and may change from year to year, a circle representative of the median home range size approximates the provincial home range. The circle centers upon a spotted owl activity center, with an area approximating the provincial median annual home range. For example, estimated home range area varies from 3,340 acres (based on a 1.3-mile radius area) in California to 14,271 acres (based on a 2.7-mile radius circle) in Washington. The Service approximates the area most heavily used by spotted owls during the nesting season, identified as the core area, by a 0.7-mile-radius circle (985 acres). The nest tree, location of pre-fledged juveniles, or most significant location of the pair determines the center of the circle. Spotted owls in northern California focused their activities in core areas that ranged from about

167 to 454 acres, with a mean of about 409 acres; approximately half the area of the 0.7-mile radius circle (Bingham and Noon 1997). Spotted owls maintain smaller home ranges during the breeding season and often dramatically increase their home range size during fall and winter (Forsman et al. 1984, Sisco 1990).

Although differences exist in natural stand characteristics that influence provincial home range size, habitat loss and forest fragmentation caused by timber harvest effectively reduce habitat quality in the home range. A reduction in the acreage of suitable habitat results in a reduction in spotted owl abundance and nesting success (Bart and Forsman 1992, Bart 1995).

Habitat Use

Forsman et al. (1984) report that spotted owls have been observed in the following forest types: Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), grand fir (*Abies grandis*), white fir (*Abies concolor*), ponderosa pine (*Pinus ponderosa*), Shasta red fir (*Abies magnifica shastensis*), mixed evergreen, mixed conifer hardwood (Klamath montane) and redwood (*Sequoia sempervirens*). Use of these types coincides with appropriate forest structure (see below). In parts of the Oregon Coast Range, spotted owls have been recorded in pure hardwood stands (Glenn et al. 2004). In California, spotted owls are found from near sea level in coastal forests to approximately 2130 m (7000 ft) in the Cascades (Gutiérrez 1996). The upper elevation limit at which spotted owls occur decreases with increasing latitude in Oregon and Washington (Lint et al. 2005). In all areas, the upper elevation limit at which spotted owls occur corresponds to the transition to subalpine forest, which is characterized by relatively simple structure and severe winter weather (Gutiérrez 1996).

Roost sites selected by spotted owls have more complex vegetation structure than forests generally available to them (Barrows and Barrows 1978, Forsman et al. 1984, Solis and Gutiérrez 1990). These habitats are usually multi-layered forests having high canopy closure and large diameter trees in the overstory.

Spotted owls nest almost exclusively in trees. Like roosts, nest sites are found in forests having complex structure dominated by large diameter trees (Forsman et al. 1984, Hershey et al. 1998). Even in forests that have been previously logged, spotted owls select forests having a structure (i.e., larger trees, greater canopy closure) different than forests generally available to them (Folliard 1993, Buchanan et al. 1995, Hershey et al. 1998).

Foraging habitat is the most variable of all habitats used by territorial spotted owls (Thomas et al. 1990). Descriptions of foraging habitat have ranged from complex structure (Solis and Gutiérrez 1990) to forests with lower canopy closure and smaller trees than forests containing nests or roosts (Gutiérrez 1996).

Habitat Selection

Spotted owls generally rely on the structures and characteristics of older forested habitats for nesting, roosting, foraging, and dispersal. These characteristics include (Thomas et al. 1990, USFWS 1990a):

- A multi-layered, multi-species canopy dominated by large overstory trees;
- Moderate to high canopy closure;
- A high incidence of trees with large cavities and other types of deformities;
- Numerous large snags;
- An abundance of large, dead wood on the ground; and
- Open space within and below the upper canopy for spotted owls to fly.

Forested stands with high canopy closure also provide thermal cover (Weathers et al. 2001), as well as protection from predation. Recent landscape-level analyses in portions of the Klamath Province suggest that a mosaic of late-successional habitat interspersed with other vegetation types may benefit spotted owls more than large, homogeneous expanses of older forests (Zabel et al. 2003, Franklin et al. 2000, Meyer et al. 1998). In redwood forests along the coast range of California, spotted owls may be found in younger forest stands with structural characteristics of older forests (Thomas et al. 1990). However, spotted owls do not generally appear to select for stands of intermediate or younger ages (Solis and Gutiérrez 1990, Thomas et al. 1990).

In mixed conifer forests of the East Cascades province in Washington, 27 percent of nest sites were in old-growth forests, 57 percent in the understory reinitiation phase of stand development, and 17 percent in the stem exclusion phase (Buchanan et al. 1995). In the West Cascades province in Oregon, 50 percent of spotted owl nests were in late-successional (greater than 80 years old) or old-growth stands, and none were found in stands less than 40 years old (Irwin et al. 2000).

Ward (1990) reported that spotted owls foraged in areas that had lower variance in prey densities (prey were more predictable in occurrence) within older forests and near ecotones of old forest and brush seral stages. Zabel et al. (1995) showed that spotted owl home ranges are larger where flying squirrels (*Glaucomys sabrinus*) are the predominant prey. Conversely, home ranges are smaller where woodrats (*Neotoma* spp.) are the predominant prey.

In the Western Washington Cascades, spotted owls used mature/old forests dominated by trees greater than 50 cm diameter-at-breast height (dbh) with greater than 60 percent canopy closure more often than expected for roosting during the non-breeding season. They used young forest (trees 20-50 cm dbh with greater than 60 percent canopy closure) less often than expected based on availability (Herter et al. 2002).

Reproductive Biology

Adult spotted owls exhibit high annual survival rates and are relatively long-lived (USFWS 1992a and Anthony et al. 2004). Spotted owls do not typically reach sexual maturity until after 2 years (Miller et al. 1985 and Thomas et al. 1990). Adult females lay an average of two eggs per clutch, with a range of one to four eggs. Spotted owl pairs typically do not nest every year, nor are nesting pairs successful every year (USFWS 1990a). The small clutch size, temporal variability in nesting success, and somewhat delayed maturation all contribute to the relatively low fecundity of this species (Gutiérrez 1996).

In the Douglas-fir region, nest sites are usually located within stands of old-growth and late-successional forest dominated by Douglas-fir, and they contain structures such as cavities, broken tree tops, and mistletoe (*Arceuthobium* spp.) brooms (Forsman et al. 1984, Blakesley et al. 1992, LaHaye and Gutiérrez 1999). In general, courtship and nesting behavior begins in February to March with nesting occurring from March to June; however, timing of nesting and fledging varies with latitude and elevation (Forsman et al. 1984). After young fledge from the nest, they depend on their parents until they are able to fly and hunt on their own. Parental care continues post-fledging into September (USFWS 1990b), and sometimes into October (Forsman et al. 1984). During this time, the adults may not roost with their young during the day, but they respond to begging vocalizations by bringing food to the young (Forsman et al. 1984).

Some spotted owls, known as "floaters", do not demonstrate territorial behavior, but either remain as residents within the territory of a pair or move among territories (Gutiérrez 1996). Floaters have special significance in spotted owl populations because they may buffer the territorial population from decline (Franklin 1992). Little is known about floaters other than that they exist and typically do not respond to calls as vigorously as territorial birds (Gutiérrez 1996).

Dispersal Biology

Natal dispersal of spotted owls from Oregon and Washington typically begins during mid- to late-September, and shows remarkable synchrony across broad areas (Forsman et al. 2002). When data from many dispersing spotted owls are pooled, the direction of dispersal away from the natal site appears random (Miller 1989, Ganey et al. 1998, Forsman et al. 2002). Dispersal direction from individual territories, however, may be non-random in response to the local distribution of habitat and topography (Forsman et al. 2002). Natal dispersal occurs in stages, with juvenile spotted owls settling in temporary home ranges between bouts of dispersal (Forsman et al. 2002). Median natal dispersal distance is about 10 miles for males and 15.5 miles for females (Forsman et al. 2002, see also Miller 1989, Ganey et al. 1998). Successful dispersal of juvenile spotted owls may depend on their ability to locate unoccupied suitable habitat in close proximity to other occupied sites (LaHaye et al. 2001).

Breeding dispersal occurs among a small proportion of adult spotted owls; these movements were more frequent among females and unmated individuals (Forsman et al. 2002). Breeding dispersal distances were shorter than natal dispersal distances and are apparently random in direction (Forsman et al. 2002).

Large non-forested valleys are apparent barriers to natal and breeding dispersal; forested foothills between valleys may provide the only opportunities for dispersal (Forsman et al. 2002). The degree to which extensive water bodies, such as the Columbia River estuary and Puget Sound, function as barriers to dispersal is unclear. Analysis of genetic structure of spotted owl populations suggests adequate rates of gene flow may occur across the Puget Trough between the Olympic Mountains and Washington Cascades, and across the Columbia River between the Olympic Mountains and the Coast Range of Oregon (Haig et al. 2001). Both telemetry and genetic studies indicate inbreeding is rare.

Dispersing juvenile spotted owls experience high mortality rates, exceeding 70 percent during their first year in some studies (USFWS 1990b, Miller 1989). Leading known causes of mortality are starvation, predation, and accidents (Miller 1989, USFWS 1990b, Forsman et al. 2002). Parasitic infection may contribute to these causes of mortality (Forsman et al. 2002). In a study on habitat use by dispersing juvenile spotted owls in the Oregon Coast Range, Klamath and Western Oregon Cascades Provinces (Miller et al. 1997), mature and old-growth forest were used slightly more than expected, compared to availability, during the transient phase and nearly twice its availability during the colonization phase. Dispersing juvenile spotted owls used closed pole-sapling-sawtimber habitat roughly in proportion to availability in both phases; they used open sapling and clearcuts less than expected based on availability during colonization.

Food Habits

Spotted owls are mostly nocturnal (Forsman et al. 1984), but may forage opportunistically during the day (Laymon 1991, Sovern et al. 1994). Composition of prey in the spotted owl's diet varies regionally, seasonally, annually, and locally, likely in response to prey availability (Laymon 1988, Ganey 1992, Verner et al. 1992, Carey 1993, Ward and Block 1995, Forsman et al. 2001). Northern flying squirrels and woodrats are usually the predominant prey, in biomass and in frequency (Barrows 1980; Forsman et al. 1984; Ward 1990; Bevis et al. 1997; Forsman et al. 2001, 2004), with a clear geographic pattern of diet, paralleling differences in habitat (Thomas et al. 1990). Northern flying squirrels are generally the dominant prey item in the more mesic Douglas-fir/western hemlock forests characteristic of the northern portion of the range. Woodrats are generally the most abundant prey item in the drier mixed conifer/mixed evergreen forests typically found in the southern portion of the range (Forsman et al. 1984, Thomas et al. 1990, Ward et al. 1998, reviewed by Courtney et al. 2004). These prey items were found to be approximately equally abundant in the southwest interior of Oregon (Forsman et al. 2001, 2004).

Other prey species, such as the red tree vole (*Arborimus longicaudus*), red backed voles (*Clethrionomys gapperi*), mice, rabbits and hares, birds, and insects, may be seasonally or locally important (reviewed by Courtney et al. 2004). For example, Rosenberg et al. (2003) showed a strong correlation between annual reproductive success of spotted owls (number of young per territory) and abundance of deer mice (*Peromyscus maniculatus*) ($r^2 = 0.68$), despite the fact they only made up 1.6±0.5 percent of the biomass consumed. However, it is unclear if the causative factor behind this correlation was prey abundance or a synergistic response to weather (Rosenberg et al. 2003). Ward (1990) also noted that mice were more abundant in areas selected for foraging by owls. Nonetheless, spotted owls deliver larger prey to the nest and eat smaller food items, perhaps to reduce foraging energy costs. Therefore, managers should not underestimate the importance of smaller prey items such as *Peromyscus* in the spotted owl diet (Forsman et al. 1984, 2001, 2004).

Population Dynamics

The spotted owl is a relatively long-lived species, produces few but relatively large young, invests significantly in parental care, experiences later or delayed maturity, and exhibits high adult survivorship. The spotted owl's long reproductive life span allows for some eventual recruitment of offspring, even if recruitment does not occur each year (Franklin et al. 2000).

Annual variation in population parameters for spotted owls has been linked to environmental influences at various life history stages (Franklin et al. 2000). In coniferous forests, mean fledgling production of the California spotted owl (*S. o. occidentalis*), a closely related subspecies, was higher when minimum spring temperatures were higher (North et al. 2000), a relationship that may be a function of increased prey availability. Across their range, spotted owls have previously shown a pattern of alternating years of high and low reproduction (Franklin et al. 1999). For reasons unknown, highest reproduction has occurred during even-numbered years. Annual variation in breeding may relate to weather conditions and fluctuation in prey abundance (Zabel et al. 1996). Forsman et al (1996) provided the results of multiple studies showing the effects of weather, specifically temperature and precipitation, on northern spotted owl productivity.

A variety of factors may regulate spotted owl population levels. These factors may be density-dependent (e.g., habitat quality, habitat abundance) or density-independent (e.g., weather). Interactions may occur among factors. For example, severe weather may prove more detrimental to individual spotted owls in fragmented or otherwise poor quality habitat than those living in high quality, contiguous habitat. As habitat quality decreases, density-independent factors may have more influence on variation in survival, which tends to increase variation in the rate of population growth (Franklin et al. 2000). A consequence of this pattern is that, at some point, lower habitat quality may cause the population to be unregulated (i.e., have negative growth) and decline to extinction (Franklin et al. 2000).

Threats

Reasons for Listing

The Service listed the spotted owl as threatened throughout its range "due to loss and adverse modification of suitable habitat as a result of timber harvesting and exacerbated by catastrophic events such as fire, volcanic eruption, and wind storms" (USFWS 1990a). More specifically, significant threats to the spotted owl included low or declining populations; limited or declining habitat; fragmented or isolated distribution of habitat and populations; isolation of provinces; predation and competition; lack of coordinated conservation measures; and vulnerability to natural disturbance (USFWS 1992a). The Service characterized the threats within each province as severe, moderate, low, or unknown. Declining habitat was recognized as a severe or moderate threat to the spotted owl in all 12 provinces, isolation of provinces within 11 provinces, and declining populations in 10 provinces. Consequently, these three factors represented the greatest concern range-wide to the conservation of the spotted owl. Limited habitat was considered a severe or moderate threat in nine provinces, and low populations a severe or moderate concern in eight provinces, suggesting that these factors are a concern throughout the majority of the range. The Service rated the vulnerability to natural disturbances as low in five provinces.

The degree to which predation and competition poses a threat to the spotted owl was unknown in more provinces than any of the other threats, and indicates a need for additional information. Few empirical studies exist to confirm that habitat fragmentation contributes to increased levels of predation on spotted owls (Courtney et al. 2004). However, great horned owls (*Bubo virginianus*), an effective predator on spotted owls, are closely associated with fragmented

forests, openings, and clearcuts (Johnson 1992, Laidig and Dobkin 1995). As mature forest harvest continues, great horned owls may colonize fragmented forests, thereby increasing spotted owl vulnerability to predation.

New Threats

Barred Owls

Since the listing of the spotted owl under the Act, new information suggests that hybridization with the barred owl is less of a threat (Kelly and Forsman 2004) and competition with the barred owl is a greater threat than previously anticipated (Courtney et al. 2004). Since 1990, the barred owl has expanded its range south into Marin County, California and the central Sierra Nevada Mountains, such that it is now roughly coincident with the range of the northern spotted owl and the California spotted owl (Courtney et al. 2004). Further, notwithstanding the likely bias in survey methods towards underestimating actual barred owl numbers (Courtney et al. 2004), barred owl populations appear to be increasing throughout the Pacific Northwest, particularly in Washington and Oregon (Zabel et al. 1996, Dark et al. 1998, Wiedemeier and Horton 2000, Kelly et al. 2003, Pearson and Livezey 2003, Anthony et al. 2004a). Barred owl numbers now may exceed spotted owl numbers in the northern Washington Cascades (Kuntz and Christopherson 1996) and British Columbia (Dunbar et al. 1991) and appear to be approaching spotted owl numbers in several other areas, including Redwood National and State Parks in California (Schmidt 2003). Barred owl populations in the Pacific Northwest appear to be self-sustaining based on current density estimates and apparent distribution (Courtney et al. 2004).

Barred owls apparently compete with spotted owls through a variety of mechanisms: prey overlap (Hamer et al. 2001), habitat overlap (Hamer et al. 1989, Dunbar et al. 1991, Herter and Hicks 2000, Pearson and Livezey 2003), and agonistic encounters (Leskiw and Gutiérrez 1998, Pearson and Livezey 2003). New information on encounters between barred owls and spotted owls comes primarily from anecdotal reports that corroborate initial observations that barred owls react more aggressively towards spotted owls than vice versa (Courtney et al. 2004). Limited circumstantial evidence exists documenting barred owl predation on spotted owls (Leskiw and Gutiérrez 1998, Johnston 2002). Information collected to date indicates that encounters between these two species tend to be agonistic in nature, and that the outcome is unlikely to favor the spotted owl (Courtney et al. 2004).

Although biologists initially thought barred owls were more closely associated with early successional forests than spotted owls (Hamer 1988, Iverson 1993), recent studies indicate that barred owls utilize a broader range of forest successional stages than do spotted owls (Courtney et al. 2004). The only study comparing spotted owl and barred owl food habits in the Pacific Northwest indicated that barred owl diets overlapped strongly (greater than 75 percent) with spotted owl diets (Hamer et al. 2001). However, barred owl diets were also more diverse than spotted owl diets, including species associated with riparian and other moist habitats, as well more terrestrial and diurnal species.

Evidence that barred owls are causing the displacement of spotted owls is largely indirect, based primarily on retrospective examination of long-term data collected on spotted owls. Correlations

between local spotted owl declines and barred owl increases have been noted in the northern Washington Cascades (Kuntz and Christopherson 1996, Herter and Hicks 2000, Pearson and Livezey 2003), on the Olympic peninsula (Wiedemeier and Horton 2000; Gremel 2000, 2003), in the southern Oregon Cascades Johnston 2002), and in the coastal redwood zone in California (Schmidt 2003).

Spotted owl occupancy was significantly lower in spotted owl territories where barred owls were detected within 0.8 km (0.5 mi) of the spotted owl territory center than in spotted owl territories where no barred owls were detected (Kelly et al. 2003). Kelly et al. (2003) found spotted owl occupancy to be significantly lower ($P < 0.001$) when barred owls detections occurred within 0.8 km of the spotted owl territory center. Occupancy was "only marginally lower" ($P = 0.06$) if barred owls were located more than 0.8 km from spotted owl territory centers. In a Roseburg, Oregon, study area, 46 percent of spotted owls moved more than 0.8 km, and 39 percent of spotted owls were not relocated in at least two years, after barred owls were detected within 0.8 km of the territory center. Observations provided by Gremel (2000) from the Olympic National Park are consistent with those of Kelly et al. (2003); he documented significant displacement of spotted owls following barred owl detections "coupled with elevational changes of northern spotted owl sites on the east side of the Park" (Courtney et al. 2004). Pearson and Livezey (2003) reported similar findings on the Gifford Pinchot National Forest where unoccupied spotted owl sites were characterized by significantly more barred owl sites within 0.8-km, 1.6-km, and 2.9-km from the territory center than in occupied spotted owl sites.

In two study areas in Washington, investigators found relatively high numbers of territories, previously occupied by spotted owls, that are now apparently not occupied by either spotted or barred owls. Forty-nine of 107 territories in the Cascades (Herter and Hicks 2000), and 23 of 33 territories in the Olympic Experimental State Forest (Wiedemeier and Horton 2000) were no longer occupied by either species. Since the habitat was still present in these vacant territories, some factor or factors may be reducing habitat suitability or local abundance of both species. For example, weather conditions could cause prolonged declines in abundance of both species (Franklin et al. 2000). Because spotted owls have been reported anecdotally to give fewer vocalizations when barred owls are present, it is possible that these supposed vacant territories are still occupied by spotted owls that do not respond to surveys. Likewise, survey protocols for spotted owls are believed to under-detect barred owls (Courtney et al. 2004). Preliminary results from Olson et al. (2005) suggest that barred owl presence had a negative effect on spotted owl detection probabilities. Thus, some proportion of seemingly vacant territories may be an artifact of reduced detection probability. Nonetheless, previously occupied territories apparently vacant of both *Strix* species suggests that factors other than barred owls alone are contributing to declines in spotted owl abundance and territorial occupancy (Courtney et al. 2004).

Two studies (Kelly 2001, Anthony et al. 2004a) attempted to determine whether barred owls affected fecundity of spotted owls in the long-term demographic study areas. Neither study was able to clearly do so, although the Wenatchee and Olympic demographic study areas showed possible effects (Anthony et al. 2004a). However, both studies described the shortfalls of their methods to adequately test for this effect. Iverson (2004) reported no effect of barred owl presence on spotted owl reproduction, but his results could have been influenced by small sample size (Livezey, in review). Barred owls had a negative effect on spotted owl survival on

the Wenatchee and Olympic study areas and possibly an effect on the Cle Elum study area (Anthony et al. 2004a). Olson et al. (in press) found a significant but weak negative effect of barred owl presence on spotted owl reproductive output but not on survival at a Roseburg, Oregon study area (Courtney et al. 2004).

Regarding interactions between barred and spotted owls, the uncertainties associated with methods, analyses, and possible confounding factors, such as the effects of past habitat loss and weather, warrant caution in interpretation of the patterns emerging from the data and information collected to date (Courtney et al. 2004). Further, data are currently lacking that would allow accurate prediction of how barred owls will affect spotted owls in the southern, more xeric, provinces in the California and Oregon Klamath region. In spite of these uncertainties, the preponderance of the evidence gathered thus far is consistent with the hypothesis that barred owls play some role in spotted owl population decline, particularly in Washington, portions of Oregon, and the northern coast of California (Courtney et al. 2004).

Although the barred owl currently constitutes a significantly greater threat to the northern spotted owl than originally thought at the time of listing (Courtney et al. 2004), it is unclear whether forest management influences the outcome of interactions between species (Courtney et al. 2004, summarized by Lint et al. 2005). The most recent summaries compiled on the barred owl (Courtney et al. 2004, Lint et al. 2005, USDI Fish and Wildlife Service 2004) do not provide recommendations on how to deal with this potential threat. In their status review of the northern spotted owl, the Service (U.S. Fish and Wildlife Service 2004) did not consider the increased risk to northern spotted owl populations due to the uncertainties surrounding barred owls and other factors sufficient to reclassify the subspecies as endangered at this time. Because it was not clear if additional protection of northern spotted owl habitat would reverse the population trends in some portions of the species' range, and because the results of their study did not identify the causes of those trends, Anthony et al. (2004) declined to make any recommendations to alter the current NWFP management strategy.

Wildfire

In 1994, the Hatchery Complex wildfires burned 43,480 acres (17,603 ha) in the Wenatchee National Forest, eastern Cascades, Washington, affecting six spotted owl activity centers (Gaines et al. 1997). Spotted owl habitat within a 2.9 km radius of the affected activity centers was reduced by 8 to 45 percent (mean = 31 percent) due to direct effects of the fire and by 10 to 85 percent (mean = 55 percent) due to delayed mortality of fire-damaged trees and insect caused tree mortality. Spotted owl habitat loss was greater on mid to upper slopes (especially south-facing) than within riparian areas or on benches (Gaines et al. 1997). Direct mortality of spotted owls was assumed to have occurred at one site. Data were too sparse for reliable comparisons of site occupancy or reproductive output between sites affected by the fires and other sites on the Wenatchee National Forest.

Two wildfires burned in the Yakama Indian Reservation, eastern Cascades, Washington, in 1994, affecting home ranges of two radio-tagged spotted owls (King et al. 1997). Although the amount of home ranges burned was not quantified, spotted owls were observed using areas that received

low and medium intensity burning. No direct mortality of spotted owls was observed, even though thick smoke covered several spotted owl site centers for a week.

The short-term effects of wildfires on spotted owl demography are an important consideration for resources managers. Bond et al. (2002) examined the demography of spotted owls post wildfire, in which wildfire burned through spotted owl nest and roost sites in varying degrees of severity. Depending on the severity of the burn, wildfires may have relatively little short-term impact on spotted owl demography (i.e., survival, reproduction and site fidelity). In a preliminary study conducted by Anthony et al. (2004) in the Klamath Province of Oregon, their sample of spotted owls appeared to be using a variety of habitat types within the Timbered Rock Fire, including areas that had experienced moderate burning.

At the time of listing there was recognition that catastrophic wildfire posed a threat to the spotted owl (USFWS 1990a). New information suggests fire may be more of a threat than previously thought. In particular, the rate of habitat loss in the relatively dry East Cascades and Klamath provinces has been greater than expected (see "Habitat Trends" below). However, the total amount of habitat affected by wildfires has been relatively small (Lint et al. 2005). We may be able to influence, through silvicultural management, how fire prone forests will burn, and the extent of the fire when the inevitable fire occurs. Such silvicultural efforts are currently being implemented throughout the spotted owl's range, in an attempt to overcome nearly 100 years of effective fire suppression. However, we now recognize that our ability to protect spotted owl habitat and viable populations of spotted owls from these large fires through risk-reduction endeavors is largely uncertain (Courtney et al. 2004). Lint et al. (2005) indicated that the NWFP recognized wildfire as an inherent part of managing spotted owl habitat in certain portions of the range. The repetitive design of the NWFP can help mitigate the risks associated with large-scale fire (Lint et al. 2005).

West Nile Virus (WNV)

WNV has killed millions of wild birds in North America since it arrived in 1999 (McLean et al. 2001, Caffrey 2003, and Marra et al. 2004). Mosquitoes are the primary carriers (vectors) of the virus that causes encephalitis in humans, horses, and birds. Mammalian prey may also play a role in spreading WNV among predators, like spotted owls. Owls and other predators of mice can contract the disease by eating infected prey (Garmendia et al. 2000, Komar et al. 2001). Recent tests of tree squirrels from Los Angeles County, California, found over 70 percent were positive for WNV (R. Carney, pers. comm. 2004, cited in USFWS 2004). One captive spotted owl in Ontario, Canada, contracted WNV and died.

Health officials expect that WNV will eventually spread throughout the area that includes the range of the spotted owl (Courtney et al. 2004), but it is unknown how WNV will ultimately affect spotted owl populations. Susceptibility to infection and mortality rates of infected individuals vary among bird species, and even within groups of species (Courtney et al. 2004). Owls appear to be quite susceptible. Breeding eastern screech owls (*Megascops asio*) in Ohio experienced 100 percent mortality (T. Grubb, pers. comm., cited in Courtney et al. 2004). In contrast, barred owls showed lower susceptibility (B. Hunter, pers. comm., cited in Courtney et al. 2004). Some level of innate resistance may occur (Fitzgerald et al. 2003), which could

explain observations in several species of markedly lower mortality in the second year of exposure to WNV (Caffrey and Peterson 2003). Wild birds also develop resistance to WNV through immune responses (Deubel et al. 2001). The effects of WNV on bird populations at a regional scale have not been large, even for susceptible species (Caffrey and Peterson 2003), perhaps due to the short-term and patchy distribution of mortality (K. McGowan, pers. comm., cited in Courtney et al. 2004) or annual changes in vector abundance and distribution.

Courtney et al. (2004) offer competing propositions for the likely outcome of spotted owl populations being infected by WNV. One proposition is that spotted owls can tolerate severe, short-term population reductions due to WNV, because spotted owl populations are widely distributed and number in the several hundreds to thousands. An alternative proposition is that WNV will cause unsustainable mortality, due to the frequency and/or magnitude of infection, thereby resulting in long-term population declines and extirpation from parts of the spotted owl's current range.

West Nile virus (WNV) has been identified as a potential threat of unknown magnitude to the spotted owl (Courtney et al. 2004), and has the potential to reduce the population numbers beyond the projected decline anticipated under the NWFP (Lint et al. 2005). Thus far, no mortality in wild, northern spotted owls has been recorded. Habitat restoration and recovery for northern spotted owls is anticipated to take decades, due to the long-term regrowth and development of late-successional forest structure. As such, it is too early to evaluate the long-term effectiveness of conservation efforts and regulatory changes in conserving northern spotted owls. However, the WNV threat to the northern spotted owl may not be influenced by habitat management or improvement (USFWS 2004).

Sudden Oak Death

Sudden oak death was recently identified as a potential threat to the spotted owl (Courtney et al. 2004). The fungus-like pathogen *Phytopthora ramorum* that recently invaded from Europe causes this disease, and it is rapidly spreading. At the present time, sudden oak death is found in natural forest stands that include various oak (*Quercus* spp.) species from Monterey County to Humboldt County in California, and has reached epidemic proportions in oak and tanoak (*Lithocarpus densiflorus*) forests along approximately 300 km of that coast (Rizzo et al. 2002). It also occurs near Brookings, Oregon, killing tanoak, and causing dieback of closely associated wild rhododendron (*Rhododendron* spp.) and evergreen huckleberry (*Vaccinium ovatum*) (Goheen et al. 2002). It has been found in several different forest types and at elevations from sea level to over 800 m elevation. It poses a threat of uncertain proportion because of its potential impact on forest dynamics and alteration of key habitat components (i.e., hardwood trees), especially in the southern portion of the spotted owl's range (Courtney et al. 2004). However, the potential for management to address the additive effects of sudden oak death on habitat availability is unknown and substantial uncertainty about its effects mediated against placing too much weight on this factor in the USFWS Five-Year Review Evaluation (USFWS 2004).

Inbreeding Depression, Genetic Isolation, and Reduced Genetic Diversity

The Service did not consider inbreeding and other genetic problems due to small population sizes an imminent threat to the spotted owl at the time of listing. Recent studies show no indication of reduced genetic variation and past bottlenecks in Washington, Oregon, or California (Barrowclough et al. 1999, Haig et al. in press, Henke et al. unpublished). However, in Canada, Harestad (2004) estimated the breeding population to be less than 33 pairs and annual population decline may be as high as 35 percent. Canadian populations may be more adversely affected by issues related to small population size including inbreeding depression, genetic isolation, and reduced genetic diversity (Courtney et al. 2004). Low and persistently declining populations throughout the northern portion of the species range (see "Population Trends" below) may be at increased risk of losing genetic diversity.

Climate Change

Climate change, a potential additional threat to northern spotted owl populations, is not explicitly addressed in the NWFP. Climate change could have direct and indirect impacts on northern spotted owls and their prey. However, the emphasis on maintenance of serial stage complexity and related species diversity in the Matrix under the NWFP should contribute to the resiliency of the federal forest landscape to the impacts of climate change (Courtney et al. 2004).

Based upon a global meta-analysis, Parmesan and Yohe (2003) discussed several potential implications of global climate change to biological systems, including terrestrial flora and fauna. Results indicated that 62 percent of species exhibited trends indicative of advancement of spring conditions. Bird species manifest these trends in earlier nesting activities. Because the spotted owl exhibits a limited tolerance to heat relative to other bird species (Weathers et al. 2001), subtle changes in climate have the potential to affect this species. However, at this time, there is no agreed-upon, objective means to measure that potential.

Conservation Needs of the Northern Spotted Owl

Based on the above assessment of threats, the spotted owl has the following habitat-specific and habitat-independent conservation (i.e., survival and recovery) needs:

Habitat-Specific Needs

- Large blocks of suitable habitat to support clusters or local population centers of spotted owls (e.g., 15 to 20 breeding pairs) throughout the owl's range;

- Suitable habitat conditions and spacing between local spotted owl populations throughout its range to facilitate survival and movement;

- Suitable habitat distributed across a variety of ecological conditions within the spotted owl's range to reduce risk of local or widespread extirpation;

- A coordinated, adaptive management effort to reduce the loss of habitat due to catastrophic wildfire throughout the spotted owl's range, and a monitoring program to clarify whether these risk reduction methods are effective and to determine how owls use habitat treated to reduce fuels; and

- In areas of significant population decline, sustain the full range of survival and recovery options for this species in light of significant uncertainty.

Habitat-Independent Needs

- A coordinated research and adaptive management effort to better understand and manage competitive interactions between spotted and barred owls; and

- Monitoring to better understand the risk that WNV and sudden oak death pose to spotted owls and (for WNV) research into methods that reduce the likelihood or severity of outbreaks in spotted owl populations.

Conservation Strategy

Since 1990, various efforts have addressed the conservation needs of the spotted owl and attempted to formulate conservation strategies based upon these needs, beginning with the ISC's Conservation Strategy (Thomas et al. 1990). Several ensuing efforts continued to use the basic conservation strategy designed by Thomas et al (1990), including:

- The designation of critical habitat (USFWS 1992b),

- The preparation of a Draft Recovery Plan (USFWS 1992a),

- The Scientific Analysis Team report (Thomas et al. 1993),

- The report of the Forest Ecosystem Management Assessment Team (Thomas and Raphael 1993); and

- The Northwest Forest Plan (USDA/USDI 1994a).

Each conservation strategy was based upon the reserve design principles first articulated in the ISC's report, which are summarized as follows.

- Species well distributed across their range are less prone to extinction than species confined to small portions of their range.

- Large blocks of habitat, containing multiple pairs of the species, are superior to small blocks of habitat with only one to a few pairs.

- Blocks of habitat that are close together are better than blocks far apart.

- Habitat that occurs in contiguous blocks is better than habitat that is more fragmented.

- Habitat between blocks is more effective as dispersal habitat if it resembles suitable habitat.

Federal Contribution to Recovery

The NWFP is the current conservation strategy for the spotted owl on federal lands. It is designed around the conservation needs of the spotted owl and based upon the designation of a variety of land-use allocations whose objectives are either to provide for population clusters (i.e., demographic support) or to maintain connectivity between population clusters. Several land-use allocations, including Late-Successional Reserves (LSRs), Managed Late-Successional Areas (MSLAs), Congressionally Reserved Areas (CRAs), Managed Pair Areas, and Reserve Pair Areas, are intended to contribute primarily to supporting population clusters. The remaining land-use allocations, including Matrix, Adaptive Management Areas (AMAs), Riparian Reserves (RRs), Connectivity Blocks, and Administratively Withdrawn Areas (AWAs), provide connectivity among habitat blocks intended for demographic support.

The range-wide system of LSRs set up under the NWFP captures the variety of ecological conditions within the 12 different provinces to which spotted owls are adapted. This design reduces the potential for extinction resulting from large catastrophic events in one or more provinces. Multiple, large LSRs in each province reduce the potential that spotted owls will be extirpated in any individual province and reduce the potential that large wildfires or other large-scale events will eliminate all habitat within an LSR. In addition, LSRs are generally arranged and spaced to ensure a reasonable likelihood that spotted owls disperse among two or more adjacent LSRs. This network of reserves reduces the likelihood that catastrophic events will substantially reduce habitat connectivity and population dynamics among provinces.

Although FEMAT scientists predicted that spotted owl populations would decline in the Matrix over time, they expected populations to stabilize and eventually increase within LSRs as habitat conditions improved over the next 50 to 100 years (Thomas and Raphael 1993, USDA/USDI 1994a and 1994b). Based on the results of the first decade of monitoring, the NWFP's authors cannot determine if the declining population trend will be reversed because not enough time has passed to provide the necessary measure of certainty (Lint et al. 2005). However, the results from the first decade of monitoring do not provide any reason to depart from the objective of habitat maintenance and restoration as described under the NWFP (Lint et al. 2005). Other stressors, some already in action (e.g., barred owl), and some yet unrealized (West Nile virus), complicate the conservation of the spotted owl. Currently, the new reports generated on the science of the spotted owl offer few management recommendations to address the emerging threats facing the owl. The redundancy and flexibility of the system of NWFP land use allocations may prove to be the most appropriate strategy in responding to these unexpected challenges (Courtney et al. 2004).

Under the NWFP, the agencies anticipated a decline of northern spotted owl populations during the first decade of implementation. Recent reports (Courtney et al. 2004, Anthony et al. 2004a) identified greater than expected northern spotted owl declines in Washington and northern

portions of Oregon, and more stationary populations in southern Oregon and northern California. The reports found no direct correlation between habitat conditions and changes in northern spotted owls at the metapopulation scale. In addition, no evidence currently exists to suggest that dispersal habitat is currently limiting (Courtney et al. 2004, Lint et al. 2005). Even with the population decline, Courtney et al (2004) noted that there is little reason to doubt the effectiveness of the core of the NWFP conservation strategy.

According to the Service (U.S. Fish and Wildlife Service 2004), the current scientific information, including information showing northern spotted owl population declines, indicates that the spotted owl continues to meet the definition of a threatened species. That is, populations are still relatively numerous over most of its historic range, which suggests that the threat of extinction is not imminent, and that the subspecies is not endangered even in the northern part of its range where greater than expected population declines were documented.

Conservation Efforts on Non-Federal Lands

FEMAT noted that limited Federal ownership in some areas constrained the ability to form an extensive reserve network to meet conservation needs of the spotted owl. Thus, non-federal lands were an important contribution to the range-wide goal of achieving conservation and recovery of the spotted owl. The Service's primary expectations for private lands are their contributions to demographic support (pair or cluster protection) to and/or their connectivity with Federal lands. In addition, forest practice rules in effect in each state govern timber harvest, and provide protection of spotted owls and/or their habitat to varying degrees.

Washington: In 1993, the State Forest Practices Board adopted rules (Forest Practices Board 1996) that would "contribute to conserving the spotted owl and its habitat on non-Federal lands" based on recommendations from a Science Advisory Group which identified important non-Federal lands and recommended roles for those lands in spotted owl conservation (Hanson et al. 1993, Buchanan et al. 1994). Spotted owl-related Habitat Conservation Plans (HCPs) in Washington generally provide both demographic and connectivity support as recommended in these reports and the draft recovery plan (USFWS 1992a).

Oregon: The Oregon Forest Practices Act provides for protection of 70-acre core areas around known spotted owl nest sites, but it does not provide for protection of spotted owl habitat beyond these areas (ODF 2000). In general, no large-scale strategy or mechanism for spotted owl habitat protection currently exists for non-federal lands in Oregon. The four spotted owl-related HCPs currently in effect in Oregon address relatively few acres of land; however, they will provide some nesting habitat and connectivity over the next few decades.

California: In 1990, the State amended the State Forest Practice Rules (FPRs), which govern timber harvest on non-federal lands, to require surveys for spotted owls in suitable habitat and to provide protection around activity centers (CDF 2001). Under the FPRs, no timber harvest plan (THP) can be approved if it is likely to result in incidental take of Federally listed species, unless authorized by a federal HCP. The California Department of Fish and Game initially reviewed all THPs to ensure that take was not likely to occur; the Service took over that review function in 2000. Several large industrial owners operate under Spotted Owl Management Plans that have

been reviewed by the Service; the plans specify basic measures for spotted owl protection. The Service has approved three HCPs that authorize take of spotted owls. Implementation of these plans will provide for spotted owl demographic and connectivity support to NWFP lands.

Current Condition of the Spotted Owl

The current condition of the species incorporates the effects of all past human and natural activities or events that have led to the present-day status of the species and its habitat (USFWS and NMFS 1998).

Range-wide Habitat and Population Trends

Habitat Trends

The Service has used information provided by the Forest Service, Bureau of Land Management, and National Park Service to update the habitat baseline conditions on Federal lands for spotted owls on several occasions since the listing of the spotted owl in 1990. The estimated 7.4 million acres used for the NWFP in 1994 (USDA/USDI 1994a) was believed to be representative of the general amount of spotted owl habitat on these lands. This baseline was used to track relative changes over time in the subsequent analyses. The plan's effectiveness monitoring program resulted in the production, in 2005, of a new map depicting suitable spotted owl habitat throughout the species' range (Lint et al. 2005). However, this new habitat map is not yet available for use in tracking individual actions. Therefore, the following analyses indicate changes to the baseline condition established in 1994. The Service is beginning a process to evaluate the map for future use of tracking habitat trends.

Currently, there are no reliable estimates of spotted owl habitat on other land ownerships. Consequently, consulted-on acres can be tracked but not evaluated in the context of change with respect to a reference condition on non-federal lands. However, the production of the monitoring program habitat map provides an opportunity to evaluate trends in non-federal habitat.

Range-wide Analysis 1994 – 2001

In 2001, the Service assessed habitat baseline conditions (USFWS 2001), the first assessment since implementation of the NWFP in 1994. This range-wide evaluation of habitat was necessary to determine if the rate of potential change to spotted owl habitat was consistent with the change anticipated in the NWFP. In particular, the Service considered habitat effects documented through section 7 consultations since 1994. In general, the analytical framework of these consultations focused on the reserve or connectivity goals established by the NWFP land-use allocations (USDA/USDI 1994a). The Service expressed these effects in terms of changes in acreage of suitable spotted owl habitat within those land-use allocations. The Service determined that actions and their effects were consistent with the expectations for implementation of the NWFP from 1994 through June 2001 (USFWS 2001).

Range-wide Analysis 1994 – 2004 (first decade of the NWFP)

This section updates the information considered in USFWS (2001), relying particularly on information in documents the Service produced pursuant to section 7 of the Act and information provided by NWFP agencies on habitat loss resulting from natural events (e.g., fires, windthrow, insect and disease).

In 1994, about 7.4 million acres of suitable habitat were estimated to exist on federal lands. As of April 12, 2004, the Service had consulted on the proposed removal of 575,447 acres of spotted owl habitat range-wide, of which 190,429 acres occurred on federal lands managed under the NWFP. Federal lands were expected to experience an approximate 2.6 percent decline in suitable habitat due to all management activities (not just timber harvest) over the past decade, with about 167,134 acres[1] (approximately 2.3 percent) removed by timber harvest. These anticipated changes in suitable spotted owl habitat were consistent with the expectations for implementation of the NWFP.

Most management-related habitat loss on federal lands, considered range-wide, was concentrated in the Oregon physiographic provinces. In particular, the percentage of habitat to be removed from the Oregon Klamath Mountains province was relatively high (approximately 11 percent) in comparison to other provinces, most of which were characterized by less than a 4 percent decrease in habitat. Habitat removed from the Oregon Klamath Mountains province and the two Oregon Cascades provinces made up 44 percent and 36 percent, respectively, of the habitat loss range-wide since 1994. In summary, habitat loss in Washington accounted for 9.06 percent of the range-wide loss, but it only resulted in a loss of 0.73 percent of available habitat on Federal lands in Washington. In Oregon, habitat loss accounted for 82.37 percent of the range-wide losses, but only 4.13 percent of available habitat on Federal lands in Oregon. Loss of habitat on federal lands in California accounted for 8.57 percent of the losses range-wide, but only 1.34 percent of habitat on federal lands in California.

Since 1994, habitat lost due to natural events was estimated at approximately 168,301 acres range-wide. About two-thirds of this loss was attributed to the Biscuit Fire that burned over 500,000 acres in southwest Oregon (Rogue River basin) and northern California in 2002. This fire resulted in a loss of approximately 113,451 acres of spotted owl habitat, including habitat within five LSRs.

Little information is available regarding spotted owl habitat trends on non-federal lands. Internal Service consultations conducted since 1992 have documented the eventual loss of 407,849[2] acres of habitat on non-federal lands. Most of these losses have yet to occur because they are part of large-scale, long-term HCPs.

Subsequent to the analysis for the first decade (1994–2004) of the NWFP, the Forest Service and Bureau of Land Management reported revised estimates of fire impacts. They also reported that not all effects anticipated during section 7 consultations actually occurred on the landscape, since

[1] Data compiled by the U.S. Fish and Wildlife Service, Northern Spotted Owl Coordination Group.

[2] Data compiled by the U.S. Fish and Wildlife Service, Northern Spotted Owl Coordination Group.

the action agencies have not implemented some projects. Together these reports reduce the anticipated habitat loss during that decade. Therefore, the analysis above represents a reasonable, worst-case assessment. In addition, at the time of this assessment, we had no empirical information on increases in spotted owl habitat on any ownership resulting from suitable habitat that had developed through forest succession and in-growth. The 2005 NWFP monitoring program's recently released reports suggests that approximately 515,000 to over 1 million acres of younger forests may have transitioned into late-successional forest condition, range-wide, since 1994.

Range-wide Analysis from 2004 (first decade) to the Present

This section updates the information considered in the first range-wide, decadal (1994-2004) analysis of the NWFP to the present writing of this BO. In 1994, about 7.4 million acres of suitable habitat were estimated to exist on Federal lands. As of April 2004, the Service had consulted on the removal of 575,447 acres of spotted owl habitat range-wide, of which 190,429 acres occurred on Federal lands managed under the NWFP. From April 12, 2004, to the present, the Service has consulted on the removal or downgrading of 15,455 acres of spotted owl habitat range-wide on Federal lands managed under the NWFP (190,429 acres consulted on for removal through April 12, 2004, subtracted from 205,884 acres consulted on for removal through July 19, 2005). This amount of habitat loss (0.21 percent) is consistent with the expectations for timber management under the NWFP for the second decade of implementation, using the 2004 baseline of 7,038,368 acres of suitable habitat (1994 baseline with all suitable habitat losses subtracted out).

Currently, an estimated 4,876,646 acres of spotted owl habitat in Reserves receive protection under the NWFP.

Spotted Owl Numbers, Distribution, and Reproduction Trends

There are no estimates of the historical population size and distribution of the spotted owl within preferred habitat, although spotted owls are believed to have inhabited most old-growth forests throughout the Pacific Northwest prior to modern settlement (mid-1800s), including northwestern California (USFWS 1989). According to the final rule listing the spotted owl as threatened (USFWS 1990a), approximately 90 percent of the roughly 2,000 known spotted owl breeding pairs were located on federally managed lands, 1.4 percent were located on State lands, and 6.2 percent were located on private lands. The percent of spotted owls located on private lands in northern California was slightly higher (Forsman et al. 1984, USFWS 1989, Thomas et al. 1990).

Gutiérrez (1994), using data from 1986-1992, tallied 3,753 known pairs and 980 singles throughout the range of the spotted owl. At the time the NWFP was initiated (July 1, 1994), BLM estimated 5,431 known locations or site centers of spotted owl pairs or resident singles: 851 sites (16 percent) occurred in Washington, 2,893 (53 percent) occurred in Oregon, and 1,687 (31 percent) occurred in California (BLM 1995). Because some areas were unsurveyed (USFWS 1992a, Thomas et al. 1993), and many remain so, the actual population of spotted owls across the range was believed to be larger than either count.

Because current survey coverage and effort are insufficient to produce reliable population-size estimates, researchers use other indices, such as demographic data, to evaluate trends in spotted owl populations. Analysis of demographic data can provide an estimate of the rate and direction of population growth, identified by the parameter lambda (λ). A λ of 1.0 indicates a stationary population that is neither increasing nor decreasing, a λ less than 1.0 indicates a declining population, and a λ greater than 1.0 indicates a growing population.

In January 2004, at the spotted owl demographic meta-analysis workshop, two meta-analyses were conducted on the rate of population change using the re-parameterized Jolly-Seber method (λ_{RJS}). One meta-analysis applied to all 13 study areas, and a second meta-analysis applied to the eight study areas included in the Effectiveness Monitoring Program of the NWFP (Anthony et al. 2004a). Data were analyzed separately for individual study areas, as well as simultaneously across all study areas (true meta-analysis).

Estimates of λ_{RJS} ranged from 0.896-1.005 for the 13 study areas, and all but one (Tyee) of the estimates were <1.0, suggesting population declines for most areas (Anthony et al. 2004a) (Figure 1). There was strong evidence that populations on the Wenatchee, Cle Elum, Warm Springs, and Simpson study areas declined during the study, and there also was evidence that populations on the Rainer, Olympic, Oregon Coast Range, and HJ Andrews study areas were decreasing (Figure 1). Precision of the λ_{RJS} estimates for the Rainier and Olympic study areas were poor and not sufficient to detect a difference from 1.00. The estimate of λ_{RJS} for the Rainier study area (0.896) was the lowest of all of the areas. Populations on the Tyee, Klamath, South Oregon Cascades, Northwest California, and Hoopa study areas appeared to be stationary during the study, but there was some evidence that the South Oregon Cascades, Northwest California, and Hoopa study areas were declining (λ_{RJS} <1.00).

The weighted mean λ_{RJS} for all of the study areas was 0.963 (SE = 0.009, 95 percent CI = 0.945-0.981), suggesting that populations over all study areas collectively were declining by about 3.7 percent per year from 1985-2003. The mean λ_{RJS} for the eight demographic monitoring areas on Federal lands was 0.976 (SE = 0.007, 95 percent CI = 0.962-0.990), and the mean for non-Federal lands was 0.942 (SE = 0.016, 95 percent CI = 0.910-0.974), an average decline of 2.4 versus 5.8 percent per year, respectively. This suggests that spotted owl populations on Federal lands were declining but at a lower rate than elsewhere. However, interspersion of non-federal and federal land ownership on the study areas confounds this analysis.

The number of populations that have declined and the rate at which they have declined are noteworthy, particularly the precipitous declines on the four Washington study areas (Wenatchee, Cle Elum, Rainier, and Olympic). In these study areas, the population decline is estimated at 30-50 percent over 10 years. A similar decline is estimated for the Warm Springs study area in Oregon (Anthony et al. 2004a). Declines in adult survival rates may be an important factor contributing to declining population trends. Survival rates declined over time on five of the 14 study areas: four study areas in Washington, which showed the sharpest declines, and one study area in the Klamath province of northwest California (Anthony et al. 2004a). In Oregon, apparent survival for four of six study areas showed no time trends, and the remaining two study areas had weak non-linear trends. In California, two study areas showed no

trend, one showed a slight decline, and one showed a significant linear decline (Anthony et al. 2004a). Like the trends in annual rate of population change, trends in adult survival rate showed clear declines in some areas, but not in others.

A small population of spotted owls occurs in British Columbia. This relatively isolated population apparently is declining sharply. Large areas of apparently suitable habitat are currently unoccupied (Courtney et al. 2004). Breeding populations have been estimated at fewer than 33 pairs. The species may be declining as much as 35 percent per year (Harestad et al. 2004). The amount of interaction between spotted owls in Canada and the U.S. is unknown (Courtney et al. 2004). The Canadian population has reached the point where it is now vulnerable to stochastic demographic events that could cause further declines and perhaps extirpation; conditions are not likely to improve in the short term (Courtney et al. 2004).

Status in the Project Vicinity

Information for northern spotted owl territories in Mendocino County was obtained by Caltrans from the most current version of the California Department of Fish and Game (CDFG) database. This database is maintained by CDFG and tracks all known northern spotted owl territories throughout the state of California. Currently, the CDFG northern spotted owl database lists 556 territories in Mendocino County.

Crude density (i.e., the number of owls per square kilometer) has been calculated for several forest lands in northwestern California. The current density of northern spotted owls on Mendocino Redwoods Company lands is 0.272 owls/km^2. This density appears to be one of the greater densities throughout forest lands in northern California. The Biological Opinion for Pacific Lumber Company cites a density of 0.325 owls/km^2 (USFWS 1999c), the greatest known density reported for northern California. Lower densities were found in the Willow Creek study area in Humboldt County, 0.235 owls/km^2 (Franklin et al. 1990); Green Diamond lands in northern California, 0.209 owls/km^2 (Diller and Thome 1999); and Redwood National Park, 0.163 owls/km^2 (Tanner 1999).

Research in California indicates that several northern spotted owl study populations may be stable or slightly declining (Franklin et al. 1996, Franklin et al. 2002). A minimum population estimate for northern spotted owls in California during the late 1980s and early 1990s was 1,111 pairs (Gutierrez et al. 1995). Although populations may be stable in northern California, northern spotted owl populations are declining across a large portion of their range due to destruction and fragmentation of old-growth habitat (Noon and McKelvey 1996). Fragmentation of old-growth and other late-successional forest habitat has isolated populations and reduced prey availability in areas of the northern spotted owls' range other than northern California (Thomas et al. 1990).

ENVIRONMENTAL BASELINE (in the Action Area):

Regulations implementing the Act (50 CFR §402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have

already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation process.

Distribution of Northern Spotted Owls in the Action Area

Field Surveys

Potential northern spotted owl habitat was mapped by Caltrans within the Oil Well Hill area according to California Board of Forestry guidelines (Caltrans 1997). Several vegetation communities in the project area were found to be generally consistent with spotted owl habitat characteristics. Initial preparation of the habitat map was conducted using information from the vegetation assessment.

Caltrans' surveys for northern spotted owls followed guidelines endorsed by the Service. Surveys for northern spotted owls occurred from April through August 1991; additional surveys were conducted in 1992 and 1993. Surveys were conducted in areas that provide functional nesting, roosting, and foraging habitat for spotted owls. The surveys were conducted to determine spotted owl presence and nesting status in the project area. The quality and amount of suitable habitat within an occupied spotted owl territory were described in order to assess the effects of altering spotted owl habitat in the project area. The amount of functional nesting, roasting, foraging, and dispersal habitat was measured within the proposed project corridor to determine the ability of these areas to support spotted owls (Caltrans 1997). After spotted owls were detected during night surveys in 1991, intensive day surveys were conducted to locate nest sites or activity centers. Once located, spotted owls were moused to locate nests (Caltrans 1997).

Caltrans biologists conducted informal, non-protocol, site-specific surveys for northern spotted owls in 1998, in habitat known to support spotted owls. These surveys were conducted in order to locate spotted owls detected in the 1991, 1992, and, 1993 surveys (Caltrans 2000). Following this informal survey, protocol-level surveys for northern spotted owls were initiated again, in 1999, in order to assess the status and presence of spotted owls in the project area. These surveys followed the two-year method as described in the 1992 California State Board of Forestry guidelines.

In addition to these survey results, Caltrans also utilized the Natural Environment Study (NES) (Caltrans 1997), local CDF/CDFG Timber Harvest Plans, the California Natural Diversity Database (CNDDB 2003, CNDDB 2005), and discussions with CDFG biologists to update and assess presence of northern spotted owls in the project area.

Current Condition in the Action Area

Northern spotted owls were not found within the Modified J1T project corridor, nor within the footprint of the designated borrow site at Oil Well Hill during the most recent (i.e., 1999) surveys. However, spotted owls were found historically near the project corridor and at Oil Well Hill, west of the existing U.S. Highway 101. Suitable nesting/roosting/foraging habitat does not occur within the Modified JIT corridor; the area is not capable of supporting such habitat.

However, suitable spotted owl foraging and dispersal habitat exists at the Oil Well Hill designated borrow site (Figure 3-2, Appendix I, of the BA).

Suitable northern spotted owl nesting and foraging habitat occurs in the densely forested areas around the western and northwestern perimeter of Little Lake Valley, consisting of mixed north-slope forest, Douglas-fir forest, mixed conifer forest, mixed evergreen forest, and some of the black oak and Garry oak woodland. Large stands occur at the extreme northern end of the valley, north of Outlet Creek, and west of U.S. Highway 101, just southwest of the Louisiana-Pacific mill along the west side of U.S. Highway 101 (Figure 3-2, Appendix I of the BA).

Protocol-level surveys within potential northern spotted owl habitat in the project area resulted in finding two pairs of spotted owls in 1991 and 1992 (Figure 5-4, Appendix I of the BA). Both pairs were located outside of the Modified J1T corridor and outside the proposed Oil Well Hill borrow site. One pair (pair 1) was located west of U.S. Highway 101 in the Wild Oat Canyon drainage, and the second pair (pair 2) was observed just west of U.S. Highway 101 and north of Outlet Creek (Figure 5-4, Appendix I of the BA).

Pair 1 was a breeding pair observed in 1991 and 1992. In 1991, the pair produced one young at a nest within a mature forest grove covering several hectares along an unnamed drainage. The land surrounding the nesting area (or activity center) consisted of dense mixed-conifer forest on all sides. The nest site was within 0.8 km (0.5-mile) of a rural residential area along Highway 101 north of Willits. In late 1991 all but approximately 5.7 hectares (14.1 acres) (designated as a protected area) of this nesting grove was selectively harvested. All large conifers were removed, except those within the 5.7 hectares (14.1 acres) protected area. In 1992, this pair nested in an old stick nest just north of the remnant nesting grove and produced two young. No adults were found during a one-day survey conducted on April 8, 1993. A two-year protocol-level survey conducted in 1999 and 2000 found no evidence of spotted owls nesting at this site. The nesting grove is located outside of the project corridor and designated borrow site at Oil Well Hill, approximately 2.3 km (1.4 miles) southwest of Oil Well Hill.

Pair 2 was located in the area of Outlet Creek, west of Highway 101 and north of Outlet Creek. This pair did not breed in 1991 but did breed in 1992. In 1992, this pair nested within a small unnamed drainage between Highway 101 and Outlet Creek Road, approximately 150 meters (500 feet) west of Oil Well Hill, and produced two young. Based on results of the one-day survey conducted on April 8, 1993, this pair did not breed in 1993. Most of the area is dense, second growth mixed-conifer forest with small pockets of older forest. The nesting grove is outside of the project corridor, but is near the designated borrow site at Oil We1 Hill. A two-year protocol-level survey conducted in 1999 and 2000 found no evidence of nesting activity at this nest site.

The area immediately north of Little Lake Valley, including the proposed borrow site, is the southernmost area in the Coast Range with continuous spotted owl dispersal habitat that connects the coastal spotted owl populations with more interior coastal range spotted owl populations east and south of Willits. South of this area, connections between coastal and more interior populations are fragmented by river valleys, drier forest types, agriculture, and developed areas less conducive to dispersal by spotted owls.

Critical Habitat

No designated critical habitat for northern spotted owl occurs within or near the Modified J1T alignment or the designated borrow site at Oil Well Hill. Therefore, no critical habitat will be affected by this proposed action.

EFFECTS OF THE ACTION

Scientific Basis for Evaluating Potential Effects

This section describes the scientific basis for analyzing the potential direct and indirect effects of human actions, including their interrelated and interdependent actions, on the northern spotted owl. While the implementation of most proposed actions, including the proposed Willits Bypass Project, would not result in all of the potential effects described herein, this discussion provides a general framework and understanding under which the proposed action considered in this biological opinion may be objectively analyzed.

Potential Effects of Habitat Modification

Site-Specific Effects

Forest and fire management practices have the potential to reduce the quantity and quality of spotted owl nest and roost sites. Spotted owls depend upon existing forest structures, such as cavities and broken treetops, for nest sites. Silvicultural prescriptions, timber harvest activities, and fire management activities which result in the removal of the oldest, most decadent trees or require removal of hazard trees and snags may remove potential spotted owl nest sites (Blakesley et al. 1992). Further, prescriptions designed to reduce ladder fuels or release the growth of co-dominant trees often simplify vertical structure in the understory, where spotted owls perch for hunting or roosting (Forsman et al. 1984).

Timber harvest and fire management activities can contribute to changes in habitat microclimate by reducing overall canopy closure within nesting and roosting habitat. A reduction in canopy closure often results in reduced protection from environmental factors, such as rain, wind, snow, and temperature. Laboratory and field studies have determined that spotted owls are less heat tolerant than many other bird species. Physiological limitations corroborate these observations (Weathers et al. 2001).

Removing trees, snags, and downed wood can affect prey composition and/or availability by altering characteristics of the habitat upon which prey species depend. Because the amount of snags and down material on the forest floor is positively correlated with densities of some prey species, a reduction in the abundance of these components may contribute to localized, short-term declines in prey (Williams et al. 1992). Reductions in populations of these prey species could lower spotted owl recruitment.

Landscape-Level Effects

Site-specific effects could change the function which forested stands provide for northern spotted owls. For the purposes of the following discussion, changes in habitat function resulting from cutting of trees and other vegetation are categorized as removal, downgrade, or degrade. Removal represents a complete loss of habitat function following an action. For example, an area functioned as nesting/roosting habitat; after habitat modification, the area does not provide any habitat function. Downgrade is a subset of the term removal and refers to a loss of habitat function and change from one habitat function to another. For example, if an area functioned as nesting/roosting habitat before habitat modification, but is capable of providing only foraging habitat post-project, this would be classified as downgrade. This term could also be used to signify a change in function from foraging to dispersal as well. Degrade, to be distinguished from downgrade, indicates a reduction in habitat quality, but not habitat function. For example, an area that functioned as foraging habitat prior to an action still provides foraging habitat after the effect, but prey abundance may be reduced due to a reduction in some structural components or vegetation.

Removal or downgrading of habitat within home ranges, especially when located close to the nest site, can reasonably be expected to negatively affect northern spotted owls. A reduction in northern spotted owl productivity and survivorship occurs as the amount of suitable habitat within a spotted owl home range declines (Bart 1995). In northwestern California, survivorship of adult spotted owls was greater where greater amounts of older forest were present around the activity center, but reproductive success increased where the amount of edge between older and younger forest was relatively high (Franklin et al. 2000).

Research indicates that spotted owls in northern California focus their activities in heavily-used "core areas" that range in size from about 167 to 454 acres, with a mean of about 409 acres (Bingham and Noon 1997). These core areas, which included 60 to 70 percent of the spotted owl telemetry locations during the breeding season, typically comprised only about 20 percent of the home range area. Therefore, habitat removal within core areas could have disproportionate effects on spotted owls. Spotted owl abundance and productivity significantly decrease when the proportion of suitable habitat within 0.7 mile of an activity center falls below 500 acres, which represents 50 percent of the total 1,000 acres within 0.7 mile (O'Halloran 1989; Simon-Jackson 1989; Thomas et al. 1990). For the purpose of consultation, the Service identifies the following guidelines for the amount of suitable habitat needed to maintain essential behaviors, such as breeding, within the home range area: 500 acres within 0.7 mile of the activity center and 1,336 acres within 1.3 mile of the activity center.

Potential Effects of Noise Disturbance

Some activities, such as timber harvesting, road construction and decommissioning, landslide rehabilitation, trail maintenance, and fire management, use motorized equipment (e.g., helicopters, heavy equipment, or chainsaws) that introduces high levels of noise into the environment. This elevated noise level may have adverse effects on wildlife species by interfering with essential behaviors. The effects of noise on birds are difficult to determine (Knight and Skagen 1988) and quantify. Confounding factors include the tolerance level of individual birds, type and frequency of human activity, ambient sound levels, how sound reacts

with topography and vegetation, and differences in how species perceive noise. Regardless of these difficulties, research conducted on a variety of bird species suggests that disturbance can have a negative impact on their reproductive success (Tremblay and Ellison 1979; Belanger and Bedard 1989; Piatt et al. 1990; Henson and Grant 1991). Disturbance can affect productivity in a number of ways, including interference of courtship (Bednarz and Hayden 1988), nest abandonment (White and Thurow 1985), egg and hatchling mortality, exposure and predation (Drent 1972; Swensen 1979), and altered parental care (Fyfe and Olendorff 1976; Bortolotti et al. 1984).

The few studies which examined responses of northern and Mexican spotted owls to several disturbance sources, such as helicopters, small chainsaws, and hikers, indicate that noise can disrupt spotted owl behaviors, such as flushing from roosts and prey delivery rates (Delaney et al. 1999; Delaney and Grubb 2001; Swarthout and Steidl 2001). However, spotted owl sensitivity varies with stimulus distance, location (i.e., aerial or ground), type, and timing, as well as individual tolerance (Delaney et al. 1999; Delaney and Grubb 2001; Swarthout and Steidl 2001).

Potential Effects of Injury or Mortality

In extreme cases, forest or fire management activities could result in direct injury or mortality of adults, eggs, or young. The potential for northern spotted owls to be struck and killed or injured by falling trees during harvesting or exposed to high levels of smoke during prescribed burning is confined to the area relatively close to the nest tree. Individual adult spotted owls reasonably can be expected to move from the area of disturbance and avoid injury or death. However, adult spotted owls which are incubating eggs or brooding young may be reluctant to leave the area (Delaney et al. 1999) and be vulnerable to injury or death. Young spotted owls are poor fliers immediately after leaving the nest; they develop their flight skills during their first months after leaving the nest. Thus, they are most vulnerable to being struck by falling trees during this time. Young are also susceptible to smoke inhalation. They may disperse prematurely in response to disturbance such as tree falling or smoke, thus increasing the likelihood of predation or starvation outside of the nest grove. Adults may abandon eggs in response to tree felling near the nest (Drent 1972; Swensen 1979; White and Thurow 1985). Forest management that includes falling trees may crack or destroy eggs.

Effects of the Proposed Action

The proposed project corridor and road alignment will avoid direct and indirect impacts to northern spotted owl nesting and foraging habitat, because it is greater than 0.8 km (0.5 mile) from known nesting activity centers, and would not remove any suitable habitat. Because much of the alignment through Little Lake Valley will require fill material upon which to build the road bed, very little excavation will occur in the proposed road prism. However, a substantial amount of fill material is needed to build the roadbed, and a borrow site will be needed. Oil Well Hill, located alongside Highway 101 approximately 3 miles north of the proposed road alignment, is the designated borrow site. Excavation of fill material there will require the removal of existing forest vegetation.

Potential effects of this proposed action to spotted owls within the action area include loss of suitable nesting, roosting and foraging habitat, and temporary noise and visual disturbance within potentially occupied habitat during construction. Minimization measures identified earlier in this biological opinion will reduce but will not eliminate adverse effects. The potential effects to the spotted owl from the proposed action, and reductions in the effects as a result of implementing the proposed minimization measures, are discussed below.

Caltrans anticipates the removal of a maximum of 40 acres (16 ha) of nesting, roosting, foraging and dispersal habitat, and disturbance resulting from potential differences in noise patterns during the excavation activities. In addition, existing traffic noise dynamics resulting from extensive landscape modification on the east side of the highway could change. These impacts to spotted owls are discussed in detail in the following sections. Because of the historic presence of northern spotted owl nesting within approximately 152 meters (500 feet) of the proposed Oil Well Hill borrow site, and the removal of approximately 40 acres (16 ha) of nesting, roosting, foraging and dispersal habitat at the proposed borrow site, the proposed project may adversely affect northern spotted owl.

Effects Due to Habitat Removal and Degradation

Excavation of fill material within the borrow site will require a substantial removal of native forest vegetation. The area has been subject to previous logging activities, but mature and old-growth trees are found within the forest matrix in the excavation area. The removal of this forest habitat will result in the loss of nesting, roosting, and foraging habitat for the spotted owl, as well as some dispersal habitat.

Provincial Home Range

The provincial home range of a spotted owl in the vicinity of the action area is approximated by a circle of radius 1.3 mi. (2.1 km). This circle encompasses the median area of a spotted owl home range within the California Coast Range province, as estimated through research, of approximately 3,340 ac.(1,352 ha). Provincial home ranges apply to nesting or territorial pairs as well as individual spotted owls that demonstrate multi-year occupancy of suitable nesting habitat. The center of the provincial home range is identified by a known nest tree, location of fledglings, or other sign of spotted owl occupancy of a given area.

Project effects to suitable habitat are based on the types of activities and their location within identified provincial home ranges. The threshold for harm to the spotted owl is defined as the reduction of available suitable habitat to less than 1,336 acres (40 percent of the area) within a provincial home range as a result of the current action combined with effects of previous actions. The home range is further defined by a more critical area of about 1,000 ac. (405 ha), approximated by a 0.7 mi. (1.1 km) radius circle from the spotted owl activity center. The threshold within this critical area is the reduction below 50 percent (500 acres) of suitable habitat as a result of the current action combined with previous actions in the area. Any suitable nesting/roosting habitat removal within the closest 70 ac. (2.8 ha) area to the activity center constitutes harm to spotted owls. This 70-acre core area can be approximated by a circle of

radius 985 ft. (0.186 mi., 0.304 km), or may be described as a specific polygon of habitat in a site-specific analysis.

Existing potentially suitable nesting/roosting/foraging habitat was mapped in 2005 within a 1.3-mile radius of the Oil Well Hill borrow site by Caltrans wildlife biologist Peter Lewendal (Appendix F of the BA). This study involved assembling a base map consisting of portions of the USGS 7.5 minute Longvale, Burbeck, Willis Ridge and Willits quadrangles. Aerial photographs were not available, so Caltrans had the area flown to created stereo-pair photographs of the site in 2005. The aerial photos were reviewed in April 2005 to assess spotted owl nesting/roosting, foraging and unsuitable habitats. The area was ground-truthed on April 25 and 26, 2005.

Caltrans' analysis determined that within the 1.3-mile radius polygon of this borrow site (encompassing approximately 4839.1 acres), approximately 3070.3 acres consist of suitable foraging habitat, and 99.2 acres consist of suitable nesting/roosting habitat, encompassing an area of approximately 3169.5 acres of suitable habitat, or approximately 65.5 percent of the 1.3-mile radius polygon.

Approximately 32.4 acres of the Oil Well Hill borrow site consists of suitable nesting, roosting, and foraging habitat. Hence, if the entire Oil Well Hill borrow-site is excavated, Caltrans estimated that approximately 3,137.1 acres (approximately 64.9 percent) of suitable foraging and nesting/roosting habitat would remain within the 1.3-mile radius of the Oil Well Hill borrow site (Habitat Analysis Report, Appendix F of the BA).

In a separate analysis using a slightly different classification of habitat, the Service estimated that approximately 4,802.9 acres occurs within 1.3 miles of the footprint of the borrow site, of which 2,435.5 acres (50.7 percent) currently support suitable nesting, roosting and foraging habitat. For the owl site on Oil Well Hill that would be directly affected by the removal of suitable habitat, approximately 1828.6 acres (53.9 percent) of suitable nesting, roosting, and foraging habitat currently exists within the provincial home range of the known site on Oil Well Hill.

Following the removal of a maximum of 32.4 acres of suitable habitat, the 1.3 mile buffer area around the borrow site would retain at least 2,403.1 acres of suitable, or 50.0 percent of the area. For the affected owl site, the removal of 32.4 acres of suitable will result in an estimated retention of 1,796.2 acres (53.8 percent) of suitable within the provincial home range.

In the more critical area within 0.7 miles of the site center, the Service estimates that approximately 597.9 acres of suitable habitat currently exists, or about 59.8 percent of the area. Following the removal of suitable habitat from the borrow site, approximately 565.5 acres of suitable will remain, or about 56.6 percent of the area.

Site Center

One known owl site center is located near the proposed borrow site, and we estimate that up to 10 acres of suitable nesting, roosting, and foraging habitat would be removed from the 70-acre core area. This estimate is based on the anticipated core area around the known nest site including the most favorable, contiguous nesting and roosting habitat. For this particular site,

approximately 10 acres occurs within the proposed borrow site. The known site center was not occupied during the most recent protocol surveys completed in 1999 and 2000. However, its occupancy status has not been documented since 2000, so it is presumed to still be a functional site center. Site surveys will be conducted during the two years prior to the initiation of project construction to confirm presence or absence during project implementation. These surveys are anticipated to occur during the years 2007 and 2008. It is possible that the site center for this owl site has moved to a new, undetected location since the last confirmed sighting. However, in the absence of new information, the known site center will be adversely affected by the removal of nesting and roosting habitat near a known site center.

Effects Due to Noise Disturbance

Excessive noise generated by the proposed action has the potential to disrupt essential breeding behaviors of spotted owls, or result in reduced reproductive performance through adverse effects to nesting spotted owls and their young. Based on surveys conducted during 1991 to 1993 and repeated in 1999 and 2000, only one spotted owl nest site is known to occur within 0.5 miles or less of the proposed action, on Oil Well Hill. The last known occupancy of this nest site was 1993. Spotted owls located farther than 0.5 miles from the project footprint would not be affected by noise generating activities.

A 65-hour-long, continuous noise survey conducted by Caltrans at Oil Well Hill during the period May 6-8, 2004, found that existing traffic sound levels were fairly high throughout one 24 hour period, ranging from approximately 60 to 83 decibels (dB) (L_{max}, from table in Appendix E of the BA), but were lower during the late evening and early morning hours for the other 24 hour period, ranging between approximately 37 and 52 dB (Appendix E of the BA). Caltrans anticipates that noise levels generated by heavy equipment used for excavation would range from approximately 70 to 80 dB at the project site (Keith Pommerenck, pers. comm.). Hence, it is anticipated that excavation noise levels are not expected to significantly exceed existing traffic levels for excavation occurring immediately adjacent to the existing highway. However, because excavation is expected to occur continuously during both day and night hours, the difference in the frequency of noise patterns could potentially disturb spotted owls, if they are nesting and foraging in the area.

Excavation can occur as far as 600 ft. (183 m) from the edge of the existing highway surface, if the need for fill material dictates. The ambient sound environment at this distance from the highway is anticipated to be substantially lower than what occurs nearer to the highway. The sound level generated by excavation activities may, therefore, substantially exceed the ambient condition. However, these excessive sound levels would be farther from the known nest site, and would likely have less effect on nesting owls there than if their nest site nearer this eastern edge of the excavation area.

The contractor may use explosives at Oil Well Hill as part of the excavation of fill material. The number and frequency of charges would be determined by the contractor. Blasting typically produces a rapid series of impulse type noise with mostly low frequency noise content (Illingsworth and Rodkin 2005). If explosives are used at Oil Well Hill, the charges would be set below ground rather than on the surface, to fracture and loosen the rock. Estimates of noise

levels generated by blasts in a study for the Confusion Hill Relocation Project (Illingsworth and Rodkin 2005) recorded a noise level of approximately 85 dBA at approximately 550 feet. In addition, blasting noise levels recorded for emergency work performed at Confusion Hill, Mendocino County, which involved a surface blast, recorded noise levels of 83 dBA at approximately 500 feet line-of-site from the point of detonation, as reported in the BA.

These numbers reported by Caltrans would translate to sound levels substantially higher than sound levels within the site center or at a potential nest tree under ambient conditions. Sound levels reported for blasting (85 dB at 550 feet) would translate to approximately 106 dB at 50 ft. (15 m), which substantially exceeds the reported sound level (60-83 dB) of traffic on the existing highway. Should owls attempt to nest at the site on Oil Well Hill, this level of disturbance could lead to behavioral modifications, such as flushing from the nest, and injury to owls.

Highway noise levels are not anticipated to increase significantly in the future, and the existing cut banks absorb sound and contribute no more than a minimal echo effect. Therefore, Caltrans anticipates that the transmission of highway traffic noise eastward into potential NSO habitat east of Oil Well Hill would not be significantly higher than existing levels (K. Pommerenck, pers. comm.).

Interrelated and Interdependent Activities

Regulations implementing the Act require the Service to consider the effect of activities which are interrelated and interdependent to the proposed action (50 CFR 402.02). The Act defines interrelated activities as those which are part of a larger action and depend upon the larger action for their justification, and interdependent activities as those projects which have no independent utility apart from the action that is under consideration. This proposed action does not include any interrelated and interdependent activities.

Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur within the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Within the Action Area, the only foreseeable action with known construction dates which potentially would have cumulative effects associated with the Willits Bypass is the proposed wastewater treatment facility for the City of Willits. This action would include the construction of new wastewater treatment facilities, including the construction of expanded oxidation ponds, treatment wetlands, mitigation areas for wetland use, and a public trail around these facilities. This project does not occur within or near suitable spotted owl habitat, and is not expected to have any effects on the species.

Other potential activities in or near the Action Area include: a second access road to the Brooktrails subdivision, which may be routed in or near Wild Oat Canyon; a third access road to Brooktrails, connecting to Highway 20 west of Willits; the expansion of public transit and

bicycle/pedestrian facilities near Baechtel Road/Railroad Avenue; repairs to the existing Northwest Pacific Railroad, including its route through the Outlet Creek Canyon; the build-out of the Brooktrails subdivision; the build-out of the City of Willits and adjacent unincorporated Mendocino County lands; and, future timber harvest plans (THPs) in the Action Area. However, none of these activities are currently designed or planned to a level where effects to listed species or their habitats can be reasonably considered at this time, and so do not contribute to cumulative effects for the project considered in this consultation.

The CDF has records of six THPs within, or partially within, the 2.6 km (1.6-mile) radius circle around Oil Well Hill that have been recorded since 1990. These are 1-90-364 MEN (50 acres [20 ha]); 1-90-631 MEN (665 acres [370 ha]); 1-94-155 MEN (20 acres [8 ha]); 1-94-591 MEN (238 acres [96 ha]); 1-95-487 MEN (50 acres [20 ha]); and 1-99-051 MEN (11 acres 4.5 ha]). Portions of two THPs, 1-90-631 and 1-94-591 extend outside the 2.6 km (1.6-mile) radius. The majority of these logging activities involved seed tree and shelterwood cuts.

Because of the existing market the current value of timber is low, there are no immediate future plans to harvest timber within the Oil Well Hill area. Hence, it is not possible to predict future logging activities. All of the land within the 1.6-mile radius is privately owned, and logging on the areas encompassed by these THPs has occurred in the past, and could occur in the future if timber prices are more favorable.

No other actions likely to result in cumulative effects to listed species are currently being implemented or planned in the action area at this time.

CONCLUSION

After reviewing the current status of the northern spotted owl, the environmental baseline for the action area, the effects of implementing the proposed construction of the Willits Bypass project in Mendocino County, and its cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the northern spotted owl. The Service reached this non-jeopardy conclusion based on the following factors:

1. The proposed action will remove suitable spotted owl nesting, roosting and foraging habitat. Most of this loss of habitat will be permanent. That is, those portions of the habitat that will be permanently maintained as roadway, cut banks, fill slopes, and other areas permanently unvegetated or maintained as low vegetation will never recover its function as suitable spotted owl habitat. Despite this loss, the removal of suitable habitat has been reasonably minimized, in regards to the purpose and need of the action, through implementation of minimization measures identified in the project description. After completion of the proposed action, the known active spotted owl site will still encompass more than 40 percent suitable habitat within the provincial home range (1.3 mile radius of the known nest), and will contain more than 50 percent suitable habitat within the 0.7 mile radius area.

2. One owl site will be affected by the loss of up to 32.4 acres of suitable habitat. Only a small portion of this 32.4 acres occurs within the 70-acre owl core area, likely to be less

than 10 acres. All of these acres to be removed are across the highway from the known site center. However, some of the acres to be removed are the better quality habitat remaining available to this already compromised site center. Despite the potential loss of this site center, the regional scale of the effect is small, affecting only a single known site within this province.

3. One spotted owl nest site is known to occur within a distance of the borrow site such that it may be adversely affected by noise disturbance resulting from construction activities, under the proposed minimization measures. However, this site was not occupied when last surveyed in 1999 and 2000. Surveys will be conducted during the two years prior to the start of construction, to confirm occupancy of this site at that time. Surveys are anticipated to occur during the years 2007 and 2008. Should this spotted owl site, or another new site within one-quarter mile of the borrow site, be found to be occupied at that time, FHWA and Caltrans will consult with the Service at that time to address new information and consider minimization measures appropriate to the exact location of any known spotted owls.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under that Act provided that such taking is in compliance with this Incidental Take Statement.

Any Reasonable and Prudent Measures described below are non-discretionary, and must be undertaken by the FHWA so that it becomes a binding condition of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. FHWA has a continuing duty to regulate the activity covered by this incidental take statement. If FHWA (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, FHWA must report the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement [50 CFR §402.12(I)(3)].

AMOUNT OR EXTENT OF INCIDENTAL TAKE

The Service anticipates that up to one pair of northern spotted owls associated with the site center on Oil Well Hill will be taken as a result of this proposed action. Implementing the proposed action would result in the removal of suitable habitat, and would adversely affect the species. This removal of suitable habitat would occur within a known northern spotted owl site center, and would harm the species as a result of loss of suitable habitat around an historically occupied and successfully nest. The removal of up to 32.4 acres of suitable habitat would occur within the provincial home range of an known owl site, but would not remove sufficient habitat to result in harm to the species at the home range scale. Finally, should blasting occur at the excavation site, the sound level generated by such subsurface explosives would harass the species as a result of substantially elevated sound levels at a potentially occupied nest site. Up to one pair of northern spotted owls would be harassed by this elevated sound level.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the northern spotted owl.

REASONABLE AND PRUDENT MEASURES

No reasonable and prudent measures are necessary to minimize impacts of incidental take of northern spotted owls. Minimization measures agreed to by Caltrans and incorporated into the project description would sufficiently reduce the amount of take.

TERMS AND CONDITIONS

No terms and conditions are necessary because reasonable and prudent measures are deemed unnecessary.

MONITORING REQUIREMENTS

No monitoring requirements are necessary.

REPORTING REQUIREMENTS

Upon locating a dead or injured northern spotted owl, initial notification must be made to the Service's Division of Law Enforcement in Chico, California at (530) 342-8724 and Michael Long, Field Supervisor, Arcata Fish and Wildlife Office at (707) 822-7201 immediately, and in writing within three (3) working days. Notification must include the date, time, and location of the carcass; cause of death or injury, if known; and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state for later analysis of cause of death. The finder has the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed, unless to remove it from the path of further harm or destruction. Should any treated listed species survive, the Service should be contacted regarding the disposition of the animal. In the case of take or suspected take of northern spotted owl not exempted in this

biological opinion, the Arcata Fish and Wildlife Office and the Division of Law Enforcement shall be notified within 24 hours.

COORDINATION OF INCIDENTAL TAKE WITH OTHER LAWS

The Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), of the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service provides Caltrans with the following conservation recommendations:

1. Portions of the habitat disturbed during construction of the Willits Bypass may be appropriate to restore to conditions that promote the future growth of suitable habitat conditions. These conditions include limiting the extent of tree removal to that necessary for completing the construction work, replanting disturbed areas as appropriate to local, native conifer and hardwood tree species, and retention of large woody debris within planted areas.

2. To minimize the permanent loss of suitable habitat, Caltrans should consider ways to minimize the width of the extraction area to that necessary for future highway alignment and right-of-way, avoiding creation of broad areas will little habitat value in the future. This approach would reduce overall habitat loss in the long term, and retain habitat that exists farther from the existing and future highway alignment.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in your September 27, 2005, request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat is designated that may

be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Please contact staff biologist Ray Bosch at (707) 822-7201 should you have further questions regarding this consultation.

Sincerely,

for Amelia Bricker

Michael M. Long
Field Supervisor

cc:
Federal Highway Administration, Sacramento, California (Attn: Lanh Phan)
California Department of Transportation, Eureka (Attn: John Bulinski)
California Department of Transportation, Sacramento (Attn: Don Schmoldt)
National Marine Fisheries Service, Santa Rosa (Attn: Tom Daugherty)
California Department of Fish and Game, Yountville (Attn: Corinne Gray)

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802- 4213

SEP 1 1 2006

In response refer to:
2005/07370:TKD

Gene K. Fong
Division Administrator
U.S. Department of Transportation
Federal Highway Administration
California Division
650 Capitol Mall, Suite 4-100
Sacramento, California 95814

Dear Mr. Fong:

This document transmits NOAA's National Marine Fisheries Service's (NMFS) biological opinion (Enclosure 1) based on NMFS' review of the U.S. Federal Highway Administration's (FHWA) and California Department of Transportation's (Caltrans) proposed construction of the Route 101 Willits Bypass, in Mendocino County, California. FHWA and Caltrans have proposed the Willits Bypass Project to reduce delays, improve safety, and improve conditions for interregional traffic. The primary feature of the proposed project is a new segment of U.S. 101 that would bypass the City of Willits in Mendocino County, California.

The enclosed biological opinion is based on NMFS' review of information provided with FHWA's request of October 18, 2005, for formal consultation and other documents, meetings, telephone conferences, site visits, and analyses provided during consultation. It addresses potential adverse effects on the following listed species (Evolutionarily Significant Unit or Distinct Population Segment) and designated critical habitat, in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §1531 *et seq.*):

California Coastal Chinook salmon (*Oncorhynchus tshawytscha*)
threatened (June 28, 2005, 70 FR 37160)
critical habitat (September 2, 2005, 70 FR 52488)
Southern Oregon/Northern California Coasts coho salmon (*O. kisutch*)
threatened (June 28, 2005, 70 FR 37160)
critical habitat (May 5, 1999, 64 FR 24049)
Northern California steelhead (*O. mykiss*)
threatened (January 5, 2006, 71 FR 834)
critical habitat (September 2, 2005, 70 FR 52488)

Based on the best available information, the enclosed biological opinion concludes the proposed Willits Bypass Project is not likely to jeopardize the continued existence of California Coastal Chinook salmon, Southern Oregon/Northern California Coasts coho salmon, or North Coast steelhead, or result in the destruction or adverse modification of designated critical habitat for these species. However, NMFS expects the action is likely to result in take of listed anadromous

salmonids. An incidental take statement is included with the enclosed biological opinion. The incidental take statement includes non-discretionary terms and conditions that are expected to minimize the impacts of incidental take of listed salmonids as a result of the Willits Bypass Project road and bridge building activities. In addition, a conservation recommendation is included in the enclosed biological opinion.

Regarding the project's Conceptual Mitigation Plan, Caltrans has proposed creation/restoration, enhancement and preservation of salmonid habitat and riparian areas within Little Lake Valley. Due to the preliminary nature of future in-channel mitigation proposals, NMFS was unable to analyze the impacts of these projects. NMFS staff will work with FHWA and Caltrans to design these future mitigation actions. If these actions may affect listed species or their critical habitats, reinitiation of consultation would be needed.

This letter also transmits NMFS' Essential Fish Habitat (EFH) Conservation Recommendations pursuant to section 305(b) of the Magnuson-Stevens Fisheries Conservation and Management Act (MSFCMA) (Enclosure 2). The Willits Bypass project site includes areas identified as EFH for various life stages of species managed under the Pacific Coast Salmon Fishery Management Plan. Based on our review, NMFS concludes that the Willits Bypass Project has the potential to adversely affect EFH. The enclosed EFH Conservation Recommendations are designed to minimize potential adverse effects on EFH.

Mr. Thomas Daugherty is the lead biologist for this project. If you have any questions regarding the enclosed documents, please contact Mr. Thomas Daugherty at (707) 468-4057.

Sincerely,

for Rodney R. McInnis
Regional Administrator

Enclosures

cc: Russell Strach, NMFS Sacramento
Jeremy Ketchum, Caltrans Sacramento

Enclosure 1

BIOLOGICAL OPINION

ACTION AGENCY:	U.S. Department of Transportation, Federal Highway Administration, California Division
ACTION:	Funding and Construction of the Highway 101 Willits Bypass Project
CONSULTATION CONDUCTED BY:	National Marine Fisheries Service, Southwest Region
PCTS TRACKING NUMBER:	2005/07370
DATE ISSUED:	_____

I. CONSULTATION HISTORY

In 1994, the U.S. Army Corps of Engineers (ACOE), U.S. Environmental Protection Agency (USEPA), U.S. Department of Transportation Federal Highway Administration (FHWA), U.S. Fish and Wildlife Service (USFWS), NOAA's National Marine Fisheries Service (NMFS), and California Department of Transportation (Caltrans) signed a formal Memorandum of Understanding (MOU) that would integrate the National Environmental Policy Act (NEPA) process and Clean Water Act Section 404 procedures, as well as improve coordination among stakeholder agencies. The NEPA/404 integration process was designed to implement Section 404 more effectively to preserve wetlands and the plants and animals that depend on this type of habitat. Under the guidelines of the MOU, signatory agencies (NEPA/404 Resource Agencies) are to agree to a project's Purpose and Need Statement, which sets forth the criteria for selecting project alternatives. The guidelines also specify that signatory agencies are to agree to the alternatives to be studied, early in the environmental review process.

Shortly after the MOU was signed, Caltrans and FHWA initiated the NEPA/404 integration process for the Route 101 Willits Bypass project with USEPA, ACOE, USFWS, and NMFS, and invited these agencies to join the Project Development Team (PDT). In 1995, the participating agencies approved the alternatives that would be studied and the Purpose and Need Statement that would guide the project design and operation.

In 1997, Jones and Stokes Associates Inc. prepared a Natural Environmental Study for the Highway 101/Willits Bypass Project Area that was submitted to Caltrans, Eureka, California (Jones and Stokes 1997).

On June 1, 1998, NMFS received a letter from Caltrans stating that studies on the Highway 101 Willits Bypass would be resuming and six distinct four-lane corridor alignments were to be evaluated. This correspondence also formally invited NMFS to take part in the PDT and to bring forth any concerns regarding the potential effects of the proposed action on threatened Northern California (NC) steelhead (*Oncorhynchus mykiss*), threatened California Coastal (CC) Chinook salmon (*O. tshawytscha*), and threatened Southern Oregon/Northern California Coasts (SONCC) coho salmon (*O. kisutch*) and designated critical habitat for these species.

NMFS participated in ten PDT meetings from June 1998 to October 2003. During this time, a number of major decisions were made with respect to the project. Caltrans determined that two alternatives (Alternatives K and K2) were no longer prudent or feasible, and a third alternative (Alternative TSM) did not meet the project's purpose and need. NMFS brought forth concerns with one of the remaining alternatives (Alternative E3) due to the potential impacts to high-quality stream habitats located in the upper reaches of Baechtel, Broaddus, and Mill creeks. In addition, NMFS expressed concern with an alternative (Alternative C1) due to potential effects to salmonid spawning and rearing habitat in reaches of Outlet Creek.

Alternatives C1T, J1T, LT, E3, and No Build were considered in the draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS). In addition, the NEPA/404 Resource Agencies agreed that Caltrans would examine the remaining alternatives using a nodal approach, whereby each segment of the remaining alternatives would be evaluated in the draft EIR/EIS. During development of these alternatives, NMFS participated in a number of site visits and meetings regarding the effects of the project and possible mitigation actions to reduce the overall effect to the environment.

On August 22, 2002, NMFS provided Caltrans with comments on the draft EIR/EIS. In that letter, NMFS raised various issues, including potential effects of proposed alternatives on water quality, salmonid habitat, and specific life stages of Federally-protected salmonids. Caltrans conducted alternatives analysis based on public and agency comments on the draft EIR/EIS, and identified the Modified J1T Alternative as the least environmentally damaging practical alternative (LEDPA). NMFS provided Caltrans with a letter on January 23, 2004, which supported the Modified J1T Alternative as the LEDPA, yet provided Caltrans with concerns related to riparian removal and sediment delivery associated with the Modified J1T Alternative. Once FHWA and Caltrans received concurrence from the NEPA/Section 404 agencies on the LEDPA, they initiated formal section 7 consultation with NMFS on October 17, 2005.

During late May and June 2006, Caltrans and NMFS discussed potential changes to the project's construction techniques including dewatering of bridge construction sites and sound monitoring during pile driving. On June 1, 2006, NMFS provided to Caltrans a preliminary draft of the Incidental Take Statement (ITS) attached to the NMFS internal draft biological opinion. Caltrans provided comments on the draft ITS on June 9, and June 22, 2006. Caltrans suggested that dewatering and relocation of salmonids not occur unless sound levels during pile driving exceeded 187 dB_{SEL} or 208 dB peak. The September 2005 biological assessment for the project proposed that NMFS would establish the sound threshold which would trigger dewatering of the project sites.

NMFS and Caltrans then met in Sacramento, California, on June 26, 2006, to discuss sound monitoring, project site dewatering, and sound level impacts on fish. During the meeting, Caltrans continued to propose that dewatering of the stream area near a pile driving work site not occur unless injurious levels of sound were detected. NMFS expressed concern that waiting until injury occurred does not minimize impacts. NMFS proposed that measures be implemented to protect the fish prior to the onset of injury.

To resolve this issue, Caltrans proposed to dewater stream reaches in advance of pile driving to ensure listed salmonids would not be exposed to unsafe levels of sound. An electronic mail message from Sarah Allred (Caltrans) to Thomas Daugherty (NMFS) on June 30, 2006, confirmed that Caltrans would remove fish and de-water stream areas in the vicinity of pile driving and would not rely on sound monitoring thresholds to determine if dewatering is needed. Above and below each dewatered reach, Caltrans proposed to conduct hydroacoustic monitoring during pile driving to assess sound levels.

By letter dated July 13, 2006, to NMFS, Caltrans expressed concern with the delay in issuance of the NMFS biological opinion for the Willits Bypass Project. Caltrans' letter suggested the sound threshold issues associated with pile driving be set aside for this project, because they agreed to dewater all wetted stream crossings prior to pile driving.

On July 19, 2006, Caltrans and NMFS exchanged additional information by electronic mail regarding the hydroacoustic monitoring above and below dewatered areas of the stream.

A complete administrative record for this consultation is on file at the NMFS Ukiah, California field office.

II. DESCRIPTION OF THE PROPOSED ACTION

A. General Description

Caltrans and FHWA propose the Highway 101 Willits Bypass to reduce delays on U.S. Route 101. Currently Highway 101 runs through the City of Willits, California. The bypass project will re-route Highway 101 around the City of Willits, providing a stable flow of traffic at 65 miles per hour. The proposal includes the construction of a four-lane freeway that crosses the Little Lake Valley east of Willits. The bypass would begin 3.3 kilometers (km) south of Willits, where the existing Highway 101 becomes a two-lane road, and extend to about 2.2 km north of Willits, where the new alignment would merge with the existing two-lane Highway 101. Construction would begin in 2009 and likely take four years to complete.

The southern end of the proposed bypass project begins at the Haehl Creek Interchange, where future traffic will be able to remain on the freeway by taking the bypass, or exit to the south end of Willits. The freeway bypass project will continue from the Haehl Creek interchange approximately five km along existing and new imported fill to a proposed viaduct structure. The viaduct structure begins near Center Valley Road and crosses Haehl, Baechtel, Broaddus, and Mill creeks for a distance of 1.7 km. The proposed freeway bypass then continues on new fill for approximately 0.4 km, crosses the railroad grade before reaching the Quail Meadows Interchange

1.5 km to the north of Willits. The proposed freeway bypass continues for approximately one additional km after crossing Upp Creek before re-joining the existing route of Highway 101. The overall length of the proposed freeway bypass will be approximately 9.3 km.

North and southbound lanes of the new alignment will be 3.6 meters wide. A 13.8-meter median will separate the northbound and southbound lanes. Inside shoulder width, nearest the medium, will be 1.5 meters and 3.0 meters on the outside shoulder. Cut slopes will vary from 1:1 (vertical: horizontal) to a 1:4 ratio. Fill slopes generally will vary between 1:2 and 1:4 ratios.

Interchange ramps will have single lanes. Some local roads will be improved or constructed, and these roads will be two lanes with 2.4 meter shoulders. Private access roads will be improved or constructed to meet Mendocino County Standards.

The proposed bypass will cross Haehl Creek at three locations (hereafter termed upper, middle and lower), Baechtel Creek, Broaddus Creek, Mill Creek, and Upp Creek. The crossings at upper Haehl Creek will consist of the southbound and northbound freeway bridge structures; one bridge each for the southbound off-ramp and the northbound on-ramp associated with the southern interchange; and replacement of an existing culvert for the Schmidbauer (private landowner access) access road with a natural bottom culvert. The crossings at middle Haehl Creek would consist of bridges for the north- and south-bound lanes, south of Shell Lane. The crossing at Upp Creek, at the northern end of the project, will consist of a natural bottom culvert for the north-and southbound lanes. The crossings at lower Haehl, Baechtel, Broaddus, and Mill creeks will consist of the north and southbound viaduct structures.

B. Specific Construction Actions

1. Staging Areas

The first phase of construction is the establishment of three staging areas, one each in the southern, central, and northern portions of the project corridor. The "southern" staging area will be located south of East Hill Road and east of the railroad tracks, and is approximately 365 meters east of Haehl Creek. The "central" staging area is located between Center Valley Road and East Commercial Street (Hearst-Willits Road), and borders Baechtel Creek, just upstream and downstream of the confluence with Haehl Creek. The northern staging area will be located near the proposed Quail Meadows interchange.

The staging areas may be used by the contractor(s) to store equipment and materials, and will be located where the contractor can gain easy access to the project corridor. Access roads from the staging areas to the project corridor will be constructed where necessary. It is anticipated that work will begin at several areas at the same time. Where staging areas are located adjacent to salmonid bearing creeks, a sufficient buffer will be maintained along with appropriate best management practices (BMPs) to ensure storm runoff from these areas does not directly flow into any natural drainage. No riparian vegetation would be removed within the staging areas.

2. Road Construction

Caltrans will lay out the new alignment and the contractor will demolish structures and clear the area to be worked. Excavated material from a permitted borrow site, such as Oil Well Hill, will be transported to the alignment where it is placed and compacted to support the pavement section. A maximum of 1.9 million cubic meters of earthen material will be excavated, transported, and compacted to build the project. A haul road will constructed within the limits of the alignment, and it will be used to transport material from the borrow site to the areas of new construction.

Once the material is transported to its desired location, heavy equipment including bulldozers, graders, scrapers, and large trucks will shape the freeway embankment. Compaction occurs simultaneously during this process. Drainage facilities will be installed during this phase of the project.

When the embankment is completed, aggregate will be brought in with belly dump trucks and spread on the roadbed surface. The roadbed will then be watered, shaped and compacted to design specifications. Trucks will then haul in asphalt concrete, spread it with specialized paving equipment, and compact it to specified dimensions.

3. Borrow of Earthen Fill from Oil Well Hill

Up to 1.9 million cubic meters of earthen material may be excavated from the borrow site at Oil Well Hill. Up to 16.2 hectares will be excavated. This activity will occur on the east side of Highway 101, beginning approximately 425 meters north of the Highway 101 bridge over Outlet Creek. Material would be transported to the project corridor via trucks using existing Highway 101, and from Highway 101, material will be transported along haul roads within the limits of the new alignment. Sediment basins and other BMPs will be used to minimize and avoid sediment entering Outlet Creek.

If the contractor selected by Caltrans opts to use an alternative borrow site, the contractor will be required to submit a new borrow site plan to the Caltrans Resident Engineer. All borrow sites, whether designated by Caltrans or the contractor must comply with the project contract and environmental laws and regulations.

4. Concrete Batch Plant

It may be necessary to supplement the current commercial production of concrete and to minimize specified haul time, by allowing contractors to construct a temporary plant(s) near the project site. Caltrans has indicated a likely site for a batch plant is the existing Schusters Transportation site, located north of East Valley Street, and between Haehl Creek and Baechtel Creek. This biological opinion assumes one concrete batch plant will be constructed at the Schusters Transportation site. If an alternative site is selected or additional temporary concrete plants are constructed, additional review by NMFS and reinitiation of section 7 consultation may be necessary.

5. Retaining Walls

Three retaining walls will be constructed for this project. Two retaining walls will be located near Haehl Creek, at the southern freeway interchange. At this site, one will be located along the west side of the northbound on-ramp. The second retaining wall will be located on the east side of the northbound mainline lanes just south of the new crossing over upper Haehl Creek. Rock slope protection may be needed for a distance of up to 15 meters along the south bank of Haehl Creek. The third retaining wall will be located on the west side of the southbound lanes south of the viaduct, and east of Baechtel Creek.

To construct the two retaining walls at the southern interchange, removal of riparian vegetation will be required. A portion of these walls may require rock slope protection. The wall foundation will require the installation of "H" piles by pile driving. Equipment may need to enter the Haehl Creek channel at this location for construction activities. However, because this reach of Haehl Creek is normally dry during the summer months, work in this area will likely occur when the channel is dry.

The third retaining wall south of the viaduct will be constructed on grassland. This site will not require the removal of riparian vegetation.

6. Permanent Bridge Construction

At the upper Haehl Creek crossing location, the proposed bridges will consist of the two freeway structures (northbound and southbound lanes); the southbound off-ramp; and the northbound on-ramp. Rock slope protection may be required along both banks at the southbound off-ramp and northbound on-ramp for a distance of approximately 8 meters above and below each structure.

The proposed new Schmidbauer Ranch access road will be located off the east side of the interchange and will connect with an existing dirt road that crosses over Haehl Creek. The reconstruction of this access road will require removal of an existing culvert. This culvert will be replaced with an appropriately sized culvert that provides flood flow conveyance and anadromous fish passage.

At the middle Haehl Creek crossing, the proposed bridges will consist of two freeway structures (northbound and southbound lanes). The proposed bridge sites will be cleared of vegetation prior to construction. Rock slope protection may be required along the south bank for a distance of approximately 8 meters above and below each structure.

At lower Haehl Creek, Baechtel Creek, Broaddus Creek, and Mill Creek, permanent stream crossings will consist of two freeway structures (northbound and southbound lanes) for the viaduct. These viaduct crossings and construction methods are described in detail below.

Permanent bridge building will begin with construction of approaches, where necessary, followed by construction of the abutments. The abutment work will include excavation for the footings, pile driving, or drilling for the foundations (which will occur outside the creek channels), formwork for concrete placement, steel reinforcement bar placement, concrete pouring, finishing, and curing. Each of the permanent bridge abutments may require 20 or more

35 centimeter to 51 centimeter "H" piles, which will be placed by pile drivers, at or near the top of bank.

The temporary false work at each permanent bridge site will be constructed between June 15 and October 15. The false work substructure will consist of steel beams supported by the piles or wood pads and will span the creek channel, thus eliminating the need to place piles in the streambed below ordinary high water mark. False work supports will consist of hollow, 61 centimeter to 76 centimeter diameter steel piles, "H" piles, or wood pads. Installation of these supports may require pile driving. The permanent bridge superstructure forms would then be erected and concrete poured, finished, and cured. After a suitable time to allow the concrete to set and strengthen, the falsework would be removed and other work, including bridge rail and approach work, would be completed.

The use of temporary culverts for construction of the structures crossing salmonid bearing streams is not anticipated. If dewatering is required at any of these stream crossings, cofferdams will be used to divert stream flow around the work area. Any salmonids in work areas will be collected prior to and during dewatering for relocation to other suitable habitats nearby in the same sub-basin.

7. Temporary Bridge Construction

Temporary bridges may be required to access portions of the project site at the initial stages of construction. The temporary bridges will likely consist of Bailey Bridges, railroad flatcars, or similar type of structures. These bridges would not require placing any piers in the stream channels or banks. No access into the live stream channels would be required.

Temporary bridges may be located at Haehl, Baechtel, Broaddus, Upp and Mill creeks, or at several (5 or less) other non-fish bearing streams, as necessary. If the placement of these bridges is outside of areas already proposed for temporary riparian removal areas, an additional distance of three meters of riparian vegetation will be removed on both sides of the structure. The bridges would be installed during the dry season between June 15 through October 15.

8. Viaduct Construction

The proposed viaduct crossings will be located on lower Haehl Creek, Baechtel Creek, Broaddus Creek, and Mill Creek. The proposed viaduct crossings would consist of separate northbound and southbound elevated structures. These viaducts would be elevated above the valley floor for their full lengths of approximately 1730 meters. The viaducts will span the Little Lake Valley and allow for runoff in the valley floodway. Each of the elevated viaduct structures would be approximately 12.5 meters wide. The viaduct superstructures will be supported by piles with a maximum diameter of 2.1 meters. The size and number of columns and the distance between the sets of columns has yet to be determined. The installation of the columns and deck construction would require a 30.5-meter wide temporary work area on the east side of the viaduct, and a 17-meter wide temporary work area on the west side of the viaduct.

Permanent fill in the floodway would be limited to the total surface area encompassed by the columns (estimated to be approximately one percent of the area under the viaduct). It is likely

that the northbound and southbound viaduct structures will be constructed simultaneously. When each frame (consisting of multiple spans) is completed, work would begin on the next frame, where material and equipment would be located. One of the viaduct spans would require support columns at the site of the existing aeration ponds at the Willits Wastewater Treatment Plant. These ponds will be decommissioned or relocated prior to construction of the viaduct.

The viaduct crossing over Baechtel Creek may require rock slope protection. Rock slope protection may be installed on both banks under the structures and for a maximum distance of 8 meters upstream and downstream of the structures.

9. Pile Driving Associated with Bridge and Viaduct Construction

Pile driving will be required to construct the bridge abutments and piers, the columns for the viaduct, and installation of the temporary falsework supports. The exact number and size of the piles for each of the structures have not been determined. However, there will be no permanent or temporary piles in any stream channel below ordinary high water. For the proposed viaduct, piles could be as large as 2 meters in diameter. Falsework supports may be piles approximately 61 centimeters to 76 centimeters in diameter on wood pads. Where necessary, benches will be excavated on the stream bank above ordinary high water to provide temporary footings for the false work. Each permanent bridge abutment may require approximately 20, 36-centimeter to 51-centimeter "H" piles. All permanent bridge abutments would be located above the top-of-bank. The approximate number of piers and columns within 15 meters of the stream channels are summarized below:

- Upper Haehl Creek: 455, 30-centimeter "H" piles would be driven within 15 meters of the top-of-banks for the upper Haehl Creek crossings for the bridge abutments and retaining walls; and 69, 61 to 76 centimeter falsework piles would be driven, with 12 of these piles, within 15 meters of the top-of-banks and 28 below the top-of-banks (but above the ordinary high water mark).

- Middle Haehl Creek: 186, 30-centimeter "H", piles would be driven within 15 meters of the top-of-banks for the middle Haehl Creek crossing for the bridge abutments; one 2-meter diameter cast in steel shell (CISS) pile would be located below the top-of-bank; and 50, 61- to 76-centimeter diameter falsework piles would be driven, with 20 of these piles within 15 meters of the top-of-banks and 30 piles below the top-of-banks.

- Lower Haehl Creek: 4, 2-meter diameter CISS piles would be driven within 15 meters above the top-of-banks at Haehl Creek, near it's confluence with Baechtel Creek; and 25, 61 to 76-centimeter falsework piles would be driven, with 20 of these piles within 15 meters of the top-of-banks, and 5 piles below the top-of-banks.

- Baechtel Creek: 12, 2-meter diameter, CISS piles would be driven, with 6 of these piles within 15 meters of the top-of-banks, and 6 piles below the top-of-banks; and 70, 61- to 76-centimeter falsework piles would be driven, with 25 of these piles within 15 meters of the top-of-banks and 45 piles below the top-of-banks.

- Broaddus Creek: 6, 2-meter diameter, CISS piles would be driven within 15 meters of the top-of-banks, with no large piles being driven below the top-of-banks; 30, 61 to 76-centimeter falsework piles would be driven, with 20 of these piles located within 15 meters of the top-of-banks, and 10 piles located below the top-of-banks.

- Mill Creek: 6, 2-meter diameter, CISS piles would be driven within 15 meters above the banks at Mill Creek; and 20, 61 to 76-centimeter falsework piles would be driven, with 10 of these piles within 15 meters of the top-of-banks and 10 piles below the top-of-banks.

All temporary and permanent piles will be installed with an impact or vibratory hammer. It is anticipated that the time required to drive each 2-meter diameter pile could be approximately 10 to 20 hours, but may take longer. The time required to drive typical small diameter piles may be one hour. Pile driving activities within 15 meters of the top-of-bank may require up to a week, or more, at each crossing.

Prior to the driving of piles in or near the stream banks of Haehl, Baechtel, Broaddus, or Upp creek, Caltrans proposes to dewater the adjacent reach of wetted streams for a distance up to 150 meters. Fish including anadromous salmonids will be collected prior to and during dewatering for relocation to suitable and unaffected aquatic habitat nearby. Cofferdams will be constructed and water diverted through appropriately sized pipes. The cofferdams will likely be constructed with impermeable liners placed over clean, washed, commercially available river gravel, ranging in size from approximately 2.5 centimeters to 7.5 centimeters, or by use of sand bags or rubber bladders. No native streambed material or angular rock material would be used. Water will be diverted into the upstream entrance of a diversion pipe and around the construction site.

A qualified fisheries biologist who has authorization from NMFS will be on-site to capture and relocate salmonids trapped in dewatered areas and pools. The biologist would relocate fish to suitable habitat outside of the construction area. The methods of fish removal will be selected in coordination with NMFS and California Department of Fish and Game (CDFG). Upon completion of construction at each crossing, material used for the cofferdams and water diversion will be removed from the channel. Any imported washed gravel used for cofferdams would be spread out within the stream channel. Cofferdams and diversion facilities will be removed from the channel no later than October 15 of each year.

10. Stream Realignment

The project will require the realignment of approximately 915 meters of an unnamed ephemeral watercourse, located east of the existing roadbed fill near the Schmidbauer Ranch, north the proposed southern freeway interchange. The 915-meter reach affected occurs south of East Hill Road, and averages approximately 3 meters wide. This watercourse has a small watershed, consisting of a small portion of the Schmidbauer Ranch. A new channel may be constructed east of the existing watercourse, and would be completed in one construction season while the watercourse is dry.

11. Culvert Construction, Removal, and Replacement

An existing culvert on Upp creek, under existing Highway 101, will be replaced to improve fish passage. The culvert will be either a steel arch design or a cast-in-place box culvert with a natural bottom. The culvert that spans the creek will be constructed in a manner that maintains the original channel configuration and gradient. If a cast-in-place design is used, temporary construction formwork will require supports in multiple locations within the creek channel. If a steel arch design is selected, no temporary false work will be used in the creek. Removal of vegetation up to a distance of 23 meters above and below the Upp Creek culvert site may be required for construction. The new culvert site may also require placement of rock slope protection on the banks for a maximum distance of 8 meters above and below the culvert

An existing culvert in upper Haehl Creek will be replaced during the improvement of the Schmidbauer Ranch access road. The existing culvert will be replaced with a natural bottom arch or box culvert. Construction will occur during the summer months when this reach of Haehl Creek is normally dry. However, flows through the existing culvert have created an outfall pool that can retain water throughout the year. If water is present, a qualified fisheries biologist will survey the pool for the presence of salmonids. If present, the fish would be removed prior to removal and replacement of the culvert.

A second culvert located in upper Haehl Creek under the proposed freeway bridge will be removed to improve fish passage. Stabilization of the creek channel following removal of the culvert may consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Stream channel stabilization would follow guidelines provided in the *California Salmonid Stream Habitat Restoration* Manual (CDFG 1998). Guidance from NMFS and CDFG will be used in development of appropriate stream stabilization structures at this site.

12. Freeway Maintenance and Use

Long-term maintenance for the completed bypass will include mowing, ditch and culvert cleaning, vegetation pruning, pavement sweeping, applying sand, and repair. These normal maintenance activities are conducted using Caltrans BMPs as described in the Storm Water Quality Handbook Maintenance Staff Guide (Caltrans 2003). Caltrans estimates that the freeway bypass will be used by 14,400 vehicles per day (average annual daily traffic estimated for 2008).

C. Proposed Measures to Minimize and Avoid Impacts

In addition to the impact minimization measures described above, the following measures are proposed by Caltrans and FHWA to further minimize impacts to salmonids during implementation of the project:

- Construction at each of creek crossings will be limited to the period between June 15 and October 15 of each year, unless earlier and/or later dates for construction activities at the creek crossings are approved by NMFS. This work window is intended to minimize the impacts to migrating salmon and steelhead that utilize Haehl, Baechtel, Broaddus, Mill, and Upp creeks.

- If a rain event occurs between June 15 and October 15, and rock slope protection or other erosion control measures have not been completed, non-rainy season BMPs would be implemented in accordance with the Storm Water pollution Prevention Plan (SWPPP), including inspection, maintenance and repair, to minimize delivery of soil to the stream channels.

- The use of vehicles and heavy equipment may not occur in areas below the top-of-bank when standing or flowing water is present with the exception of establishing a flow diversion around a work site.

- BMPs will be used to prevent the discharge of equipment fluids to the stream channel.

- Equipment will not be stored in the channel when not in use. All equipment will be removed from the channel at the end of each workday. All equipment will be fueled, maintained, and repaired at sites well away from the stream banks.

- Caltrans will monitor underwater sound pressure levels in the wetted stream habitats immediately above and below dewatered areas. A minimum of 10 blows per pile will be monitored for underwater sound levels. If in-stream peak sound pressure levels exceed 187 dB_{SEL} or 208 dB peak (Caltrans 2006), Caltrans will immediately contact NMFS for recommendations to reduce the potential for harm to listed salmonids. Possible measures to reduce harm could include dewatering additional areas and fish relocation. The length of channel that would be dewatered would be determined through consultation with NMFS and CDFG fisheries biologists. If the streambed is dry for a distance of approximately 75 meters upstream and downstream of the piles/columns, such that no cofferdams or dewatering is required, no underwater sound monitoring is proposed by Caltrans.

- Appropriate BMPs will be developed and implemented in accordance with the Statewide National Pollutant Discharge Elimination System (NPDES) permit for all soil disturbance activities. These BMPs will be submitted by the contractor to Caltrans for approval as a SWPPP prior to engaging in any construction activities related to the proposed Willits Bypass Project.

- Caltrans/FHWA will have a qualified biologist monitor construction activities in sensitive biological resource areas (*e.g.*, stream crossings) as necessary, to ensure permit conditions and mitigation requirements are implemented and enforced.

D. Proposed Willits Bypass Conceptual Mitigation Plan

Pursuant to the NEPA/404 MOU, Caltrans has prepared a conceptual mitigation plan to serve as a guide in the preparation of the final mitigation and monitoring plan and as a basis for further negotiations with resource agencies. Mitigation for impacts to riparian vegetation would occur both on-site and off-site. Appropriate, local native plant species would be used for the revegetation of impacted riparian areas within the project limits as well as in off-site mitigation areas. Riparian trees are proposed for planting at the ratio of five new trees for each tree lost with the goal of four living trees after five years of monitoring. Associated shrubs, herbaceous

perennial plants and annuals would be seeded or planted along with riparian trees. Planting methods would include the installation of stem (pole) cuttings from plants such as willow (*Salix spp.*), cottonwood (*Populus spp.*), thimbleberry (*Rubus parviflorus*), California blackberry (*Rubus ursinus*), coyote bush (*Baccharis spp.*), or other species capable of easy rooting from cuttings.

Pole cuttings will also be utilized to revegetate areas where riprap is installed. Cuttings would be planted in openings between the rock riprap. As part of the mitigation, pole cuttings may be utilized to armor active erosion headcuts, eroding gully banks, and unstable stream banks in the project area and its vicinity. Installation of container grown or bare rootstock plants, such as alder, Oregon ash, valley oak, or box elder would also be utilized in areas at or above ordinary high water. Selected sensitive plants growing in areas impacted by the project could be relocated.

Mitigation for permanently impacted project area riparian habitats would be implemented as creation/restoration, enhancement, and preservation of stream bank. All temporarily impacted riparian areas would be restored to their original condition in addition to compensatory mitigation elsewhere in Little Lake Valley. The purpose of the compensatory mitigation in addition to restoration of impacted project areas is to offset the temporal loss of the riparian habitat functions in the impacted areas.

In addition to re-planting of native vegetation, Caltrans may pursue a program to remove invasive exotic vegetation. Invasive exotic vegetation would be removed in compliance with the California Invasive Plant Council's *Invasive Plants of California's Wildlands* manual. Areas where invasive exotic plants are removed would be closely monitored for several years for the plant's re-emergence.

For compensation of impacts to anadromous salmonid habitat, Caltrans may construct instream structures such as opposing wing deflectors, anchored large woody debris, or stepped pool systems in project streams or elsewhere in the Willits Valley. Another possible mitigation activity could be the removal of fish passage barriers on primary salmonid streams in Little Lake Valley. Fish passage barriers within Caltrans right-of-way areas would be prioritized. These projects have not been designed and were not analyzed in this biological opinion. Reinitiation of consultation with NMFS may be necessary for these projects if one or more of them may affect listed salmonids or their critical habitat.

In coordination with state and federal agencies, Caltrans will develop a final mitigation and monitoring plan prior to project construction to ensure project impacts to listed species will be fully mitigated. By separate memorandum with the CDFG, Caltrans will ensure adequate funding to implement mitigation and monitoring measures for purposes of obtaining a consistency determination pursuant to CDFG Code Section 2080.1.

E. Action Area

The action area for a consultation includes all areas affected directly and indirectly by the project. For the purposes of this consultation, the action area consists of stream segments of Haehl,

Baechtel, Broaddus, Mill, Outlet, and Upp creeks within the Willits Bypass Project footprint. Indirect effects could extend to reaches of Outlet Creek below the confluence of Baechtel and Broaddus creeks, a reach of Mill Creek, and reaches of Haehl Creek between the construction sites. All of the action area stream reaches eventually flow to Outlet Creek, which flows north out of the Little Lake Valley.

Impacts from direct, indirect, and beneficial effects by this project vary between streams. The extent of the potential impacts by stream length will be greatest along Haehl and Outlet creeks. Baechtel, Broaddus, and Upp creeks will be exposed to less impact by stream length, with one proposed freeway crossing (north and south lanes) at each of them. The Outlet Creek stream reach included in the action area is located downstream of the of the freeway construction project. Table 1 summarizes the length of each stream that is included as in the action area for this biological opinion.

Table 1. Streams and expected lengths of impacted areas for the Willits Bypass Project.

Stream Name	Number of Crossings	Type of Crossings	Action Area Length
Haehl Creek	6	6 bridges, 1 culvert, 1 culvert removal, 2 viaduct crossings	5 kilometers
Baechtel Creek	1	2 viaduct crossings	1250 meters
Broaddus Creek	1	2 viaduct crossings	150 meters
Mill Creek	1	2 viaduct crossing	2 kilometers
Upp Creek	1	1 culvert	400 meters
Outlet Creek	None		5 kilometers
			Total = 13.8 kilometers

* All action area lengths are approximate.

III. STATUS OF THE SPECIES AND CRITICAL HABITAT

This biological opinion analyzes the effects of the proposed action on the following listed salmonids and their designated critical habitat:

Threatened Southern Oregon/Northern California Coasts coho salmon. (*Oncorhynchus kisutch*)
Listing determination (70 FR 37160; June 28, 2005)
Critical habitat designation (64 FR 24049; May 5, 1999);

Threatened California Coastal Chinook salmon (*Oncorhynchus tshawytscha*)
Listing determination (70 FR 37160; June 28, 2005)
Critical habitat designation (70 FR 52488; September 2, 2005);

Threatened Northern California steelhead (*Oncorhynchus mykiss*)
Listing determination (71 FR 834; January 5, 2006).
Critical habitat designation (70 FR 52488; September 2, 2005).

A. Species Description and Life History

Coho salmon, Chinook salmon, and steelhead are anadromous fish, spending some time in both fresh- and saltwater. The older juvenile and adult life stages occur in the ocean, until the adults ascend freshwater streams to spawn. Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles all rear in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults. Juveniles migrating to the ocean are called smolts. Both smolts and adults go through physiological changes as they emigrate from fresh- to saltwater (smolts) and immigrate from salt- to freshwater (adults). The timing of migrations, freshwater habitat preferences for spawning and rearing, the duration of freshwater and ocean rearing, distribution in the ocean, age at maturity, and other traits vary by species. Coho salmon and Chinook salmon die after spawning, whereas steelhead can sometimes survive to spawn again (Shapovalov and Taft 1954, Sandercock 1991, Healy 1991, Busby *et al.* 1996).

1. Coho Salmon

The life history of the coho salmon in California has been well documented (Shapovalov and Taft 1954, Hassler 1987, Weitkamp *et al.* 1995). In contrast to the life history patterns of other anadromous salmonids, coho salmon in California generally exhibit a relatively simple 3-year life cycle. Adult salmon typically begin the immigration from the ocean to their natal streams after heavy late-fall or winter rains breach the sand bars at the mouths of coastal streams (Sandercock 1991). Coho salmon are typically associated with small to moderately-sized coastal streams characterized by heavily forested watersheds; perennially-flowing reaches of cool, high-quality water; dense riparian canopy; deep pools with abundant overhead cover; instream cover consisting of large, stable woody debris and undercut banks; and gravel or cobble substrates (Sandercock 1991). Immigration continues into March, generally peaking in December and January, with spawning occurring shortly after arrival at the spawning ground (Shapovalov and Taft 1954). The timing of adult coho salmon migration to the Eel River watershed is October through February, peaking in November and December (Fukushima and Lesh 1998).

The eggs generally hatch after four to eight weeks, depending on water temperature. Survival and development rates depend, in part, on fine sediment levels within the redd. Under optimum conditions, mortality during this period can be as low as 10 percent; under adverse conditions of high scouring flows or heavy siltation, mortality may be close to 100 percent (Baker and Reynolds 1986). McMahon (1983) found that egg and fry survival drops sharply when fines make up 15 percent or more of the substrate. The newly-hatched fry remain in the redd from two to seven weeks before emerging from the gravel (Shapovalov and Taft 1954). Upon emergence, fry seek out shallow water, usually along stream margins. As they grow, juvenile coho salmon often occupy habitat at the heads of pools, which generally provide an optimum mix of high food availability and good cover with low swimming cost (Nielsen 1992). Chapman and Bjornn (1969) determined that larger juveniles tend to occupy the head of pools, whereas smaller juveniles are found further down the pools. As the fish continue to grow, they move into deeper water and expand their territories until, by July and August, they reside exclusively in deep pool habitat. Preferred rearing habitat has little or no turbidity and high sustained invertebrate forage production. Juvenile coho salmon feed primarily on drifting terrestrial insects, much of which

are produced in the riparian canopy, and on aquatic invertebrates growing within the interstices of the substrate and in leaf litter in pools. Juvenile coho salmon prefer well shaded pools at least 1 meter deep with dense overhead cover; abundant submerged cover composed of undercut banks, logs, roots, and other woody debris; and preferred water temperatures of 12-15° Celsius (C) (Brett 1952, Bell 1991, Reiser and Bjornn 1979, McMahon 1983), but not exceeding 22-25°C (Brungs and Jones 1977) for extended time periods. Growth is slowed considerably at 18°C and ceases at 20°C (Stein *et al.* 1972, Bell 1991).

In the spring, as yearlings, juvenile coho salmon undergo a physiological process, or smoltification, which prepares them for living in the marine environment. In the Eel River watershed, coho salmon smolts migrate to the ocean from May through July, peaking in April, May, and June (Fukushima and Lesh 1998). Emigration timing is correlated with precipitation events and peak upwelling currents along the coast. Entry into the ocean at this time facilitates more growth and, therefore, greater marine survival (Holtby *et al.* 1990).

2. Chinook Salmon

Chinook salmon are the largest anadromous member of Oncorhynchus; adults weighing more than 120 pounds have been reported from North American waters (Scott and Crossman 1973, Page and Burr 1991). Chinook salmon exhibit two main life history strategies: ocean-type fish and river-type fish (Healy 1991). Ocean-type fish typically are fall- or winter-run fish that spawn shortly after entering freshwater and their offspring emigrate shortly after emergence from the redd. River-type fish are typically spring- or summer-run fish that have a protracted adult freshwater residency, sometimes spawning several months after entering freshwater. Progeny of river-type fish frequently spend one or more years in freshwater before emigrating. The Chinook salmon in the Eel River watershed and Outlet Creek sub-basin are ocean-type fish.

Chinook salmon in the CC Chinook salmon ESU generally remains in the ocean for two to five years (reviewed in Myers *et al.* 1998 – Appendix B). In the ocean, Chinook salmon from California tend to stay along the California and Oregon coasts, but migration may continue to higher latitudes if oceanographic conditions are appropriate (Allen and Hassler 1986). Some Chinook salmon return from the ocean to spawn one or more years before full sized adults return, and are referred to as jacks (males) and jills (females). Fall-run Chinook salmon enter the Eel River from October through January (Fukushima and Lesh 1998). These fish typically enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas on the mainstem or lower tributaries of rivers, and spawn within a few weeks of freshwater entry. Fall-run Chinook salmon typically spawn in the lower reaches of rivers and tributaries at elevations of 200 to 1,000 feet. Run timing is also, in part, a response to stream flow characteristics.

Egg deposition must be timed to ensure that fry emerge during the following spring at a time when the river or estuary productivity is sufficient for juvenile survival and growth. Adult female Chinook salmon prepare redds in stream areas with suitable gravel composition, water depth, and velocity. Spawning generally occurs in swift, relatively shallow riffles or along the edges of fast runs at depths greater than 24 centimeters (cm). Optimal spawning temperatures range between 5.6 and 13.9°C. Redds vary widely in size and location within the river. Preferred spawning substrate is clean, loose gravel, mostly sized between 1.3 and 10.2 cm, with no more than 5 percent fines. Gravels are unsuitable when they have been cemented with clay or fines or

are produced in the riparian canopy, and on aquatic invertebrates growing within the interstices of the substrate and in leaf litter in pools. Juvenile coho salmon prefer well shaded pools at least 1 meter deep with dense overhead cover; abundant submerged cover composed of undercut banks, logs, roots, and other woody debris; and preferred water temperatures of 12-15° Celsius (C) (Brett 1952, Bell 1991, Reiser and Bjornn 1979, McMahon 1983), but not exceeding 22-25°C (Brungs and Jones 1977) for extended time periods. Growth is slowed considerably at 18°C and ceases at 20°C (Stein *et al.* 1972, Bell 1991).

In the spring, as yearlings, juvenile coho salmon undergo a physiological process, or smoltification, which prepares them for living in the marine environment. In the Eel River watershed, coho salmon smolts migrate to the ocean from May through July, peaking in April, May, and June (Fukushima and Lesh 1998). Emigration timing is correlated with precipitation events and peak upwelling currents along the coast. Entry into the ocean at this time facilitates more growth and, therefore, greater marine survival (Holtby *et al.* 1990).

2. Chinook Salmon

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when sediments settle out onto redds, reducing intergravel percolation. Minimum intergravel percolation rate depends on flow rate, water depth, and water quality. The percolation rate must be adequate to maintain oxygen delivery to the eggs and remove metabolic wastes. The Chinook salmon's need for a strong, constant level of subsurface flow may indicate that suitable spawning habitat is more limited in most rivers than superficial observation would suggest. After depositing eggs in redds, adult Chinook salmon guard the redd from 4 to 25 days before dying.

Chinook salmon eggs incubate for 90 to 150 days, depending on water temperature. Successful incubation depends on several factors including dissolved oxygen levels, temperature, substrate size, amount of fine sediment, and water velocity. Maximum survival of incubating eggs and pre emergent fry occurs at water temperatures between 5.6 and 13.3°C with a preferred temperature of 11.1°C. Fry emergence begins in December and continues into mid April (Leidy and Leidy 1984). Emergence can be hindered if the interstitial spaces in the redd are not large enough to permit passage of the fry. In laboratory studies, Bjornn and Reiser (1991) observed that Chinook salmon and steelhead fry had difficulty emerging from gravel when fine sediments (6.4 millimeters or less) exceeded 30 to 40 percent by volume.

After emergence, Chinook salmon fry seek out areas behind fallen trees, back eddies, undercut banks, and other areas of bank cover (Everest and Chapman 1972). As they grow larger, their habitat preferences change. Juveniles move away from stream margins and begin to use deeper water areas with slightly faster water velocities, but continue to use available cover to minimize the risk of predation and reduce energy expenditure. Fish size appears to be positively correlated with water velocity and depth (Chapman and Bjornn 1969, Everest and Chapman 1972). Optimal temperatures for both Chinook salmon fry and fingerlings range from 12 to 14°C, with maximum growth rates at 12.8°C (Boles 1988). Chinook salmon feed on small terrestrial and aquatic insects and aquatic crustaceans. Cover, in the form of rocks, submerged aquatic vegetation, logs, riparian vegetation, and undercut banks provide food, shade, and protect juveniles from predation.

The low flows, high temperatures, and sand bars that develop in smaller coastal rivers during the summer months favor an ocean-type life history (Kostow 1995). With this life history, smolts typically emigrate as subyearlings during April through July (Myers *et al.* 1998). The ocean-type Chinook salmon in California tend to use estuaries and coastal areas for rearing more extensively than stream type Chinook salmon. The brackish water areas in estuaries moderate the physiological stress that occurs during parr smolt transitions.

3. Steelhead

General reviews for steelhead in California document much variation in life history (Shapovalov and Taft 1954, Barnhart 1986, Busby *et al.* 1996, McEwan and Jackson 1996). Juvenile steelhead live 1 to 4 years in freshwater before smolting and emigrating, then spend 1 to 4 years maturing in the ocean. Steelhead spawn at 2 to 8 years, and may spawn 1 to 4 times over their life. Although variation occurs, in coastal California, steelhead usually live in freshwater for 2 years, then spend 1 or 2 years in ocean before returning to their natal stream to spawn. Steelhead exhibit much variation in migration timing too. Steelhead can be divided into two reproductive ecotypes, based upon their state of sexual maturity at the time of river immigration and the duration of their spawning migration: stream maturing and ocean maturing. Stream maturing

steelhead enter freshwater in a sexually immature condition and require several months to mature and spawn; whereas, ocean maturing steelhead enter freshwater with well developed gonads and spawn shortly after river entry. These two reproductive ecotypes are more commonly referred to by their season of freshwater entry (*i.e.*, summer [stream maturing] and winter steelhead [ocean maturing]). Summer steelhead typically immigrate between May and October and spawn in January and February; winter steelhead typically immigrate between November and April spawning soon after reaching the spawning grounds. Both summer and winter steelhead are reported from the South Fork Eel River, but only winter steelhead are likely found in the action area.

Survival to emergence of steelhead embryos is inversely related to the proportion of fine sediment in the spawning gravels. However, steelhead are slightly more tolerant than other salmonids, with significant reductions in survival when fines of less than 6.4 millimeters (mm) comprise 20-25 percent of the substrate. Fry typically emerge from the gravel two to three weeks after hatching (Barnhart 1986). Upon emerging from the gravel, fry rear in edgewater habitats and move gradually into pools and riffles as they grow larger. Older fry establish territories which they defend. Cover is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation (Shirvell 1990, Meehan and Bjornn 1991). Steelhead, however, tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids. Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. In winter, juvenile steelhead become inactive and hide in available cover, including gravel or woody debris. Rearing steelhead juveniles prefer water temperatures of 7.2-14.4°C and have an upper lethal limit of 23.9°C (Barnhart 1986, Bjornn and Reiser 1991). They can survive in water up to 27°C with saturated dissolved oxygen conditions and a plentiful food supply. Fluctuating diurnal water temperatures also aid in survivability of salmonids (Busby *et al.* 1996).

In Waddell Creek, in Santa Cruz County, Shapovalov and Taft (1954) found steelhead juveniles migrating downstream at all times of the year, with the most juvenile steelhead emigrating during spring and summer. Fukushima and Lesh (1998) report the steelhead emigrate from the Eel River watershed from April through July.

B. Status of Species and Critical Habitat

In this opinion, NMFS assesses the status of each species by examining four types of information, all of which help us understand a population's ability to survive. These population viability parameters are: abundance, population growth rate, spatial structure, and diversity (McElhany *et al.* 2000). While there is insufficient information to evaluate these population viability parameters in a quantitative sense, NMFS has used existing information to determine the general condition of populations in each ESU and factors responsible for the current status of each ESU.

1. SONCC Coho Salmon

A comprehensive review of estimates of historic abundance, decline, and present status of coho salmon in California is provided by Brown *et al.* (1994). They estimated that the coho salmon annual spawning population in California ranged between 200,000 and 500,000 fish in the 1940s,

which declined to about 100,000 fish by the 1960s, followed by a further decline to about 31,000 fish by 1991. Brown *et al.* (1994) concluded that the California coho salmon population had declined more than 94 percent since the 1940s, with the greatest decline occurring since the 1960s. More recent population estimates vary from approximately 600 to 5,500 adults (Brown *et al.* 1994). Available information suggests that SONCC coho salmon abundance is very low, and the ESU is not able to produce enough offspring to maintain itself (population growth rates are negative) and has experienced many local extirpations (NMFS 2001, Good *et al.* 2005). In addition, SONCC coho salmon have experienced range constriction, fragmentation, and a loss genetic diversity. Many subpopulations that may have acted to support the species' overall numbers and geographic distribution, have likely been lost. While the amount of data supporting these conclusions is not extensive, NMFS is unaware of information that suggests a more positive assessment of the condition of the SONCC coho salmon ESU and its critical habitat. Recent status reviews for SONCC coho salmon conclude that this ESU is presently "likely to become endangered" (NMFS 2001, Good *et al.* 2005). Recently NMFS evaluated the listing status of SONCC coho salmon and maintained the threatened status of SONCC coho salmon (70 FR 37160).

2. CC Chinook Salmon

Rigorous population estimates for the CC Chinook salmon are lacking. Myers *et al.* (1998) reviewed early estimates and reported estimated historic (prior to 1965) Chinook salmon escapement for the Eel River as 55,500. Recent estimates of abundance within the Eel River exceeds 4,000 Chinook salmon and show a -29.7 percent trend in abundance from 1987-1997 (Myers *et al.* 1998). Evidence suggests that CC Chinook salmon populations have been extirpated or nearly extirpated in the southern part of the ESU, or are extremely low in abundance – Chinook salmon in the Russian River are an exception. In addition, an apparent loss of the spring-run Chinook life history in the Eel River Basin and elsewhere in the ESU indicates risks to the diversity of the ESU. Although there are few data available, recent status reviews for CC Chinook salmon conclude that population abundance levels remain depressed relative to historical levels and that this ESU is presently "likely to become endangered" (NMFS 2001, Good *et al.* 2005). Recently NMFS evaluated the listing status of CC Chinook salmon and maintained the threatened status of SONCC coho salmon (70 FR 37160). Chinook salmon runs observed in the South Fork Eel River and the Van Duzen River in 1992/93 through 1994/95 indicated a slight increase in numbers (CDFG 1997).

3. NC Steelhead

Based on the limited data available (dam counts of portions of stocks in several rivers), NMFS' initial status review of NC steelhead (Busby *et al.* 1996) determined that population abundance was very low relative to historical estimates (1930s and 1960s dam counts), and recent trends were downward in most stocks. Overall, population numbers are severely reduced from pre-1960s levels, when approximately 198,000 adult steelhead migrated upstream to spawn in the major rivers of this Distinct Population Segment (DPS) (Busby *et al.* 1996, 65 FR 36074). Updated status reviews reach the same conclusion, and noted the poor amount of data available, especially for winter run steelhead (NMFS 1997, Adams 2000, Good *et al.* 2005). The information available suggests that the population growth rate is negative. Comprehensive geographic distribution information is not available for this DPS, but steelhead are considered to

remain widely distributed (NMFS 1997). It is known that dams on the Mad River and Eel River block large amounts of habitat historically used by NC steelhead (Busby *et al.* 1996). Hatchery practices in this DPS have exposed the wild population to genetic introgression and the potential for deleterious interactions between native stock and introduced steelhead. Historical hatchery practices at the Mad River hatchery are of particular concern, and included out-planting of non-native Mad River hatchery fish to other streams in the DPS and the production of non-native summer steelhead (65 FR 36074). The conclusion of the most recent status review (Good *et al.* 2005) echoes that of previous reviews. Abundance and productivity in this DPS are of most concern, relative to NC steelhead spatial structure (distribution on the landscape) and diversity (level of genetic introgression). The lack of data available also remains a risk because of uncertainty regarding the condition of some stream populations. Recently, NMFS evaluated the listing status of NC steelhead and proposed maintaining the threatened listing determination (71 FR 834). NMFS is unaware of recent population status information specific to steelhead in the mainstem Eel River, or more specific to the Outlet Creek subbasin.

4. Critical Habitat

Critical habitat is defined in section 3(5)(A) of the Endangered Species Act (ESA) as "(i) the specific areas within the geographical area occupied by the species . . . on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species . . . upon a determination by the Secretary of Commerce (Secretary) that such areas are essential for the conservation of the species" (see 16 U.S.C. 1532(5)(A)). The term 'conservation', as defined in section 3(3) of the ESA, means ". . . to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary" (see 16 U.S.C. 1532(3)). Therefore, critical habitat is the geographic area and habitat functions necessary for the recovery of the species.

The condition of critical habitat, for all the Chinook and coho salmon ESUs and the steelhead DPS, has been degraded from conditions known to support viable salmonid populations. These conditions are, in part, the result of the following human-induced factors affecting critical habitat[1]: logging, agricultural and mining activities, urbanization, stream channelization, dams, wetland loss, and water withdrawals, including unscreened diversions for irrigation (reviewed in Good *et al.* 2005). Impacts of concern include alteration of stream bank and channel morphology, reduced surface flow, alteration of water temperatures, loss of spawning and rearing habitat, fragmentation of habitat, loss of downstream recruitment of spawning gravels and large woody debris, degradation of water quality, removal of riparian vegetation resulting in increased stream bank erosion, increases in erosion entry to streams from upland areas, loss of shade (higher water temperatures), and loss of nutrient inputs. Depletion and storage of natural river and stream flows have drastically altered natural hydrologic cycles in many of the streams in the ESUs and the DPS.

[1]Other factors, such as over fishing and artificial propagation have also contributed to the current population status of these species. All these human induced factors have exacerbated the adverse effects of natural environmental variability from such factors as drought and poor ocean conditions.

Assessment of the CC Chinook and NC steelhead designated critical habitat is included in NMFS (2005), which addresses critical habitat for seven salmon and steelhead ESUs/DPSs. The NMFS Southwest Region established Critical Habitat Analytical Review Teams (CHARTs) consisting of NMFS fishery biologists that assessed the habitat conservation value of Hydrologic Subareas (HSAs) within the ESUs/DPSs. Conservation values of "high", "medium", and "low", were determined from a variety of data sources on quality, quantity, and distribution of physical or biological features associated with spawning, rearing, and migration in each HSA.

For CC Chinook salmon, the CHART identified 45 occupied HSAs within the freshwater and estuarine range of the ESU. Eight HSAs were rated low in conservation value, 14 were rated medium, and 27 were rated high in conservation value (NMFS 2005). Essential features for spawning, rearing and migration are contained in approximately 5,036 km of occupied habitat within these HSAs. The proposed project is located within the Outlet Creek HSA, which contains 96 km of spawning, 65 km of rearing, and 72 miles of migration habitat for Chinook salmon. The Outlet Creek HSA was considered by the CHART to have high conservation value for CC Chinook critical habitat (NMFS 2005).

The CHART identified 50 occupied HSAs within the freshwater and estuarine range for the NC steelhead DPS. Nine HSAs were rated as low conservation value, 10 were rated medium, and 27 were rated high in conservation value (NMFS 2005). Essential features for spawning, rearing, and migration are contained in approximately 2,931 km of occupied stream habitat within the HSAs. The Outlet Creek HSA contains 133 km of spawning, rearing and migration habitat, which represents 4.5 percent of the total habitat of the DPS occupied habitat. A high conservation value was given to the Outlet Creek HSA for NC steelhead critical habitat (NMFS 2005).

IV. ENVIRONMENTAL BASELINE

This biological opinion analyses the areas affected directly and indirectly by the proposed Willits Bypass construction project. The action area evaluated in this biological opinion includes stream segments of Haehl, Baechtel, Broaddus, Mill, Outlet and Upp creeks identified above.

A. Status of the Species in the Action Area

All of the stream segments identified in the action area are located within the Outlet Creek watershed, sub-basin within the Eel River watershed. This basin currently provides habitat for populations of CC Chinook, SONCC coho salmon, and NC steelhead. Chinook salmon, coho salmon, and steelhead utilize the low gradient reaches of the action area streams as migration corridors during adult spawning and smolt migrations (LeDoux-Bloom 2006).

Chinook and coho salmon spawning and rearing are known to occur in upstream areas of Baechtel, Broaddus, and Mill creeks (S. Harris, CDFG, personal communication, 2005). Coho salmon spawning and rearing is not expected to occur in the action areas of Haehl, Upp, or Outlet creeks. There is some potential for straying of adult coho salmon into these streams (S. Harris,

CDFG, personal communication, 2006). Some Chinook salmon spawning does occur in reaches of Outlet, and Haehl creeks. Juvenile Chinook and coho may rear for short periods of time during their outmigration during the spring, but are not expected to utilize any stream reaches identified in action area for summer rearing.

Juvenile steelhead have been found to utilize all stream segments that are within the project action area (LeDoux-Bloom 2006). Although many of the reaches within the action area either have very low (less than 1 cfs) flow, are intermittent, or dry during the summer months, juvenile steelhead are expected to be found in aquatic habitat present during the summer low flow period. CDFG observed low numbers of juvenile steelhead in Baechtel and Broaddus creeks during 1995 habitat typing surveys. CDFG (2004) conducted spring stream surveys of proposed project crossings and visually observed juvenile steelhead in Baechtel, Broaddus, Mill, lower Haehl, but did not observe salmonid juveniles in Upp or upper Haehl creeks.

B. Habitat Conditions in the Action Area

The majority of the action area is located on the valley floor area of the Willits Valley that has a history of intermittent flow from July to September in most years. LeDoux-Bloom (2006) reports that in 1920 the U.S. Department of Agriculture Soil Survey for the Willits area stated that all streams entering the valley are intermittent, including Baechtel, Broaddus, Haehl, Davis, and Berry creeks. CDFG conducted habitat typing in twenty reaches of the Outlet Creek basin. The following is summary of the habitat conditions for stream segments within the action area.

1. Baechtel Creek

The action area stream reach is located in the valley bottom where several tributaries meet to form Outlet Creek. This lower reach of Baechtel Creek characterized by an F3 channel type which are characterized by low gradients (< 2%), are well entrenched, and have gravel/cobble substrates (Rosgen 1994). CDFG (1995) surveys found that pools in Baechtel Creek are relatively shallow in the summer with only 174 of 463 pools having a maximum depth of greater than two-feet. Pool shelter ratings for Baechtel Creek indicate that habitat complexity is low. Pool tail-outs, or areas where adult fish spawn, had high embeddedness ratings during the 1995 CDFG surveys, indicating poor gravel quality for salmonid spawning. Surveys conducted by CDFG in the spring of 2004 characterized the Baechtel Creek crossing site as having a high proportion of run habitat, high levels of silt and sand substrate and very low gradient, less than 0.5% (CDFG 2004). The lower reach of Baechtel also has poor water temperature conditions, with stream temperatures up to 29° C in late July and August (CDFG 1995).

2. Broaddus Creek

Surveys of Broaddus Creek by CDFG in 1995 and 2004 characterize this reach as well entrenched, low gradient, and with fine substrates of sand and silt. CDFG's 2004 survey of the stream reach at the proposed crossing indicates a high number of run and riffle habitats with few pools. Spawning habitat is rated as very poor in the CDFG 1995 survey results, with seventy-five percent of the pool tail-outs having high embeddedness ratings (>50% fine sediment). Stream temperatures during July of 1995 ranged from 14.5°C to 24°C in Broaddus Creek. The

action area considered in this biological opinion is located at the lower end of Broaddus Creek where stream temperatures are likely in the upper end of the documented range.

3. Haehl Creek

Haehl Creek is a well entrenched, low gradient stream with gravel as the dominant substrate (CDFG 1995). Stream temperatures measured by CDFG habitat inventory crews in 1995 ranged from 15.5°C to 24°C in the summer. CDFG reports poor spawning conditions at all three of the proposed Haehl Creek crossing locations (S. Harris, CDFG, personal communication, 2005). Elevated percentages (estimated > 90%) of fine-grained sediment are present within Haehl Creek (CDFG 2004). Riparian canopy cover averaged 80 percent along the total length of Haehl Creek (CDFG 1995). Based on site visits by NMFS in 2005, the proposed crossings areas along Haehl Creek have areas that are sparse or have no riparian vegetation. CDFG characterizes Haehl Creek as having degraded conditions from past land use practices and low potential as summer rearing habitat for salmonids (S. Harris, CDFG, personal communication, 2005).

4. Mill Creek

Current habitat conditions for Mill Creek have not been well documented. A general stream survey conducted by CDFG in 2004 evaluated stream conditions at the proposed crossing location (CDFG 2004). This area of Mill Creek is also a very low gradient valley reach characterized by intermittent flows during the summer months. The portion of the action area in Mill Creek consists of a high proportion of pool habitat (85 percent), and substrates dominated by fine sand sized material (CDFG 2004). This area of Mill Creek has a riparian canopy that consists of red alder (*Alnus rubra*), willow (*Salix spp.*), Himalayan blackberry (*Rubus discolor*), and poison oak (*Toxicodendron diversilobum*).

5. Outlet Creek

The portion of the action area in Outlet Creek was created by local ranchers to maintain transport of accumulated sediment where Baechtel, Broaddus and Mill Creek join. The original channel that drained these streams is located to the west, and is currently known as the Outlet overflow channel. This newer channel, created in the 1950s, is a "U" shaped channel that provides marginal salmonid rearing habitat, but does function as a migration corridor for all three listed salmonid species (C. LeDoux-Bloom, CDFG, personal communication, 2005). The Outlet Creek channel provides little in the way of rearing habitat during the summer months. Intermittent pools having high temperature and stagnant conditions characterize the channel during this time (C. LeDoux-Bloom, CDFG, personal communication, 2005).

6. Upp Creek

The segment of stream that makes up the Upp Creek action area is considered to be very degraded habitat for salmonids, and is typically dry during the summer months. Migration conditions at the existing Highway 101 culvert limit adult salmonids passage to the upper segments of Upp Creek that provides spawning and rearing habitat. Spring surveys at the culvert replacement site by CDFG (2004) did not document the presence of salmonids. These surveys

also noted that flow was intermittent and the dominant substrate was fine sand sized sediment mixed with gravel.

C. Value of the Action Area as Critical Habitat for Salmonids

Outlet, Haehl, Baechtel, Broaddus, Mill and Upp creeks in the action area are designated critical habitat for CC Chinook salmon, SONCC coho salmon, and NC steelhead. These streams are part of the Outlet Creek hydrologic sub-area, which has a high conservation value as determined by NMFS (NMFS 2005). Conservation Value was determined by the CHARTs by evaluating the quantity and quality of habitat features, the relationship of the area (HSA) to other areas within the ESU/DPS, and the significance to the ESU/DPS of the population occupying that area (NMFS 2005). Because quality of habitat was only one of the rating factors used to determine conservation value, and habitat quality was considered at the geographic scale of an HSA, specific stream reaches within an HSA may, or may not, contain high quality of habitat, regardless of the HSA's overall rating for conservation value.

The longest stream reaches included in the action area are Haehl Creek and Outlet Creek. Both of these stream reaches currently have marginal salmonid rearing habitat during the summer due to intermittent flow and lack of riparian canopy to maintain suitable salmonid stream temperature conditions. During 2004, CDFG conducted stream temperature monitoring in nine streams located within the southern subbasin (action area) of the Outlet Creek basin and all nine had maximum weekly average temperatures (MWATs) considered unsuitable for salmonid rearing (LeDoux-Bloom 2006).

Spawning habitat in the Outlet Creek reach of the action area is limited due to its very low gradient and is typically inundated during the winter by the "Little Lake" for which the valley was named. This reach of Outlet Creek serves as primarily as migration corridor for adult salmon and steelhead during the fall and winter months, as well as smolts as they migrate out of tributaries to the Eel River. Chinook salmon and steelhead spawn in Haehl Creek, but it is only used by Chinook salmon in years when high adult escapement occurs (S. Harris, CDFG, personal communication, 2005).

The action areas of Baechtel, Broaddus, Mill, and Upp Creek represent much shorter stream reaches (150-1250 meters) of habitat, which are located on the valley floor in the most downstream area of each named stream. These valley segments currently have low quality habitat for juvenile steelhead summer rearing; steelhead have been found at low densities in these areas. Some reaches such as Outlet Creek may not be occupied by salmonids during the late summer months (C. LeDoux-Bloom, CDFG, personal communication, 2005). For the most part these segments provide migration passage for adult and smolts to and from higher quality habitat, which is upstream and outside of the action area. Some limited spawning and rearing use by steelhead is likely to occur in the lower reaches of Baechtel, Broaddus, Mill, and Outlet creeks, but is not expected to occur in Upp Creek.

D. Factors Affecting the Species and Critical Habitat in the action Area

Pomo Native Americans occupied the Outlet Creek sub-basin when the first European settlers arrived in the early 1840s. In 1855, Sam and Harry Baechtel drove cattle to the valley from Marin County and settled in the Little Lake Valley (LeDoux-Bloom 2006). In 1892, the California Northwestern Railroad Company began scouting locations along their routes for an egg taking station and hatchery under the direction of Colonel LaMotte. By 1897, fish facilities were open on Gibson Creek in the Russian River Basin and Outlet Creek. Steelhead eggs collected from the Little Lake Valley were grown in the Gibson Creek Hatchery and planted throughout the Outlet Creek Basin, parts of Big River, Russian River, and possibly Lagunitas Creek (LeDoux-Bloom 2006). LeDoux-Bloom (2006) also reports that trout eggs from the Shasta or McCloud rivers were grown out and planted in Outlet Creek and other Mendocino County watersheds until the facility was closed in 1920.

During the late 1800s and early 1900s many of the creeks in the Outlet Creek basin were relocated for the building of railroads. Today in several areas one can observe where Outlet Creek was moved by cutting off the meander and straightening the stream to build the existing Highway 101 alignment (C. LeDoux-Bloom, CDFG, personal communication, 2005). Beginning in 1910, channels were created with oxen and plows to facilitate draining of the Little Lake Valley to lower Outlet Creek for agricultural purposes such as potato production and cattle grazing (DWR 1965, as cited in Le-Doux Bloom 2006). The largest channel, according to longtime landowner John Ford, was constructed to form a straight channel that drains flow from Baechtel, Broaddus, and Haehl creeks, this is what is currently know as Outlet Creek. The original Outlet Creek, as reported in Le-Doux Bloom (2006), is located to the west and is referred to as the Outlet overflow channel.

By the 1950s and 1960s, many of the upper areas of the Outlet Creek Basin had been logged with little attention to erosion control. According to LeDoux-Bloom (2006), many of the valley floor stream reaches such as Baechtel, Broaddus, and Haehl became aggraded during the winter storms of 1955 and 1964. These same stream reaches went through additional aggradation in the 1980s and in some areas the adjacent meadows were lower in elevation than the streams. Juvenile steelhead and coho were found rearing in some of the meadow areas only to perish when water temperatures reached lethal levels (W. Jones, private consultant, personal communication, 2006). In order to maintain passage in the aggraded reaches along the valley floor, CDFG funded barrier and sediment removal projects to define channels for adult salmonid migration (LeDoux-Bloom 2006).

Currently reaches within the action area are affected by cattle grazing, which occurs on Haehl, Baechtel, Outlet, and Upp creeks. Based on field observations by NMFS during site visits of the action area, the current grazing practices continue to impact the riparian areas along streams located on the valley floor. The current riparian zone consists of a narrow strip of riparian vegetation including alder, willow, oak, Himalayan blackberry, and poison oak. Much of the riparian zone is inconsistent in forming a functional riparian community, which does not provide adequate protection for salmonid habitat. Evidence of inadequate riparian zones within the action area were found during 2004 temperature monitoring, which documented unsuitable stream temperature conditions for salmonids (LeDoux-Bloom 2006).

Planwest Partners (2002) reports that localized flooding in upstream areas has resulted in efforts to reduce the amount of brush and debris in these valley streams that are part of the action area. An existing water treatment plant releases treated wastewater in Outlet Creek near the confluence with Baechtel Creek. Releases occur during the winter period and are reported to have no impact on spawning salmonids other than providing slightly more flow (Planwest Partners 2002).

Non-native fish have been introduced to some of the streams located within the action area. Bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), and smallmouth bass (*Micropterus dolomieu*) have been reported to inhabit reaches of Haehl, Mill, and Outlet Creek (S. Harris, CDFG, personal communication, 2005). Introduction of these non-native species is believed to be from farm ponds and local reservoirs from which they escape. Presence of these warm water species effects salmonids in a number of ways, including competition for habitat space, and predation, elimination of natives, reduced growth and survival, and changes in community structure (Spence *et al.* 1996).

V. EFFECTS OF THE ACTION

Pursuant to section 7(a)(2) of the ESA (16 U.S.C. § 1536), Federal agencies are directed to ensure that their activities are not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat. This biological opinion assesses the effects of the proposed Willits Bypass Project on listed salmonids, and the designated critical habitats for SONCC coho salmon, CC Chinook salmon, and NC steelhead. The proposed freeway construction project is likely to adversely affect listed salmonids and critical habitats. An overview of the action is provided in the *Description of the Proposed Action* section of this opinion. In the *Status of the Species and Critical Habitat* and *Environmental Baseline* sections of this Opinion, NMFS provided an overview of the threatened and endangered species and critical habitat that are likely to be affected by the activity under consultation.

Regulations that implement section 7(a)(2) of the ESA require NMFS to evaluate the direct and indirect effects of Federal actions and actions that are interrelated with or interdependent to the Federal action to determine if these actions appreciably reduce listed species' likelihood of surviving and recovering in the wild by reducing their reproduction, numbers, or distribution (16 U.S.C. §1536, 50 CFR 402). Section 7 of the ESA also requires NMFS to determine if Federal actions would destroy or adversely modify critical habitat (16 U.S.C. §1536). This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR §402.2. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

The purpose of this consultation is to examine the total range of potential beneficial and detrimental effects to the ESA listed salmonids and their critical habitats that may occur as a result of constructing the proposed Willits Bypass over a four-year period, and to ascertain the likelihood that construction activities and proposed mitigations would jeopardize the survival and recovery of the subject species and or destroy or adversely modify their critical habitats.

A. NMFS Assumptions Regarding the Effects Analysis in this Biological Opinion

To date, Caltrans proposed plans for the construction of the Willits Bypass are at a 30 percent design level. SWPPP BMPs will be developed once the contractor(s) have acquired contracts from Caltrans. In addition, the mitigation plan is at a "Conceptual" level and few specific mitigation areas or plans have been developed to date. In order to facilitate the development of this biological opinion, NMFS has had to make certain assumptions regarding the effectiveness of the conceptual BMPs and the mitigation plans. NMFS assumes that the BMPs, SWPPP, and mitigation actions will be effective with regard to minimizing impacts of the proposed construction and mitigating and improving habitat over time. NMFS expects that Caltrans will provide proposed plans for the SWPPP, mitigation, and final project design prior to implementing these actions. Furthermore, NMFS must review these plans to determine if they are sufficient to meet the effectiveness assumptions in this biological opinion regarding potential project impacts.

B. Direct and Indirect Effects to Salmon and Steelhead or Their Critical Habitats

1. Effects of Dewatering the Project Areas

Construction of bridges at four locations (six bridges), construction of viaduct crossings at four locations (eight viaduct bridges), two culvert crossings, and one culvert removal will require in-channel work and pile driving. To minimize effects of the proposed construction and pile driving, Caltrans proposes to dewater stream construction areas and relocate fish to other appropriate streams within the Outlet Creek sub-basin. By removing fish from the stream reaches in and adjacent to construction areas, the project is expected to significantly reduce the number of juvenile anadromous salmonids injured or killed during the summer work season. In the absence of fish relocation, juvenile steelhead, coho and Chinook salmon would be exposed to dewatering, thermal stress, desiccation, physical injury from construction equipment and elevated sound levels during pile driving.

Although fish relocation avoids significant impacts to fish in the project area, the fish relocation activities themselves are expected to result in some stress and mortality. Direct effects to juvenile salmonids from this dewatering and relocation will occur in action areas at Haehl, Baechtel, Broaddus, and Mill creeks. The action area for Upp Creek is expected to be dry during the construction phase of the project.

The actual distance that may need to be dewatered will vary with actual summer flow conditions. Summer flows in the Outlet Creek sub-basin are dependant on precipitation levels during the winter and spring preceding construction. Haehl Creek has five stream crossing locations that can vary from dry channel condition to wetted surface flow conditions in the summer depending the previous winter and spring rains. For evaluation purposes in this biological opinion NMFS assumes that all stream crossings except for Upp Creek, will have surface flow at the beginning of the proposed construction period (June 15). Upp Creek is expected to be dry by June 15 of each year at this location.

Nine stream crossings will have up to 150 meters dewatered at each site with the use of cofferdams for up to six weeks during the summer months. The Haehl Creek culvert replacement for the Schmidbauer Ranch road access and the Haehl Creek culvert removal may require dewatering of intermittent pools. Caltrans proposes to allow the contractor to choose various methods of cofferdam construction, including the use of rubber bladders, clean gravel, or sand bags to block stream flow and divert water around the construction sites. During dewatering of each stream crossing area, juvenile fish, including listed salmonids, will be relocated to other appropriate stream reaches. Capture and relocation efforts will result in stress and potential mortality of some juvenile steelhead and salmon. These activities may occur at each construction site over two construction seasons.

During the dewatering and fish relocation phase, juvenile steelhead are expected to be present at each stream crossing site. Juvenile steelhead densities are expected to be low based on habitat quality and prior survey work by fishery biologists. The likelihood of juvenile Chinook salmon and coho salmon being present during the construction/dewatering phase of the proposed project is very low (S. Harris, CDFG, personal communication, 2005). Juvenile coho salmon may be present in low numbers at Baechtel Creek, Broaddus Creek, and Mill Creek project locations, but not present at the four Haehl Creek project sites. Because ocean-type Chinook salmon can reside within streams for up to a year it is possible that juvenile Chinook salmon could be present at the lower Haehl, Baechtel, Broaddus, and Mill creek project areas during the dewatering and relocation activities. Ocean-type juvenile Chinook salmon normally migrate out of their natal stream from 60-150 day post-hatching, but under some conditions may remain in freshwater their first year (Myers *et al.* 1998).

Fish relocation at the proposed project sites will be conducted with electroshocking gear, seining gear, or dip nets by qualified biologists. Once cofferdams are in place, water in pool habitats may be removed using screened pumps. When stream habitats have been sufficiently dewatered, relocation efforts will continue until all fish have been removed from the dewatered reach. Despite these measures, some mortality of fish is likely at each stream crossing construction due to injury from relocation equipment (seining or electrofishing), stress related to handling, and individual fish eluding capture. These latter fish will die when the work areas are dewatered.

Mortality associated with fish relocation activities is expected to be low. To minimize impacts during fish collection and relocation, Caltrans proposes to use only experienced biologists, approved by NMFS and the CDFG. Fish will be relocated to suitable habitats outside of the construction area. Based on review of up-to-date fish relocation techniques and protocols, unintentional mortality of juvenile anadromous salmonids is expected to not exceed three percent of the fish collected. Biologists with electrofishing experience and skill can reduce injury and mortality rates to near one percent. Juvenile NC steelhead will comprise most or all of the salmonids collected at the stream crossing project sites. Due to the very low densities of juvenile Chinook and coho salmon in the project area, few are likely to be present and, thus, very few coho and Chinook salmon mortalities are expected. Juvenile salmonids that avoid capture in the project work area are not likely to survive within the construction sites once they are dewatered. Due to the poor habitat conditions (lack of hiding cover) at the construction sites, NMFS expects that relocation efforts will be effective and mortalities from dewatering and fish relocation will be less than three percent of the total number of fish present in the affected reach of stream.

2. Effects of Pile Driving During Project Construction

Pile driving will be required at eight of the ten proposed stream crossings, requiring combinations of smaller piles ("H" piles) and large CISS piles. All piles are proposed to be driven above ordinary high water levels of each stream channel. The majority of the piles at stream crossings will be located outside of the stream channel all together, but will be within 15 meters of the top-of-bank. Piles that will be located within the channel, yet above ordinary high water will be smaller, measuring from 61 to 76 centimeters. Caltrans has not specified whether pile driving will be performed with an impact hammer or vibratory hammer. The analysis below assumes either hammer type could be used to install the project's temporary and permanent piles. As described above, Caltrans has proposed to dewater construction areas and relocate fish to minimize the potential impacts of high sound pressure waves from the pile driving.

Available information indicates that fish may be injured or killed when exposed to elevated underwater sound pressure waves generated from driving steel piles with impact hammers (Abbott and Bing-Sawyer 2002, Abbott and Reyff 2004, Abbott *et al* 2005, Caltrans 2001, Caltrans 2003, Caltrans 2004, Nedwell *et al.* 2003, Vagle 2003). Pathologies associated with very high sound levels are collectively know as barotraumas. These include hemorrhage and rupture of internal organs, including the swimbladder and kidneys in fish. Death can be instantaneous, occur within minutes after exposure, or occur several days later. High sound pressure levels can also result in hearing damage and elicit stress responses in fish (Popper et al. 2003/2004).

Based on data collected during the installation of piles with a vibratory hammer in Richmond Inner Harbor (Reyff 2003), the adverse effects described above are not expected with the use of a vibratory hammer. Sound levels produced by pile driving with a vibratory hammers are not only lower, but generate different sound wave forms and lower sound frequencies that are less injurious than those produced by an impact hammer. Therefore, it is expected that underwater sound produced during the driving of the project's permanent piles and temporary piles with a vibratory hammer will not exceed levels that result in injury or mortality of listed anadromous salmonids.

If an impact hammer is used for construction in combination with timber piles, no physical injuries or mortality of salmonids are expected. Similar to a vibratory hammer, the driving of wooden and concrete piles with an impact hammer generates sound wave forms that are less injurious to fish (Reyff and Anderson 2005).

Alternatively, when steel piles are used in combination with an impact hammer at the stream crossing locations, high sound levels are likely to be generated during construction. However, all pile driving will be performed on the stream bank or further upland with adjacent stream areas either naturally dry or dewatered by a constructed flow diversion. Elevated sound levels generated by pile driving are expected to travel through the ground and streambed. Although below the level of physical injury, juvenile steelhead could be exposed to high sound pressure waves traveling through the streambed. Juvenile steelhead, coho, and Chinook salmon will be present in wetted habitats immediately upstream and downstream of the dewatered stream reaches. The degree to which an individual salmonid may be affected by high sound pressure

waves is dependent on many variables including size of fish, peak sound pressure, frequency, *etc.* Depending on these factors, effects on juvenile salmonids during the driving of steel piles with an impact hammer will range from a stress response to no response.

Juvenile salmonids are expected to be present upstream and downstream of the dewatered reaches during pile driving. Given what is currently known about the effects on salmonids from pile driving and conditions at the project site, NMFS expects that dewatering of each crossing site (up to 150 meters) will be a sufficient distance to reduce sound exposure in nearby wetted habitats to safe levels. Since fish will likely be at least 75 meters from the sound source, decibel levels during pile driving are not expected to cause mortality or injury of juvenile salmonids. Decibel levels may cause juvenile fish to become startled and abandon preferred habitats, which are adjacent to the dewatered areas. Caltrans has proposed to monitor underwater sound pressure in the wetted aquatic areas immediately above and below dewatered reaches. This information will allow for evaluation of sound exposure levels to fish rearing upstream and downstream of the stream crossing construction sites.

In the event that hydroacoustic monitoring in areas above and below the dewatered stream reach reveals excessively high sound levels, Caltrans can dewater additional areas and relocate fish to increase the distance between listed salmonids and the pile driving sound source. Based on the results of the hydroacoustic monitoring program, NMFS may recommend additional areas be dewatered. If additional dewatering is performed, numbers of juvenile salmonids collected and handled would increase, but the numbers will likely be small.

3. Effects of Riparian Vegetation Removal

Removal of riparian vegetation along banks of proposed construction areas is expected to adversely affect designated critical habitat for listed anadromous salmonids and impact juvenile steelhead within the action area. When streamside vegetation is removed, summer water temperatures typically increase in proportion to the increase in sunlight that reaches the stream surface (Chamberlain *et al.* 1991). Increases in solar radiation to stream reaches may also change aquatic species composition, increase algal biomass and alter invertebrate communities (Beschta *et al.*1987). Primary elements of salmonid habitat such as large woody debris, pool and riffle formation, and food inputs are likely to be impacted by the riparian vegetation removal (Caltrans, 2005a). In addition, removal of riparian vegetation can change local microclimate, soil moisture, groundcover, and susceptibility to bank erosion, and influence the re-establishment of vegetation (Spence *et al.* 1996).

Removal of riparian vegetation will be performed with heavy equipment and hand crews. Permanent and temporary removal of vegetation will be conducted along upper Haehl Creek (southern interchange), the Schmidbauer culvert replacement near Haehl Creek, middle Haehl Creek crossing, lower Haehl Creek viaduct crossing, Baechtel Creek viaduct crossing, Broaddus Creek viaduct crossing, Mill Creek viaduct crossing, and the Upp Creek culvert replacement location. Riparian vegetation removal is proposed from the edge of ordinary high water to areas above the top of bank that encompass most of the existing riparian zone. Table 2 presents the amount of bank length of permanent and temporary riparian vegetation removal at each stream crossing on the salmonid bearing streams.

Table 2. Permanent and temporary (replanted) riparian removal at proposed stream crossings and construction sites along the Willits Bypass.

Stream Name	Permanent Removal in meters	Temporary Removal in meters	Total Bank Length Affected in meters	Total Stream Reach Length Affected in meters
Upper Haehl Creek	772	12	784	392
Middle Haehl Creek	105	92	197	98.5
Lower Haehl Creek	34	161	195	97.5
Baechtel Creek	300	370	670	335
Broaddus Creek	33	157	190	95
Mill Creek	37	170	207	103.5
Upp Creek	179	4.6	184	92

With three distinct construction areas, Haehl Creek will require the most extensive amount of permanent riparian vegetation removal. Construction of the north and southbound viaduct crossings at Baechtel, Broaddus, and Mill creeks requires both permanent and temporary removal of riparian bank vegetation. Approximately 92 meters of channel will be affected by the permanent removal of riparian vegetation at the Upp Creek culvert crossing.

Impacts associated with the riparian vegetation removal vary within the action area depending on removal type (permanent or temporary), stream flow (absent, intermittent, surface flow present) during the summer, and presence of salmonids. The current condition of riparian habitat also influences the potential impact to salmonid habitat.

a. Removal of Riparian Vegetation along Salmonid Streams

The proposed removal of riparian vegetation at stream crossings is expected to adversely affect water temperature on the salmonid streams in the project action area. Water temperature is a critical environmental factor in most aquatic ecosystems. Chemical and biological processes in aquatic environments ultimately are regulated by temperature. As cold-blooded animals, the metabolism, reproduction, development, and scope of activity of anadromous salmonids are largely controlled by environmental temperature (Marcus *et al.* 1990). The Willits Bypass Project's proposed temporary and permanent removal of riparian vegetation is expected to result in increased solar radiation input and increase summer/fall water temperatures on the five salmonid-bearing streams in the action area.

Gillies (2000) conducted a focused study of the effects of riparian canopy removal on stream water temperature in the Little Lake Valley. Using local stream habitat inventory data, Gillies (2000) concluded that in the Willits Bypass Project area there is a direct relationship between percent canopy cover and elevated water temperatures in streams. Based on this study's results,

the riparian vegetation removal associated with the proposed Willits Bypass Project is likely to result in severe consequences to habitat quality by increasing water temperatures in the action area.

The preferred temperature range for *Oncorhynchus* spp. is generally between 6 and 15° C (Reiser and Bjornn 1979). In the Eel River Basin, stream water temperature is recognized as a critical habitat parameter (Gillies 2000), particularly during the summer months for juvenile rearing salmonids. Summer and fall water temperatures influence growth rates, swimming ability, availability of dissolved oxygen, ability to capture and use food, and ability to withstand disease outbreaks. Steelhead and coho salmon juveniles are known to rear during the summer months in the five salmonid-bearing streams of the action area. Chinook salmon juveniles typically outmigrate to the ocean as smolts during the spring months in their first year and are generally not expected to be within the streams of the action area over summer.

Due to riparian vegetation losses, additional solar inputs at the project's riparian removal sites will increase summer water temperature and degrade salmonid habitat. Summer stream temperatures are expected to increase as a result of project construction in wetted areas of Haehl, Baechtel, Broaddus, and Mill creeks. In areas where riparian vegetation is re-planted post-construction, the canopy will likely be restored in five to ten years and these additional solar radiation inputs will be reduced or eliminated. In areas of permanent vegetation losses, salmonid habitat including designated critical habitat will be permanently impacted due to the effects of increased water temperature.

Since Haehl Creek contains the largest linear extent of permanent vegetation removal, thermal impacts are expected to be more extensive and may convey the warmed water into downstream reaches of Baechtel Creek, and Outlet Creek below the confluence with Haehl Creek. However, during the summer and fall months of most water years, portions of the creek bed of Haehl, Baechtel, and Outlet creeks may be naturally dry in the action area. These intermittent flow conditions could help reduce the thermal effects of riparian removal, because subsurface flow through the project area will not be subject to direct solar radiation. The extent of this amelioration due to dry and intermittent stream flows in the action area is unknown. Juvenile steelhead that reside in thermally impacted reaches of Haehl, Baechtel, and Outlet creek are likely to experience reduced survival rates due to increases in water temperatures in portions of the action area. These effects are expected to last for at least a five year period, until mitigation actions ameliorate the impacts of the project riparian vegetation removal. The few areas that permanently lose riparian vegetation may become uninhabitable to listed salmonids.

CDFG (1995) reports existing stream temperature conditions are marginal for salmonid rearing in most of Haehl Creek. Gillies (2000) estimates reduced canopy cover in the action area due to construction of the Willits Bypass Project could increase water temperatures to levels in excess of 30° C. Although existing summer habitat conditions are marginal due to elevated temperatures, the suitability of salmonid rearing habitat within Haehl Creek and Baechtel Creek is expected to further decrease due to the project's extensive removal of riparian vegetation.

Riparian vegetation removal and the associated effects at Broaddus and Mill creeks are similar, but less extensive than Haehl and Baechtel creeks. At both Broaddus and Mill creeks it is

estimated that approximately 100 meters of stream will be affected by the viaduct construction at each site. Marginal stream temperature conditions in lower reaches of Broaddus and Mill Creeks will become less suitable for salmonid rearing during the summer months due to increased solar radiation.

Approximately 92 meters of channel will be affected by the permanent removal of riparian vegetation at the Upp Creek culvert crossing. Upp Creek typically has dry channel conditions from early spring to late fall. Therefore, riparian vegetation removal along Upp Creek is not expected to effect stream temperatures due to the lack of summer flow at the site.

b. Removal of Riparian Vegetation on Non-Salmonid Streams

Non-salmonid bearing streams located within 305 meters of salmonid streams were designated at Category II streams due to their potential influence to fish bearing streams. Other stream courses which are located beyond 305 meters of a salmonid stream, and have less potential to impact salmonid streams, were categorized as Category III streams.

Category II streams are typically important sources of water, nutrients, wood, and other vegetative material for streams inhabited by fish and other aquatic organisms (FEMAT 1993). Removal of riparian vegetation in these channels has the potential to increase stream temperatures of salmonid streams, and to deliver sediment and increase turbidity in fish bearing streams. The Willits Bypass Project proposes to permanently remove 1,090 meters of riparian vegetation along five Category II stream reaches. Temporary riparian removal is proposed on 726 meters of Category II streams.

Category III streams are small ephemeral streams, which are more than 305 meters (1000 feet used in California Forest Practice Rules) from fish bearing streams. These streams typically have no flow or aquatic life during the summer months, but are capable of transporting sediment, woody debris, and nutrients during winter rainstorms. Riparian vegetation removal for permanent and temporary impacts to these channels totals 967 meters and 21 meters, respectively.

Riparian vegetation removal is expected to create increased in surface erosion, and bank erosion, which results in increased turbidity and sediment (sand sized particles) to fish bearing channels. The majority of the Category II and III stream channel reaches impacted by the Willits Bypass Project will be placed in culverts. By placing these stream types in culverts, they are not expected to increase stream temperatures of fish bearing streams. Losses of aquatic macro invertebrate food producing areas in Category II channels will likely decrease food delivery to fish bearing channels. Loss of these food-producing areas is not expected to reach levels that would adversely affect fish bearing streams because the length of Class II stream that will be placed in culverts less than 500 meters combined. In addition, there may be some minor reduction in nutrients, woody debris, and vegetative material because of the culvert installations. Response of salmonid lifestages to increased sediment levels, including Category II and Category III streams, will be discussed in the effects section below titled *Effects of Riparian Vegetation Removal on Salmonids*.

Category II channels which are not within constructed culverts may experience stream temperature increases due to vegetation removed from the riparian zone. These streams typically have very low flow, intermittent flow, or are dry by early summer. Thus, the small contribution of flow from Category II drainages is generally not enough to result in stream temperature changes to fish bearing streams during the summer months.

4. Mobilization of Sediment from Construction Activities

Suspended and deposited fine sediment can adversely affect salmonid rearing and spawning habitat if present in excessive amounts. High levels of suspended solids may abrade and clog fish gills, reduce feeding, and cause fish to avoid some areas (Cordone and Kelly 1961). Several activities associated with construction of the Willits Bypass Project may result in an increase delivery of sediment to streams in the action area. These include construction of the roadbed, operation of staging areas, riparian vegetation removal, channel realignment, in-channel work such as rock slope protection and bridge construction, culvert replacements, excavation activities at the southern interchange, and construction and removal of cofferdams. An estimated 1.9 million cubic meters of earthen material will be excavated, transported, and compacted to build the project. Caltrans estimates the total ground disturbance for all project areas will total 93 hectares (D. Schmoldt, Caltrans, personal communication, 2006). In addition to road and bridge construction activities, Caltrans construction of fish enhancement/mitigation projects could result in short-term increases in turbidity during the placement of instream structures.

Barret *et al.* (1995) reviewed various highway construction projects on an ephemeral stream in Texas and concluded that several projects built in the 1970's resulted in a 50 percent increase in sediment delivery as a result of highway construction. Other studies reviewed by Barret *et al.* (1995) showed short term and minor inputs of sediment to streams from highway construction.

Caltrans currently requires contractors implement soil stabilization and sediment control BMPs. These actions are designed to contain the majority of erodible material. Proper implementation of the BMPs is expected to reduce the mobilization and delivery of sediments to nearby streams. However, the large quantity of earthen material used in this project over a broad area is expected to result in some level of increased delivery of sediment to salmonid bearing streams in the action area. For the Willits Bypass Project, current BMPs are expected to provide more effective sediment control than that reviewed by Barret et al. (1995).

Although increased amounts of sediment input to salmonid bearing streams are expect during project construction, sediment quantities have not been estimated by Caltrans or in this biological opinion. Fine grain sediment will likely enter streams from soil disturbed by construction along stream banks and from upland areas. Staging areas, roadbeds, vegetation removal sites, excavation and compaction areas area likely sources of sediment to the stream channels of the action area. Soils disturbed during construction will provide a source of sediment that can be mobilized by rain events during the subsequent winter/spring. Sediment will travel along gullies and ravines to stream channels and then to the bottom of the creek bed. Once in the creek channel, sediment can increase turbidity levels in the water column, fill-in gravel interstices in the creek bed, and coat the bottom of the channel with layers of fine materials.

Within the action area, sediment originating from construction activities may be deposited in Haehl, Baechtel, Broaddus, Mill, and Upp creeks. In addition, a five kilometer reach Outlet Creek downstream of the construction sites was included in the action due the potential for increased rates of sediment delivery. Increased levels of fine sediment can adversely affect salmonid spawning habitat, various life stages of salmonids, and other instream habitat features within the action area.

a. Effects on Salmonid Spawning Habitat

Spawning habitat for Chinook salmon occurs within the action area; although existing conditions are poor. Surveys performed by CDFG in 2005 identified high percentages of sand which reduces the quality of the creek bed for spawning. CDFG reports that during a normal water year, up to 20 Chinook salmon redds may be constructed in creek areas adjacent to the Willits Bypass Project (S. Harris, CDFG, personal communication, 2006). Additional Chinook salmon spawning occurs in creeks both upstream and downstream of the action area. Adult coho salmon and steelhead entering the Little Lake Valley area spawn primarily upstream of the action area. CDFG estimates over 90 percent of the adult coho salmon and steelhead migrate to areas upstream of the project site to spawn (S. Harris, CDFG, personal communication, 2006). Therefore, few coho salmon and steelhead are expected to spawn within the action area.

Sediment input by project construction is expected to further degrade existing spawning habitat conditions in the action area. Fine sediments input associated with project construction will reduce the permeability of gravels, intergravel flow, and the availability of dissolved oxygen for developing embryos, and interfere with emergence success by occluding interstitial pore space (Everest *et al.*1987). Laboratory studies have found an inverse relationship between fine sediment and fry survival, with decreases of 3.4 percent survival for each one percent increase in fine sediment (Everest *et al.* 1987). Fine sediment originating from project during the four year construction period is expected to further decrease the survival of salmonid embryos and reduce the ability of fry to emerge from redds in the creeks of the action area. However, sediment delivery levels associated with project construction should diminish significantly after project construction is completed.

b. Effects on Salmonid Life Stages

Construction activities are known to cause temporary increases in water turbidity (reviewed in Furniss *et al.* 1991, Reeves *et al.* 1991, and Spence *et al.* 1996). Short-term increases in turbidity could occur during construction, but reach dewatering will generally avoid this problem because work will be performed in the dry. Post construction winter rains will likely result in short-term increases in turbidity as runoff occurs in areas of exposed soil and removed riparian vegetation. High levels of turbidity and suspended sediment in the action area may affect adult and juvenile anadromous salmonids by a variety of mechanisms. High concentrations of suspended sediment can disrupt normal feeding behavior and efficiency (Cordone and Kelly 1961; Bjornn *et al.* 1977, Berg and Northcote 1985), reduce growth rates (Crouse *et al.* 1981), and increase plasma cortisol levels (Servizi and Martens 1992). Even small pulses of turbid water will cause salmonids to disperse from established territories (Waters 1995), which can displace fish into less suitable habitat and/or increase competition and predation, decreasing chances of survival. Increased

sediment deposition can fill pools and reduce the amount of cover available to fish, decreasing the survival of juveniles (Alexander and Hansen 1986).

Increased turbidity levels associated with the Willits Bypass Project are not expected to physically injure listed salmonids or result in adverse behavioral effects. Moderate, but temporary increases in turbidity during the summer construction season and during the winter months are expected. These levels will likely result in some limited behavioral effects, such as temporarily reduced feeding efficiency of juvenile salmon or steelhead in the action area. These behavioral changes are not expected to cause mortality or decrease the probability of individual juvenile or adult salmonid survival within the action area.

5. Mobilization of Sediment from Oil Well Hill

Oil Well Hill is the proposed borrow site identified by Caltrans. Project construction could result in the excavation of 1.9 million cubic meters of material from this location. The borrow area will likely encompasses 12 to 16 hectares. This site is east of Highway 101 and approximately 425 meters from Outlet Creek.

Sediment delivery reduction measures have been proposed to prevent sediment from reaching Outlet Creek. Sediment detention basins will be located at key drainage areas to capture material that is mobilized. Proper construction and operation of these detention .basins are expected to intercept all mobilized sediments prior to reaching Outlet Creek. The detention basin design appears to be adequate to avoid adversely affecting salmonid habitat in Outlet Creek and other streams within the action area.

Caltrans has indicated that alternative borrow site areas may be selected by the contractor, but selection of an alternative site will require submittal of a borrow site plan. Alternative borrow site plans have not been evaluated in this biological opinion. Further review by NMFS may be required if an alternative non-commercial borrow site is proposed.

6. Effects of Rock Slope Protection

Rock slope protection or riprap is proposed in at several stream crossings in combination with retaining walls for protection of bridge columns and banks. A total of 140 meters of stream length will be impacted by placement of riprap along three sites on upper Haehl Creek: one site on middle Haehl Creek, and one site each on Baechtel, and Upp creeks. Use of riprap to protect banks is expected to result in effects to designated critical habitat for Chinook salmon, coho salmon, and steelhead.

General effects of riprap on salmonid habitat include, elimination of lateral bank erosion, which prevents development of undercut banks, and cover for fish (Schmetterling *et al.* 2001). Placement of large rock can change the sediment transport capacity of a stream reach and affect the natural distribution of particle sizes in a stream (Beschta and Platts 1986). Sediment size changes can affect spawning substrate and food production for salmonids and cover requirements provided by certain substrate (Platts 1979). The loss of riparian vegetation due to the placement of riprap can reduce or eliminate recruitment of new riparian vegetation, reduce habitat complexity, reduce shade to streams which maintain cold water habitat, and reduce recruitment

of large woody debris (LWD) (Schmetterling *et al.* 2001).

At each stream crossing on Haehl, Baechtel, and Upp creeks, approximately 15 meters of riprap will be placed along one or both banks. Rock will extend from the channel bed to an area approximately two-thirds up the bank. Top of bank areas will be planted with willow. Riprap is expected to reduce habitat complexity and riparian shade adjacent to stream crossings. This action is expected to have long-term adverse effects on designated critical habitat for CC Chinook salmon, SONCC coho salmon and NC steelhead. Existing habitat at the stream crossing sites is in moderate to poor condition. The proposed placement of riprap will further degrade stream habitat for salmonids. Reduced cover, LWD, shade, and changes in stream bed substrate are expected to decrease rearing habitat quality for juvenile Chinook salmon and steelhead, and to a lesser extent coho salmon. Juvenile coho are not expected to utilize the action area during the summer month due to unsuitable stream temperature conditions.

7. Toxic Chemicals

Equipment refueling, fluid leakage, and maintenance activities within and near the stream channel pose some risk of contamination of aquatic habitat and subsequent injury or death to listed salmonids. Caltrans has proposed measures which are designed to prevent the spill of contaminants into the waterways of the action area. Measures include: maintaining fuel storage and refueling sites in upland locations at an appropriate distance from the stream channel; maintaining vehicles and construction equipment be in good working condition; and servicing of equipment in an upland location.

Caltrans may use bentonite as a lubricant for pile placement and an accidental release of bentonite may occur. Bentonite is potentially lethal to fish. Sigler *et al.* (1984) reported that steelhead and coho salmon show reduced growth rates or increased emigration rates when exposed to 125 to 175 mg/l bentonite. In addition to toxic chemicals associated with construction equipment, stream water that comes into contact with wet cement can adversely affect water quality by raising the pH of water, which may result in injury or death to listed salmonids. However, these water quality impacts are not anticipated, because the stream will be dewatered around the construction work sites. Measures should minimize the potential for a spill. In addition, Caltrans and its contractors will have ample opportunity to attend to any spill prior to toxic chemicals reaching the waters of the action area.

8. Long-term Maintenance and Use

NMFS believes it unlikely that long-term maintenance actions, including mowing of vegetation, cleaning of ditches, pruning vegetation near bridges, and repairing pavement, will result in adverse affects. Post construction maintenance actions implemented with the use of appropriate BMPs are likely to minimize and avoid any sediment and turbidity entering streams in the action area. This includes any sediment generated from infrequent sand applications conducted for icy freeway conditions. BMPs are included in the Caltrans Storm Water Quality Handbook Maintenance-Planning and Design Staff Guide (P&DSG) (Caltrans 2003b), and will be used during maintenance of the Bypass. NMFS believes that in general, these BMPs are likely to be effective at avoiding maintenance impacts on listed species and critical habitats. However, a

complete maintenance plan is unavailable for the project, and maintenance actions expected to result in sediment and turbidity entering streams would require reinitiation of consultation.

Use of the freeway bypass is expected to generate grease and oil as well as other contaminants along the freeway corridor. Also, accidental spills are expected from freeway related traffic accidents. These contaminants may be washed into nearby streams during the rainy season. Caltrans has developed a standard Hazardous Waste and Spill Response Plan (HW&SRP) which would be implemented during the operation of the project. NMFS believes that hazardous waste and spill response practices contained in the HW&SRP and BMPs contained in the P&DSG are likely to be effective in minimizing the amount of contaminants entering streams. Adverse effects to salmonids and their habitat from introduced chemicals, oils, grease, or accidental spills are not expected.

The existence of the freeway bypass may cause increased runoff from impervious surfaces that could cause adverse effects to salmonids and their habitat within the action area. For example, increased runoff can scour redds and destroy salmonid eggs and alevins. To address the potential for increased runoff from the impervious freeway surfaces, Caltrans designed permanent BMPs into the design, construction, and maintenance of the project to minimize increased runoff potential (Caltrans 2000). The P&DSG requires the Caltrans design team to account for hydrologic impacts of the project, and provide measures to minimize impacts to stream stability. Based on the information provided in Caltrans' Water Quality Assessment (Caltrans 2000), NMFS concludes that design features, and permanent BMPs, will avoid adverse effects to salmonids and their habitat related to potential increased runoff from the completed project.

C. Interdependent and Interrelated Actions

NMFS does not anticipate any interdependent or interrelated actions associated with the proposed action.

D. Actions with Beneficial Effects to Salmonids or their Habitat

1. Haehl Creek and Upp Creek Culvert Replacements

Existing culverts on Haehl and Upp creeks are impediments to fish anadromous passage (Caltrans 2005a). The Willits Bypass Project proposes to replace both these culverts with new structures that improve passage for both adult and juvenile lifestages of salmonids. At Upp Creek the existing culvert will be replaced with a new culvert. On upper Haehl Creek, the existing culvert under the new propoposed Highway 101 alignment will be removed and not replaced. A second culvert on Haehl Creek will be replaced for improvement of the new Schmidbauer Ranch access road.

These culvert removals and replacements are expected to improve adult anadromous fish passage on Upp and Haehl creeks. Recent assessments of the existing culvert on upper Haehl Creek by CDFG and NMFS staff biologists have determined that the culvert is a barrier to adult salmon and steelhead. A fish passage assessment study conducted by Caltrans ranked Upp Creek as one of the top ten locations for restoration of passage conditions in Mendocino County (Caltrans

2005b). Habitat surveys on upper reaches of Upp Creek have documented the presence of approximately 2,300 meters of available anadromous habitat. Replacement of the Upp Creek culvert on existing Highway 101 would be most beneficial for NC steelhead due to the higher gradient that exists upstream of the culvert (S. Harris, CDFG, personal communication, 2006). Coho and Chinook salmon are not known to use high gradient stream habitat, and are less likely to use the newly accessible upper reaches of Upp Creek for spawning and rearing. Increased rearing opportunities would be available for juvenile NC steelhead, which, over time, would likely result in increased steelhead production in the Outlet Creek watershed.

The replacement of the culvert on upper Haehl Creek is expected to provide a lesser benefit to anadromous fisheries. Upper Haehl Creek is near the upstream end of anadromous habitat in the streams headwaters. Replacement of the culvert with one that improves fish passage is not expected to increase levels of salmonid productivity. The habitat may provide for some additional spawning of Chinook salmon and steelhead adults, and some use during the winter by juvenile Chinook and steelhead. This reach of upper Haehl Creek is usually dry during the summer months and is not expected to provide juvenile rearing habitat for steelhead or salmon.

2. Riparian Vegetation Mitigation

Caltrans proposes to restore and mitigate temporary and permanent impacts to riparian vegetation on anadromous streams, Category II streams, and Category III streams. The general extent and nature of the project's mitigation plantings are described in the "*Conceptual Mitigation Plan for the Willits Bypass Project*", dated August 19, 2006. The riparian mitigation plan is "conceptual", because it is based on early and limited level of project design. Therefore, Caltrans and FHWA have not ascertained the specific compensatory mitigation sites for this project.

The Conceptual Plan proposes replanting of riparian vegetation on anadromous stream at a 3:1 ratio. Based on the existing project design, this ratio will result in the creation/restoration of 22.2 acres of riparian area mitigation for permanent and temporary impacts. Mitigation of Category II and III stream types will result in riparian creation/enhancement of 13.6 and 1.95 acres of riparian revegetation, respectively.

Riparian vegetation mitigation by Caltrans will be designed to restore the ecosystem to its natural pre-disturbance riparian community structure and function. In order to accomplish this goal, Caltrans proposes to plant five riparian trees for every tree that has been removed. Anadromous reaches will be planted to achieve a 30-meter riparian zone, Category II streams will be re-vegetated to achieve a 15-meter riparian zone, and Category III stream will be re-vegetated to create an 8-meter riparian zone. In addition, native shrubs and herbaceous perennial plants are proposed to be planted along with riparian trees.

Proposed riparian restoration/creation is expected to compensate for project impacts in some areas and improve existing conditions in other areas. Evaluation of past riparian replanting projects in California generally shows improvement in anadromous salmonid habitat conditions. Opperman and Merenlender (2004) found positive responses in salmonid habitat to riparian restoration actions conducted 10-20 years earlier. Factors that may affect success or failure of a riparian planting project may be due to one or more reasons, including aspect, slope, existing

vegetation, upland drainage, soil moisture conditions, competing vegetation, use of imported soil, native soil conditions, and stock quality (Anderson and Welton 2005). Caltrans has proposed specific success criteria in order to provide a level of certainty for riparian mitigation success. Caltrans has estimated that after a five-year period, riparian tree canopies would provide a ten-foot strip of shade from restored vegetation, at a minimum. Other success criteria such as absolute vegetative cover, woody plant survival, and floristic composition, *etc.*, are proposed per the Conceptual Mitigation Plan.

Success of the proposed revegetation of riparian areas may take several decades to produce a riparian forest (Manci 1989). Faster growing species, such as willow (*Salix spp*), and white alder (*Alnus rhombifolia*), are expected to provide shade and bank protection within the first 5-10 years. Restoration of functional riparian areas may take 20-40 years dependent on the growth of species such as big leaf maple (*Acer macrophyllum*), cottonwood (*Populus spp*), California bay laurel (*Umbellularia californica*), and other riparian species proposed for planting. Riparian vegetation is generally in poor condition within the Little Lake Valley due to effects of grazing and urbanization over the last one-hundred years. Therefore, the proposed plan to provide restoration/creation at the proposed levels is a benefit, but this benefit to aquatic habitat may not be fully realized for 10 to 40 years. Beneficial effects will include improvement of stream temperatures, increased bank stability (5-10 years), and over a longer period, introduction of LWD and improved cover for fisheries habitat (10-40 years).

3. Instream Habitat Mitigation

Caltrans may propose to construct instream structures (such as opposing wing deflectors), anchor LWD, or contract to have other stream enhancement/restoration structures placed in stream mitigation reaches. As described previously, these projects are uncertain to occur and are not analyzed in this biological opinion. If these projects are designed and proposed, and may adversely affect listed salmonids or their critical habitats, reinitiation of consultation with NMFS will be needed.

VI. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

A variety of cumulative effects are occurring to salmonid fisheries resources within the Outlet Creek sub-basin. Following are the activities that are reasonably certain to occur within these watersheds that will likely result in cumulative effects in the future:

A. Rural Development

BLM *et al.* (1996) reports that many 64.7 hectare parcels within the South Fork Eel River watershed will continue to undergo subdivision down to 16.2 hectare parcels. Since the Outlet

Creek watershed is part of the South Fork Eel River watershed, it is reasonable to assume that similar subdivision activities are and will continue to occur within the Outlet Creek watershed. Impacts to salmonid habitat from rural development include loss of riparian vegetation, changes in channel morphology and dynamics, altered watershed hydrology, increased sediment delivery from roads, elevated water temperatures and increased water demand within the action area.

B. Chemical Use

It is anticipated that chemicals such as pesticides, herbicides, fertilizers, and fire retardants will continue to be used in the action area. Impacts to salmonids may include changes to riparian vegetation and associated organic input into aquatic systems, changes in aquatic invertebrate communities, and increased algae production. Due to the lack of specific information, we are unable to determine the effects of chemical applications in the action area. Due to the undeveloped nature of the action area, the use of chemicals is not expected to be conducted under applicable State and Federal laws.

C. California Streambed Alteration Agreements

CDFG has strengthened the permitting process for activities taking place in, or near, rivers and streams by requiring environmental review. Henceforth, streambed alteration agreements will be reviewed in accordance with the California Environmental Quality Act. This program is expected to result in lessened impacts to salmonids from projects such as temporary summer dams, and stream bank stabilization projects within the action area.

D. Illegal Marijuana Cultivation

Beginning in the 1960's a new significant land use activity arose in the South Fork Eel River watershed. The "back to the land movement" as it is known consisted of individuals leaving urban centers in an attempt to "get back to nature" (BLM *et al.* 1996). Many areas that had been logged were subdivided and real estate activities became very prominent within southern Humboldt and northern Mendocino counties. Many of the "back to the land" individuals could not find employment and turned to illegal marijuana cultivation as a means of economic support (BLM *et al.* 1996). These activities are expected to continue into the future. According to BLM *et al.* 1996 this activity has significant impacts on the ecosystem through runoff of fertilizers, poisons to control rodents, and water diversions which some have suggested may rival impacts of logging and grazing. Water withdrawal in Baechtel and Broaddus creeks has been reported to degrade summer rearing conditions for juvenile steelhead and coho salmon; these impacts are expected to continue (C. LeDoux-Bloom, CDFG, personal communication, 2005).

VII. INTEGRATION AND SYNTHESIS OF EFFECTS

The construction of the Willits Bypass Project is anticipated to affect five salmonid-bearing streams in the Outlet Creek sub-basin of the Eel River watershed over a four-year period. An estimated 1.9 million cubic meters of material will be excavated, transported and compacted to build a four-lane freeway, crossing the Little Lake Valley, beginning approximately 3.3

kilometers south of Willits to 2.2 kilometers north of Willits. New freeway stream crossings will be construction over Haehl Creek at three locations, and one crossing each at Baechtel, Broaddus, Mill, and Upp creeks. Construction is expected to adversely affect threatened NC steelhead, threatened CC Chinook salmon and threatened SONCC coho salmon by dewatering/fish relocation, temporary and permanent riparian vegetation removal, mobilization of sediment, and placement of rock slope protection. Maintenance and use of the bypass is not expected to adversely affect salmonids or their critical habitats, as described above.

Direct effects to listed salmonids associated with construction activities will be limited to the summer months when juvenile NC steelhead are likely to be present at the stream crossing sites. Construction in channels will be limited to the period between June 15 and October 15. CC Chinook are unlikely to be present during construction, because juveniles will have emigrated from the watershed as smolts during the spring months. Juvenile SONCC coho salmon are unlikely to be present in the action area due to unsuitable water temperature conditions during the summer and early fall months. Dewatering and fish collection activities prior to in-water construction are expected to result in the safe relocation of over 97 percent of the juvenile steelhead residing at the stream crossings.

Effects to salmonid habitat, including designated critical habitat, include loss of riparian vegetation, increased water temperatures, increased levels of sediment delivery to the creek, and placement of rock slope protection. These actions are expected to reduce instream cover, reduce recruitment of LWD, reduce canopy cover and associated shade (increasing water temperatures), degrade spawning habitat, and generally decrease juvenile rearing habitat diversity and complexity. A small number of listed salmonids may be injured or killed as a result. Most of these impacts to habitat are temporary. Impacts to critical habitat caused by reductions in riparian vegetation may persist for a number of years after project construction.

Riparian mitigation is expected to ameliorate impacts to stream temperatures and associated salmonid summer rearing habitat within five years of the completion of the project, and ultimately to improve habitat conditions in certain reaches of the creeks in the action area. More habitat will be improved by riparian mitigation than will be permanently lost. BMPs implemented by Caltrans to control sediment during construction are expected to be sufficient to avoid long-term adverse effects to spawning and rearing habitat in the action area. Culvert removal and replacement are expected to improve fish passage conditions for both adult and juvenile salmonids in Upp and Haehl creeks.

The project is likely to incrementally degrade critical habitat in the action area until mitigation actions are complete and riparian vegetation has re-established. This degradation is unlikely to affect the conservation value of critical habitat as a whole for these species because the degradation in the action area is minimal and short term, and therefore unlikely to adversely affect the conservation of salmonid species in the Haehl Creek HSA. Early coordination between CDFG, NMFS, and Caltrans during development of project alternatives resulted in selection of a roadway alignment that is least damaging and avoids impacts to the highest quality habitat in the Outlet Creek sub-basin. Reaches of streams that currently provide the best quality of habitat for listed salmonids in the sub-basin will not be affected by the project. Stream crossings proposed in the Willits Bypass Project are at locations that frequently dry out in the summer. In addition,

existing conditions at the proposed stream crossings are currently lacking well-developed riparian vegetation and contain high percentages of fine sediment in the streambed. Bypass alignment alternatives that traveled through the western hills of Willits had the potential to impact the highest quality spawning and rearing habitat of Baechtel, Broaddus and Mill creeks. These areas with well-developed riparian vegetation, high quality spawning gravels and perennial flow conditions for summer rearing are not affected by the proposed project. Thus, by design, the selected project alternative avoids and minimizes impacts to listed anadromous salmonids and designated critical habitat in the Outlet Creek sub-basin.

Although incidental take of NC steelhead, CC Chinook salmon, and SONCC coho salmon is anticipated, impacts within the action area are not expected to reduce the probability of these populations surviving and recovering in the wild. NMFS reasons that low numbers of individual steelhead are currently produced in the action area and very low numbers of CC Chinook salmon and SONCC coho salmon are produced in the action area. Low reproductive productivity from the action area is due to baseline habitat conditions of high levels of fine sediment and low embryo/fry survival rates.

For NC steelhead, few of the fish originating from the action area are likely to contribute to the adult population given the poor rearing conditions that currently exist. During the summer and fall months, intermittent to dry conditions in stream channels, high stream temperatures, and poor to moderate habitat diversity currently limits summer habitat conditions and juvenile survival. NC steelhead are sufficiently distributed throughout the Eel River watershed to ameliorate the small losses expected in the action area from the project during the four year construction period, and for the five to ten years required for restored riparian vegetation to provide shade over streams.

CC Chinook salmon primarily use the action area during adult and smolt migrations, although some juvenile rearing occurs prior to emigration from the basin in the spring months[2]. The majority of Chinook salmon spawn and rear in Baechtel, Broaddus, and Mill creeks upstream of the action area (S. Harris, CDFG, personal communication, 2006). A small amount of spawning annually occurs in the action area and it is anticipated sediment from the project will result in a decreased level of embryonic survival. These decreases in survival of embryos within redds are expected to occur after each of the four construction seasons and should diminish to baseline conditions a few years after construction is completed. It is anticipated that adverse affects associated with this project will not decrease the probability of survival and recovery of CC Chinook salmon at the ESU level. CC Chinook salmon are sufficiently distributed throughout the Eel River watershed to ameliorate the small losses expected in the action area during this project's 4-year implementation period.

A small population of threatened SONCC coho salmon is thought to remain in the Outlet Creek sub-basin (S. Harris, CDFG, personal communication, 2006). Due to warm water temperature conditions and poor habitat complexity, low potential for juvenile coho salmon summer rearing currently exists in the action area. For similar reasons of poor habitat quality, few adult fish are

[2] Because these juveniles rear and outmigrate in the spring, adverse effects from elevated summer water temperatures are not anticipated.

likely to spawn in the reaches of the creeks in the action area. Thus, the proposed project has minimal impact on SONCC coho salmon or their habitat in the Outlet Creek sub-basin. Upstream reaches of these creeks in the Outlet Creek sub-basin, and other streams in the Eel River Basin, provide sufficient habitat and population productivity to maintain the SONCC coho salmon ESU during and after construction of the Willits Bypass Project. NMFS expects the small impact to coho salmon associated with this project is unlikely to affect the SONCC coho ESU population trend.

The proposed Willits Bypass Project is not expected to appreciably diminish the value of designated critical habitat for NC steelhead, CC Chinook salmon or SONCC coho salmon. Habitat impacts from the project in the action area are mostly temporary and/or minor. These impacts will be ameliorated, *i.e.*, critical habitat will return to its current condition, within 5-10 years, by the proposed riparian mitigation. Proposed riparian mitigation, as well as fish passage improvements in Haehl and Upp creeks, are likely to result in improvements to the current value of critical habitat for listed anadromous salmonids throughout the action area, and Outlet Creek sub-basin, although these improvements may take as long as 40 years.

VIII. CONCLUSION

After reviewing the best available scientific and commercial information, the current status of the species and critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion that the construction of the Willits Bypass Project by FHWA and Caltrans, in Mendocino County, California is not likely to jeopardize the continued existence of SONCC coho salmon, CC Chinook salmon, or NC steelhead.

After reviewing the best available scientific and commercial information, the current status of critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS biological opinion that the construction of the Willits Bypass Project by FHWA and Caltrans, in Mendocino County, California is not likely to adversely modify or destroy designated critical habitat for SONCC coho salmon, CC Chinook salmon, or NC steelhead.

IX. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by NMFS as an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to

and not the purpose of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are nondiscretionary, and must be undertaken by the FHWA, Caltrans, and their designees for the exemption in section 7(o)(2) to apply. The FHWA and Caltrans have a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA and Caltrans: (1) fail to assume and implement the terms and conditions, or (2) fail to require any designee to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to any permit, grant document, or contract, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the FHWA and Caltrans must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement (50 CFR §402.14(i)(3)).

A. Amount or Extent of Take

The Willits Bypass Project is expected to result in the incidental take of NC steelhead, CC Chinook salmon, and SONCC coho salmon. The majority of take is associated with the de-watering and fish relocation activities at the stream crossing construction sites. Caltrans proposes to implement dewatering and fish relocation to minimize take of juvenile salmonids associated with pile driving and other instream construction activities. Dewatering and fish relocation is proposed at all stream crossings except when the stream is dry and no water is present.

Based on summer electrofishing surveys conducted by the CDFG in 1993, NC steelhead are expected to comprise the vast majority of juvenile salmonids collected during fish relocation. Few to no juvenile Chinook and coho salmon are expected to be present during reach de-watering. No adult salmonids are expected to be present or taken by this project.

The majority of take during de-watering and relocation will be non-lethal take. Qualified biologists will relocate all fish, including salmonids from the dewatered stream channel areas (as much as 150 lineal meters) at each stream crossing. Some mortality of juvenile steelhead is anticipated during seining, electrofishing and other relocation related activities. Up to three percent of the juvenile steelhead, Chinook salmon, or coho salmon could be injured or killed because of relocation efforts. Therefore, the death or injury of no more than three percent of the total number of juvenile steelhead, Chinook salmon, and coho salmon relocated is anticipated at each stream crossing site during each year of construction.

During construction, Caltrans and its construction contractor will implement a SWPPP, to reduce the mobilization of sediment to the action area. It is likely the project construction will mobilize fine-grained (sand sized) sediment and this material will eventually be deposited in the stream channels during the winter months. Increased rates of fine sediment input may decrease the survival of embryos and the emergence of fry from spawning sites (redds) within the Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet creeks within the action area (13.8 km total). It is unlikely that sediment delivery will reach levels in the action area that result in complete loss of spawning success within redds. Some incremental loss is anticipated, but due to many factors,

the loss is unquantifiable.

Similarly, loss of riparian vegetation is expected to result in injury or death to juvenile steelhead due to elevated water temperatures. The number of steelhead affected cannot be precisely quantified but is expected to be very small based on the current condition of habitat in the affected areas, which limits steelhead use of these areas for rearing. The extent of take to juvenile steelhead is likely to persist in the action area for at least a five year period. Elevated water temperatures may persist for as long as ten years, depending upon how quickly proposed revegetation provides shade to the affected streams.

Anticipated take will have been exceeded if construction activities, construction of stream crossings, culvert removal, and replacement, or related construction activities are conducted in a manner inconsistent with the proposed project description (including project minimization and avoidance measures) or do not adhere to the terms and conditions of this biological opinion.

B. Effect of the Take

In the accompanying opinion, NMFS determined that this level of anticipated take is not likely to result in jeopardy to the species.

C. Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the impacts of the incidental take of NC steelhead, CC Chinook salmon, and SONCC coho salmon:

1. Measures shall be taken to ensure that fish relocation efforts are carried out in a manner that minimizes effects to Federally-listed salmonids.

2. Measure shall be taken to minimize harm to listed salmonids resulting from bridge and roadway construction and maintenance.

3. Measures shall be taken to minimize impacts to stream water quality.

4. Measures shall be taken to monitor the effects of pile driving on listed species.

5. Measures shall be taken to ensure the final mitigation plan adequately compensates for project impacts.

6. Measures shall be taken to monitor take of salmonids.

D. Terms and Conditions

FHWA and Caltrans must comply with the following terms and conditions, which implement the reasonable and prudent measures, described above and define the reporting and monitoring requirements. These terms and conditions are non-discretionary.

The following terms and conditions implement **Reasonable and Prudent Measure 1** to ensure that any fish relocation efforts are carried out in a manner that minimizes effects to federally listed salmonids:

1. FHWA and Caltrans shall provide NMFS with a Fish Relocation and Dewatering Plan at least 30 days prior to the start of dewatering for fish relocation activities, and shall receive written approval for this plan from NMFS prior to beginning any dewatering for fish relocation in streams where federally listed salmonids are present. This plan shall outline cofferdam construction, dewatering methods, and fish relocation methods. If the plan meets NMFS' approval, NMFS shall provide approval and any comments within 30 days of plan submittal. If the plan does not meet NMFS' approval, NMFS shall provide a list of changes needed within 30 days of plan submittal.

2. The FHWA and Caltrans shall retain a qualified biologist with expertise in the areas of anadromous salmonid biology, including handling, collecting, and relocating salmonids; salmonid/habitat relationships; and biological monitoring of salmonids. The FHWA and Caltrans shall ensure that all fisheries biologists working on this project be qualified to conduct fish collections in a manner which minimizes all potential risks to ESA-listed salmonids. Electrofishing, if used, shall be performed by a qualified biologist and conducted according to the *NOAA Fisheries Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act*, June 2000.

3. The fisheries biologist shall monitor the construction site during placement and removal of cofferdams to ensure that any adverse effects to salmonids are minimized. The biologist shall be on site during all dewatering events in anadromous fish streams to ensure that all ESA-listed salmonids are captured, handled, and relocated safely. The fisheries biologist shall notify NMFS biologist Thomas Daugherty at (707) 468-4057 or tom.daugherty@noaa.gov, or other NMFS staff at (707) 575-6062 one week prior to capture activities in order to provide an opportunity for NMFS staff to observe the activities. During fish relocation activities the fisheries biologist shall contact Thomas Daugherty (or other NMFS staff) at the above numbers, if mortality of federally listed salmonids exceeds 3 percent, at which time NMFS will stipulate measures to reduce the take of salmonids.

4. If ESA-listed fish are handled, it shall be with extreme care and they shall be kept in water to the maximum extent possible during rescue activities. All captured fish shall be kept in cool, shaded, aerated water protected from excessive noise, jostling, or overcrowding any time they are not in the stream and fish shall not be removed from this water except when released. To avoid predation the biologist shall have at least two containers and segregate young-of-year fish from larger age-classes and other potential aquatic predators. Captured salmonids will be relocated as soon as possible to a suitable instream location (pre-approved by NMFS) where suitable habitat conditions are present to allow for survival of transported fish and fish already present.

5. Non-native fish that are captured during fish relocation activities shall not be relocated to anadromous streams, or areas where they could access anadromous habitat.

6. Pumps used to dewater the work area shall be equipped with screens that meet the following NMFS fish screening criteria:

- Perforated plate: screen openings shall not exceed 3/32 inches (2.38mm), measured in diameter.
- Woven Wire: screen openings shall not exceed 3/32 inches (2.38 mm measured diagonally).
- Screen material shall provide a minimum of 27% open area.
- Approach velocity shall not exceed 0.33 feet per second.

The following terms and conditions implement **Reasonable and Prudent Measure 2** to minimize impacts of bridge and roadway construction.

7. The FHWA or Caltrans shall notify the NMFS Santa Rosa Area Office, by letter stating the project commencement date, at least fourteen days prior to implementation. The letter shall be sent to the NMFS Santa Rosa Area Office, Attention: Supervisor of Protected Resources Division 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528.

8. The FHWA or Caltrans shall allow any NMFS employee(s) or any other person(s) designated by NMFS, to accompany field personnel to visit the construction sites during activities provided for in this opinion. NMFS will notify the Caltrans Resident Engineer at least 48 hours prior to the planned site visits and will contact Caltrans personnel prior to entering the construction site.

9. Representatives from NMFS and CDFG shall be notified two weeks in advance of any FHWA or Caltrans pre-construction meetings for the Willits Bypass Project.

10. Prior to commencement of work on the Upp Creek and Haehl Creek fish passage improvement components, FHWA or Caltrans shall submit the engineering design for the structures related to fish passage to NMFS for evaluation and concurrence prior to implementation. Fish passage design at these two structures shall follow the March 2000, *NMFS Guidelines for Salmonid Passage at Stream Crossings*. NMFS shall provide evaluation within 30 days of design submittal. If passage design meets the NMFS guidelines above, NMFS shall provide evaluation and concurrence within 30 days of design submittal. The designs should be sent to the NMFS Santa Rosa Area Office, Attention: Supervisor of Protected Resources Division, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528.

The following terms and conditions implement **Reasonable and Prudent Measure 3** to minimize impacts to stream water quality.

11. Water that comes in contact with wet concrete and has a pH greater than 9.0 must not be allowed to enter the ground or stream but shall be either: (1) pumped to a separate, lined basin, and then pumped to a truck or upland for disposal or treatment (not within the bank to bank of any waterway); or (2) pumped directly to a truck for disposal at a site that is not within the top of bank to top of bank of any waterway.

12. Construction equipment used within the creek channel will be checked each day prior to work within the creek channel (top of bank to top of bank) and if necessary action will be taken to prevent fluid leaks. If leaks occur during work in the channel (top of bank to top of bank), FHWA, Caltrans, or their contractor will contain the spill and remove the affected soils.

13. Water drafting must not be acquired from any source that may affect salmonid habitat. Water drafting from the action area is not permitted.

14. Working waters from the project area shall not be discharged to the live stream, unless Caltrans can demonstrate that no impact to stream water temperature or other water quality parameters will occur as a result of the discharge.

15. A biologist shall monitor in-channel activities and performance of sediment control or detention devices for the purpose of identifying and reconciling any condition that could adversely affect salmonids or their habitat. If sediment run-off does occur, work activities that are the cause of the sediment shall be halted and corrective measures implemented until the sediment source is eliminated.

16. When updates to the SWPPP occur, Caltrans shall notify NMFS of these changes. Caltrans will submit a re-certified SWPPP annually to NMFS, and indicate any substantial changes within the SWPPP.

17. All necessary erosion control BMPs shall be in place by October 31 of each construction season. FHWA and Caltrans shall provide NMFS with a site tour to view the BMPs during the month of November.

18. FHWA and Caltrans shall provide NMFS with a detailed description of any proposed contractor-constructed concrete batch plant, including the location and measures to avoid impacts to stream water quality.

19. Construction work conducted outside of the June 15 to October 15 work window shall not create conditions that mobilize sediment or concentrate over-land flow from construction areas into the stream-channel network.

20. FHWA and Caltrans shall provide NMFS with the detailed plan for non-fish bearing stream realignments that are proposed. The channel realignment plan will include a detailed map of channel(s) to be realigned, methods of construction, restoration, and BMPs to be implemented to minimize sediment delivery to downstream stream reaches.

21. Prior to the completion of Willits Bypass construction, FHWA and Caltrans shall provide NMFS with a maintenance plan for the project that includes description of specific maintenance activities and the specific BMPs that will be used to avoid impacts to listed salmonids and their critical habitats.

The following terms and conditions implement **Reasonable and Prudent Measure 4** to reduce effects of pile driving on listed species.

22. Caltrans shall submit a hydroacoustic monitoring plan to NMFS that provides details of the sound monitoring that is proposed in the project proposal. The hydroacoustic monitoring plan shall be submitted for NMFS review 30 days prior to the start of pile driving actions. If the plan meets NMFS' approval, NMFS shall provide written approval and any comments within 30 days of plan submittal. If the plan does not meet NMFS' approval, NMFS shall provide a list of changes needed within 30 days of plan submittal.

23. Caltrans shall conduct hydroacoustic monitoring during pile driving events in wetted aquatic habitats upstream and downstream of de-watered stream areas .

The following terms and conditions implement **Reasonable and Prudent Measure 5** to ensure the final mitigation plan adequately compensates for potential impacts.

24. FHWA and Caltrans shall provide the NMFS with a final mitigation plan. This plan shall include specific mitigation work that Caltrans proposes to conduct. For those mitigation efforts that Caltrans is unable to propose at this time, the plan shall provide a mechanism (such as a review committee, *etc.*) for developing and approving final mitigation efforts.

The following terms and conditions implement **Reasonable and Prudent Measure 6** to provide a monitoring take of salmonids.

25. FHWA and Caltrans shall provide NMFS with a summary report within 90 days of the completion of fish relocation activities each year. The report shall include the methods used during the fish relocation efforts, location, number and species captured, number of mortalities by species, and other pertinent information related to the fish relocation activities.

26. FHWA and Caltrans shall monitor stream temperatures associated with riparian vegetation removal, and provide the data to NMFS no later than 120 days after the last day of data collection.

27. All reports or plans required for the above terms and conditions shall be sent to:

Santa Rosa Field Office Supervisor, Protected Resources Division
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404.

X. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. One or more years in advance of construction of stream crossings, FHWA and Caltrans should plant riparian vegetation along the banks of on Haehl, Baechtel, Broaddus, Mill, and Upp creeks to enhance the riparian corridor prior to the project's vegetation removal. By increasing the canopy cover in areas with sparse or no existing riparian vegetation, the project can minimize the effects of increased solar radiation on stream water temperature.

XI. REINITIATION NOTICE

This concludes formal consultation for the proposed FHWA and Caltrans Highway 101 Willits Bypass Project in Mendocino County, California. As provided in 50 CFR §402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

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71 FR 834. National Marine Fisheries Service. Final rule: Endangered and Threatened Species: Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead. Federal Register 71: 834-862. January 5, 2006.

Enclosure 2

Highway 101 Willits Bypass Project

DRAFT

ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS

(Magnuson-Stevens Fishery Conservation and Management Act - EFH Consultation)

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) set forth new mandates for the National Marine Fisheries Service (NMFS), regional fishery management councils, and Federal action agencies to identify and protect important marine and anadromous fish habitat. The regional fishery management councils, with assistance from NMFS, are required to delineate essential fish habitat (EFH) in fishery management plans (FMPs) or FMP amendments for all managed species. Federal action agencies, which fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to NMFS conservation recommendations. In addition, NMFS is required to comment on any state agency activities that would impact EFH. Although the concept of EFH is similar to that of critical habitat under the Endangered Species Act, measures recommended to protect EFH are advisory, not proscriptive. The Pacific Fisheries Management Council has delineated EFH for Pacific coast salmon (PFMC 1999).

I. IDENTIFICATION OF ESSENTIAL FISH HABITAT

EFH is defined in the MSFCMA as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. NMFS regulations further define waters to include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate to include sediment, hard bottom, structures underlying the waters, and associated biological communities necessary to mean the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem; and spawning, breeding, feeding, or growth to maturity to cover a species full life cycle.

For Pacific coast salmon, the geographic extent of EFH currently being considered includes both marine and freshwater habitat. For purposes of this consultation, Pacific coast salmon EFH corresponds closely to Critical Habitat designated under the Endangered Species Act for Southern Oregon-Northern California Coasts Coast coho salmon (*Oncorhynchus kisutch*) and California Coastal Chinook salmon (*O. tshawytscha*) (64 FR 24049 and 70 FR 52488).

II. PROPOSED ACTION

The California Department of Transportation (Caltrans) and Federal Highway Administration (FHWA) propose the Highway 101 Willits Bypass to reduce delays on U.S. Route 101. Currently Highway 101 runs through the City of Willits, California. The bypass project will re-route Highway 101 around the City of Willits, providing a stable flow of traffic at 65 miles per

hour. The proposal includes the construction of a four-lane freeway that crosses the Little Lake Valley east of Willits. The bypass would begin 3.2 kilometers (km) south of Willits, where the existing Highway 101 becomes a two-lane road, and extend to about 0.6 km north of the Willits, where the new alignment would merge with the existing two-lane Highway 101. Construction would begin in 2009 and likely take four years to complete.

III. EFFECTS OF THE PROJECT ACTION

The associated biological opinion has a general description of the non-fishing related activities that directly or cumulatively, temporarily or permanently may threaten the physical, chemical, and biological properties of the habitat utilized by Pacific coast salmon and their prey within the proposed project area. The direct result of these threats is that the function of EFH may be eliminated, diminished or disrupted.

Potential impacts to salmonid habitat are described in the preceding biological opinion. Adverse effects of the proposed action on salmonid EFH may occur through dewatering and in-channel construction activities, riparian vegetation removal, and associated freeway construction work within Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet creeks, which are tributaries to the Eel River.

IV. CONCLUSION

Upon review of the anticipated effects, NMFS believes that proposed freeway construction actions are likely to cause adverse effects to Pacific coast salmon EFH.

V. EFH CONSERVATION RECOMMENDATIONS

Pursuant to Section 305(b)(4)(A) of the Magnuson-Stevens Act, NMFS recommends that the terms and conditions 7 through 21 of the preceding biological opinion's Incidental Take Statement be adopted as EFH conservation recommendations for Pacific coast salmon habitat.

VI. FEDERAL AGENCY STATUTORY REQUIREMENTS

The Magnuson-Stevens Act (Section 305(b)(4)(B)) and Federal regulations (50 CFR Section 600.920(j)) to implement the EFH provisions of the MSFCMA require Federal action agencies to provide a written response to EFH Conservation Recommendations within 30 days of its receipt. The Federal action agency included in this consultation is the Federal Highway Administration. A preliminary response is acceptable if final action cannot be completed within 30 days. The final response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on delineated EFH. If the response is inconsistent with our EFH Conservation Recommendations, it must provide an explanation of the reasons for not implementing them.

Attachment 6: Names and Addresses of Adjoining Property Owners/Lessees

Adjoining Property Owners and Lessees

APN	OWNER	PROPERTY OWNER ADDRESS	CITY	STATE	ZIP	PROPERTY ADDRESS	CITY
00701002	WILLITS CITY OF			CA	00000		
00701003	WILLITS CITY OF			CA	00000		
00701004	BENBOW CHARLES 1/2	40 E BRANCH RD	GARBERVILLE	CA	95542		
00702003	BENBOW CHARLES 1/2	40 E BRANCH RD	GARBERVILLE	CA	95542	998 HEARST WILLITS RD	WI
00703204	SHUSTERS TRANSPORTATION INC	750 E VALLEY ST	WILLITS	CA	95490	750 CENTER VALLEY RD	WI
00703205	WILLITS HORSEMAN ASSOCIATION I	PO BOX 906	WILLITS	CA	95490		
00703210	JENSEN MARJORIE L C 1/9	507 W MILL ST	UKIAH	CA	95482		
00703211	HARMS GEORGE M TTEE	392 REDWOOD AVE	WILLITS	CA	95490		
00703213	HARMS GEORGE M TTEE	392 REDWOOD AVE	WILLITS	CA	95490		
00704006	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502	701 CENTER VALLEY RD	WI
00704007	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502	731 EA VALLEY ST	WI
00704008	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490	801 EA VALLEY ST	WI
00704009	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490		
00704010	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490	801 EA VALLEY ST	WI
00704014	WINDSOR MILL PROPERTIES LLC	7950 REDWOOD DR STE 4	COTATI	CA	94931		
00704017	TWEDDELL APRIL TTEE	651 E VALLEY ST	WILLITS	CA	95490	651 CENTER VALLEY RD	WI
00705002	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490		
00705007	GRIGGS MICHAEL A JR & KERRI M	511 E VALLEY ST	WILLITS	CA	95490		
00707001	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490	500 SHELL LN	WI
00710008	SEIBERLICH JEANETTE SUCCTTEE	40 ST TERESA CT	DANVILLE	CA	94526	311 SHELL LN	WI
00710009	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490		
00710011	FORD DELMAN & DONNA R TTEES	1750 HEARST RD	WILLITS	CA	95490		
00710029	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
00716017	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
00716018	HANDLEY MARGIE LEE TTEE 1/2	PO BOX 1329	WILLITS	CA	95490		
03802009	BURTON BRUCE EDWARD 1/2	220 FRANKLIN AVE	WILLITS	CA	95490	24850 NO HWY 101	WI
03802011	BROOKE CLIFFORD ALLEN & CARLA	2409 PINE KNOLL DR #1	WALNUT CREEK	CA	94595		
03802021	GARMAN BEDA H JR & SHARON A TT	389 N MAIN ST	WILLITS	CA	95490	24900 NO HWY 101	WI
03804009	BROOKE CLIFFORD A & CARLA R	2409 PINE KNOLL DR #1	WALNUT CREEK	CA	94595		
03806007	ANDERSON CHARLES & SYLVIA	PO BOX 302	WILLITS	CA	95490	24200 NO HWY 101	WI
03806008	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD #166-K	SEAL BEACH	CA	90740	24201 NO HWY 101	WI
03806010	WAGENET GORDON M & CATHARINE S	PO BOX 345	WILLITS	CA	95490		

APN	OWNER	PROPERTY OWNER ADDRESS	CITY	STATE	ZIP	PROPERTY ADDRESS	CITY
03808009	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD 116-K	SEAL BEACH	CA	90740		
03808031	WAGENET GORDON M & CATHARINE S	PO BOX 345	WILLITS	CA	95490		
10315011	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10403018	MORRIS LAUREL A TTEE 1/4	801 E HILL RD	WILLITS	CA	95490	801 EAST HILL RD	WI
10403022	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10403023	HANDLEY MARGIE LEE TTEE	PO BOX 1329	WILLITS	CA	95490	701 EAST HILL RD	WI
10405010	MORRIS LAUREL A TTEE 1/4	801 E HILL RD	WILLITS	CA	95490		
10405015	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10405016	HANDLEY MARGIE LEE TTEE	PO BOX 1329	WILLITS	CA	95490		
10409004	SCHMIDBAUER EDWARD J & ERLYNE	19921 N HWY 101	WILLITS	CA	95490		
10411012	OCHOA LYNDA & MANUEL R	19873 N HWY 101	WILLITS	CA	95490	19873 NO HWY 101	WI
10412002	SCHMIDBAUER EDWARD J & ERLYNE	19921 N HWY 101	WILLITS	CA	95490		
10803003	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD 116-K	SEAL BEACH	CA	90740		
10804002	NIESEN WALTER A	24001 N HWY 101	WILLITS	CA	95490	24001 NO HWY 101	WI
10804003	CITY OF WILLITS THE	111 E COMMERCIAL	WILLITS	CA	95490	23731 NO HWY 101	WI
10804008	HUFFMAN RODNEY G 1/9	PO BOX 551	UKIAH	CA	95482	23731 NO HWY 101	WI
10804014	CITY OF WILLITS	111 E COMMERCIAL ST	WILLITS	CA	95490		

Attachment 7: Copies of Permit Applications

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 **EXPIRES: 31 August 2012**

Public reporting burden for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This Information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME:	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
First - Jason Middle - Last – Meigs	First - Middle - Last –
Company – State of California, Department of Transportation (Caltrans) District 3	Company –
E-mail Address – Jason_Meigs@dot.ca.gov	E-mail Address –
6. APPLICANT'S ADDRESS. Address - 2800 Gateway Oaks Drive	9. AGENT'S ADDRESS Address -
City – Sacramento State – CA Zip – 95833 Country – USA	City – State – Zip – Country –
7. APPLICANT'S PHONE NOs. W/AREA CODE	10. AGENT'S PHONE NOs. W/AREA CODE
a. Residence b. Business (916) 274-0564 c. Fax (916) 274-0602	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____

APPLICANT'S SIGNATURE DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

U.S. Highway 101 Willits Bypass Project

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Refer to Attachment 1, Block 13 (Name of Waterbody)	Address N/A
15. LOCATION OF PROJECT	
Latitude: °N Refer to Attachment 1, Block 15 (Location of Project). Longitude: °W	City - Willits State – CA Zip -

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID N/A Municipality Mendocino County, near the City of Willits

Section – 32 Township – 18N Range – 13W

17. DIRECTIONS TO THE SITE

From San Francisco, take U.S. Highway 101 north approximately 140 miles to Willits, California. The project site begins at the south of the Haehl Overhead and ends approximately 1.9 miles south of Reynolds Highway. Refer to Attachment 1, Block 15, for additional location details.

18. Nature of Activity (Description of project, include all features)

Refer to Attachment 1, Block 18 (Nature of Activity)

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

Refer to Attachment 1, Block 19 (Project Purpose), for details regarding the purpose of the proposed project.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Refer to Attachment 1, Block 20 (Reason(s) for Discharge).

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
Refer to Attachment 1, Block 21		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres Refer to Attachment 1, Block 22 (Surface Area in Acres of Wetlands or Other Waters Filled).

Or

Liner Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Refer to Attachment 1, Block 23 (Description of Avoidance, Minimization, and Compensation).

24. Is Any Portion of the Work Already Complete? Yes ☐ No ☑ IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

Address – Refer to Attachment 1, Block 25 (Addresses of Adjoining Property Owners, Lesses, Ect.)

City – State – Zip –

26. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
Refer to Attachment 1, Block 26					

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE

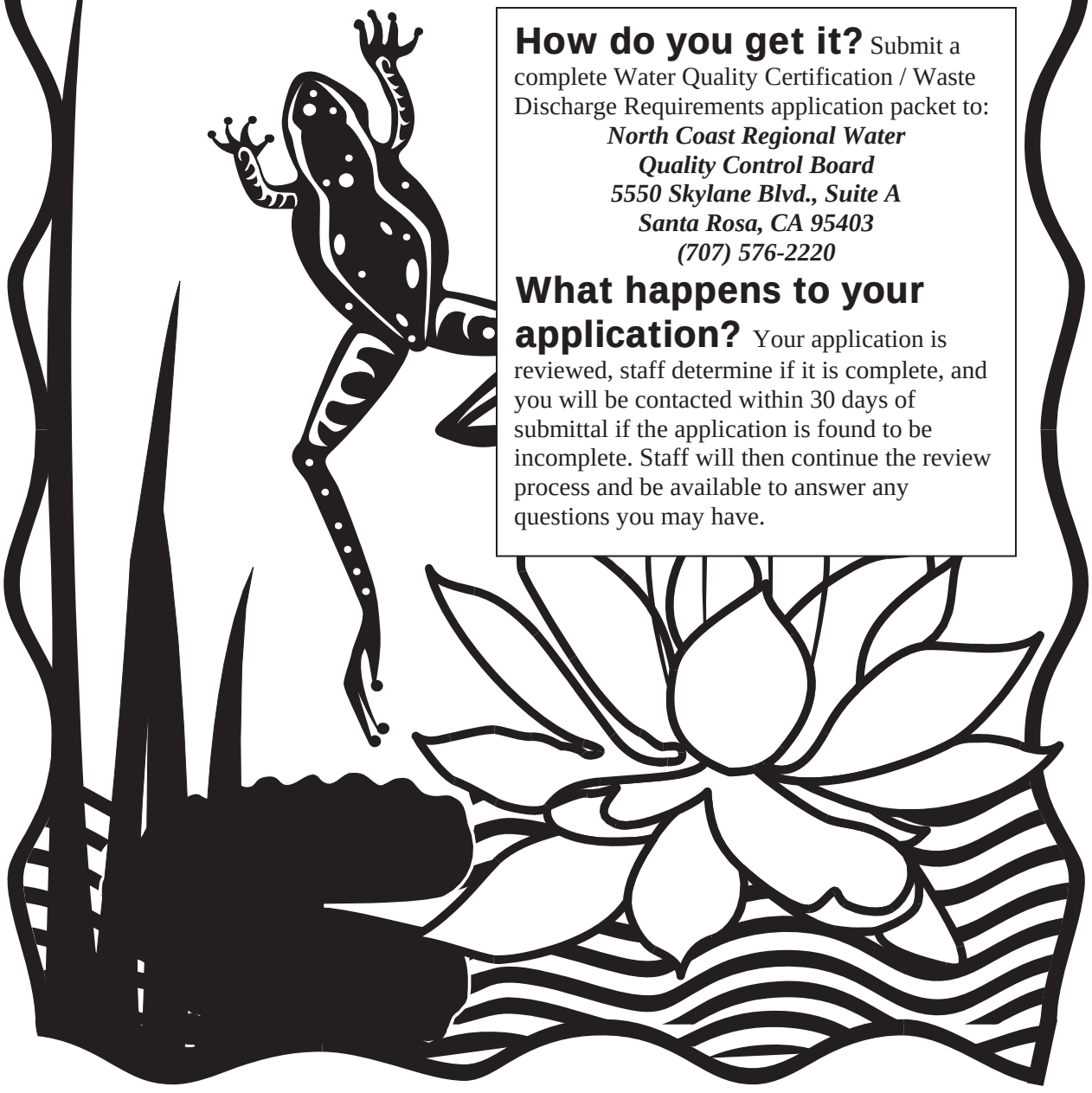
The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

WATER QUALITY CERTIFICATION AND/OR WASTE DISCHARGE REQUIREMENTS (Dredge/Fill Projects)

What is it? A Clean Water Act (CWA) Section 401 Permit (Water Quality Certification) is a finding from the Regional Water Quality Control Board that the proposed project will comply with CWA Sections 301, 302, 303, 306 and 307, State laws, and will be protective of beneficial uses. At a minimum, any beneficial uses lost must be replaced by a mitigation project of at least equal function, value and area. Waste Discharge Requirements Permits are required pursuant to California Water Code Section 13260 for any persons discharging or proposing to discharge waste, including Dredge/Fill, that could affect the quality of the Waters of the State.

Who Needs It? Anyone proposing to conduct a project that requires a federal permit or may result in a discharge to U.S. surface waters and/or "Waters of the State", including wetlands (all types), year round and seasonal streams, lakes and all other surface waters.



How do you get it? Submit a complete Water Quality Certification / Waste Discharge Requirements application packet to:

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403
(707) 576-2220

What happens to your application? Your application is reviewed, staff determine if it is complete, and you will be contacted within 30 days of submittal if the application is found to be incomplete. Staff will then continue the review process and be available to answer any questions you may have.

Application for 401 Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill)

The following application must be submitted to the Regional Water Quality Control Board for dredge/fill projects that require Water Quality Certification and/or Waste Discharge Requirements. Submit this application and the appropriate documentation*, along with a check for $640.00 (Base Price) plus additional fees, if applicable, as required according to the CCR 23 Section 2200 (a)(2) Fee Schedule** to:

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403
(Make checks payable to: State Water Resources Control Board)

*Clarification of information may be requested by Regional Water Quality staff during application review.
**Additional fees may be imposed upon application review.
Fee calculator and additional information are available at
http://www.waterboards.ca.gov/northcoast/water_issues/programs/water_quality_certification.shtml

SECTION ONE – Applicant Information & Authorization

APPLICANT/PROPERTY OWNER(S) NAME Jason Meigs, California Department of Transportation (Caltrans)	AUTHORIZED AGENT NAME AND TITLE (an agent is not required)
APPLICANT/PROPERTY OWNER(S) MAILING ADDRESS Caltrans District 3 2800 Gateway Oaks Drive Sacramento, CA 95833	AUTHORIZED AGENT MAILING ADDRESS
APPLICANT/PROPERTY OWNER(S) PHONE & FAX NUMBERS (email optional) (916) 274-0564; FAX (916) 274-0602; Jason_Meigs@dot.ca.gov	AUTHORIZED AGENT PHONE & FAX NUMBERS (email optional)

STATEMENT OF AUTHORIZATION (if designating a specific agent)

I hereby authorize _____ to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

X_____ _____
APPLICANT'S SIGNATURE (not the authorized agent) DATE

SECTION TWO – Project Information

Please refer to the provided Project Plan Checklist for guidance and attach additional supporting documentation as necessary. Supplying detailed information will aid in expediting the review process. **Including an electronic copy of the required information will expedite the review process.**

<table>
<tr><td colspan="2">PROJECT NAME OR TITLE
U.S. Highway 101 Willits Bypass Project</td></tr>
<tr><td>PROJECT STREET ADDRESS (if applicable)

U.S. Highway 101</td><td>PROJECT LOCATION (Attach a topographic map and site map clearly indicating affected waters)
COUNTY CITY/TOWN

Mendocino Near Willits</td></tr>
<tr><td>CITY/STATE/ZIP

Willits, CA</td><td>LATITUDE LONGITUDE

See Attachment A (Supplemental Information)</td></tr>
<tr><td>ASSESSORS PARCEL NUMBER(S)

See Attachment B (Adjoining Property Owners)</td><td>SECTION, TOWNSHIP, RANGE, USGS QUADRANGLE MAP

Section 32, Township 18N, Range 13W, Willits & Laughlin Range USGS 7.5-minute Quadrangles</td></tr>
<tr><td colspan="2">DIRECTIONS TO THE SITE

From Santa Rosa, take U.S. Highway 101 north approximately 80 miles to Willits, California. The project site begins at the south of the Haehl Overhead and ends approximately 1.9 miles south of Reynolds Highway. The optional proposed borrow site at Oil Well Hill is located on the east side of Highway 101 approximately 0.85-mile north of the intersection of Reynolds Highway and Highway 101. Refer to See Attachment 1 (Supplemental Information) for additional location details.</td></tr>
<tr><td colspan="2">PROJECT PURPOSE (See attached checklist for guidance. Attach additional information as necessary.)

See Attachment 1 (Supplemental Information)</td></tr>
</table>

PROJECT DESCRIPTION (See attached checklist for guidance. Provide a full, technically accurate description of the entire activity and associated environmental impacts. Attach additional pages as necessary.)

See Attachment 1 (Supplemental Information)

PROPOSED START AND END DATES	**ESTIMATED DURATION**	Will the project take place during the wet season months of October 15 through May 15? X YES ☐ NO If YES, please discuss the proposed winterization strategies on Page 5, Non-compensatory Mitigation.
January 2011 – November 2015	Four full construction seasons	

FEDERAL PERMIT(S) (applied for or approved, i.e. Army Corps of Engineers 404 Permit – Individual or Nationwide)

PERMIT TITLE	FILE DATE	FILE NUMBER
USACE 404 Individual Permit	Concurrent with this application	194741N; 1991-194740N
PERMIT TITLE	FILE DATE	FILE NUMBER

STATE PERMIT(S) (applied for or approved, i.e. Streambed Alteration Agreement (1600-1608) from the California Department of Fish and Game)

PERMIT TITLE	FILE DATE	FILE NUMBER
Streambed Alteration Agreement	Concurrent with this application	Pending
PERMIT TITLE	FILE DATE	FILE NUMBER

CEQA COMPLIANCE (Submittal of completed, approved and/or signed CEQA documentation is required prior to approval of Water Quality Certification.)

TYPE OF DOCUMENT (EIR, Negative Declaration, etc.)	LEAD AGENCY INFORMATION
EIR/EIS	Caltrans/FHWA

STATE CLEARING HOUSE NUMBER	STATUS (pending, complete, etc.)	DATE COMPLETED (or expected to be complete)
1990030006	Complete	October 25, 2006

NCRWQCB Revised February 10, 2008. Questions, contact the 401 Certification Unit Supervisor at (707) 576-2220.
To download this form in Microsoft Word visit http://www.waterboards.ca.gov/northcoast/water_issues/programs/wqc_docs/060215-401-Application.doc

SECTION THREE – Affected Waters

Please refer to the provided Project Plan Checklist for guidance and attach additional supporting documentation as necessary. Supplying detailed information will aid in expediting the review process.

DREDGE AND FILL INFORMATION (The following must be completed for each action where fill or other material will be temporarily or permanently discharged to a wetland or other waterbody, and where material will be dredged from a waterway. Attach additional pages as necessary. Provide a map showing the location of all impacts. Provide all temporary and permanent impacts to waters of the U.S. and waters of the State.)

Types of Material Being Discharged and Amount of Each Type in Cubic Yards

The proposed project will affect 5.50 acres of "other waters" of the United States (streams, ditches, and ponds) by placing approximately 13,745. 79 cubic yards of fill along 10,608.45 linear feet (LF) of "other waters" of the United States " during project construction and mitigation activities. The fills include 8306.39 cubic yards of permanent fill along 8047.10 LF of other waters" of the United States and 5439.40 cubic yards of temporary fill along 2561.35 LF of other waters" of the United States. The surface area (in acres) of "other waters" of the United States are summarized in Table 2 below. Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 1, below, lists the volume (temporary and permanent) and types of fill material that will be discharged to "other waters" of the United States as a result of the proposed project. Maps depicting impacted wetlands and "other waters" of the United States" are included in Appendix a and Appendix B of this permit application.

Table 1: Willits Bypass "Other Waters" of the US - Locations of features

Map Sheet	LF Perm	LF Temp	Feature Type	Comment/Location	Fill Volume Perm	Fill Volume Temp	Fill Type	Roadway Work	Structure Work
					(cu-yards)	(cu-yards)			
B-04	400.8	0	EPH	South of haehl Interchange, parallels west side of 101	9.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), Rock Slope Protection (RSP), RSP Fabric	Roadway fill, roadside ditch, Drainage System No. 5 (STA "A" 102+43.645) & Drainage Basin No. 1 (STA "A" 102+61.854)	
B-04	155.3	0	EPH	South of haehl Interchange, on east side of 101 (across from FID 0)	14.7	0	Imported borrow (fill), concrete (DI), Alternative Pipe Culvert (APC), Alternative Flared End Section (AFES), RSP, RSP Fabric	Roadway fill & Drainage System No. 6 (STA "A" 102+67.835)	
B-06	605.5	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101	8.7	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 13 (STA "U1" 106+30.000) & 14 (STA "U1" 105+50.000)	

B-08	309.3	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101, east of FID 4	3.1	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), Concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 8 (STA "H" 97+61.686)	
B-08*	8.6	3.4	EPH	Trib To Haehl Creek from Roadway Ditch culvert, north side of hwy 101	0.2	0.1	Import borrow (fill)	Roadway fill Drainage System No. 9 (STA "H" 97+96.641)	
B-06	144.9	0	EPH	Trib To Haehl Creek, north side of hwy 101	4.1	0	Cut	Roadway excavation, Begin STA "H" 99+13.723 - End STA "H" 99+32.816 & Drainage System No. 11 ("H" 99+31.464)	
B-06	99.5	0	EPH	Trib To Haehl Creek, north side of hwy 101. extension of FID 7	3.4	0	Import borrow (fill)	Roadway fill, Begin STA "A" 106+77.199 - End STA "A" 106+97.700	
B-06	96.4	3.4	EPH	Trib To Haehl Creek, conflunecing with Haehl Cr from NE	80.5	2.8	Import borrow (fill), roadway excavation, concrete (headwall), APC, RSP, RSP Fabric	Roadway fill, roadway excavation, Drainage System No. 18 (STA "U4" 106+35.000)	
B-06	577.6	0	EPH	Trib To Haehl Creek, parallels dirt road on north side of hwy 101	71.2	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (bridge abutment), RSP, RSP Fabric, Turf Reinforcement Mat (TRM)	Roadway fill, Begin STA "A" 105+35.903 - End STA "A" 107+46.190	
B-12	1006.6	0	EPH	On NE side of J1T align, NW of haehl interchange, “Schmidbauer”	362.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 30 ("A" 110+71.840)	
B-12	12.6	12.6	EPH	On Nw side of J1T align, NW of haehl interchange	3.2	3.2	Imported borrow (fill), APC, AFES, RSP, RSP Fabric	Roadway fill & Drainage System No. 30 ("A" 110+71.840)	
B-12	0	74.5	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 13, “Schmidbauer”	0	36.7	Import borrow (fill)	Roadside ditch	

B-14	920.3	0	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 15, “Schmidbauer”	274.5	0	Imported borrow (fill), RSP, RSP Fabric	Roadside ditch & Drainage System No. 33 ("A" 114+44.741)	
B-14	77	3.4	EPH	Trib runs to the NE, to “Schmidbauer”	8.1	0.4	Cut	Median ditch	
B-34	149.2	3.4	EPH	Ditches in Log Yard	11.9	0.3	Import borrow (fill)	Roadway fill	
B-34	118.6	3.4	EPH	Ditches in Log Yard	9.4	0.3	Import borrow (fill)	Roadway fill	
B-34	71.7	3.4	EPH	Ditches in Log Yard	5.7	0.3	Import borrow (fill)	Roadway fill	
B-34	55.9	3.4	EPH	Ditches in Log Yard	4.5	0.3	Import borrow (fill)	Roadway fill	
B-34	58.7	3.4	EPH	Ditches in Log Yard	4.7	0.3	Import borrow (fill)	Roadway fill	
B-34	74.3	3.4	EPH	Ditches in Log Yard	5.9	0.3	Import borrow (fill)	Roadway fill	
B-34	41.8	3.4	EPH	Ditches in Log Yard	3.3	0.3	Import borrow (fill)	Roadway fill	

B-34	90.9	3.4	EPH	Ditches in Log Yard	7.2	0.3	Import borrow (fill)	Roadway fill	
B-34	17.2	3.4	EPH	Ditches in Log Yard	1.4	0.3	Import borrow (fill)	Roadway fill	
B-34	123.2	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	11.8	3.4	EPH	Ditches in Log Yard	0.9	0.3	Import borrow (fill)	Roadway fill	
B-34	122.6	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	153.7	3.4	EPH	Ditches in Log Yard	12.2	0.3	Import borrow (fill)	Roadway fill	
B-06	59.3	1027.1	INT	Haehl Creek (Main Fork) – Re-Align	221.3	3832.6	Import borrow (fill), Concrete (headwall & wingwall), APC, RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (9402.7 m^3) 2. Sand & Gravel (1559.3 m^3) **Above OHW:** 1. RSP(4161.5 m^3) 2. Sand & Gravel (2611.3 m^3)	**Haehl Creek Bridges: Br No.** **10-0129F, 10-0129G & 10-0129RL** 1. Potential Temp. stream crossing (1 trestle bent in channel) at bridge 10-0129RL. 2. Potential Falsework (1 falsework bent in channel) at each structure . 3. Potential stream Diversion/temporary culvert.

B-18	188.6	160.25	INT	"Schmidbauer"	53.3	47	Import borrow (fill)	Roadway fill	
B-24	401	6.8	INT	Crosses align north of east Hill road	404.7	6.9	Imported borrow (fill), roadway excavation & concrete (headwall)	Roadway fill & Drainage Basin No. 3 ("A" 127+50.000)	
B-57	433	6.8	INT	RR Ditch at RR x-ing, east side of tracks	262.2	4.1	Import borrow (fill)	Abutment fill, new ditch (to be design by Design) & temp. culvert	**Quail Meadows OH (Br No. 10-0171)** 1. Temp. dirt road across RR tracks (Temp Haul Road) 2. Temp. Culvert crossing
B-26	514.1	6.8	INT	East Fork Haehl Creek, Handley parcel, south of Shell rd.	2324.5	30.7	Imported borrow (fill), roadway excavation, APC, AFES, RSP, RSP Fabric	Roadway fill, Drainage Basin No. 4 ("A" 132+00.000), Drainage System No. 45 ("A" 132+52.219)	
B-40	65.13	26.3	INT	Heahl Creek, Near Baechtel Confluence – Under Viaduct, Just north of East valley Street	260.0 (culvert work)	105.0 (culvert work)	Trestle/falsework construction		**Haehl Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-49	7	10	INT	Broadus, Baechtel, Outlet Confluence - Under Viaduct, NE of WWTP	54.0 (footing for bents)	77.2 (falsework)	Concrete (Bent 24), RSP, RSP Fabric, Trestle/falsework construction		**Confluence of Broaddus/Baechtel Creek** 1. Footing Impact (329.9 m3) 2. Potential temp. stream crosssing (Baechtel Creek - 2 falsework bents in channel, Broaddus Creek - 1 falsework bent in channel, & Outlet Creek- 2 trestle bents in channel)

B-51	0	429.8	INT	Mill Creek - Under Viaduct	0	0 (access and veg removal only, no temp fills below OHWM)	Trestle/falsework construction		**Mill Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-37	0	403.1	INT	Baechtel Creek, south of center valley road, west side of J1T align	0	595.7		Current Design does not show any impact at this location.	
B-26	0	270.5	INT	West (Main) Fork Haehl Creek, along west side of handley parcel	0	692.6	RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (2857.9 m^3) 2. Sand & Gravel (348.1 m^3) **Above OHW:** 1. RSP(3444.9 m^3) 2. Sand & Gravel (2309.7 m^3)	**Haehl Creek (Br No. 10-0159)** 1. potential temp. stream crossing (4 trestle bents in channel). 2. potential temp. falsework (4 trestle bents in channel).
B-57	1172.6	82.4	INT	Upp Creek and RR ditch on west side of RR x-ing, and Mill Creek on the east side of RR x-ing	1817.5	127.7	Import borrow (fill), roadside ditch (RR), Concrete (bridge structures), APC, RSP (Fish Passage Design at Upp Creek)	**Upp Creek** **Below OHW:** 1. RSP (5848.5 m^3) 2. Sand & Gravel (1258.3 m^3) **Above OHW:** 1. RSP(3100.0 m^3) 2. Sand & Gravel (1325.1 m^3)	**Quail Meadows OH** **Br No. 10-0171** 1. Potential Temp. culvert crossing 2. Potential dirt road crossing over RR tracks (temp haul road) **Upp Creek Bridges** **Br No. 10-0305, 10-0174, 10-0174K & 10-0174S** 1. Potential Temp. stream crossing (1 trestle bent in channel) at Quail Meadows I.C. 2. Potential Falsework (1 falsework bent in channel) at each structure 3. Potential Stream Diversion at each structure

B-31 and B-34	139.8	3.4	POND	Rutledge Pond	2263.1	55	Class 3 Permeable Material Filter Fabric Embankment	Class 3 Permeable Material (3213 m^3) Filter Fabric (6802 m^2) Embankment (3505 m^3)	
C-86	**375.95**	288.16	EPH	Stream Entering Watson East Mitigation Parcel	29.59	0	Grading for wetland creation		
Totals:	**8860.48**	**2862.91**			**8306.39 yd^3**	**5439.40 yd^3**			

Surface Areas of Wetlands and Other Waters Filled

The proposed project will directly affect a total of 89.12 acres of wetlands and other waters of the United States, of which 56.23 acres will be permanently filled and 32.89 acres will be temporarily disturbed during project construction and mitigation activities. Fill types affecting wetlands include those listed in Table 1 for "other waters of the United States" (permanent fills consisting of roadway and structures fill, asphalt concrete, RSP, TRM and RECP, new culverts, culvert end and treatments; temporary fills consisting of temporary falsework and falsework supports, cofferdams, temporary roadway fills, stream re-alignments, and temporary access routes). Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 2 shows the surface area (acres) of the resources that will be affected by the bypass. Maps depicting impacted wetlands and "other waters" of the United States are included in Appendix A and Appendix B of this permit application.

Table 2. Summary of Project Construction Impacts on Wetlands and Other Waters of the United States

Wetland Type / Other Waters	Project Impacts on Wetlands and Other Waters (acres)			Mitigation Impacts on Wetlands and Other Waters (acres)			Total Impacts on Wetlands and Other Waters (acres)
	Temporary	Permanent	Total	Temporary	Permanent	Total	Total
Marsh	1.38	8.15	9.53	0.49	0.00	0.49	**10.02**
Riparian Scrub	0.17	0.21	0.38	0.00	0.00	0.00	**0.38**
Riparian Woodland	1.61	3.21	4.82	0.07	0.02	0.09	**4.91**
Swale	0.03	0.00	0.03	0.26	0.05	0.31	**0.34**
Vernal Pool	0.05	0.16	0.21	0.00	0.00	0.00	**0.21**
Wet Meadow	20.69	41.64	62.33	4.98	0.45	5.43	**67.76**
Subtotal Wetlands	**23.93**	**53.37**	**77.30**	**5.80**	**0.52**	**6.32**	**83.62**
Other Waters	3.10	2.25	5.35	0.06	0.09	0.15	**5.50**
Total	**27.03**	**55.62**	**82.65**	**5.86**	**0.61**	**6.47**	**89.12**

DELINEATION INFORMATION

NAME OF PERSON DELINEATING EXTENT OF WATERS OF U.S.	DATE(S) OF WETLAND DELINEATION
Jason Meigs, Caltrans; URS Corporation; IFC Jones and Stokes	See Below

TITLE and DATE OF WETLAND VERIFICATION BY U.S. ARMY CORPS

The U.S. Army Corps of Engineers (USACE) verified the U.S. Highway 101 Willits Bypass Project's (proposed project) delineation of waters of the United States on March 1, 2005 (File 194741N). This verification was for the Modified Alternative J1T Alignment study area. In January 2007 and April 2008, a request to amend the previously verified delineation was submitted to the USACE to include minor changes to the footprint of the proposed Haehl Creek interchange, the road alignment to the north, and the proposed borrow area at Oil Well Hill. The USACE confirmed the requested changes to the delineation on August 15, 2008 (File 191-19470N). In December 1, 2008, a request to verify a delineation was submitted to include the revision of the project footprint to avoid the expansion of the Willits wastewater treatment Plant (WWTP). The USACE provided a verification for this area on December 2, 2009. In addition to the delineations of waters of the United States associated with the bypass alignment, Caltrans also submitted delineations for various parcels that will be part of the project's mitigation plan. The USACE jurisdictional determinations are located in Attachment 3.

AFFILIATION	If a wetland delineation has been verified by the U.S. Army Corps, please submit the verification letter as well as a verified wetland delineation map. If the Corps did not assume jurisdiction over the wetlands present, please submit the denial letter.
Caltrans	

AVOIDANCE OF INDIRECT IMPACTS

(Describe efforts to avoid and minimize indirect impacts to waters of the State such as upland impacts which might affect water quality. See checklist for guidance. Attach additional pages as necessary.)

Please refer to Attachment 1 "Supplemental Information"

Sections: "Avoidance and Minimization of Direct and Indirect Impacts" and "Non Compensatory Mitigation"

AVOIDANCE OF DIRECT IMPACTS (Describe efforts to **avoid** and **minimize direct impacts** to waters of the State. See checklist for guidance. Attach additional pages as necessary.)

Please refer to Attachment 1 "Supplemental Information"

Sections: "Avoidance and Minimization of Direct and Indirect Impacts" and "Non Compensatory Mitigation"

COMPENSATORY MITIGATION (Required when permanent and temporal impacts to Waters of the State occur. Describe the location, size, type, functions, and values of the proposed mitigation. Describe success criteria, monitoring, long-term funding, management, and protection of the mitigation site. Attach a Mitigation Plan if needed. Attach Mitigation Bank Bills-of-Sale for purchase credits if needed. See attached checklist for guidance.)

Caltrans has developed a Mitigation and Monitoring Proposal (MMP) that proposes compensatory mitigation for effects of the bypass on jurisdictional wetlands, other waters of the United States, riparian habitat, oak woodlands, and State-listed plants. In addition to compliance with Clean Water Act (CWA) Section 401, the MMP will be used to support compliance with CWA Section 404, Section 1602 of the California Fish and Game Code, and Section 2081 of the California Endangered Species Act (CESA). The overall goal of the MMP is to successfully compensate for impacts on sensitive biological resources resulting from bypass project construction by improving ecological functions and values to habitat in Little Lake Valley through a combination of restoration, creation, enhancement, and preservation. However, beyond this compensation, the MMP aims to restore and enhance many previously lost or degraded wetland functions and values, and to help offset past damage to parts of the Outlet Creek Basin. The table below presents the total amount of jurisdictional wetlands and other waters of the U.S. and/or State that would be created, enhanced, or preserved as compensation for the proposed project's impacts on jurisdictional waters and wetlands.

Resource	Mitigation Actions (acres)				Restoration
	Creation	Enhancement	Preservation	Total Mitigation Acres	
Wetlands	33.44	1,032.90	1,122.11	**2,188.45**	5.96
Other Waters	none	17.32	24.70	**42.02**	0.06
Total	**33.44**	**1,050.22**	**1,146.81**	**2,230.47**	**6.02**

The proposed project's MMP will be provided in its entirety in a separate transmission.

ALTERNATIVES ANALYSIS

Has an Alternatives Analysis been prepared? ☑ YES ☐ NO If you marked YES, please submit the appropriate documentation.

NON-COMPENSATORY MITIGATION (Required by all construction projects and projects which impact riparian vegetation.)

PROPOSED MINIMUM EROSION CONTROL MEASURES (Describe the methods proposed for erosion control, including winterization strategies to stabilize all bare soils and re-vegetation proposals. Please submit a map indicating the approximate locations of each method.)

Temporary Construction Site BMPs to be used on Project (info from SWDR and WPC SPI Plans)

Construction of the bypass is anticipated to last 5 construction seasons total, with four rainy seasons. The North Coast Regional Water Quality Control Board (NCRWQCB) has defined the rainy season as October 15th through May 15th.

Temporary Construction BMPs will be deployed as detailed in the Contractor prepared SWPPP approved by the Resident Engineer, in accordance with Standard Special Provision (SSP) 07-345 Water Pollution Control. The SWPPP would include appropriate Caltrans Construction Site Best Management Practices (BMPs) to reduce the potential for sediments and contaminants from entering the creeks.

Temporary Bid Line Items BMP's identified and include in the Contract Items are:

- Temporary Fence (Type ESA) & (Type ESA-Floodway)
- Temporary Erosion Control Blanket
- Temporary Fiber Roll
- Temporary Gravel Bag Berm
- Temporary Construction Entrance
- Temporary Cover
- Temporary Check Dam
- Temporary Hydraulic Mulch (BFM)
- Street Sweeping
- Temporary Concrete Washout (Portable)
- Move-in/Move-out (Temporary Erosion Control)
- Temporary Drainage Inlet Protection
- Construction Site Management

The WPC Contract items and strategy are as shown in the WPC handout to be included the Supplemental Project Information handout and available for the Contractor during project Advertisement.

Temporary Impacted areas will be revegetated to their pre-construction plant community type. They will be seeded and planted with plants native to Little Lake Valley. Temporary Hydraulic Mulch (Bonded Fiber Matrix) will be applied to temporary slopes and disturbed areas where necessary and prior to placement of final Erosion Control.

Contractor's work schedule will dictate the amount of soil disturbance and work activities that may take into affect at any particular time during the construction phase of the project. Bid item Move-in/Move-out (Temporary Erosion Control) will account for allowing the multiple mobilizations of the Contractor to stabilize the work area as portions of the work is completed.

Final Erosion Control (see Erosion Control Plans):

Non structural slopes will be stabilized with revegetation and erosion control measures. Disturbed slopes will be re-vegetated in accordance with plans developed by the District Landscape Architect or otherwise stabilized.

Permanently impacted areas such as cut and fill slopes adjacent to the roadway along interchange ramps, as well as median between the inside roadway shoulders will be revegetated with native plants appropriate to Little Lake Valley. Steeper embankment slopes located at structures approaches will be protected with Rolled Erosion Control Product (Netting) blanketing materials and all final slopes will be stabilized and revegetated with Duff and Erosion Control (Bonded Fiber Matrix) (Seed Type 1). In addition, finished slopes and ditches constructed greater than 1;3 (V:H) will be stabilized with Erosion Control (Rolled Erosion Control Product (Netting). Upon completion of construction of the Floodway Viaduct structure, the entire disturbed area will be regarded to pre-construction conditions and revegetated with Erosion Control (Bonded Fiber Matrix) (Seed Type 2). Bioswales will be constructed and revegetated with final Erosion Control (Rolled Erosion Control Product (Netting), Compost, and Erosion Control (Bonded Fiber Matrix) as part of Treatment BMPs at drainage outlet areas prior to run-off off site of the project. Turf Reinforcement Mat (TRM) will be utilized to line the inlet channel of Drainage System 54 at Center Valley Rd.

The Roundabout will include hardscape features, and plantings and irrigation & sprinkler system as a center for aesthetics and as revegetation around the pedestrian walkways. Final Erosion Control includes Mulch, Imported Topsoil, Boulder Placement, and Gravel (Miscellaneous Areas).

Oil Well Hill Optional Borrow Site:

During each construction season, the Contractor will limit the removal of vegetation to those portions of Oil Well Hill site necessary to provide fill material for that season's construction needs. The excavation activities at Oil Well Hill could result in long-term erosion of disturbed soils. Upon completion of excavation activities at the site, appropriate Temporary Construction Site BMPs will be employed by the Contractor for each season's use. And upon final completion of material excavation from the site, permanent erosion control and revegetation will be required as specified by the Caltrans Landscape Architect and as shown in the SPI handout WPC and Landscape Architecture plans.

PROPOSED POST-CONSTRUCTION STORM WATER TREATMENT MEASURES (Describe the methods proposed to treat storm water runoff from the project site prior to entering the storm drainage system, wetlands, streams, etc. Please include proper design calculations to indicate that the proposed methods will treat runoff from the 85th percentile/24-hour storm event. See SUSMP Guidelines available at: http://ci.santa-rosa.ca.us/doclib/Documents/SUSUMP.pdf, or upon request.

Refer to the Storm Water Calculations and Downstream Discharges informational handouts provided by Scott Foster by e-mail to Jeremiah Puget on 11/24/09 and in person in a meeting on 11/19/09, and included as Attachments 8 and 9 of this application

PROPOSED CONSTRUCTION AND POST-CONSTRUCTION POLLUTANT SOURCE CONTROLS (Describe the methods proposed to reduce sources of pollutants, fertilizers, pesticides, sediment, etc., from entering the water system.)

All remaining water pollution control related items will be deployed under SSP 07-346 Construction Site Management bid item, which will account for the miscellaneous "housekeeping" BMPs, such as *Spill Prevention and Control Management, Material Storage and Stockpile Management, Waste Management.* and *Non-Storm Water Management),* that would be implemented during construction activities. Additionally:

Construction Pollution Source Controls:

- Construction dewatering may be required for this project for structure footings at the Floodway Viaduct, concrete-contact water, accumulated storm water, and uncontaminated groundwater. Disposal methods may consider pumping into holding tanks for site reuse and as a water source for use in construction activities in embankment construction or dust control, discharge into ground (upland) infiltration, discharge into receiving waters, or off-site disposal, as determined by the Contractor. Dewatering activities will need to comply with the North Coast RWQCB Basin Plan, 401 Certification, and Caltrans NPDES permits.
- Landslide mitigation will be required at Abutment 1 of the proposed S101-W20 Connector Bridge (Br No 10-129F) at the Haehl Creek Interchange. Caltrans Office of Geotechnical Services has recommended the existing slide area be stabilized during the construction of Abutment 1. A Stabilization Trench is to be constructed and a portion of the slide material will be removed as unsuitable material and be replaced with suitable embankment material which will include a layer of permeable material and a subsurface drain collection system
- Petroleum Contaminated Material (No SSP No) has been identified at the Shuster's Transportation Trucking facility (located adjacent to the Floodway Viaduct on East Valley Rd) in the form of soil material and/or groundwater due to existing conditions of petroleum contamination due to former underground storage tanks. The material has a potential to be encountered at the excavations of Bent 2 and 3 and a worker Health and Safety Plan on the testing, work stockpiling, dewatering, and handling plan is required, and disposition of the material will be included in the Contract. Currently, Site Remediation is in progress at the property by the property owner and monitoring and reporting compliance with the NCRWQCB.

- The new deck surface of the Floodway Viaduct structure (Br No 10-165),will be ground and the resulting Portland Cement Concrete (PCC) grooving and grinding residues will be disposed of by the Contractor in accordance with the Contract specifications [SSP 42-600 Disposal of Portland Cement Concrete (PCC) Pavement and Bridge Deck Grooving and Grinding Residues] and RWQCB requirements.

Post Construction Pollution Source Controls:

- Post construction flows will be captured, routed into earthen ditches and channels, and detained prior to entering local waterways where feasible. Channel erosion control measures, such as willow cuttings, erosion control blankets, and rock lined channels will be deployed within the project limits. Energy dissipation devices such as flared ends and Rock Slope Protection (RSP) at culvert outlets are deployed where appropriate. The transition between culvert outlets/headwalls/wingwalls and channels will be smooth to reduce turbulence and scour. Detention facilities will be deployed as feasible to reduce peak discharges
- Cut and fill slopes are to be as flat as feasible, and concentrated flow will be collected in stabilized drains and channels whenever possible. The slope and surface protection systems deployed include; slope rounding, seeding and planting, temporary erosion control, fiber rolls, Rolled Erosion Control Protection (RECP), Bonded Fiber Matrix (BFM), and Rock Slope Protection (RSP). Hard surfaces are expected to be required, particularly at the bridge abutments and roundabout. The hard surfaces that will be used are rock slope protection and slope paving. Retaining walls will have RSP placed as scour protection

- Additional information regarding ditches, berms, dikes, and swales utilized on this project is contained in the project stormwater data report and hydro-modification report (attached).

SECTION FOUR – Additional Information

POTENTIAL FOR IMPACTS TO THREATENED AND ENDANGERED SPECIES (Please attach all Biological Assessments, Surveys, Formal Consultation Determination letters, and Mitigation Proposals as necessary.)

SPECIES AND/OR HABITAT	BIOLOGICAL ASSESSMENT (Y/N)	SURVEY CONDUCTED (Y/N)	DATES OF SURVEY CONDUCTED
Chinook salmon—California Coastal ESU	Y	Y	2004 (CDFG)
Steelhead—Northern California DPS	Y	Y	2004 (CDFG)
Coho salmon—Northern California/ Southern Oregon Coasts ESU	Y	Y	2004 (CDFG)
Northern spotted owl	Y	Y	2008, 2009 (Caltrans)
White-tailed kite	Y	N	
North Coast semaphore grass	Y	Y	2008, 2009 Caltrans (URS)
Baker's meadowfoam	Y	Y	1997 (Jones & Stokes); 2007 (URS); 2009 (Caltrans)

HAS ANY PORTION OF THE WORK BEEN INITIATED? ☐ YES ☑ NO If YES, describe the initiated work, and explain why it was initiated prior to obtaining a permit. Indicate whether any enforcement action has been taken against the project.

CUMULATIVE IMPACTS (List and describe other projects implemented or planned that are related to the proposed project, or that may impact the same waterbody. Attach additional pages as necessary.)

PROJECT NAME	DESCRIPTION	DATE IMPLEMENTED/PLANNED
Willits WWTP expansion	To accommodate projected growth in Willits & Brooktrails subdivision	2006
Brooktrails subdiv. 2nd access	Near Wild Oat Canyon	Unknown
Traffic signal at Holly & Main (US 101) Street	(self-explanatory)	2003
Northwestern Pacific Railroad improvements	Includes slide restoration to open railroad north of Willits	Unknown
Willits land use & zoning changes	SE from residential (estate) to manufacturing; downtown Specific Plan	1997; 2003
Enhanced pedestrian, bicycle & hiking trails	Within city limits	Unknown
Medocino County Museum Expansion	(at Commercial St.) 3 acres wetland creation for same acreage filled	2001

Application is hereby made for a permit or permits to authorize the work described in this application. I certify, under penalty of perjury, that this application is complete and accurate to the best of my knowledge. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT (OR AGENT) DATE

PRINT NAME OF APPLICANT (OR AGENT)

NCRWQCB Revised February 10, 2008. Questions, contact the 401 Certification Unit Supervisor at (707) 576-2220.
To download this form in Microsoft Word visit http://www.waterboards.ca.gov/northcoast/water_issues/programs/wqc_docs/060215-401-Application.doc

Application for Department of the Army Permit (33 CFR 325)

California Department of Transportation U.S. Highway 101 Willits Bypass Project Mendocino County, California

Submitted to:

U.S. Army Corps of Engineers
San Francisco District
1455 Market Street
San Francisco, CA 94103
Contact: Peter Straub
415/503-6774

Applicant:

California Department of Transportation
District 3—Office of Environmental Management
2800 Gateway Oaks Drive
Sacramento, CA 95833
Contact: Jason Meigs
916/274-0564

February 2010

For individuals with sensory disabilities, this document is available in alternate formats. Please write to Jason Meigs, California Department of Transportation, District 3—North Region Environmental Division, 2800 Gateway Oaks Drive, Sacramento, CA 95833, or call (916) 274-0564 or use the CA Relay Service TTY number (800) 735-2929.

Application for Department of the Army Permit (33 CFR 325)

California Department of Transportation
U.S. Highway 101 Willits Bypass Project
Mendocino County, California

Prepared by: _____ Date: _____

Jason Meigs, Biologist
D-3 North Region Environmental Division
California Department of Transportation, District 3
916/274-0564

Approved by: _____ Date: _____

Jeremy Ketchum, Senior Environmental Planner
Office of Environmental Management S-3
California Department of Transportation, District 3
916/264-0621

Contents

Application for Department of the Army Permit (33 CFR 325)

Appendix 1: Jurisdictional Wetland Impacts Maps (Bypass Alignement) From MMP

Appendix 2: Mitigation Imapcts Maps From MMP

Attachment 1

- Block 13: Name of Water Bodies
  - Jurisdictional Determinations
  - Name and Description of Affected Water Bodies
- Block 15: Location of Project
  - Bypass Alignment
  - Bypass Vertical Alignment
  - Latitude/Longitude of Key Project Components (Approximate)
- Block 18: Nature of Activity
  - Background and Changes Since the Final EIS/EIR
  - Description of Specific Design Elements
  - Description of Specific Construction Elements
- Block 19: Project Purpose
- Block 20: Reasons for Discharge
- Block 21: Types of Material Being Discharged and Amount of Each Type in Cubic Yards
- Block 22: Surface Areas of Wetlands or Other Waters Filled
- Block 23: Description of Avoidance, Mitigation, and Compensation
  - Habitat Mitigation and Monitoring Plan
  - Avoidance and Minimization Measures
- Block 25: Addresses of Adjoining Property Owners and Lessees
- Block 26: List of Other Certifications or Approvals and Denials Received
  - Agency Coordination and Compliance
  - Additional Information

Attachment 2 Figures

Attachment 3 Jurisdictional Determinations

Attachment 4 Record of Decision, and Notice of Determination

Attachment 5 Section 7 Concurrence Documents

Attachment 6 Section 106 Final Concurrence Documentation

Attachment 7 Section 404(b)1 Alternatives Analysis

Attachment 8 Names and Addresses of Adjoining Property Owners/Lessees

Attachment 9 Copies of FG Code Section 1602 Agreement Application and CWA Section 401 Water Quality Certification Application

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 **EXPIRES: 31 August 2012**

Public reporting burden for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This Information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME:	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
First - Jason Middle - Last – Meigs	First - Middle - Last –
Company – State of California, Department of Transportation (Caltrans) District 3	Company –
E-mail Address – Jason_Meigs@dot.ca.gov	E-mail Address –
6. APPLICANT'S ADDRESS. Address - 2800 Gateway Oaks Drive	9. AGENT'S ADDRESS Address -
City – Sacramento State – CA Zip – 95833 Country – USA	City – State – Zip – Country –
7. APPLICANT'S PHONE NOs. W/AREA CODE	10. AGENT'S PHONE NOs. W/AREA CODE
a. Residence b. Business (916) 274-0564 c. Fax (916) 274-0602	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____

APPLICANT'S SIGNATURE DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

U.S. Highway 101 Willits Bypass Project

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Refer to Attachment 1, Block 13 (Name of Waterbody)	Address N/A
15. LOCATION OF PROJECT	
Latitude: °N Refer to Attachment 1, Block 15 (Location of Project). Longitude: °W	City - Willits State – CA Zip -

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID N/A Municipality Mendocino County, near the City of Willits

Section – 32 Township – 18N Range – 13W

17. DIRECTIONS TO THE SITE

From San Francisco, take U.S. Highway 101 north approximately 140 miles to Willits, California. The project site begins at the south of the Haehl Overhead and ends approximately 1.9 miles south of Reynolds Highway. Refer to Attachment 1, Block 15, for additional location details.

18. Nature of Activity (Description of project, include all features)

Refer to Attachment 1, Block 18 (Nature of Activity)

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

Refer to Attachment 1, Block 19 (Project Purpose), for details regarding the purpose of the proposed project.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Refer to Attachment 1, Block 20 (Reason(s) for Discharge).

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
Refer to Attachment 1, Block 21		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres Refer to Attachment 1, Block 22 (Surface Area in Acres of Wetlands or Other Waters Filled).

Or

Liner Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Refer to Attachment 1, Block 23 (Description of Avoidance, Minimization, and Compensation).

24. Is Any Portion of the Work Already Complete? Yes ☐ No ☑ IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

Address – Refer to Attachment 1, Block 25 (Addresses of Adjoining Property Owners, Lesses, Ect.)

City – State – Zip –

26. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
Refer to Attachment 1, Block 26					

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

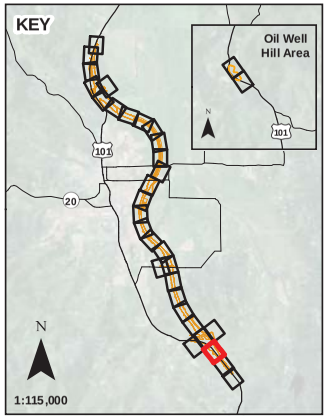
Appendix A: Bypass Impact Maps - Waters and Wetland (From Appendix B of the Willits Bypass Mitigation and Monitoring Plan)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-4

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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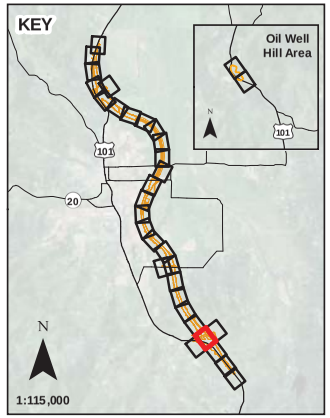

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Scale in Feet

Sheet B-6

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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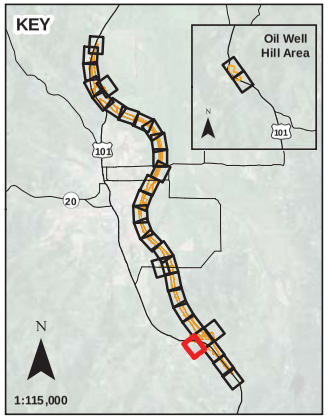

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Scale in Feet

Sheet B-8

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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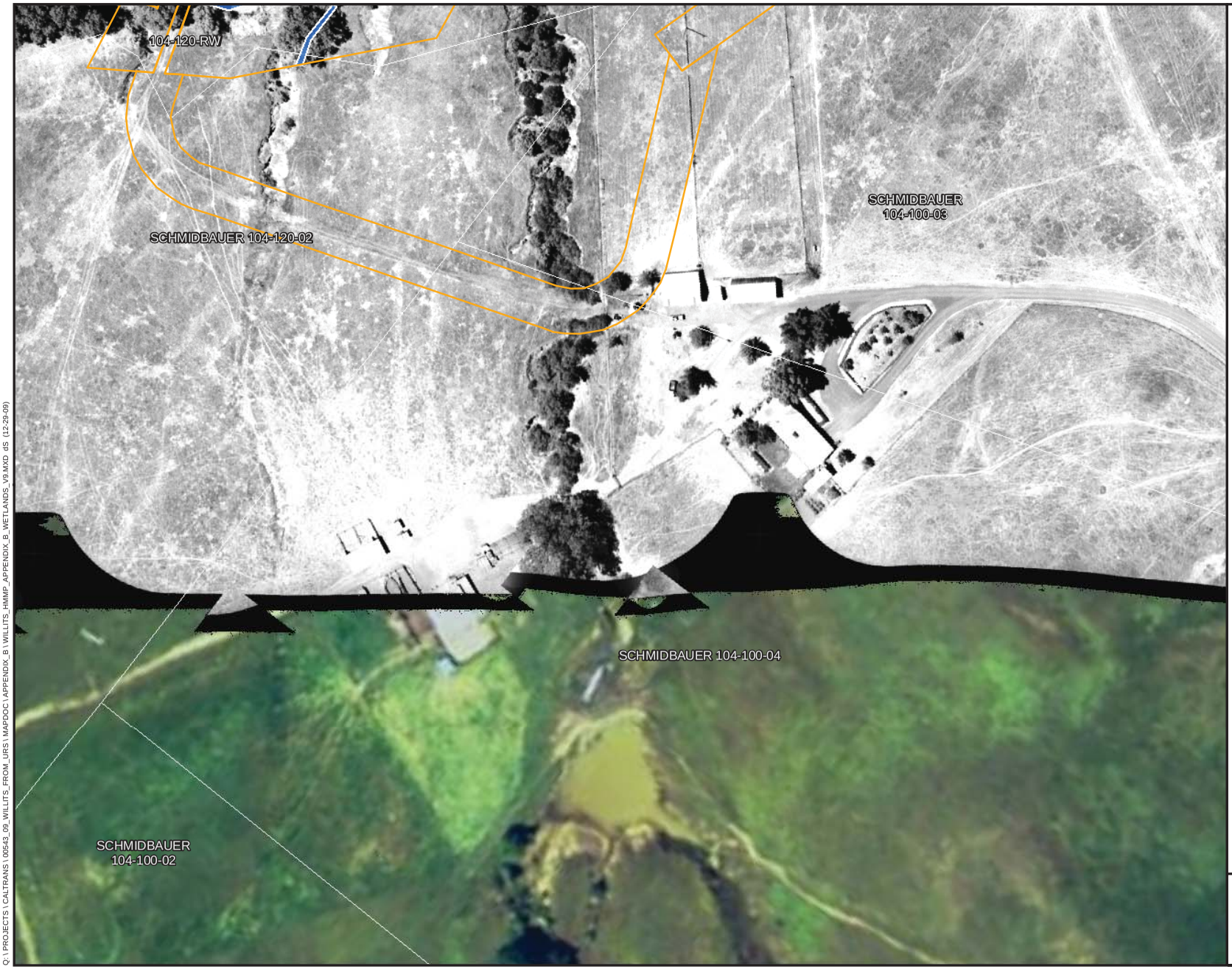

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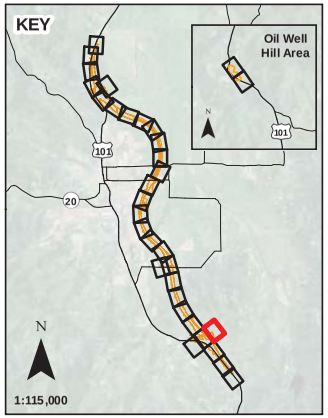

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Scale in Feet

Sheet B-10

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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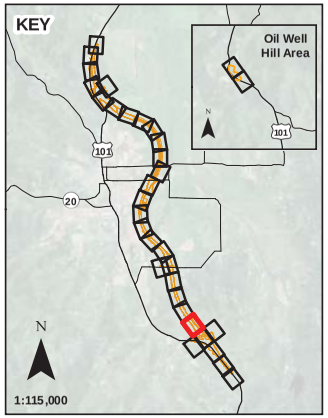

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Scale in Feet

Sheet B-12

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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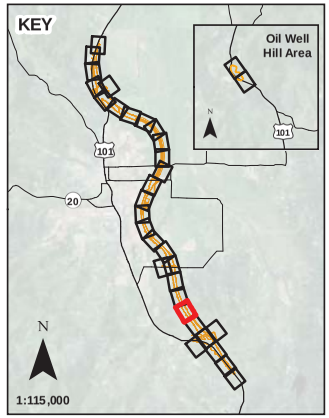

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Scale in Feet

Sheet B-14

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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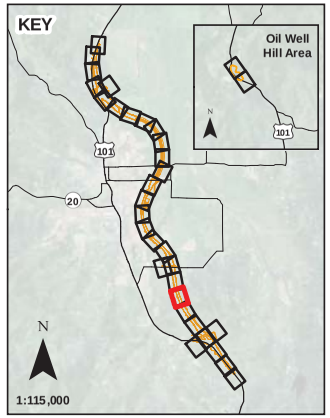

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Scale in Feet

Sheet B-16

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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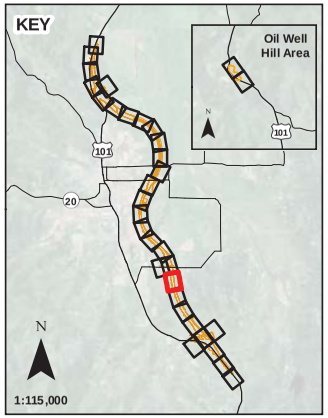

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Scale in Feet

Sheet B-18

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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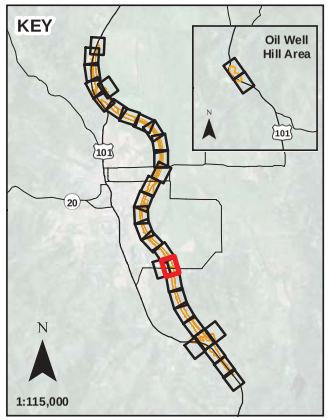

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Scale in Feet

Sheet B-20

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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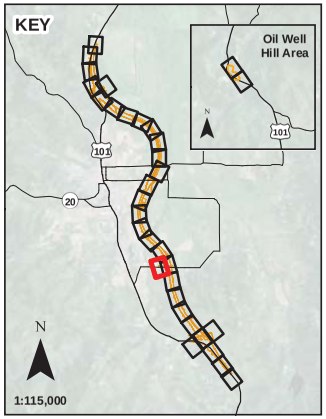

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Scale in Feet

Sheet B-22

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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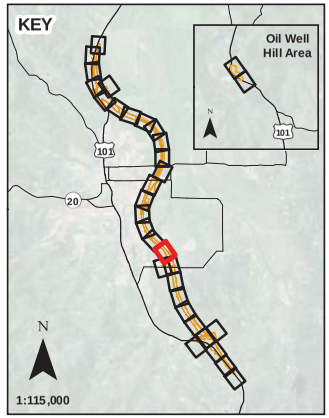

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Scale in Feet

Sheet B-24

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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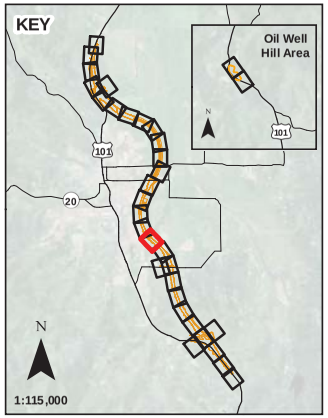

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Scale in Feet

Sheet B-26

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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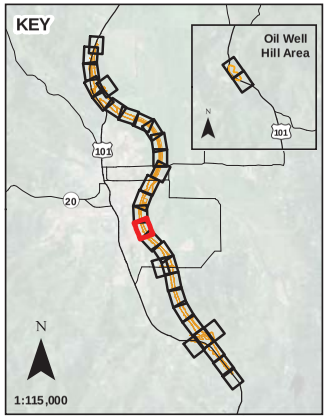

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Scale in Feet

Sheet B-28

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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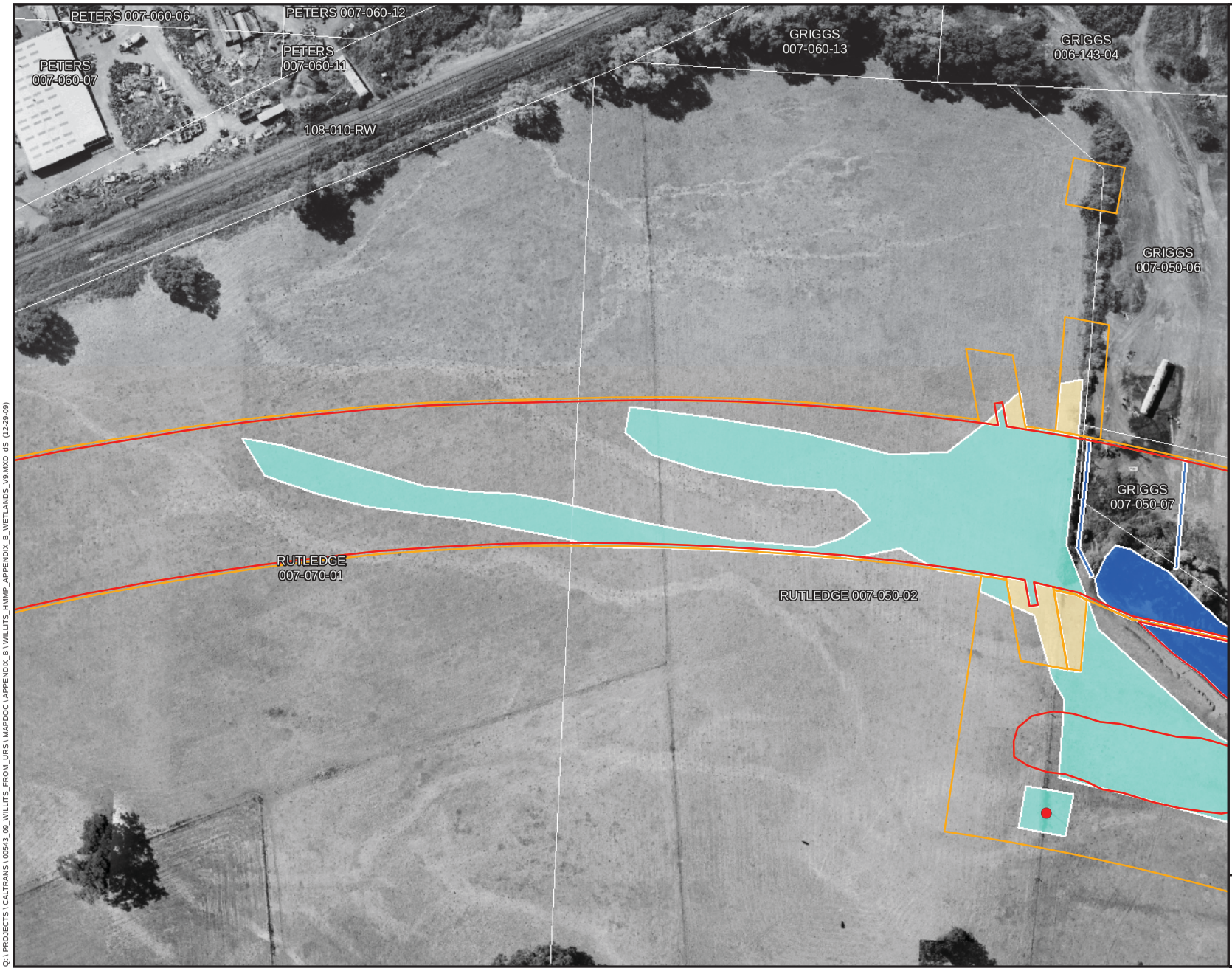

Legend

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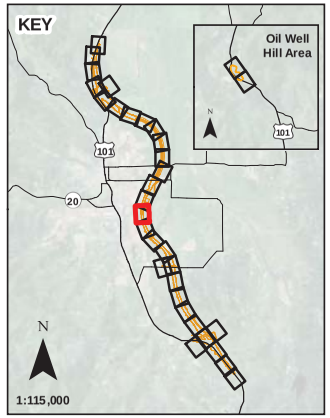

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Scale in Feet

Sheet B-31

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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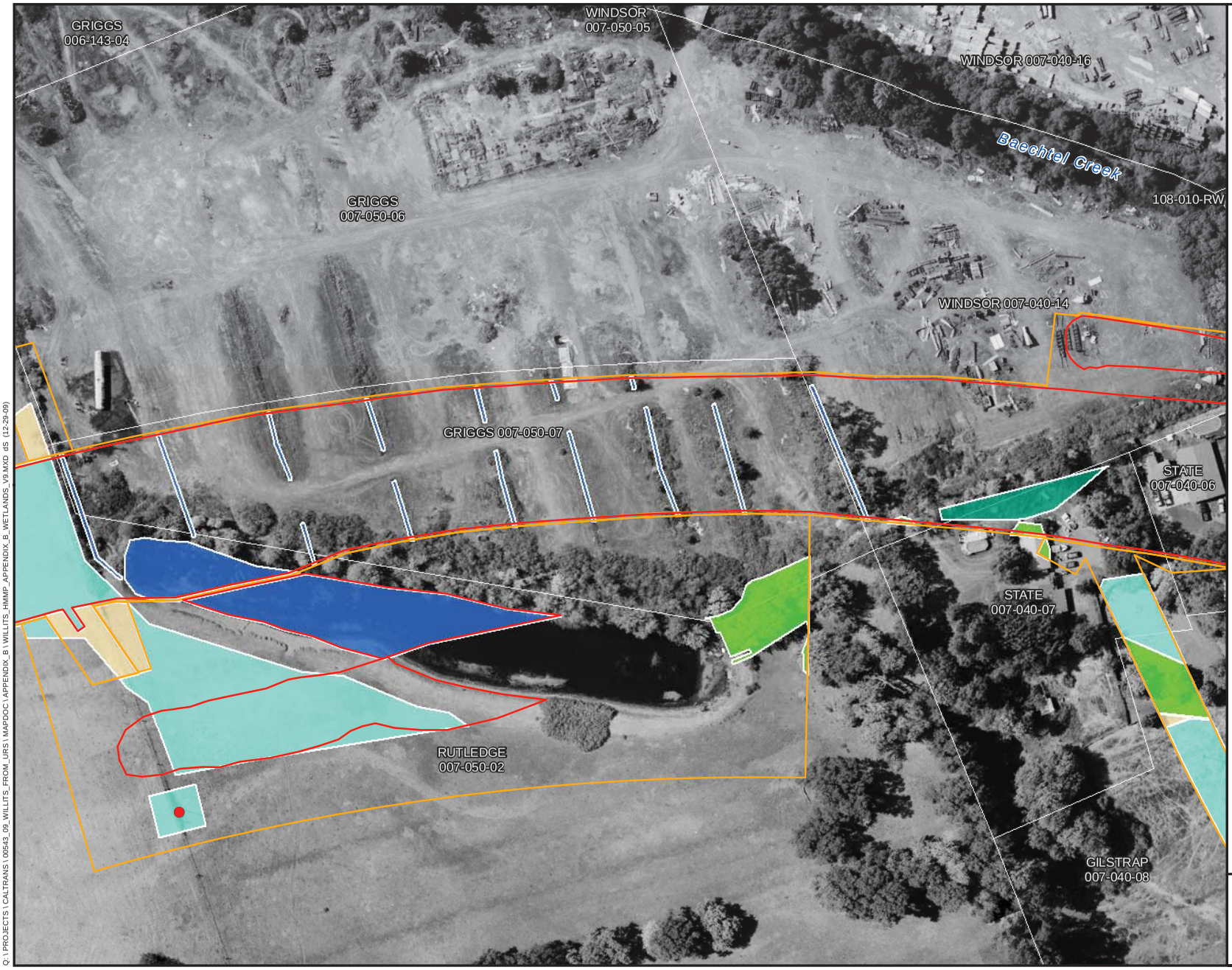

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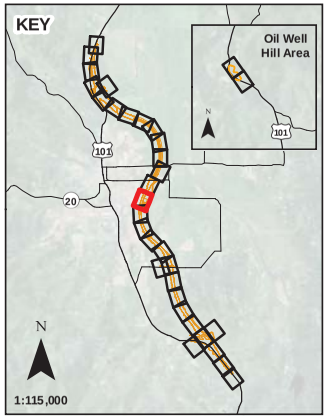

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Scale in Feet

Sheet B-34

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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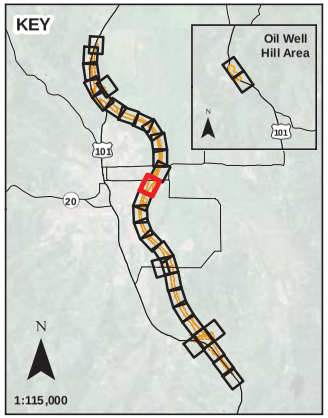

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Scale in Feet

Sheet B-37

Jurisdictional Wetland Impacts
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Impact Maps

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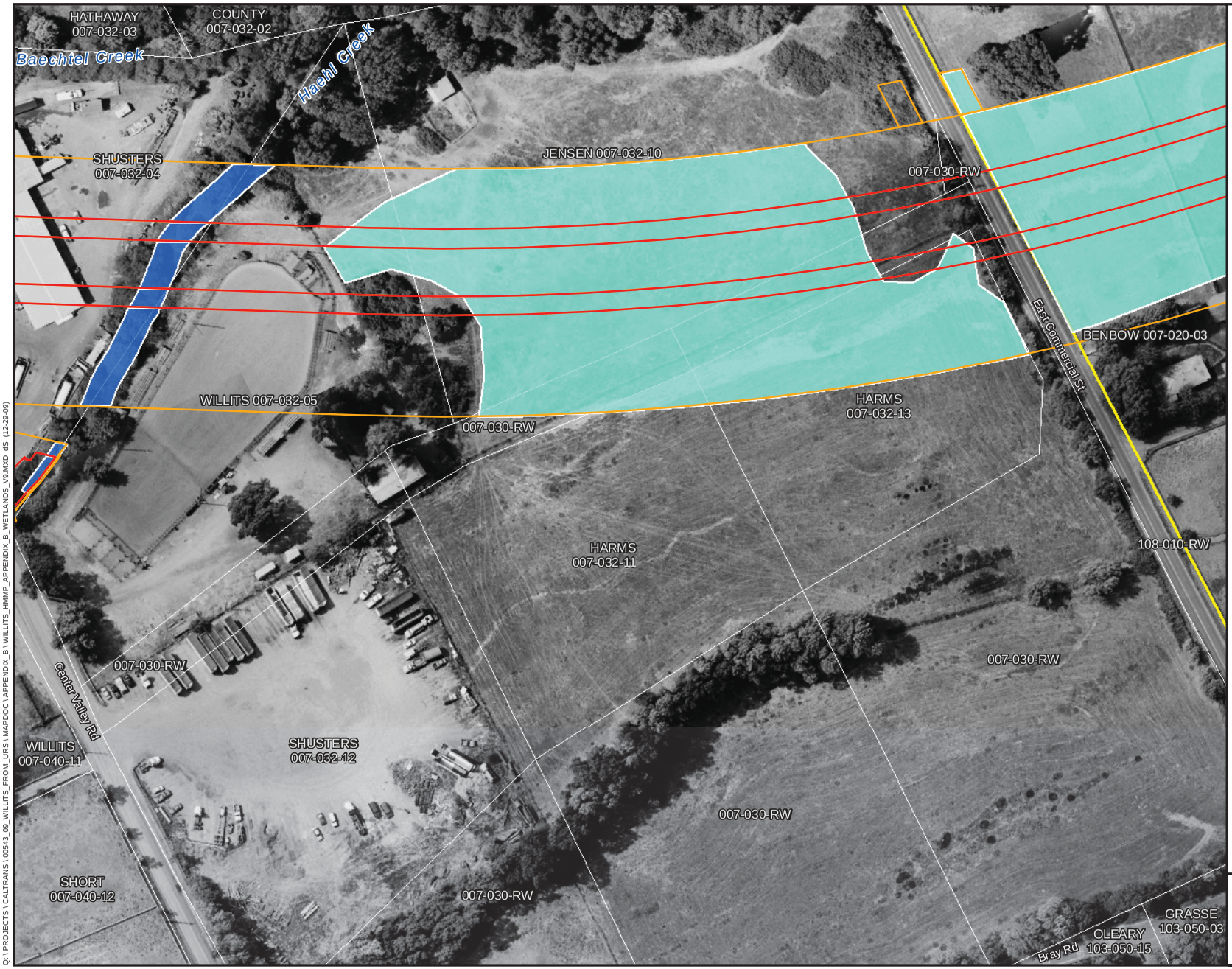

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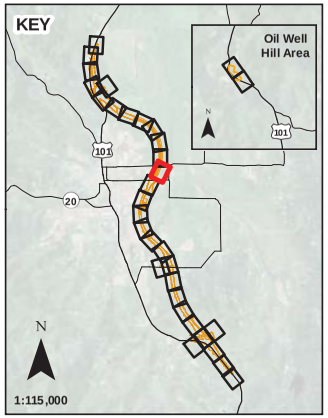

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Scale in Feet

Sheet B-40

Jurisdictional Wetland Impacts
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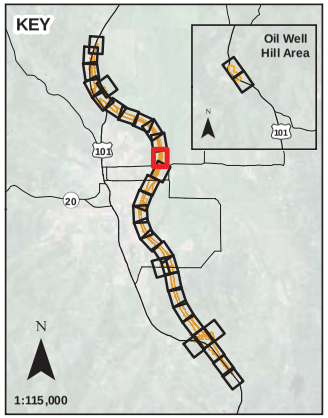

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Scale in Feet

Sheet B-43

Jurisdictional Wetland Impacts
Proposed Willits Bypass
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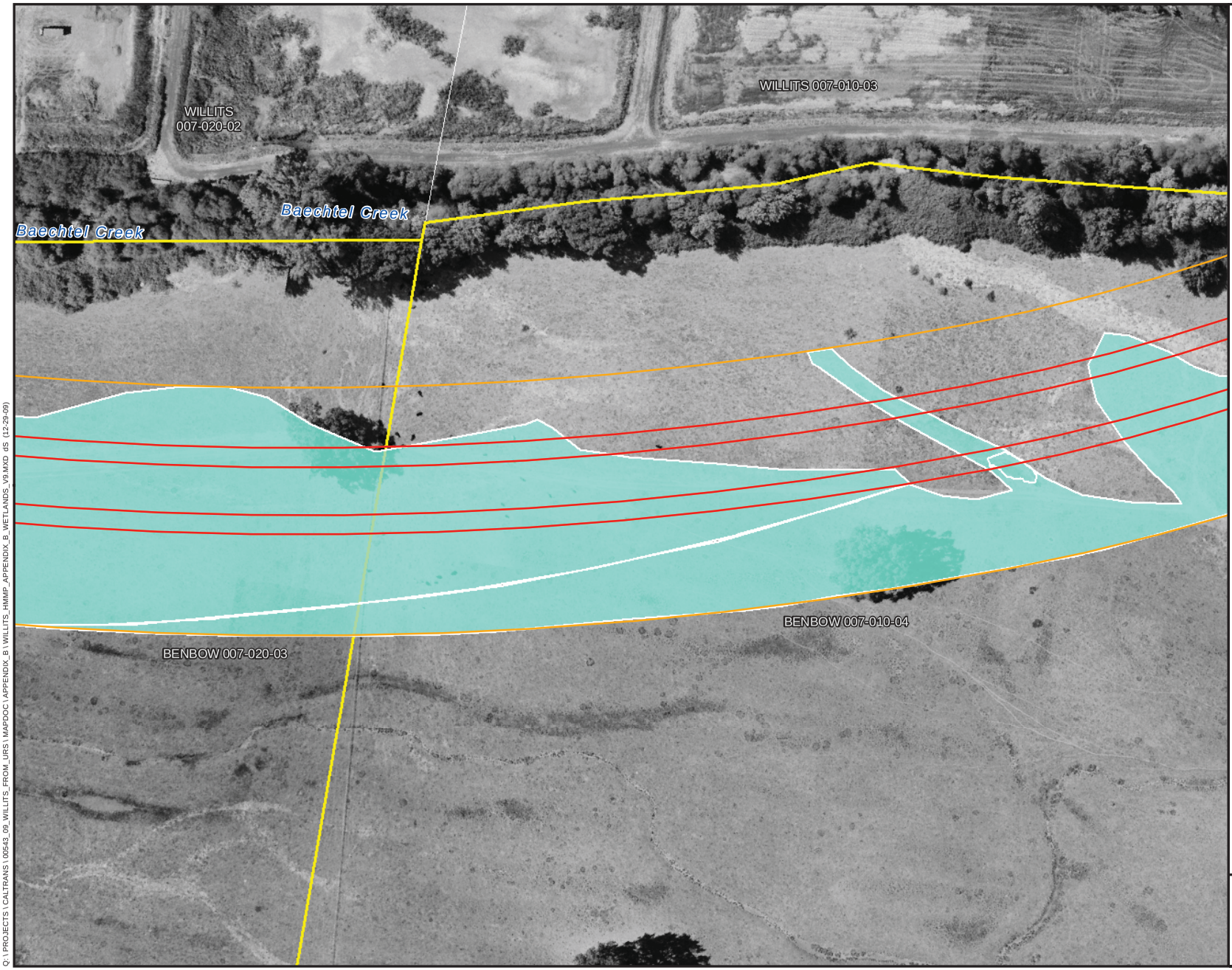

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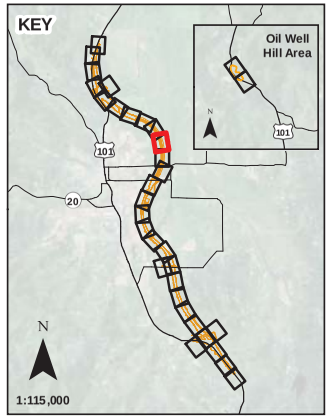
- Mitigation Parcel
- Parcel



N

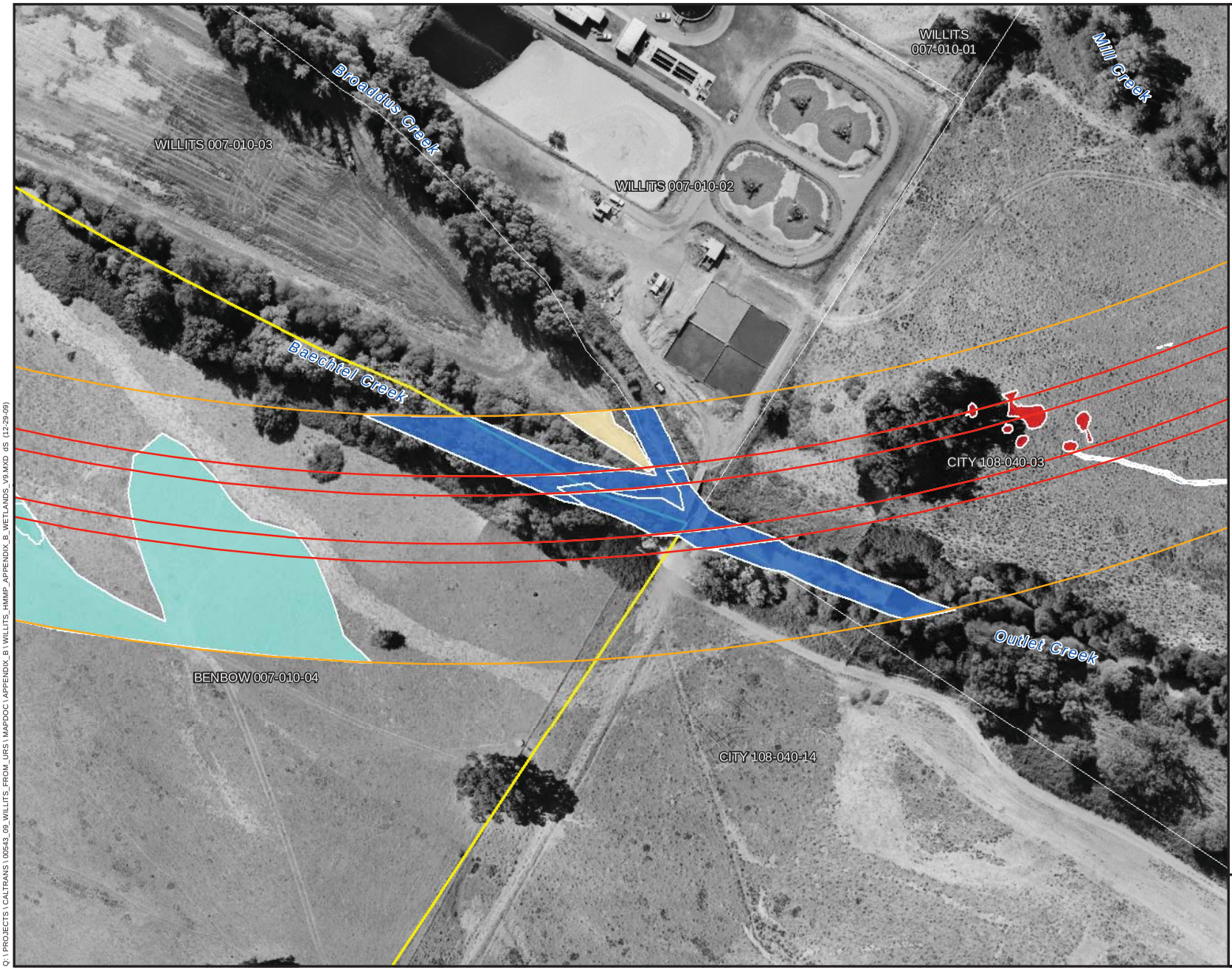
0 100

Scale in Feet

Sheet B-46

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

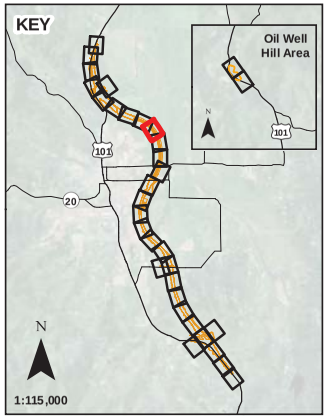


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

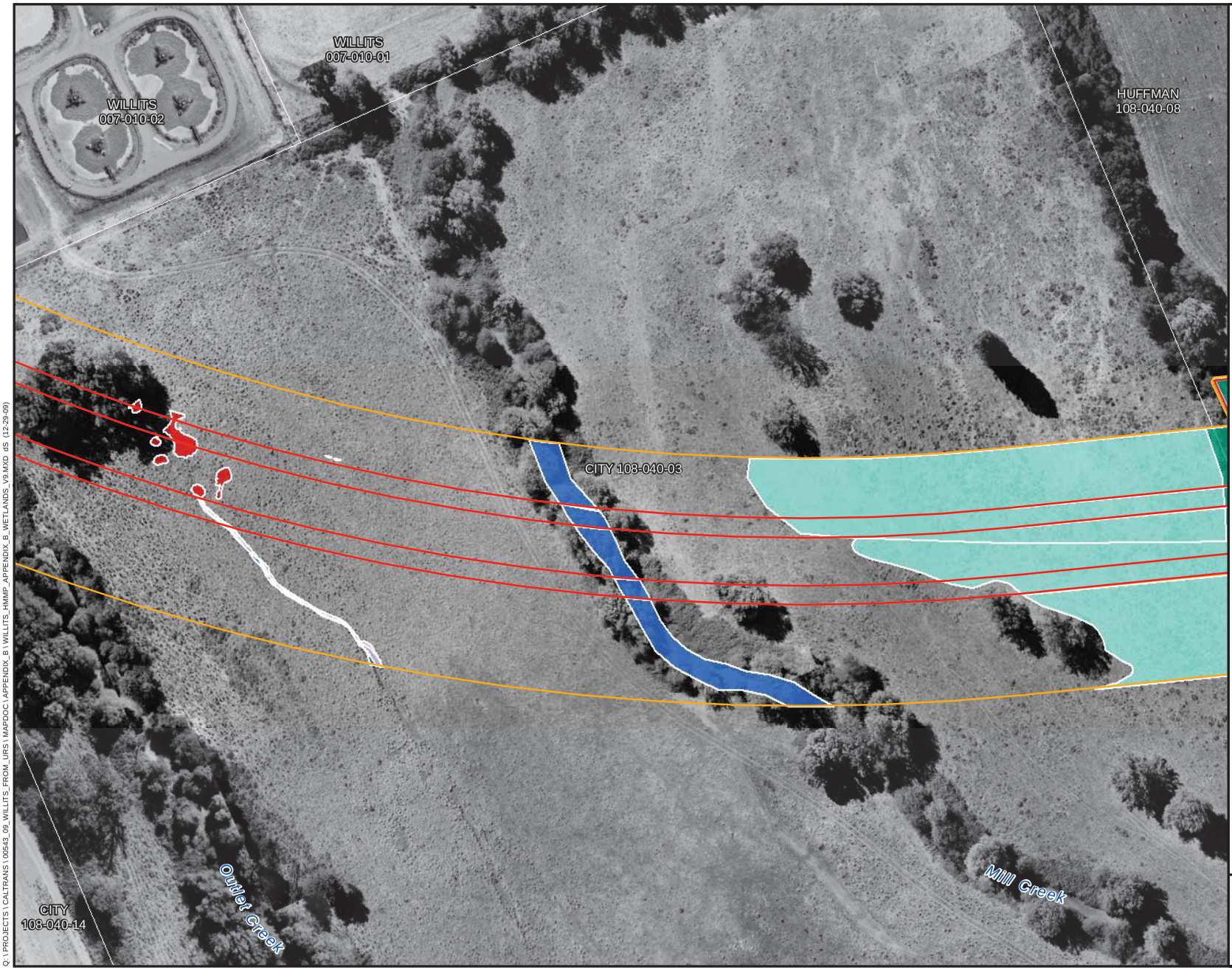
0 100

Scale in Feet

Sheet B-49

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

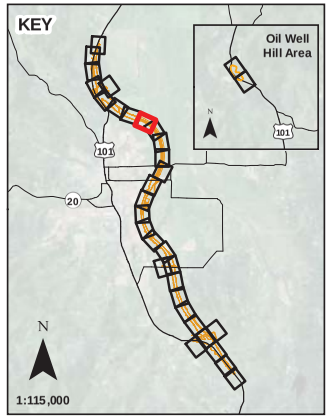


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

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Scale in Feet

Sheet B-51

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

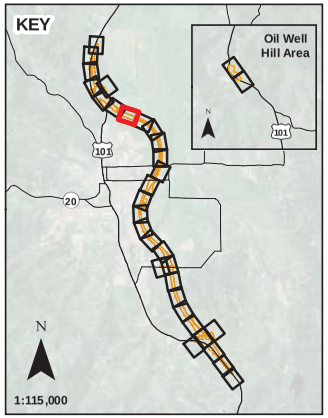
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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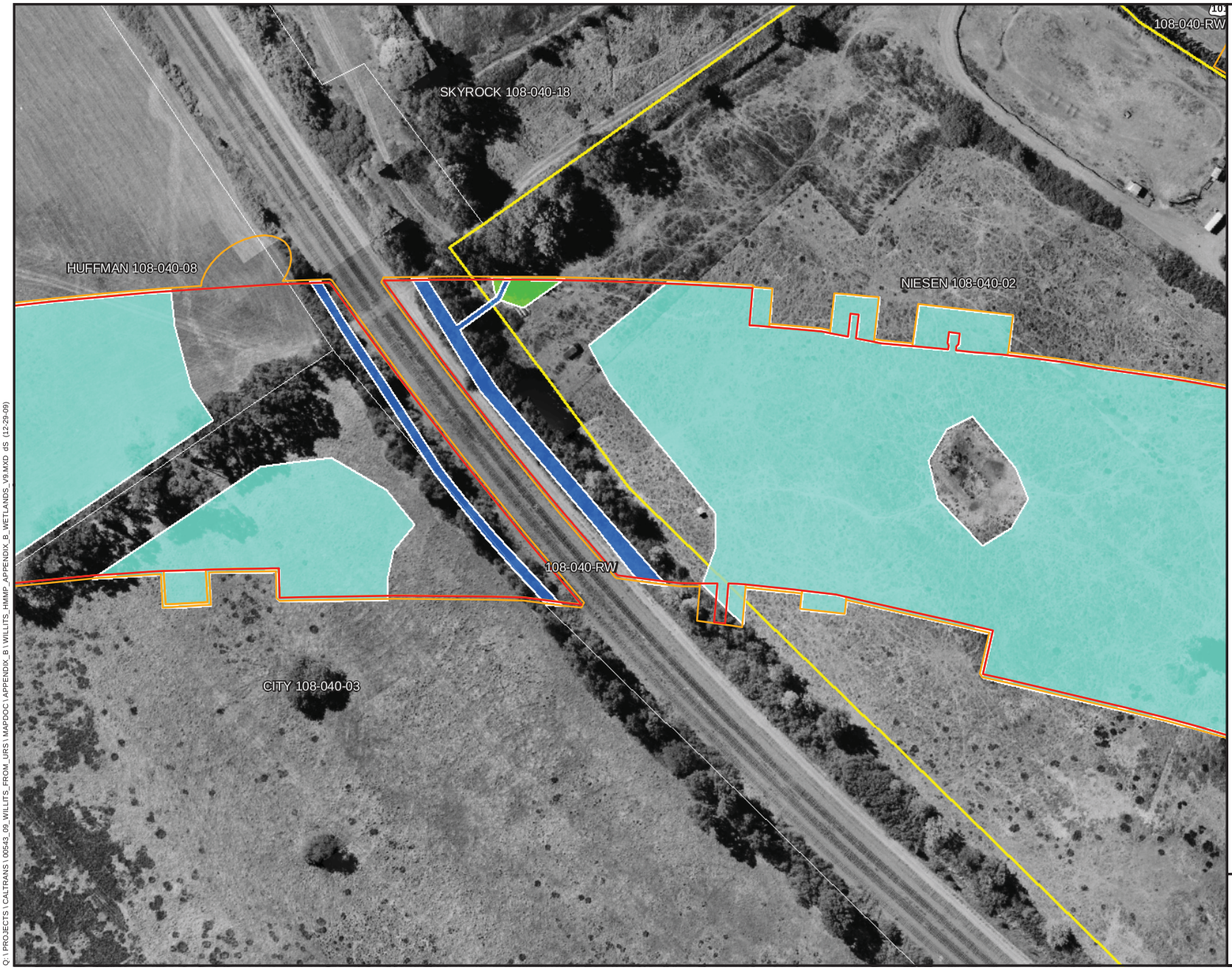
0 100

Scale in Feet

Sheet B-54

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

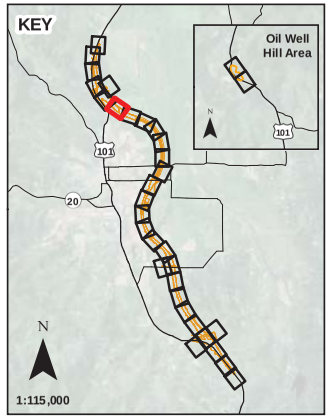


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-57

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

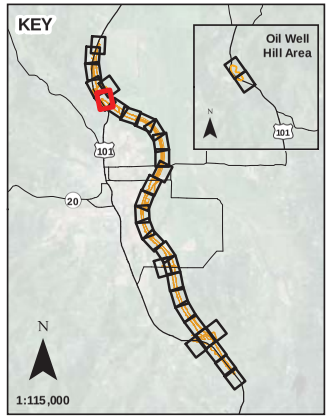
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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0 100

Scale in Feet

Sheet B-60

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

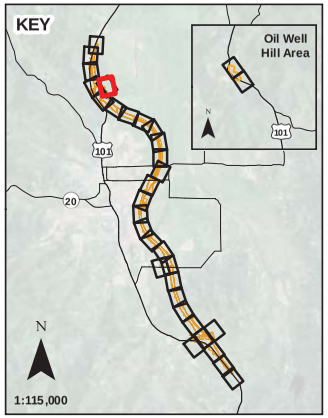
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

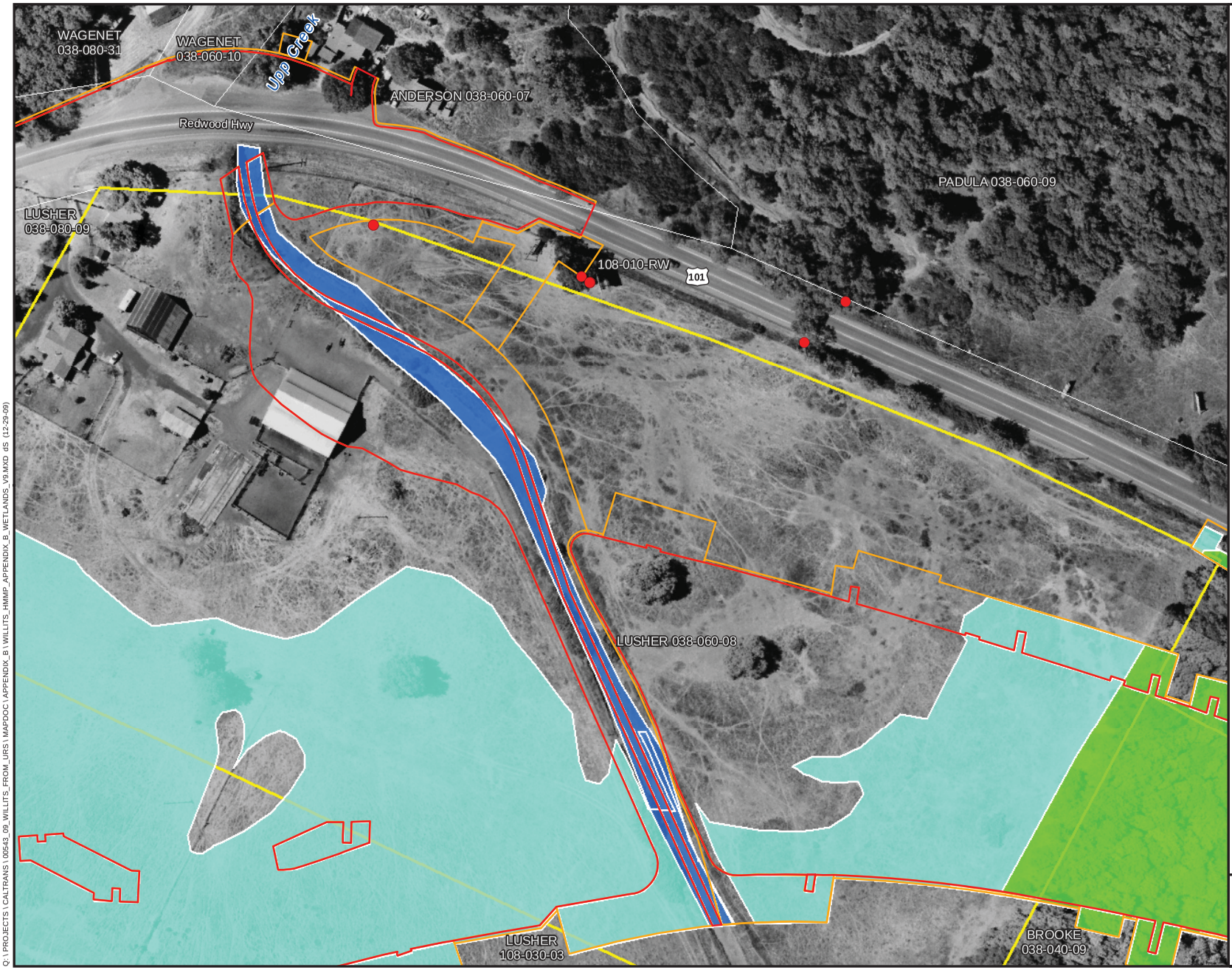
0 100

Scale in Feet

Sheet B-63

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

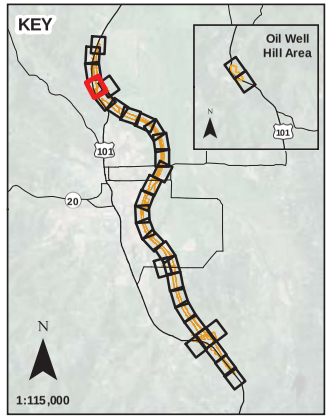


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

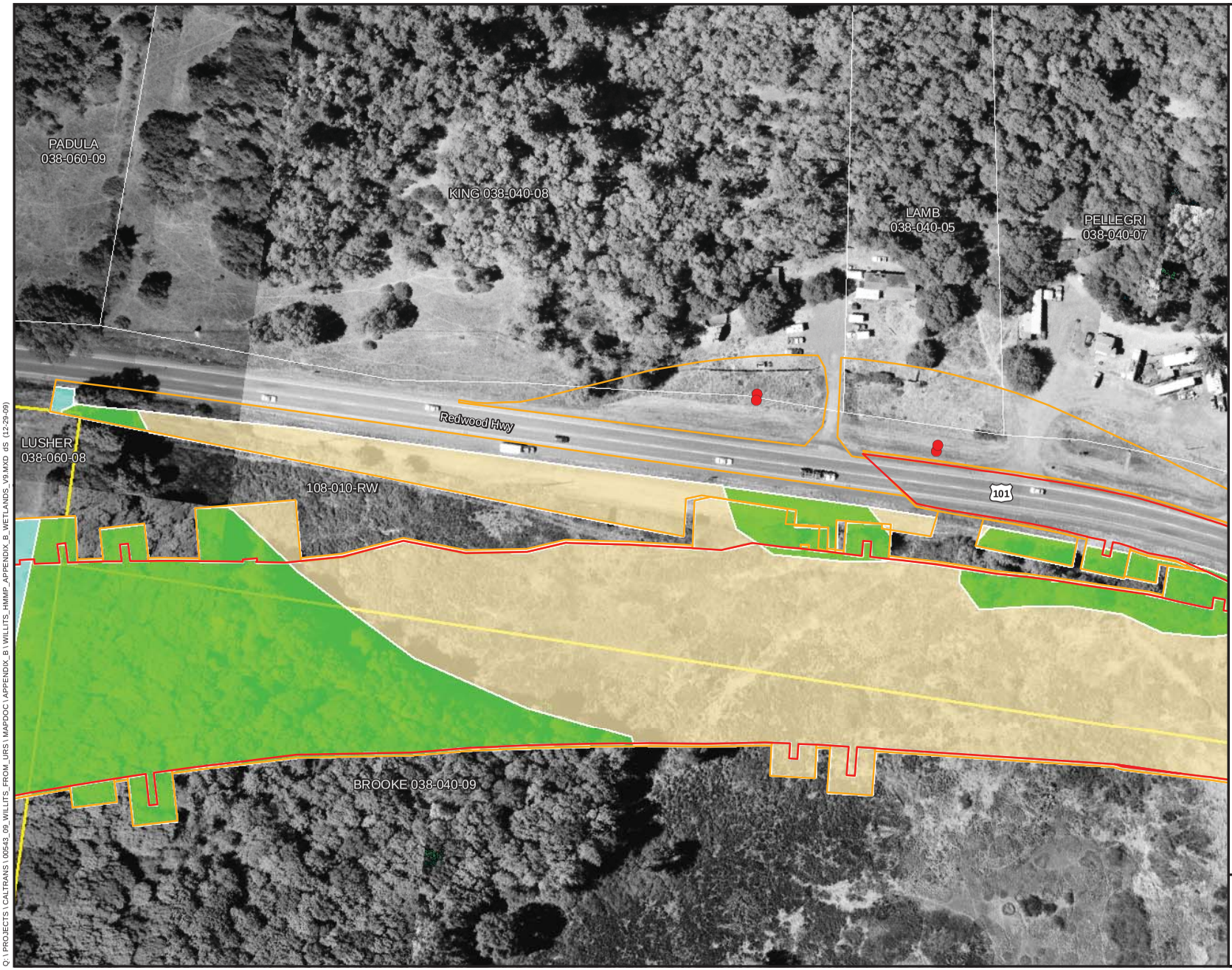
0 100

Scale in Feet

Sheet B-66

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

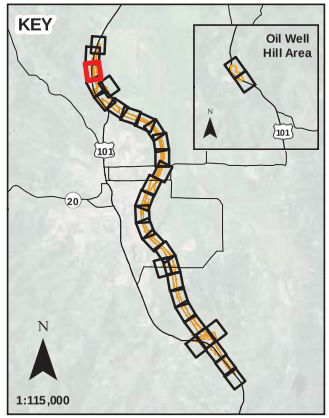


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-69

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

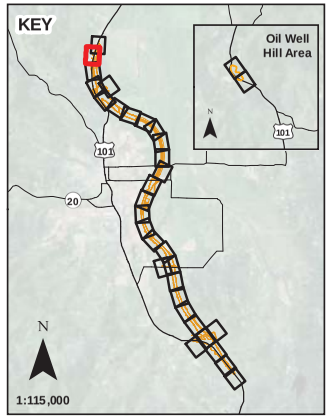
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-71

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

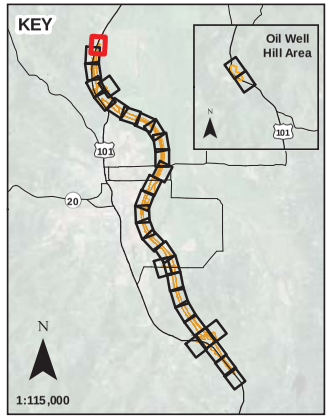
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

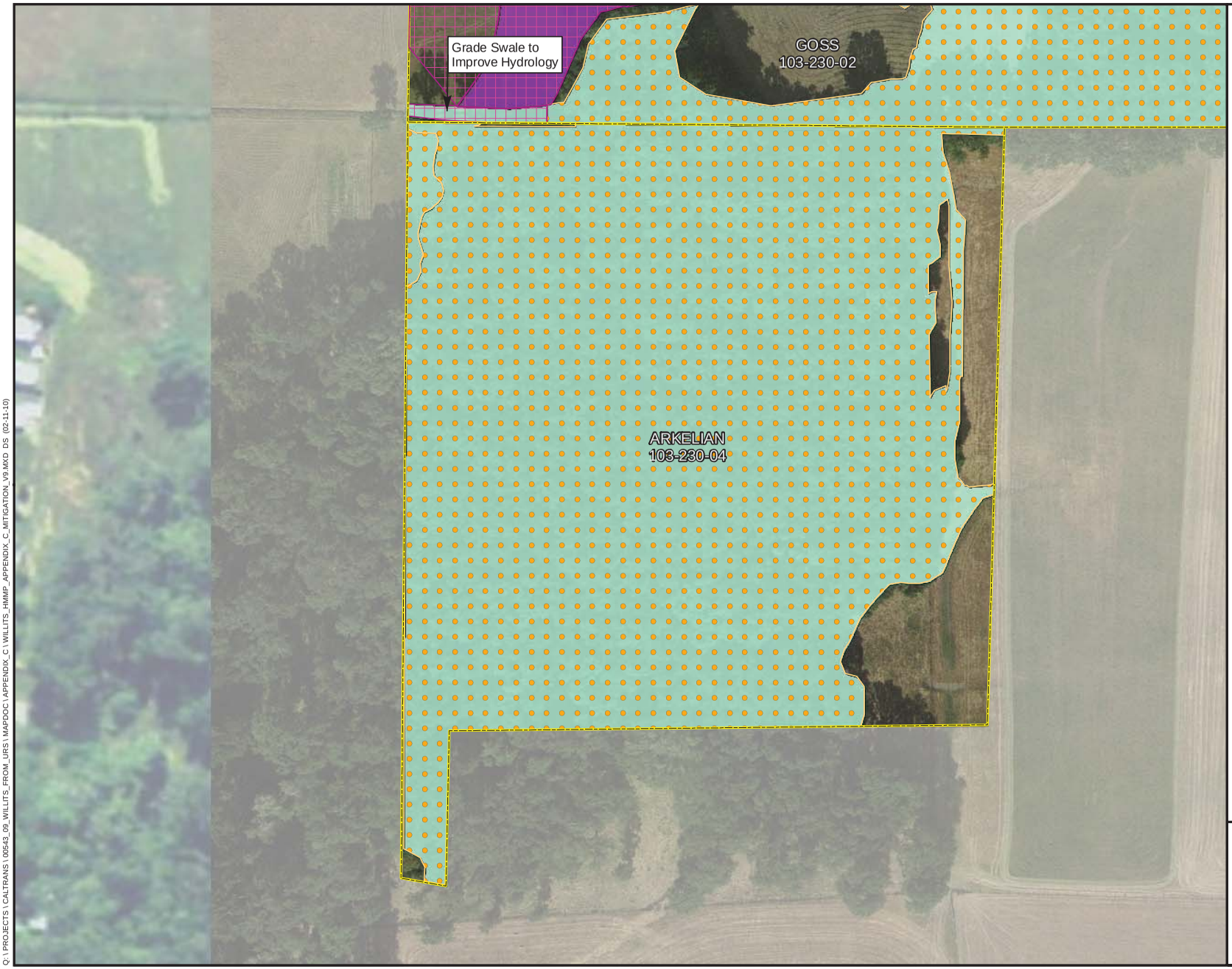
Scale in Feet

Sheet B-73

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Appendix B: Mitigation Actions Impact Maps (From Appendix C of the Willits Bypass Mitigation and Monitoring Plan)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

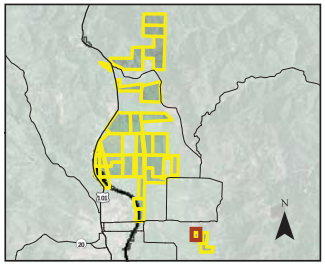
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



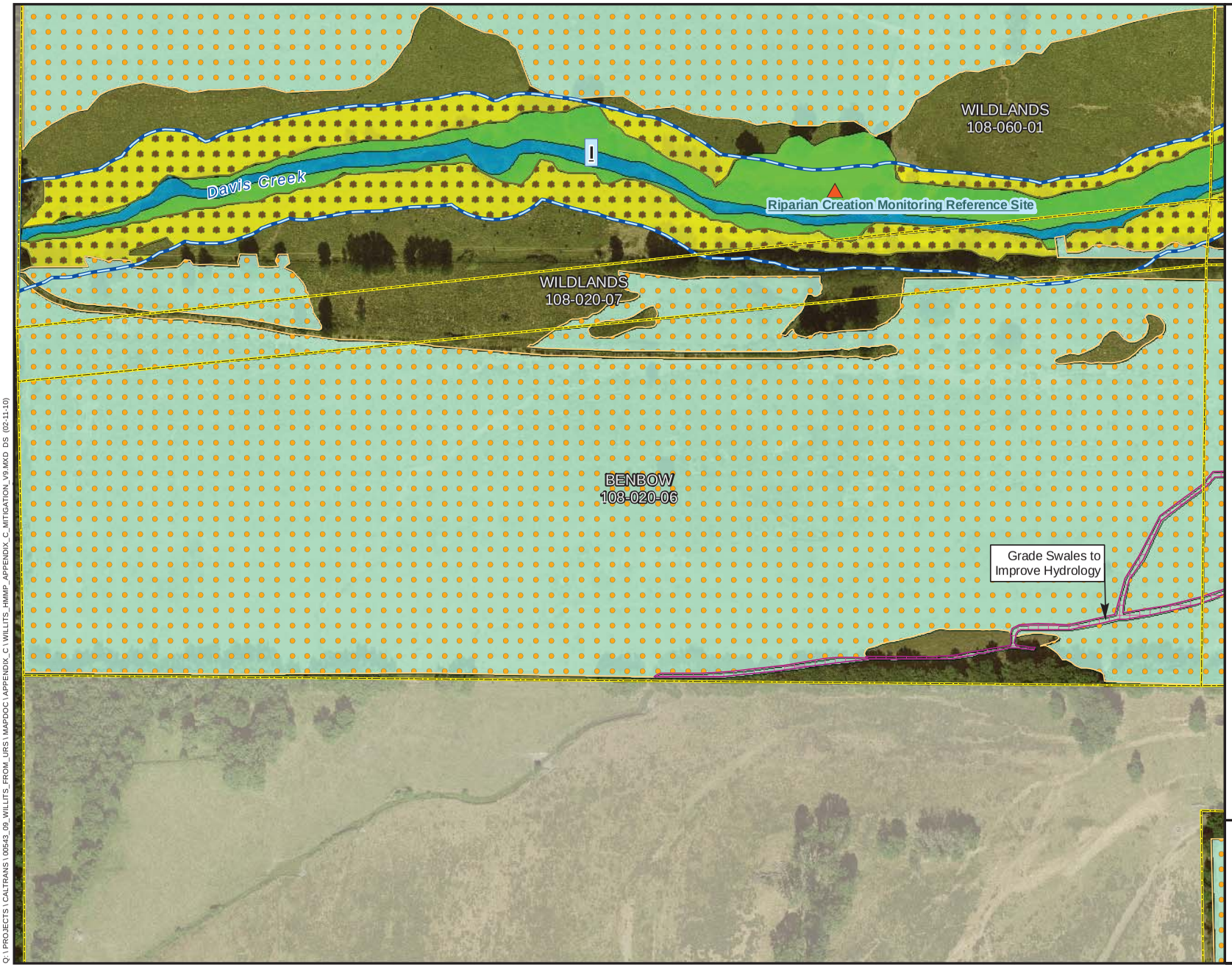
0 200

Scale in Feet

Sheet C-4
Mitigation Actions
Arkelian
APN 103-230-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

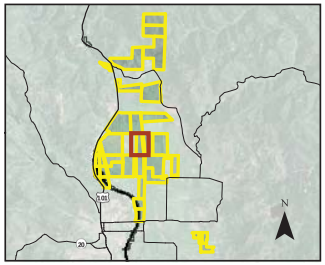
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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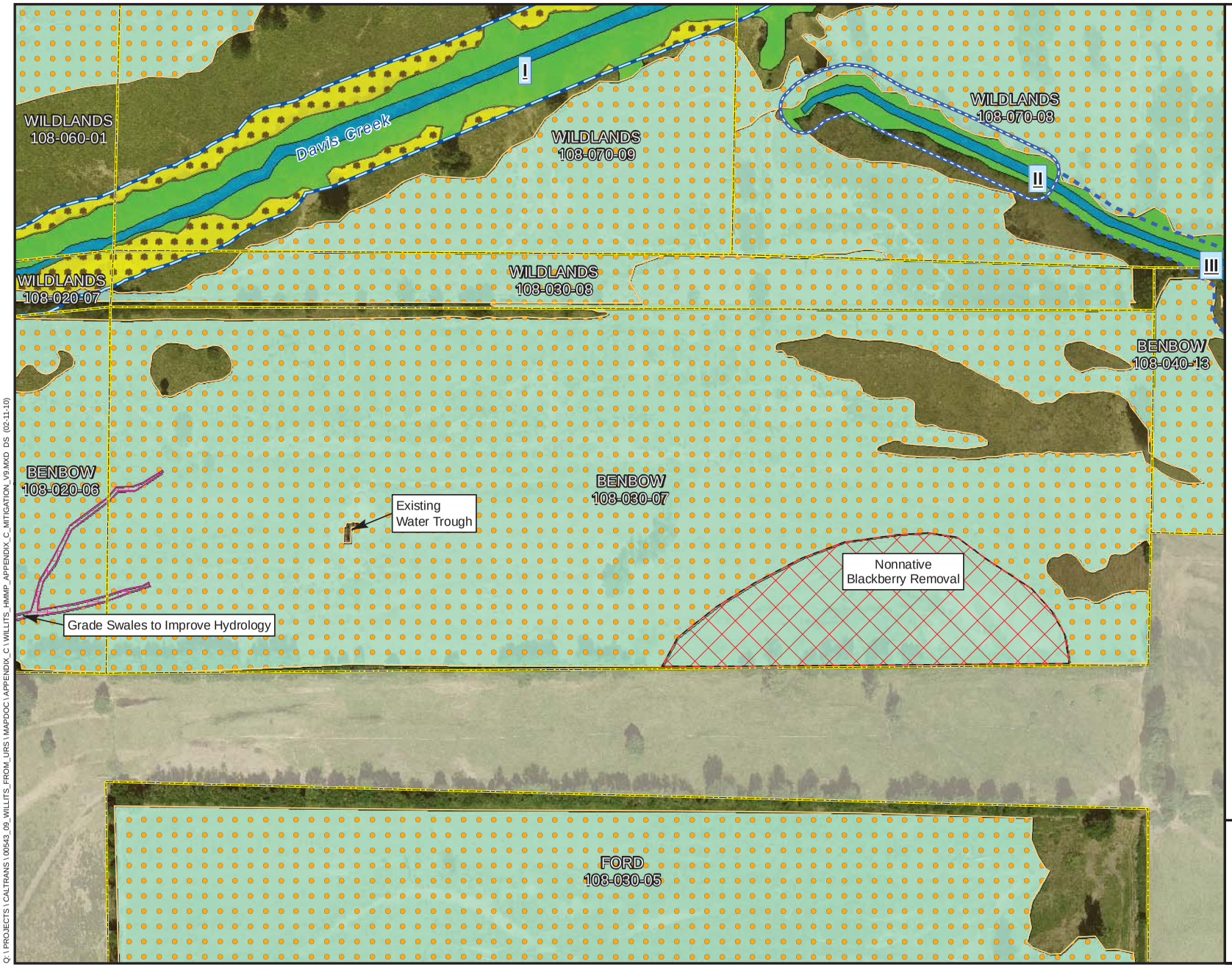
Scale in Feet

Sheet C-8
Mitigation Actions
Benbow
APN 108-020-06

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

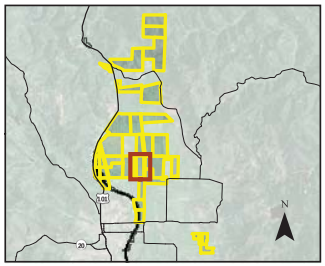
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



0 200

Scale in Feet

Sheet C-12
Mitigation Actions
Benbow
APN 108-030-07

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

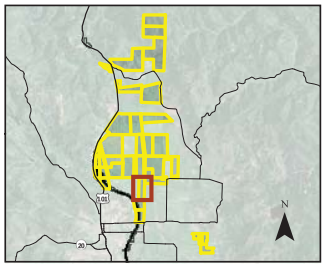
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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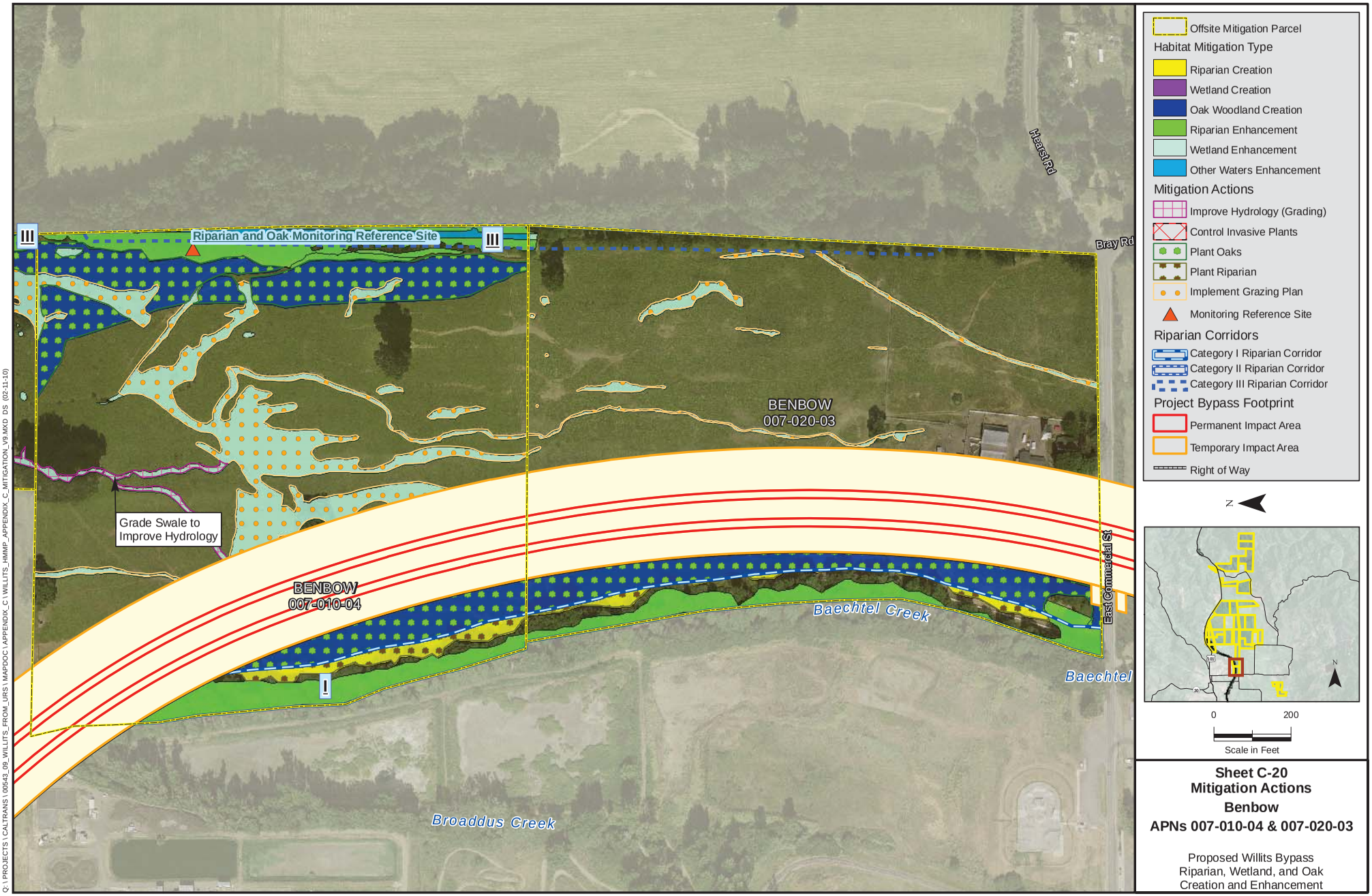
Scale in Feet

Sheet C-16
Mitigation Actions
Benbow
APN 108-040-13

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

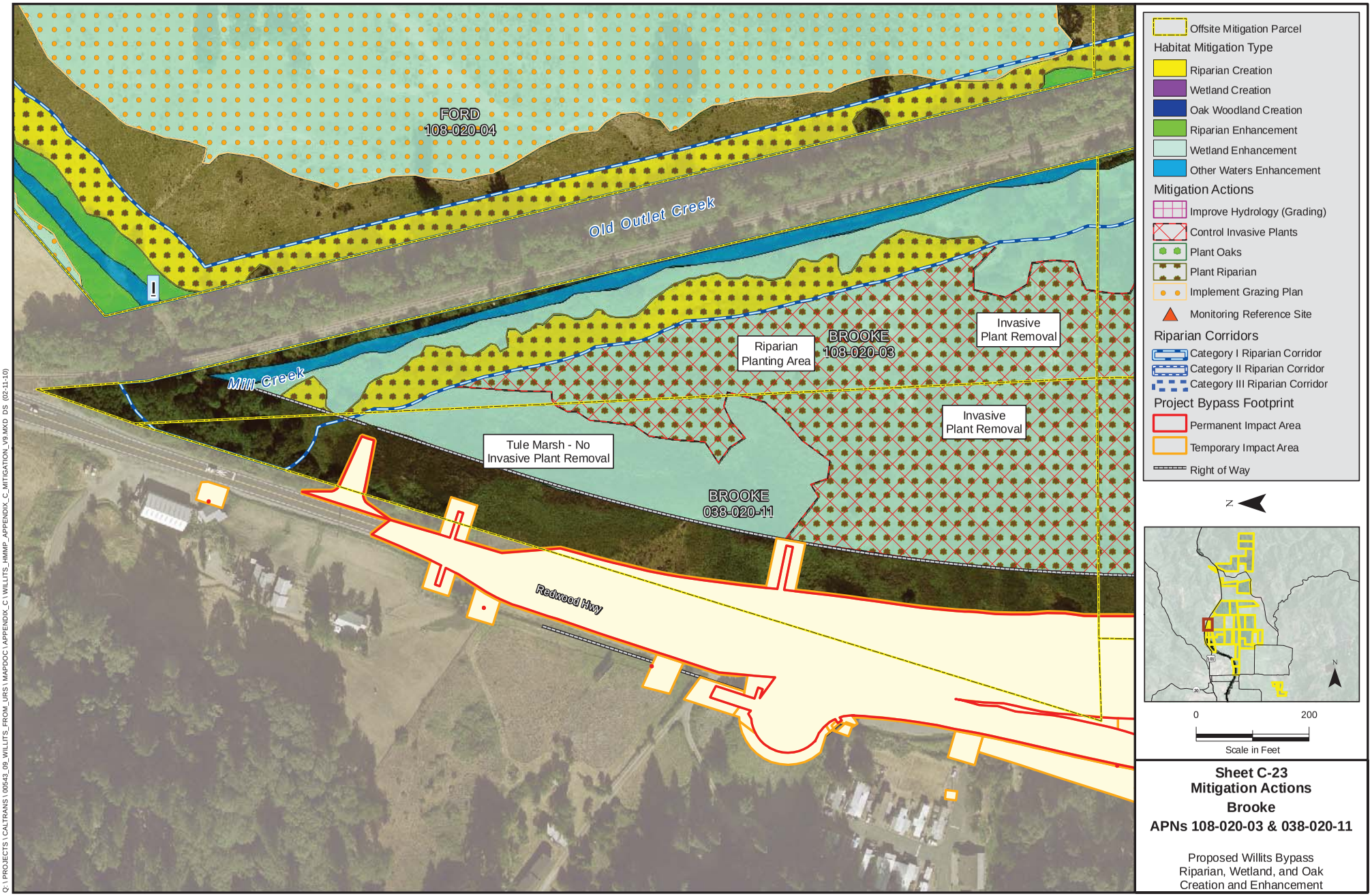
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Sheet C-20
Mitigation Actions
Benbow
APNs 007-010-04 & 007-020-03

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

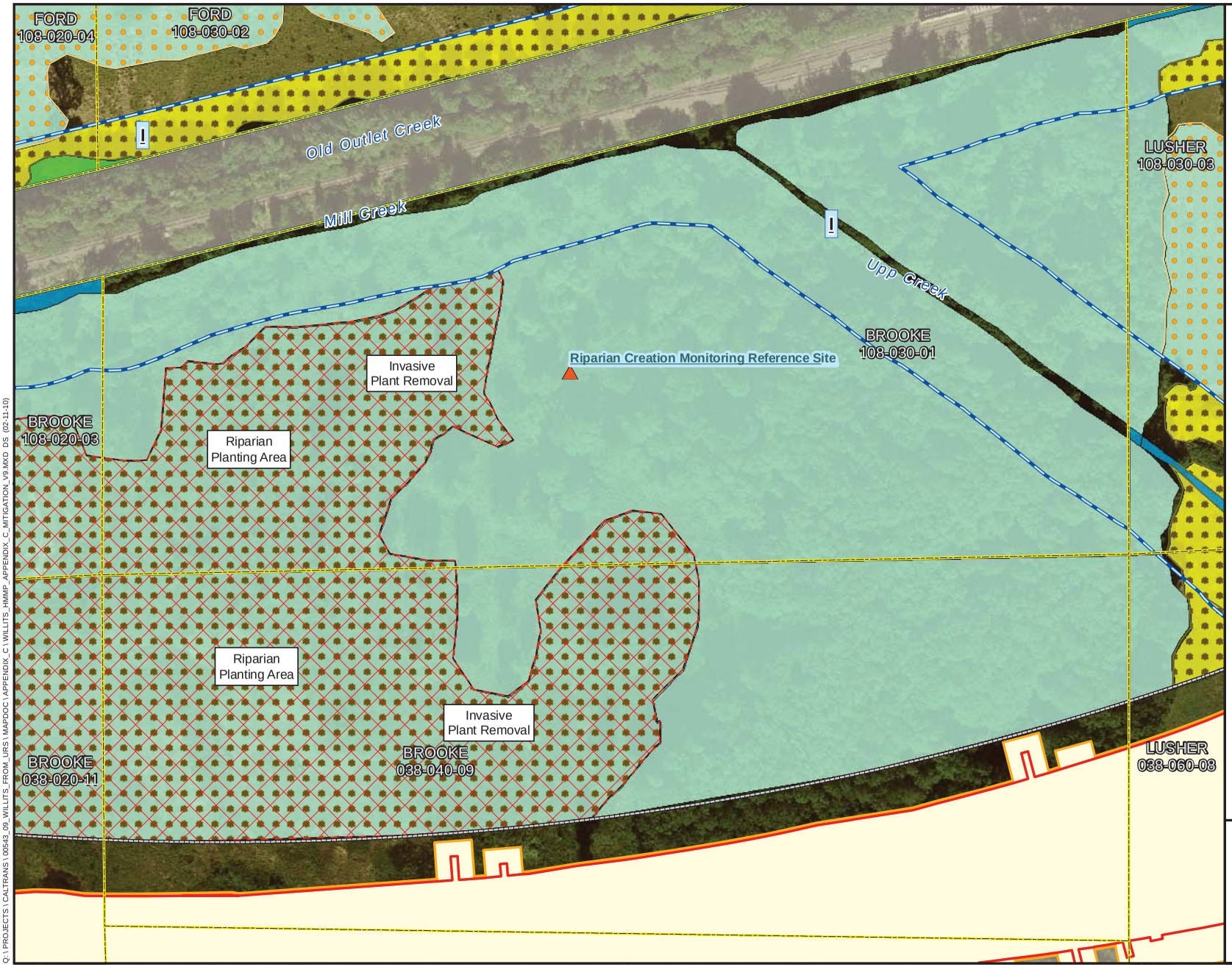
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Sheet C-23
Mitigation Actions
Brooke
APNs 108-020-03 & 038-020-11

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

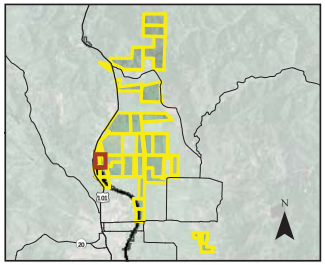
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-26
Mitigation Actions
Brooke
APNs 108-030-01 & 038-040-09

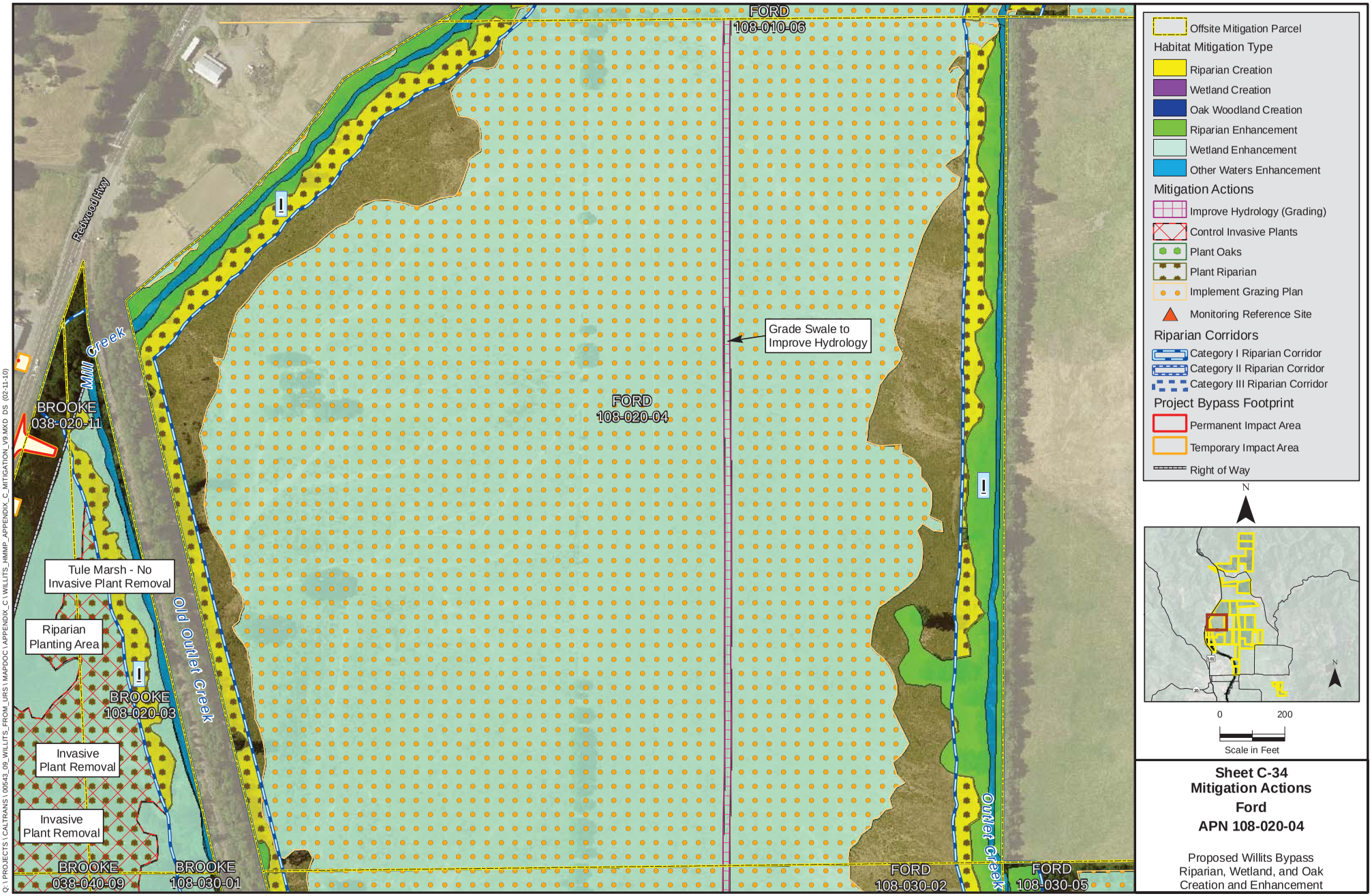
Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

Sheet C-30
Mitigation Actions
Ford
APN 108-010-06

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

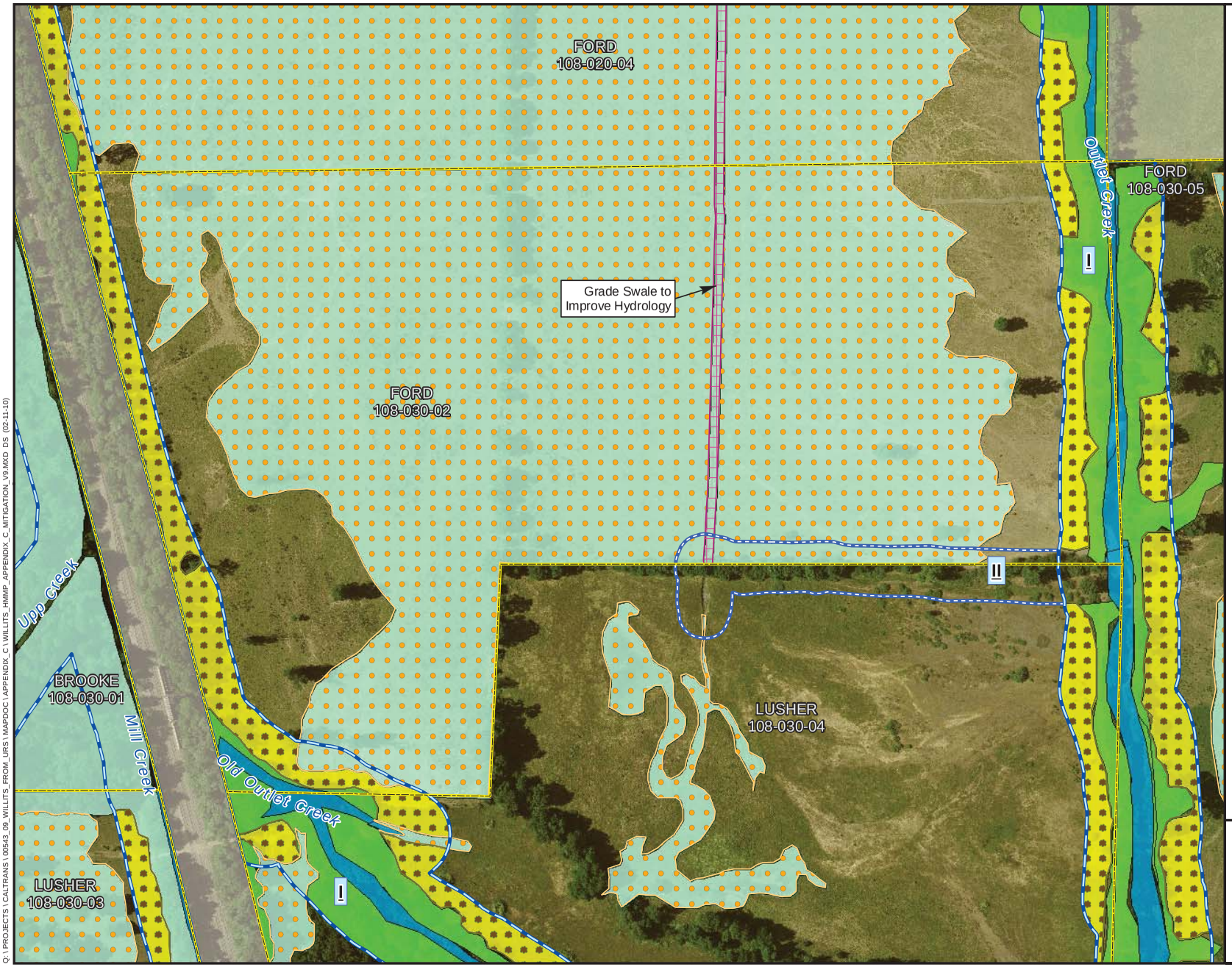
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Sheet C-34
Mitigation Actions
Ford
APN 108-020-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N

0 200

Scale in Feet

Sheet C-38
Mitigation Actions
Ford
APN 108-030-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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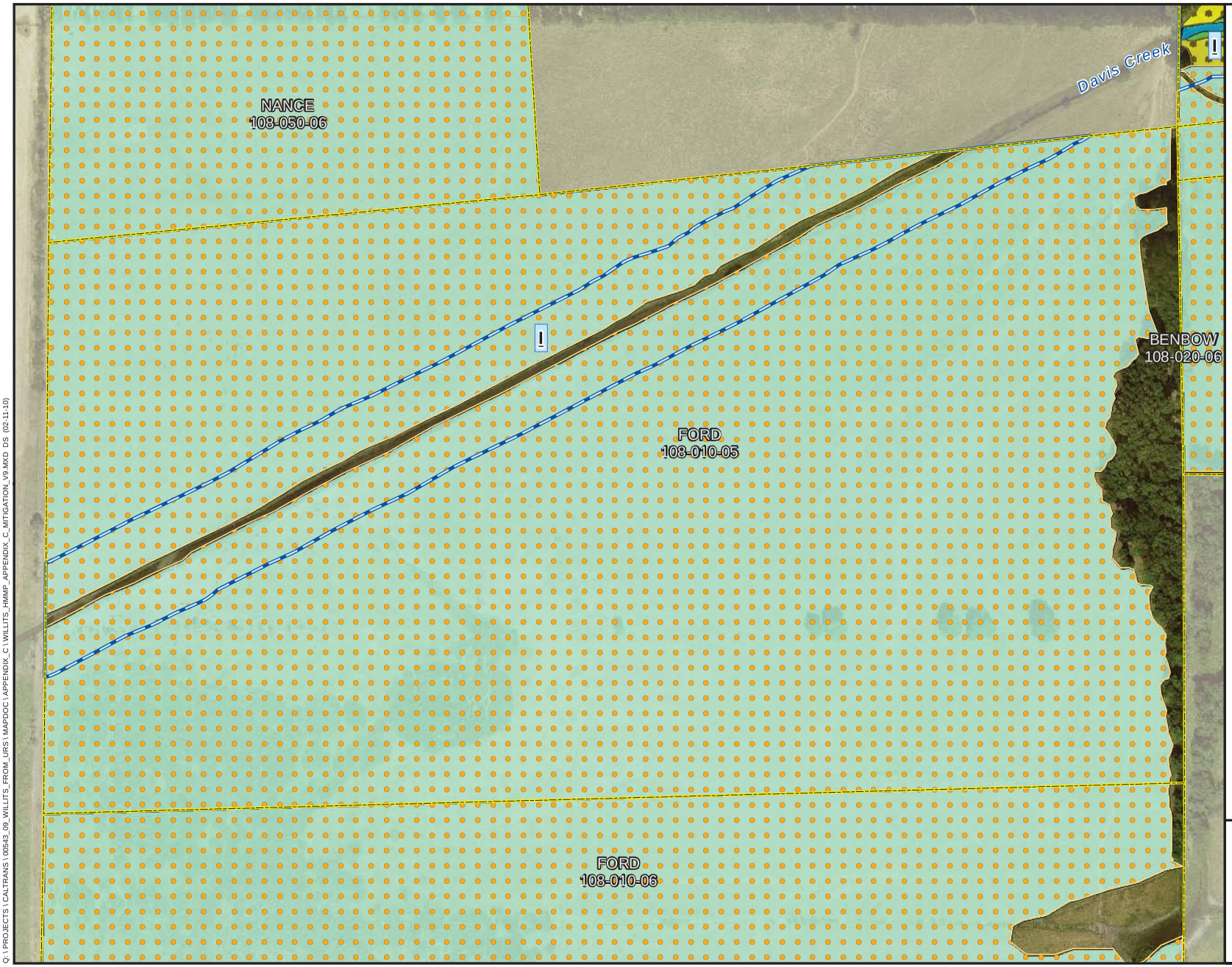


Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

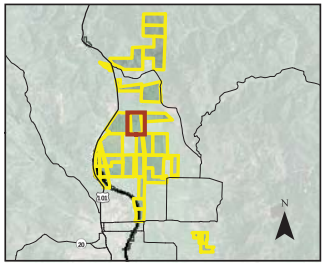
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



0 200

Scale in Feet

Sheet C-42
Mitigation Actions
Ford
APN 108-010-05

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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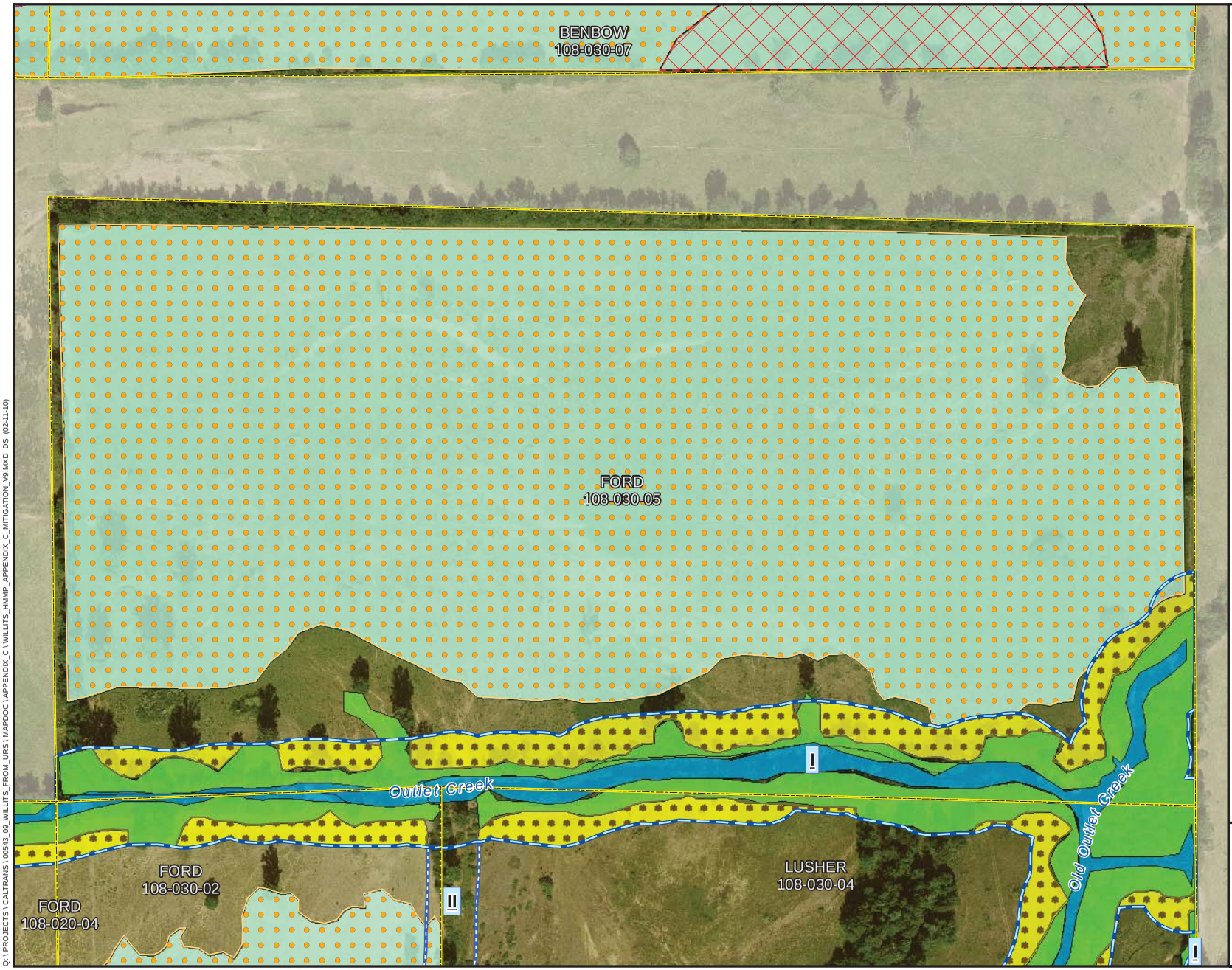

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
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- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

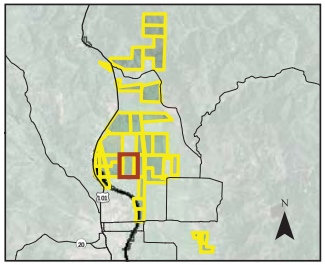
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-46
Mitigation Actions
Ford
APN 108-030-05

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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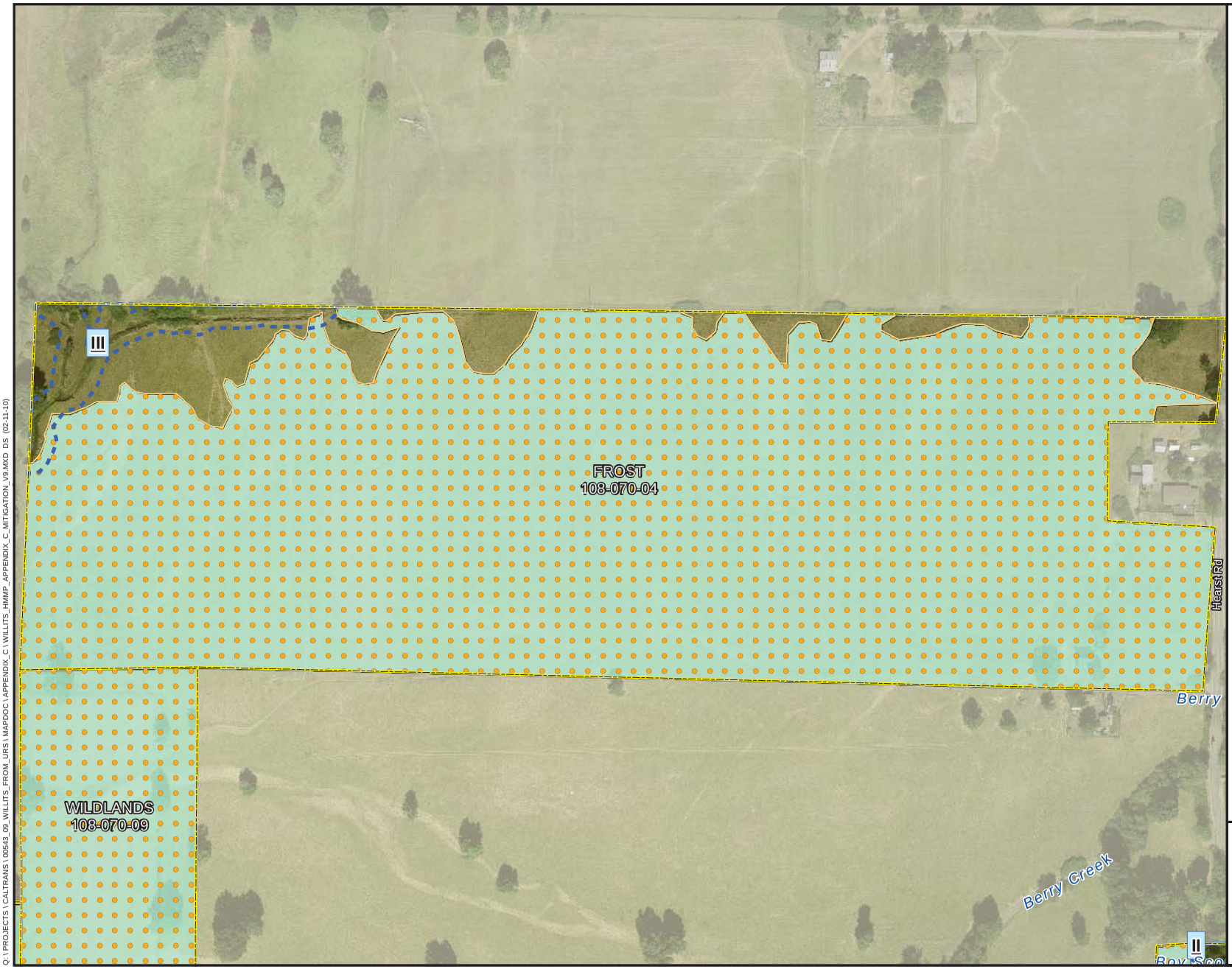

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
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- Monitoring Reference Site

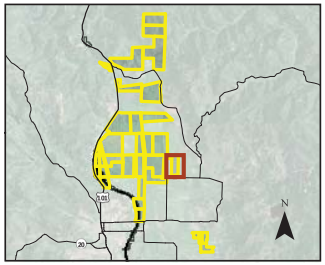
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-50
Mitigation Actions
Frost
APN 108-070-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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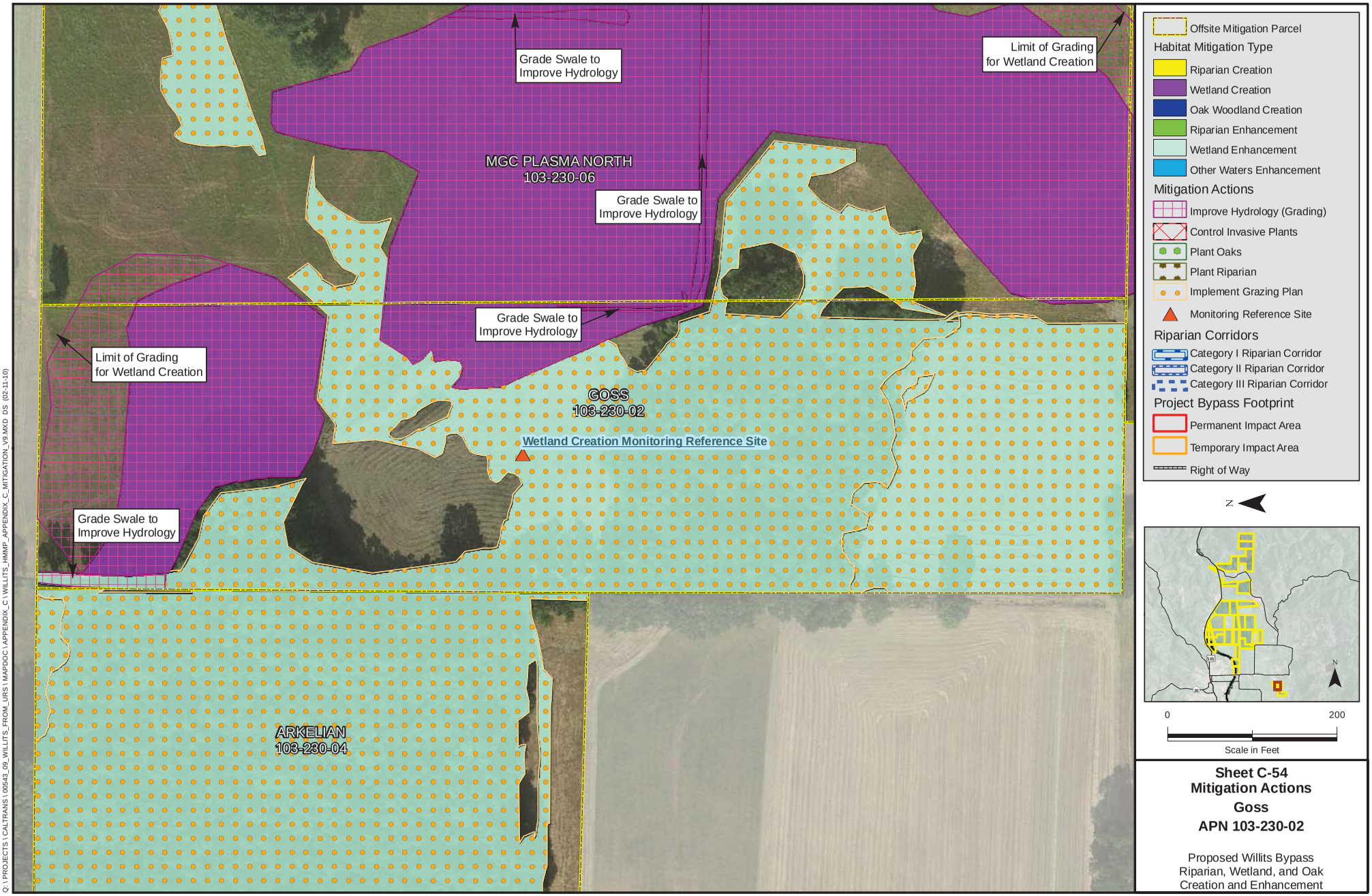

Sheet C-54
Mitigation Actions
Goss
APN 103-230-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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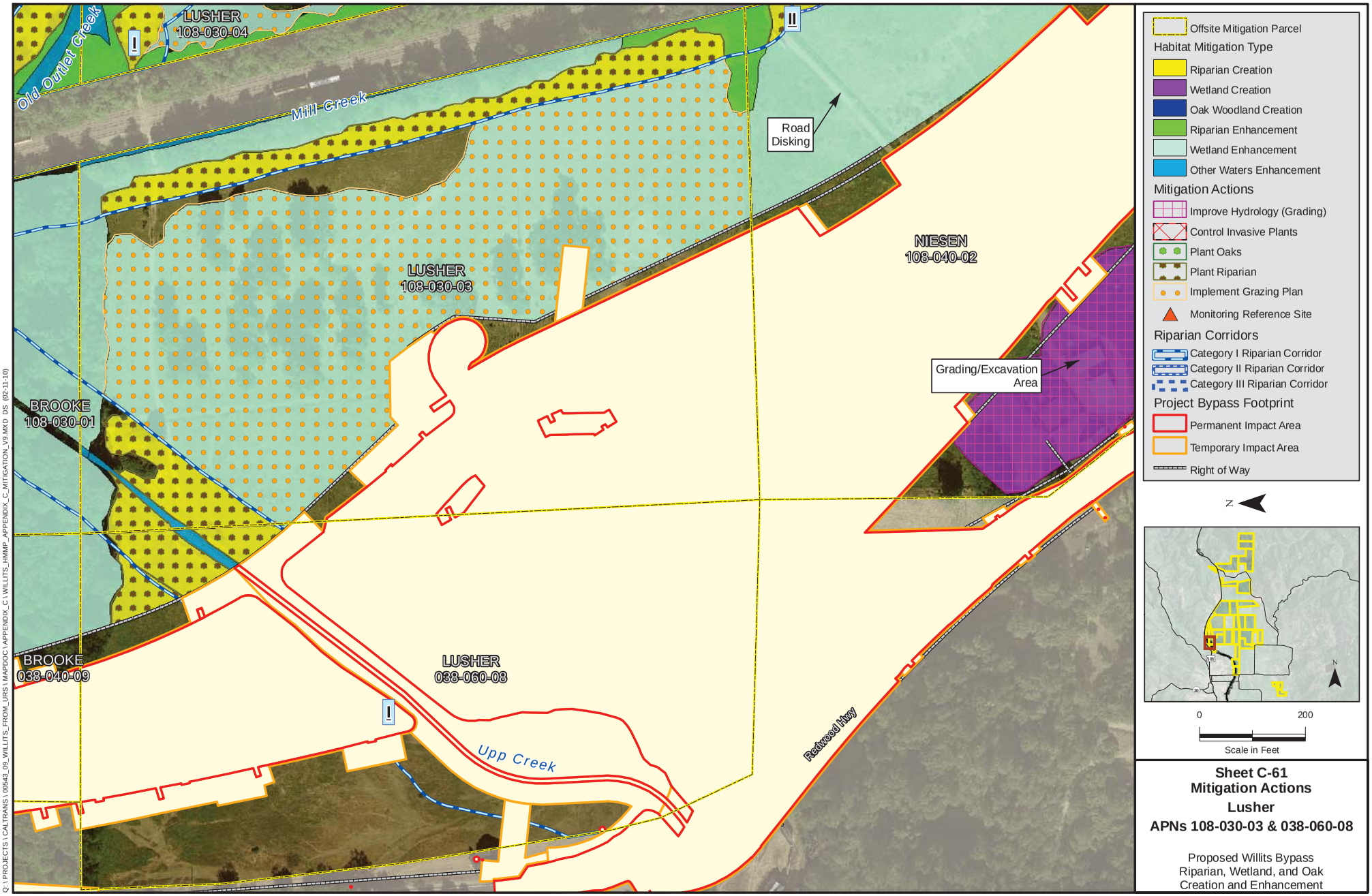

Sheet C-61
Mitigation Actions
Lusher
APNs 108-030-03 & 038-060-08

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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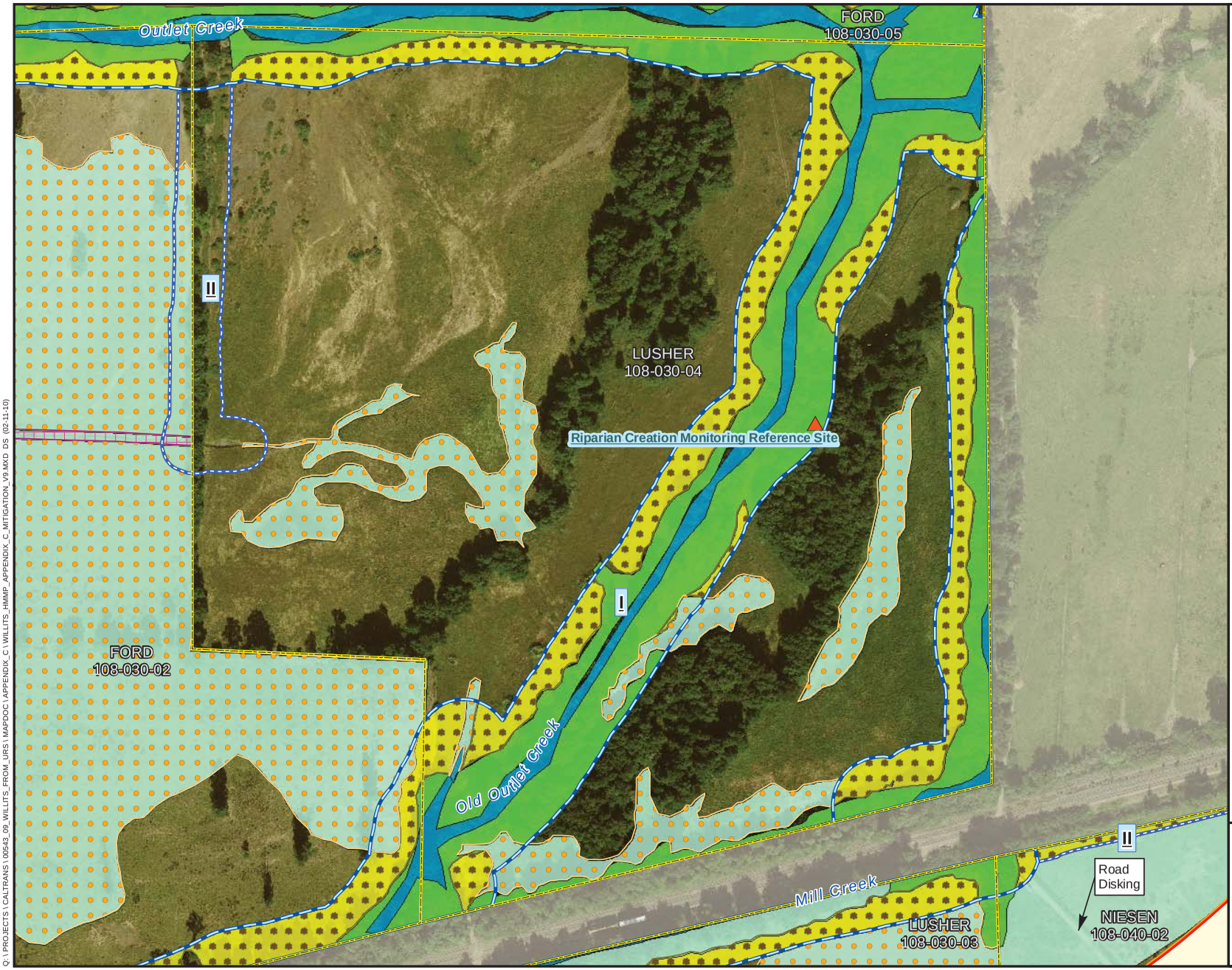


Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

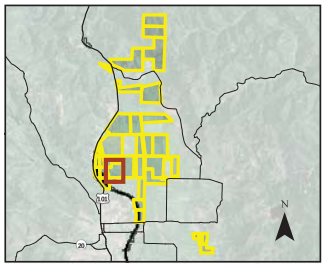
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-64
Mitigation Actions
Lusher
APN 108-030-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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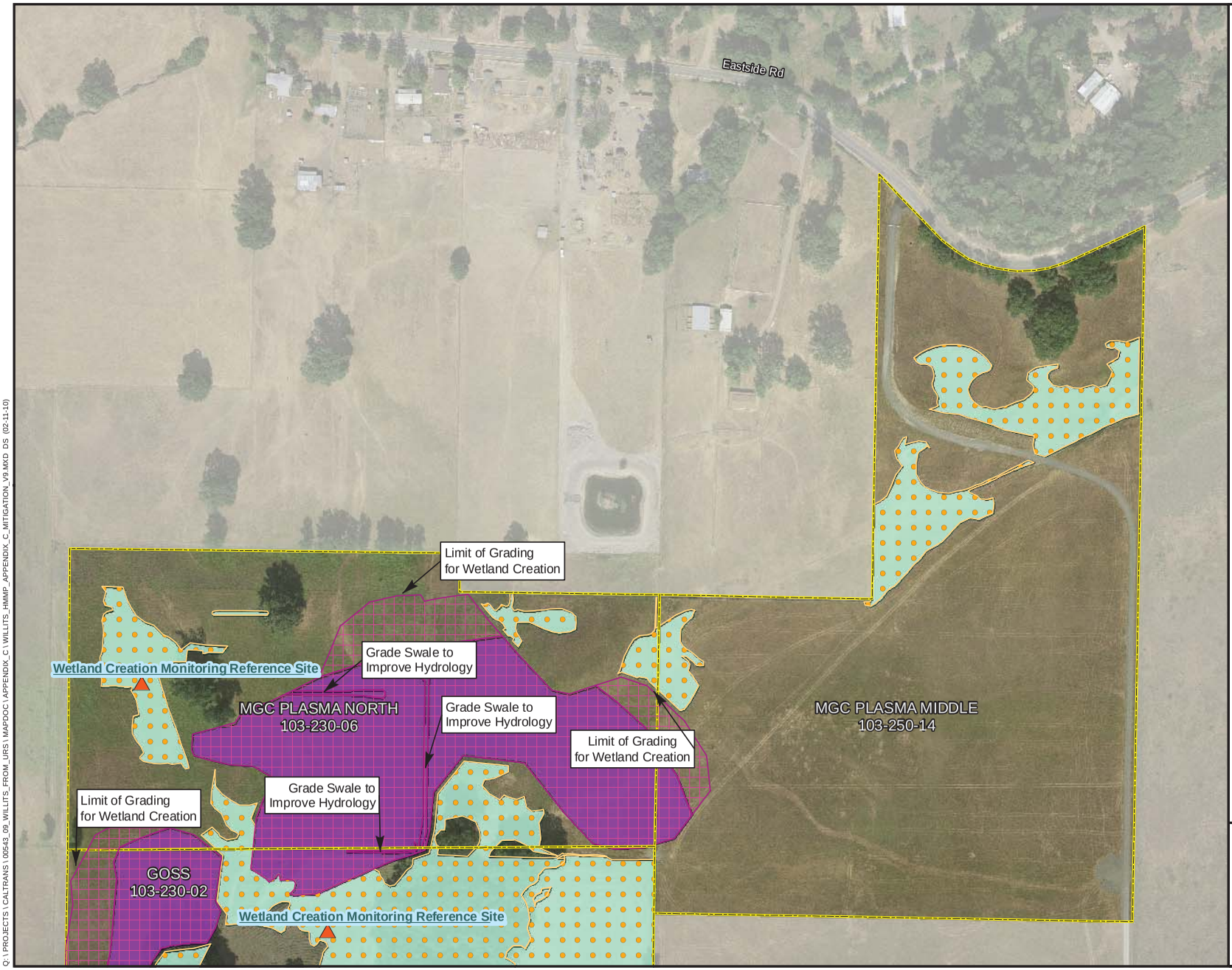

Offsite Mitigation Parcel

Habitat Mitigation Type
- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions
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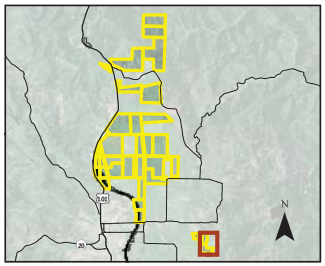
Riparian Corridors
- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint
- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



0 200

Scale in Feet

Sheet C-68
Mitigation Actions
MGC Plasma-North & Middle
APNs 103-230-06 & 103-250-14

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
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Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N

0 200

Scale in Feet

Sheet C-72
Mitigation Actions
Nance
APN 108-050-06

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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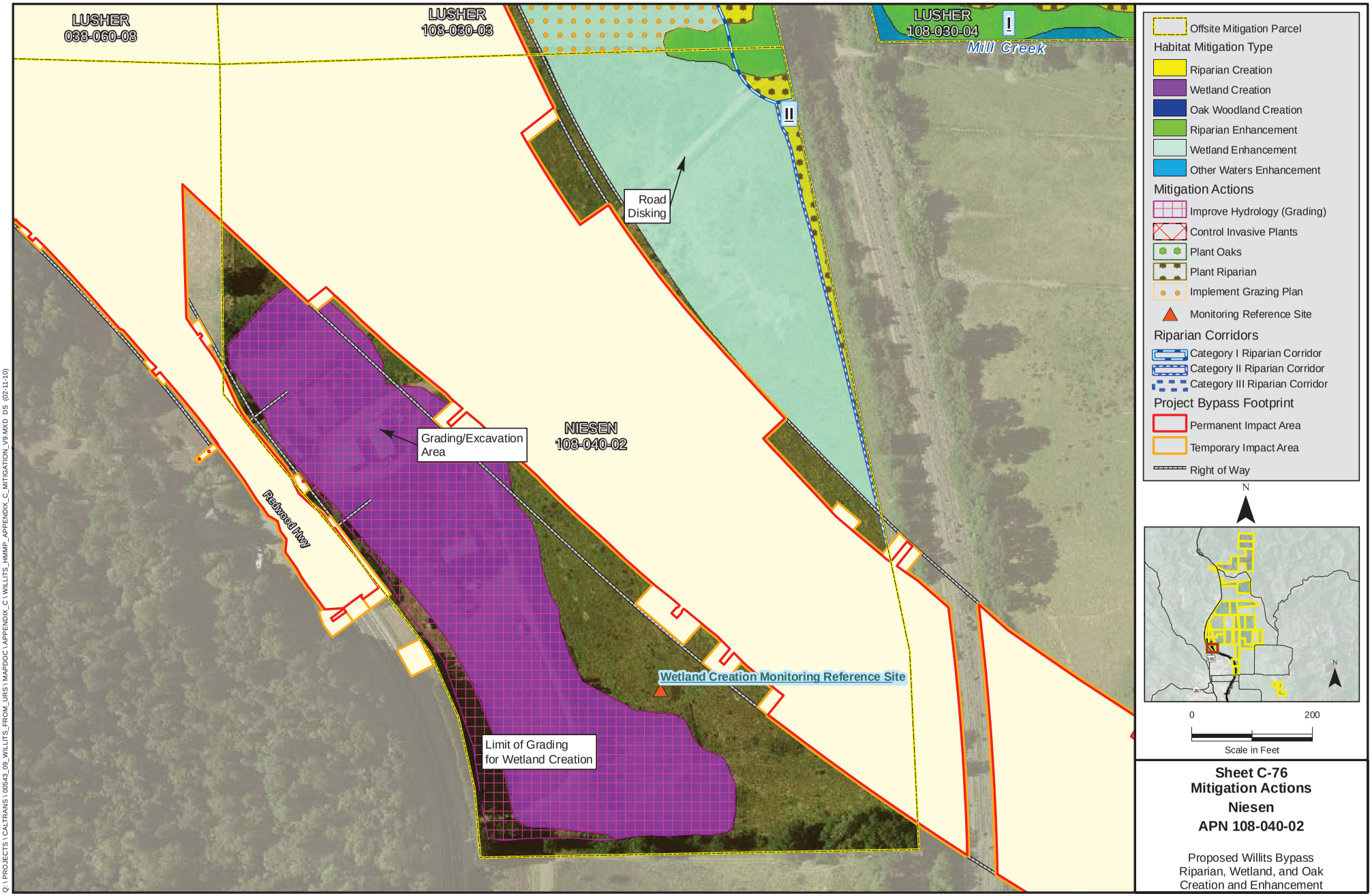

Sheet C-76
Mitigation Actions
Niesen
APN 108-040-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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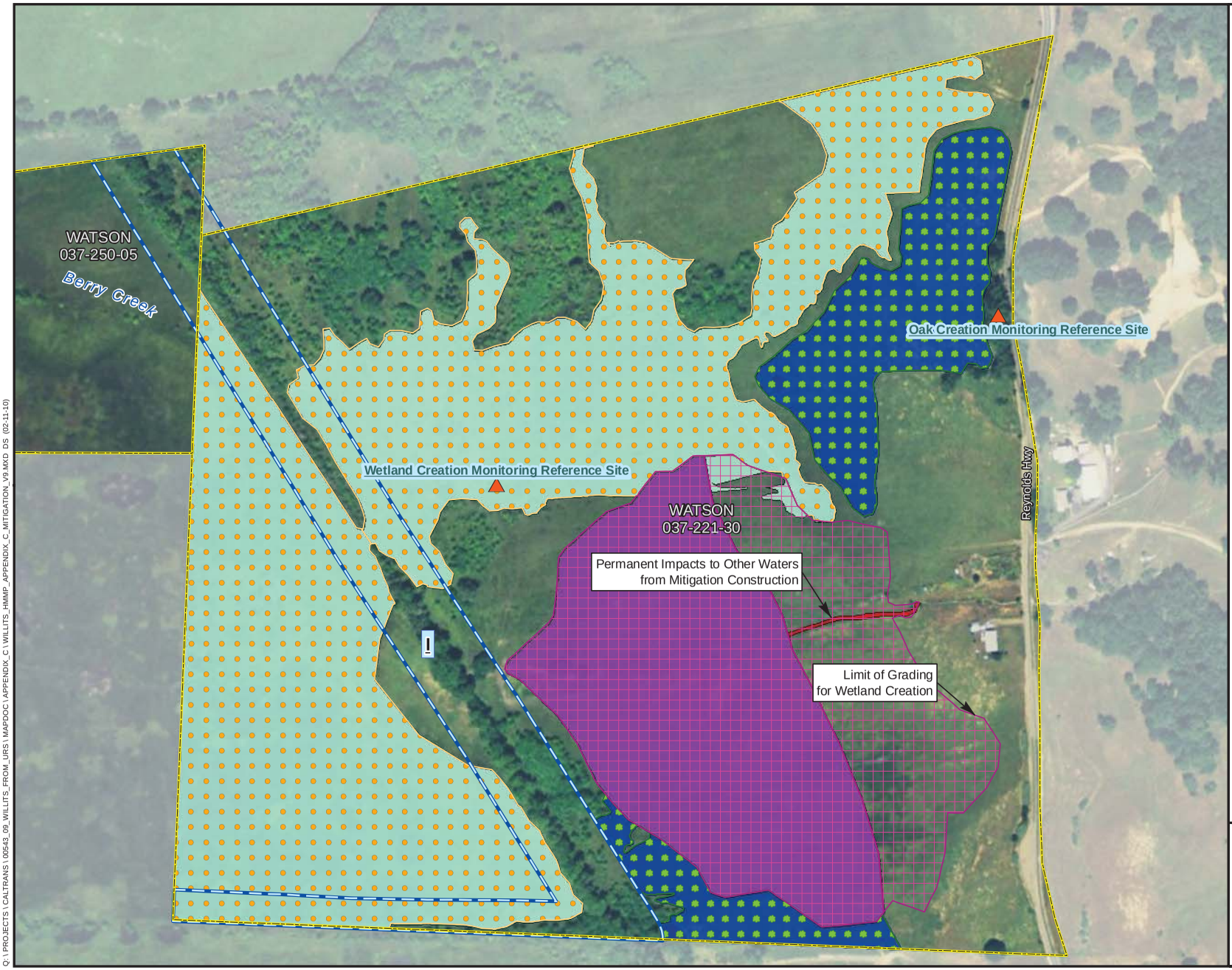

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
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- Monitoring Reference Site

Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N

0 200

Scale in Feet

Sheet C-86
Mitigation Actions
Watson
APN 037-221-30

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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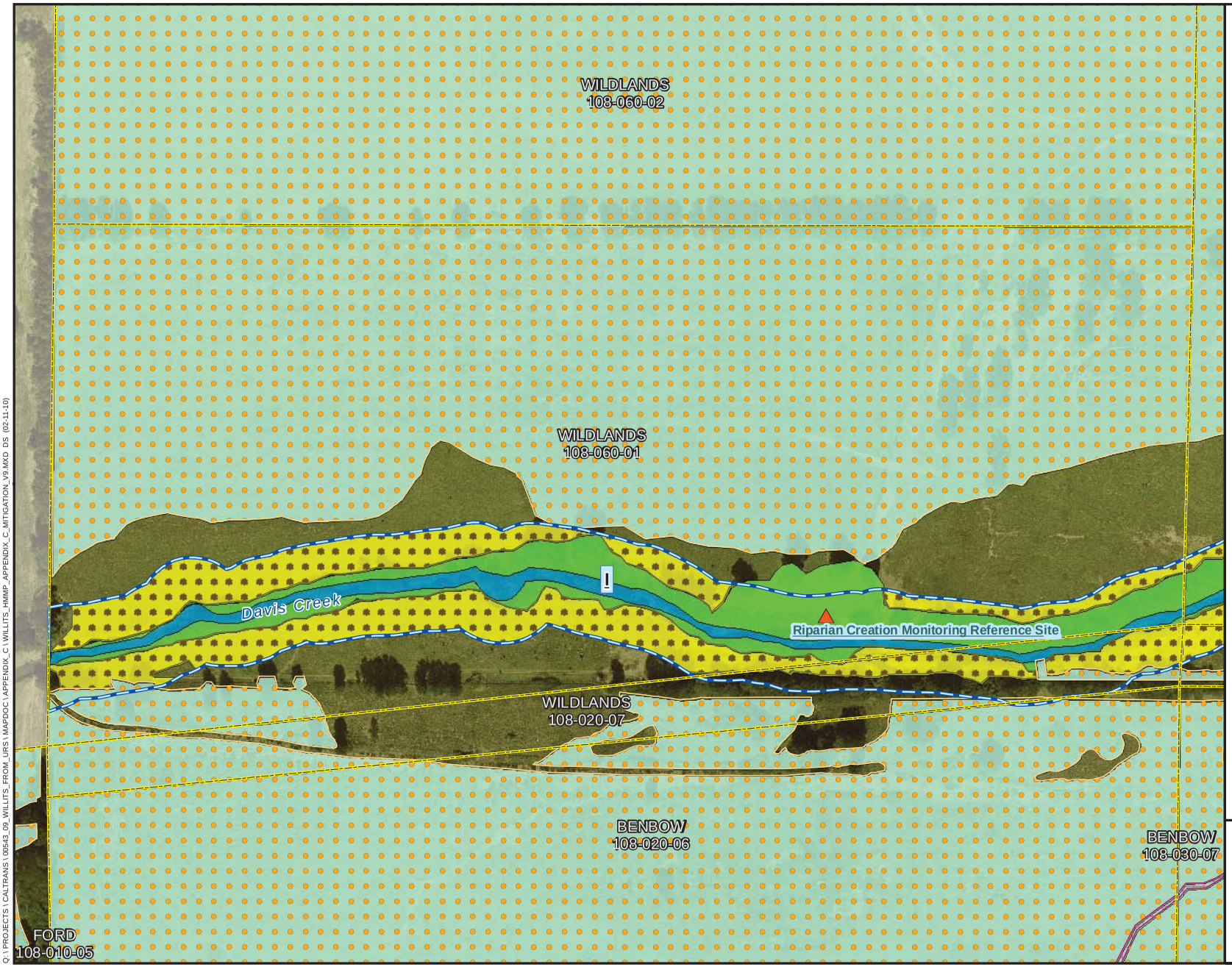

Offsite Mitigation Parcel

Habitat Mitigation Type
- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions
- Improve Hydrology (Grading)
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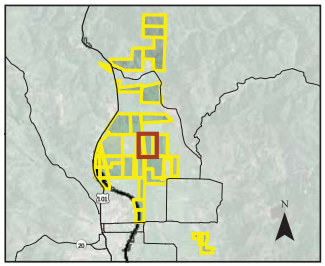
- Monitoring Reference Site

Riparian Corridors
- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint
- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-90
Mitigation Actions
Wildlands
APNs 108-060-01 & 108-020-07

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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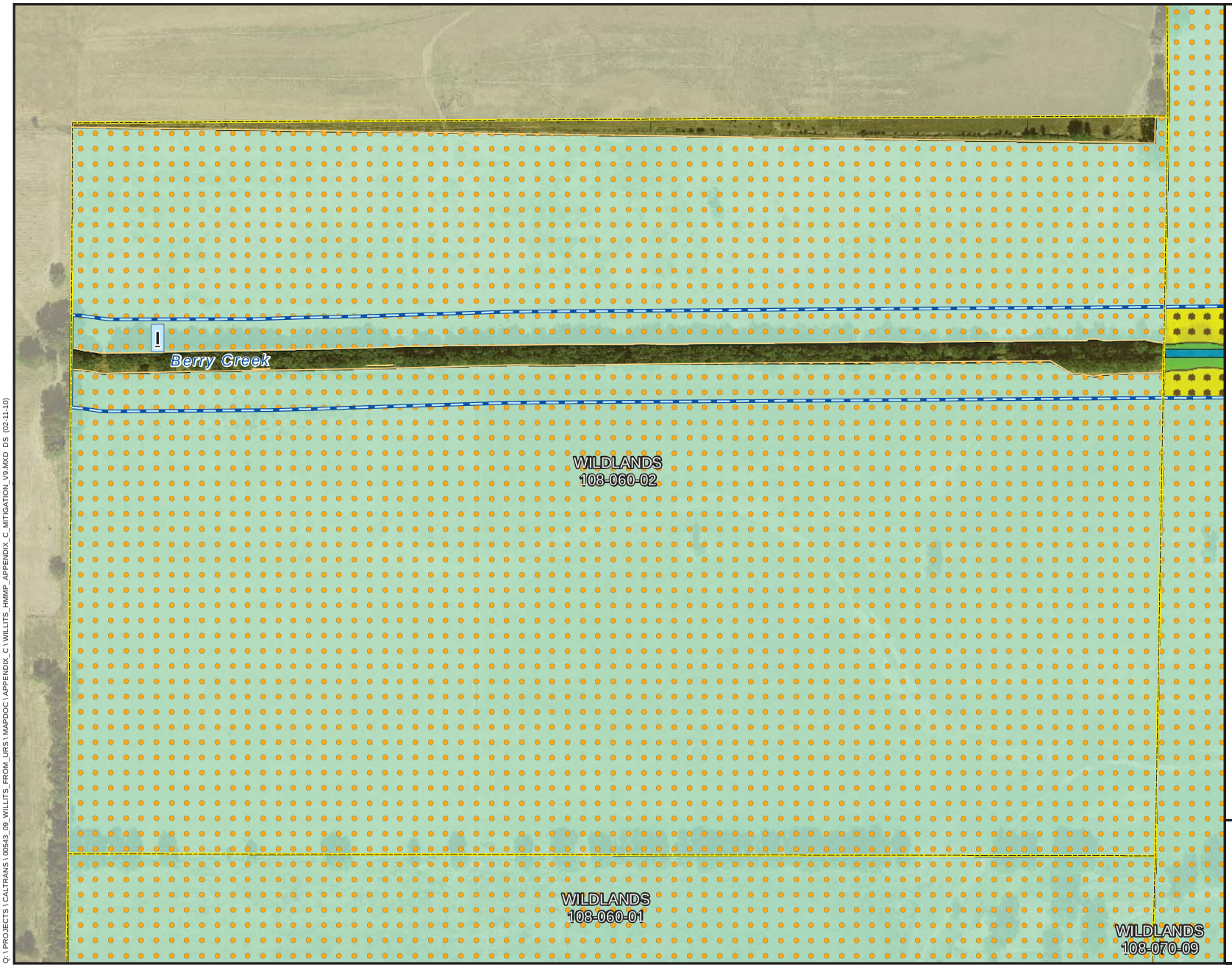

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

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- Monitoring Reference Site

Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N

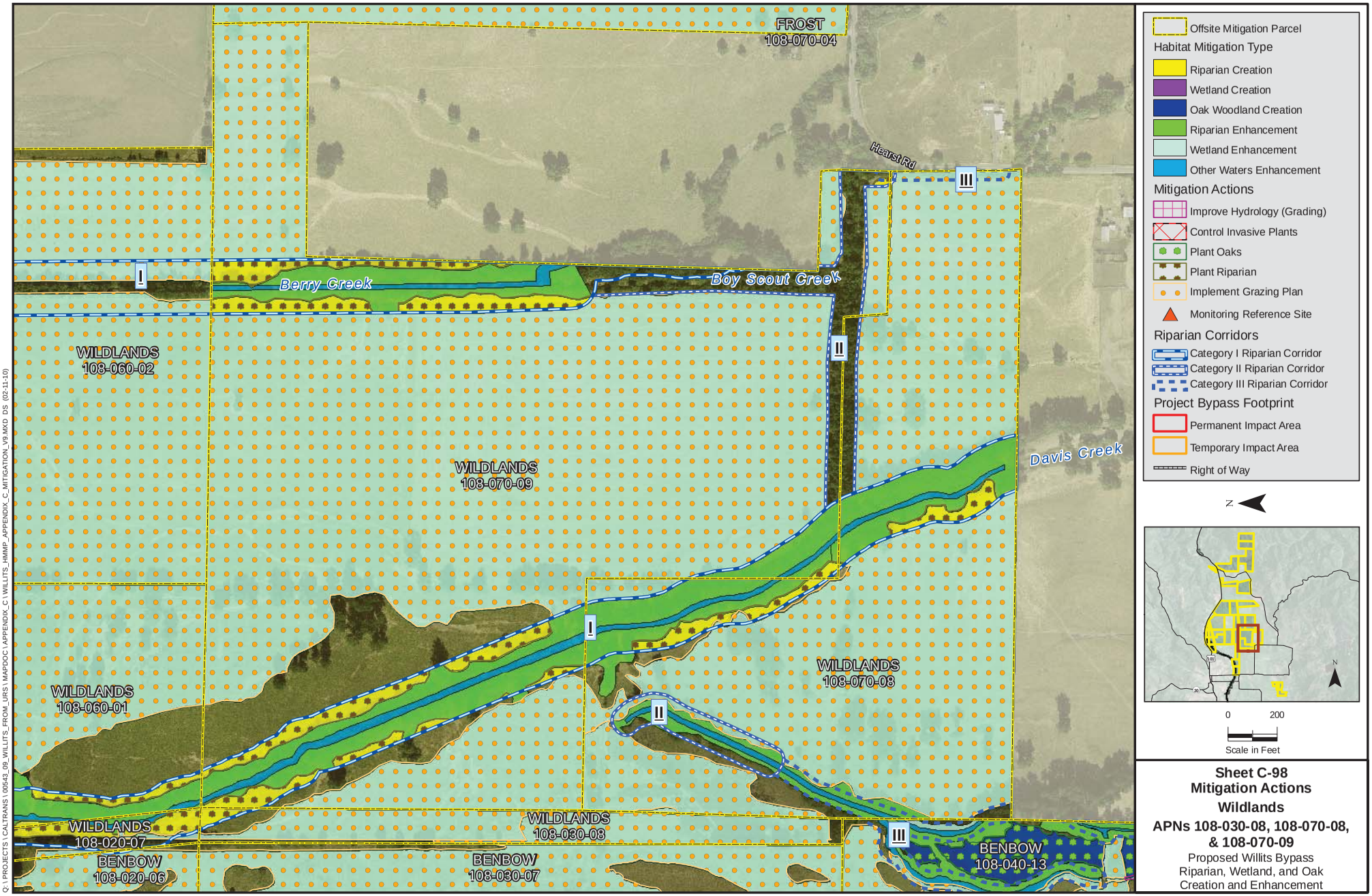
0 200

Scale in Feet

Sheet C-94
Mitigation Actions
Wildlands
APN 108-060-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS\ CALTRANS\ 00543_09_WILLITS_FROM_URS\ MAPDOC\ APPENDIX_C\ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Sheet C-98
Mitigation Actions
Wildlands
APNs 108-030-08, 108-070-08, & 108-070-09
Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS\ CALTRANS\ 00543_09_WILLITS_FROM_URS\ MAPDOC\ APPENDIX_C\ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

Attachment 1: Supplemental Information

Application for
Department of the Army Permit (33 CFR 325)
Clean Water Act Section 404
Attachment 1

Block 13: Name of Water Bodies

Jurisdictional Determinations

The U.S. Army Corps of Engineers (USACE) verified the U.S. Highway 101 Willits Bypass Project's (proposed project) delineation of waters of the United States on March 1, 2005 (File 194741N). This verification was for the Modified Alternative J1T Alignment study area. In January 2007 and April 2008, a request to amend the previously verified delineation was submitted to the USACE to include minor changes to the footprint of the proposed Haehl Creek interchange, the road alignment to the north, and the proposed borrow area at Oil Well Hill. The USACE confirmed the requested changes to the delineation on August 15, 2008 (File 191-19470N). In December 1, 2008, a request to verify a delineation was submitted to include the revision of the project footprint to avoid the expansion of the Willits wastewater treatment Plant (WWTP). The USACE provided a verification for this area on December 2, 2009. In addition to the delineations of waters of the United States associated with the bypass alignment, Caltrans also submitted delineations for various parcels that will be part of the project's mitigation plan. The USACE jurisdictional determinations are located in Attachment 3.

Name and Description of Affected Water Bodies

The project area includes numerous jurisdictional wetlands and other waters of the United States. Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks and their related tributaries and adjacent wetlands are considered waters of the United States given these waterways have connectivity to a traditional navigable water/territorial sea (Pacific Ocean). These waterways will be directly or indirectly affected by the bypass because they cross the bypass alignment as they convey water through the Little Lake Valley. Construction will also affect a number of smaller unnamed tributaries and ditches in the bypass area.

Wet meadows will be the most heavily affected jurisdictional waters, by area, within the bypass footprint**.** From south of East Hill Road to the second intersection with Haehl Creek, wet meadow, which includes some small vernal pool like features, is the dominant vegetation, occupying approximately 50% of the affected area. Wet meadows dominate the project area south of East Valley Road to the area north of Upp Creek, including the area near the Willits Wastewater Treatment Plant (WWTP). The Quail Meadows interchange at the northern end of the bypass will also affect wet meadows.

Marsh is the second-most widely affected wetland feature by area. A marsh area is located east of U.S. Highway 101 (U.S. 101) on the Brooke properties at the northern end of the bypass. A large area of riparian woodland is associated with this marsh area.

Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks are the major other waters of the United States affected by the bypass. All these creeks cross the bypass alignment as they convey water through Little Lake Valley. Construction will affect a number of smaller tributaries and ditches through the bypass area.

Block 15: Location of Project

The project will be located near the city limits of Willits in Mendocino County, California. The bypass will begin approximately 0.8 mile south the Haehl Overhead and end approximately 1.9 miles south of Reynolds Highway. The overall length of the bypass will be approximately 5.8 miles, starting near with post mile (PM)R43.1 and ending near R49.0 (Figure 1-1).

The optional proposed borrow site at Oil Well Hill is located on the east side of Highway 101 approximately 0.85-mile north of the intersection of Reynolds Highway and Highway 101.

Bypass Alignment

The proposed bypass will diverge from existing U.S. 101 at the Haehl Creek interchange and continue northwesterly on an embankment constructed with excess fill from a previous freeway project. The alignment would swing to the northeast and then travel back to the northwest, adjacent to the WWTP. Figures 1-2a to 1-2d illustrate the bypass alignment and locations of key project components. The purpose of the viaduct is to span regulatory floodway. Additional details regarding the viaduct are provided in the "Description of Specific Design Elements: section (Block 18) of this permit application attachment.

Bypass Vertical Alignment

The vertical alignment of the bypass will begin with a gentle downgrade at the south end of the project and proceed northwesterly from the existing freeway section to approximately 0.5 north mile of East Hill Road. From this point to the Quail Meadows interchange, the flat valley floor will allow grades that are nearly flat except at structure approaches and departures. Throughout the valley, the project lies in the 100-year floodplain elevation and the surface of the highway will be a 16.5-foot minimum clearance above the estimated 100-year floodwater surface elevation.

Location of Key Project Components (Approximate)

- **Haehl Creek interchange:** 39°22'28.48" N, 123°19'29.11" W; T18N, R13W, S32
- **Quail Meadows interchange:** 39°25'31.29" N, 123°21'10.33" W; T18N, R13W, S7
- **Viaduct structures:** 39°24'32.07" N, 123°20'21.36" W; T18N, R13W, S18

Block 18: Nature of Activity

The California Department of Transportation (Caltrans), in conjunction with the Federal Highway Administration (FHWA), proposes to construct a new segment of U.S. 101 that will bypass Willits in Mendocino County. The project will reduce delays, improve safety, and achieve a level of service (LOS) of "C" for interregional traffic on U.S. 101.

The FHWA is the federal lead agency under the National Environmental Policy Act (NEPA), with Caltrans acting as liaison and providing oversight for the NEPA process. Caltrans is the state lead agency under the California Environmental Quality Act (CEQA). A joint environmental impact statement/environmental impact report (EIS/EIR) has been prepared for the project.

The draft EIS/EIR was published in May 2002. According to regulations set forth in 23 Code of Federal Regulations (CFR) 771.129, a written evaluation of the draft EIS/EIR is required if the final EIS/EIR has not been submitted to the FHWA within 3 years of the date of the draft EIS/EIR circulation. Because 3 years have elapsed since circulation of the draft EIS/EIR, Caltrans submitted a written evaluation to the FHWA for review in April 2006. The purpose of this written evaluation was to determine whether it was necessary to circulate a new or supplemental EIS/EIR. Based on the information provided to the FHWA, it was determined that no new or supplemental EIS/EIR would be necessary for the project.

Caltrans approved the final EIS/EIR and filed a notice of determination on December 15, 2006. The FHWA approved the final NEPA document and filed a record of decision on December 18, 2006. A hard copy of the final EIS/EIR will be provided under separate cover. It can be also be viewed and downloaded at <http://www.dot.ca.gov/dist1/d1projects/willits/reports.feir.htm>. Copies of the record of decision and notice of determination are included as in the "Description of Specific Design Elements" section (Block of this permit application.

Background and Changes Since the Final EIS/EIR

Modified Alternative J1T (proposed project or bypass) was selected as the preferred alternative and evolved as a result of the NEPA/404 integration process. It was not specifically identified as an alternative in the draft EIS/EIR. Modified Alternative J1T shares similar project design elements of the J1T and LT alternatives discussed in the draft EIS/EIR and was proposed to further reduce community and environmental impacts.

Since publication of the final EIR/EIS in December 2006, Modified Alternative J1T has undergone several design revisions. The primary reasons for the design revisions were: 1) to avoid conflicts with the WWTP expansion project and 2) to accommodate phasing the construction of the bypass, as discussed below. Overall, the design revisions are relatively minor changes to Modified Alternative J1T as presented in the final EIR/EIS. The project remains a four-lane freeway bypass with several bridges spanning creeks and local roads, a viaduct spanning the regulatory floodway, and interchanges on either end of the bypass. The location and design elements of project revisions are described in more detail below.

Avoidance of the Willits Wastewater Treatment Plant Expansion Project

To avoid conflicts with the WWTP expansion project, the alignment was shifted slightly to the northeast around the WWTP using a triple compound curve instead of the single curve that was originally planned. The alignment returns nearly to the original alignment near the Northwestern Pacific Railroad (NWPRR) track crossing. The profile over the railroad has also been lowered, resulting in a significant reduction of the embankment footprint (and therefore a reduction in impacts on wetlands) between the end of the viaduct (Huffman/City of Willits property line) and the railroad crossing.

Phasing of Bypass Construction

Because of funding constraints, the decision was made to construct the bypass in two phases such that a functional interim two-lane facility will be constructed initially; when adequate funding becomes available in the future, the remaining lanes will be constructed to complete the four-lane bypass. The need to phase construction of the project has had design implications, resulting in the need to modify the Quail Meadows interchange. Phasing the construction of the original Quail Meadows interchange proved geometrically complex and wasteful of resources. Therefore, the interchange was shifted approximately 1,200 feet to the north and will be a two-lane interchange in Phase 1. In addition, a roundabout has been added to the west side of the interchange to connect two ramps to the local roads. An additional benefit of the roundabout is that an existing box culvert at Upp Creek can now be removed and, therefore, will allow for the restoration of this area. All crossings of Upp Creek, which were previously planned as box culverts, will now be bridges.

Although the project will be constructed in two phases, the ultimate project remains a four-lane freeway bypass. As funding allows during Phase 1, Caltrans intends to construct as much of the four-lane roadway embankment as possible to help facilitate the construction of Phase 2. The environmental study limits (ESL) and this Section 404 permit application encompass the full four-lane project area. Right-of-way purchased for the project will satisfy the requirements of the full four-lane project and will be access-controlled. Although only the two southbound lanes will be constructed initially in Phase 1, Caltrans will implement mitigation for the impacts of the ultimate four-lane project with implementation of Phase 1. The project description below discusses the ultimate four-lane facility.

Description of Specific Design Elements

Roadway Design

The proposed project is designed to accommodate the predicted interregional average annual daily traffic in 2028 at a LOS C or better. The bypass will be a four-lane freeway with a 45.3-foot median separating the northbound and southbound lanes. Each lane will be 12 feet wide. The inside shoulder width (nearest the median) will be 5 feet, while the outside shoulder width will be 10 feet. The freeway was designed for a maximum speed of 68 miles per hour (mph) and will meet the purpose of providing at least an LOS of C. Where local roads are to be improved or constructed, there will be two 12-foot lanes and shoulder width meeting local design standards.

Interchanges

Two interchanges will be constructed for the project. The Haehl Creek interchange will be located at the south end of the project near Haehl Creek and connect the existing highway into Willits with the new facility. The Quail Meadows interchange will be located near the north end of Little Lake Valley and connect the new facility to the existing highway north of Willits. Interchange ramps will be single-lane.

Bridges and Structures

The bypass will cross creeks, riparian corridors, streets, and railroad rights-of-way using 22 bridges. Three retaining walls will be built. The following structures will be constructed with this project:

- Six bridges in the Haehl Creek interchange area, one for each of the following:
  - Northbound freeway lanes separation over State Route (SR) 20
  - Southbound freeway lanes separation over SR 20
  - Southbound off-ramp over Haehl Creek
  - Northbound on-ramp over Haehl Creek
  - Northbound freeway lanes over Haehl Creek
  - Southbound freeway lanes over Haehl Creek
- Two retaining walls in the Haehl Creek interchange area adjacent to Haehl Creek:
  - East side of northbound lanes
  - West side of northbound on-ramp
- Two bridges to cross East Hill Road:
  - One bridge for the southbound roadway lanes (Phase 1)
  - One bridge for the northbound roadway lanes (Phase 2)
- Two bridges to cross the middle reach of Haehl Creek south of Shell Lane:
  - One bridge for the southbound roadway lanes (Phase 1)
  - One bridge for the northbound roadway lanes (Phase 2)
- One retaining wall on the west side of the southbound roadway lanes just south of Center Valley Road.
- Two viaduct structures to span the floodway:
  - Southbound (Phase 1)
  - Northbound (Phase 2)
- Two bridges to cross over the NWPRR tracks in the Quail Meadows interchange area, one for each of the following:
  - Southbound roadway lanes (Phase 1)
  - Northbound roadway lanes (Phase 2)

- Two bridges to cross the new connector road to existing U.S. 101 in the Quail Meadows interchange area
    - One for the southbound roadway lanes (Phase 1)
    - One for the northbound roadway lanes (Phase 2)
- Six bridges to cross Upp Creek directly north of the Quail Meadows interchange, one for each of the following:
    - Southbound roadway lanes (Phase 1)
    - Northbound roadway lanes (Phase 2)
    - Northbound on-ramp (Phase 1)
    - Northbound on-ramp (Phase 2)
    - Southbound off-ramp
    - Roundabout local intersection

    Note that the northbound on ramp bridge constructed in Phase 1 would be replaced in Phase 2 by a different bridge.

Viaduct

The proposed alignment encroaches upon the 100-year floodplain. The design includes two elevated structures, which make up the floodway viaduct. The purpose of this design feature is to span the floodway. The final floodplain evaluation report concludes that project will not increase the base flood elevation of the floodway, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q).

The viaduct s will be located in the central part of the project area and will span Center Valley Road, the lower reach of Haehl Creek just upstream of the confluence with Baechtel Creek, Hearst-Willits Road, Baechtel and Broaddus Creeks at their confluence (beginning of the Outlet Creek designation), the WWTP, and Mill Creek.

The approximately 6,000-foot-long structures will consist of a separate northbound and southbound elevated viaduct superstructure. The total area of both viaducts would be 11.6 acres. Each of the viaducts will be approximately 42.6 feet wide. The edge-to-edge distance between the structures will be approximately 31.2 feet, and each will have a 16.5-foot minimum clearance underneath. The viaducts will require supporting columns, ranging in size from 4.5 to 7 feet in diameter.

Reinforced Concrete Box Culverts

Three large reinforced concrete box (RCB) culverts will be built as part of the proposed project. The first RCB culvert will cross Haehl Creek near the Haehl Creek interchange to provide access to a ranch isolated by the new bypass; the second and third will cross under Center Valley Road, near Shuster's Trucking, and will mitigate floodplain impacts due to roadway embankment south of Center Valley Road.

The Haehl Creek culvert for the ranch access will be a natural bottom arch culvert or a partially buried box culvert. The two culverts crossing Center Valley Road will be concrete boxes and will use turf reinforcement mats in lieu of rock slope protection (RSP) at the inlets and outlets where feasible.

Retaining Walls

Three concrete retaining walls will be constructed: two at the Haehl Creek interchange, and one just before the south end of the viaduct near Baechtel Creek. One of the Haehl Creek interchange walls will be located along the west side of the northbound on-ramp. The other will be located along the east side of the northbound lanes between the separation structure over SR 20 and the Haehl Creek bridge. The third retaining wall, near Baechtel Creek, will prevent potential undermining of the roadway embankment to be undermined by Baechtel Creek.

Excavation (Cut), Embankment (Fill), and Imported Borrow

The estimated embankment requirement for Phase 1 of the proposed project is approximately 1.4 million cubic yards. Because all soil excavated on-site will be reused as embankment, no disposal sites will be required for the project. Beginning just north of the Haehl Creek interchange to the south abutment of the viaduct, and from the north abutment of the viaduct to the terminus of the project, the alignment will be constructed largely on embankment (created using excavated soil and imported fill material). Cut slopes will generally vary between a 1:2 (vertical: horizontal) and 1:2.5 ratio. Fill slopes will vary between a 1:2 and 1:4 ratio. The plans will call for slope rounding at appropriate locations.

The bypass will require imported borrow material from outside the project area in addition to material excavated on-site. The construction contractor will have the option to determine whether the source of material for earthwork fill will be a Caltrans-designated borrow site (at Oil Well Hill), a commercial borrow site, or another site.

Caltrans has designated the borrow site at Oil Well Hill, just north of Little Lake Valley, as an optional source of material that the contractor may use for the project. The material in this area is good-quality and suitable for use in embankment construction. The right-of-way for U.S. 101 at the designated borrow site is sufficient to provide the necessary embankment material for earthwork. Potential excavation at the proposed designated borrow site at Oil Well Hill could result in the removal of up to 1.3 million cubic yards of material. The State Geology and Mining Board granted an exception to the Surface Mining and Reclamation Act (SMARA) permitting requirement on March 13, 2008.

The contractor may also choose to use available commercial borrow sites in the vicinity to obtain the required fill. Typically, commercial borrow sites hold pre-approved operating permits and do not require any additional environmental permitting when soil is exported. Should the contractor select an alternative, non-commercial borrow site for this project, the contractor will be responsible for conducting a separate environmental review for the site.

Fish Passage

One existing culvert in the upper Haehl Creek channel, located under the proposed highway bridge 10-0129R/L, will be permanently removed and restored as a natural drainage feature. A second existing culvert in upper Haehl Creek will be replaced and the area restored during improvement of the proposed new Schmidbauer Ranch access road. An existing RCB culvert in the vicinity of the proposed Quail Meadows interchange and passing under US 101 will be permanently removed and the creek contoured, re-graded, stabilized, and replanted; local traffic will cross Upp Creek on the new bridge that will be on the north leg of the roundabout.

Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) will consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements will comply with guidelines established by National Marine Fisheries Service (NMFS) and California Department of Fish and Game (CDFG).

An existing access road to the Schmidbauer Ranch will be improved. This access will be from the east side of the southern interchange. The existing culvert in upper Haehl Creek will be replaced with a natural bottom arch or box culvert. The culvert replacement will occur during summer, when this reach of Haehl Creek is normally dry. However, flows through the existing culvert have created an outfall pool that can retain water throughout the year. If water is present, a qualified fisheries biologist will survey the pool for the presence of salmonids. If present, the fish will be removed and relocated before removal and replacement of the culvert.

Landscaping

Disturbed upland areas such as the cut and fill slopes adjacent to the roadway and along interchange ramps, as well as the median between the inside roadway shoulders, will be revegetated with plants native to Little Lake Valley. For drivers' safety and in compliance with Caltrans design standards, no trees will be planted within the clear recovery zone where errant vehicles could hit them. Only soft shrubby and herbaceous native species may be planted in these areas to prevent abrupt slowing, redirection, or launching of stray vehicles.

Temporarily impacted areas will be revegetated to their pre-construction plant community type. They will be seeded and planted with plants native to Little Lake Valley.

Lighting

Highway lighting will be provided at both the Haehl Creek and Quail Meadows interchanges. No lighting will be provided along the viaduct.

Fencing

Fencing will be erected along the Caltrans right-of-way where appropriate.

Stream Bank Stabilization

To prevent bank erosion and damage to the bypass facilities, RSP will be required along short lengths of creek banks. The use of RSP will be minimized through the substitution of "Rolled Erosion Control Product" (RECP; netting) or "Turf reinforcement Mat" (TRM) in appropriate locations.

At locations where Haehl and Upp Creeks pass through the right-of-way, the stream channel will be contoured, re-graded, and designed for fish passage following the guidelines set forth by NMFS and CDFG.

Mitigation Construction

Bypass construction will result in temporary and permanent impacts on riparian and wetland habitat and permanent impacts on other waters and oak habitat. Temporary impacts on riparian and wetland habitat will be mitigated on site through the use of restoration techniques. Permanent impacts on riparian and wetland habitat will be mitigated off site through the use of creation, enhancement, and/or preservation techniques.

On site mitigation implementation will focus primarily on restoring temporarily affected riparian and wetland habitat within the bypass project footprint. In addition, on site minimization efforts related to state-listed plant species (e.g., seed collection, and topsoil harvesting and stockpiling) will be required. On site mitigation actions with the potential to result in impacts on wetlands, other waters, riparian habitat, listed plant species and/or listed fish will entail the following activities, and are summarized below (a full description of proposed mitigation actions is presented in the MMP):

- **Site Preparation**. Site preparation of on site mitigation sites will entail vegetation clearing and seed, rhizome, and topsoil salvaging. Vegetation clearing will be conducted within the bypass project footprint and will entail the use of heavy equipment to strip the existing vegetation. Prior to the beginning of ground-disturbing project construction activities, known populations of listed plant species to be affected by construction either will be salvaged for transportation to adjacent on site locations or salvaged for relocation to offsite mitigation parcels, where the harvested material will be used to topdress created wetlands.

- **Grading**. Temporarily affected locations will be graded as necessary to reestablish appropriate topography and site drainage. The disturbed locations will be configured to replicated preproject conditions as closely as possible. Grading will be limited to the dry season (late spring through early fall). Erosion control seed mixes will be applied after grading is complete but prior to the onset of wet season rains to prevent loosened material/sediment from entering wetlands or waters near the bypass project footprint.

- **Seeding**. Temporarily affected riparian and wetland locations will be seeded with an erosion control mix or a wetland seed mix, depending on location in the bypass project footprint. The seed will be from locally collected seed or plants (i.e., within Little Lake Valley). All temporarily affected riparian locations and wetland locations outside the viaduct construction area will be seeded with an erosion control mix. Temporarily affected wetlands in the viaduct construction area will be seeded with a wet meadow seed mix.

- **Planting**. Temporarily affected riparian and wetland locations in the viaduct construction area will be restored using container stock grown from locally collected seed or cuttings (i.e., in Little Lake Valley). Container plants will be placed in a planting hole that will be hand excavated or augured.

Mitigation on individual offsite mitigation parcels may include a combination of habitat restoration, creation, enhancement, and/or preservation. Off site mitigation actions with the potential to result in impacts on wetlands, other waters, riparian habitat, listed plant species and/or listed fish will entail similar ground-disturbing activities (e.g., site preparation, grading, seeding, and planting) as those described above for on site mitigation areas. In addition, grazing management plans will be developed for each of the off site mitigation parcels. The plans will include strategies to promote the establishment and preservation of target wetland communities and associated plant species and to support and potentially increase the extent of currently occurring listed plant species. Enhancement actions for each parcel may include repairing and replacing existing fences and gates to control livestock; developing and implementing rotational grazing strategies to promote the establishment and preservation of target liste plant species and wetland communities; installing permanent and/or temporary exclusion fencing around sensitive areas; installing water troughs in each grazing management unit to spread grazing across the entire unit; and locating salt licks away from drainages and areas to be protected.

Utility Relocation

The relocation of overhead and underground utilities will be required to construct the Willits Bypass. Utility relocation activities are proposed at the following locations:

1. An access easement on the Schmidbauer property (104-090-03, 104-100-03, and 104-120-02) will be primarily used to access future aerial electrical utilities for both installation and maintenance purposes. The route occurs along an existing unpaved driveway and then links up to a permanent overhead easement that will be located adjacent to the new freeway R/W. Activities will include truck traffic and the installation of 18–inch diameter holes approximately every 400 feet. Following installation of poles, occasional truck traffic will occur for maintenance purposes. Temporary access will also occur along a paved road and will be necessary for topping and removing poles.
2. An access easement on the Margie Lee Handley property (103-150-10 and 007-160-18) will be used primarily to access existing aerial utilities and adjust height profile (PG&E) or to relocate underground utilities for AT&T. Activities include truck traffic and trenching and backfill operations related to relocating the AT&T utilities. Trenching depths typically are limited to 4 feet.
3. An access easement located on the Mickey (007-100-08), Rutledge (007-100-09) and Harwood (007-050-04) parcels will be used to access existing aerials for the purpose of relocating them to higher elevations along the current alignment. Activities include truck traffic, pole removal and pole installation.

4. A temporary access on the Gilstrap property (007-040-10, 007-040-09 and 007-040-08) is needed to remove service poles and relocate poles within a permanent easement to the south of Center Valley Road. Activities include truck traffic and holes drilled approximately every 250 feet. On the north side of Center Valley Road, a combination of permanent overhead and underground easements are required. Activities will include track traffic and trenching operations.
5. Permanent easements both north and south of Hearst–Willits Road are needed for relocating aerial utilities underground along existing alignments. Activities will include track traffic mainly along the paved road and trenching operations.
6. In and around the vicinity of the northern roundabout (Quail Meadows interchange) temporary easements are needed to top and remove poles. Activities include short duration truck traffic.
7. Along the north end of the project mainline, temporary easements for pole removal are needed. Activities will include removing and installing poles and short duration truck traffic. Permanent aerial easements are required for installation access and occasional maintenance. Activities include truck traffic and the installation of 18–inch diameter holes approximately every 300 feet. Permanent underground easement activities include truck traffic and trenching operations.

Description of Specific Construction Elements

Roadway Construction

Staging Areas

The first phase of construction is the establishment of staging areas. Three staging areas are proposed, located in the south-central, central, and northern portions of the project corridor. The south-central staging area is located on state-owned property (Assessor's Parcel Number [APN] 007-100-08). The central staging area is state-owned property (APN 007-040-09) located south of East Valley Street, east of the south abutment of the floodway viaduct, and west of Haehl Creek. The northern staging area is located on state-owned property (APN 108-040-02) east of existing U.S. 101, west of the Quail Meadows interchange, and south of the roundabout. In addition to the staging areas described, the contractor will have use of right-of-way not being actively used for highway purposes., except for those environmentally sensitive areas to be protected by temporary orange fencing, designated as TFESA on the construction plans enclosed with this permit application.

The staging areas will be used by the contractor to store equipment and materials and will provide the contractor easy access to the project corridor. Access roads from the staging areas to the project corridor will be constructed where necessary. It is anticipated that work will begin at several areas at the same time. Where staging areas are located adjacent to salmon-bearing creeks, a sufficient buffer will be maintained along with appropriate best management practices (BMPs) to ensure that no untreated storm runoff from these areas enters natural drainages. No riparian vegetation will be removed within the staging areas.

Access Roads

The construction of the bypass would require new access roads through some private properties near the project area. These private access roads would need to accommodate hay trucks, fire trucks, and other equipment. Roadway width for private access roads will be approximately 24 feet to allow for a two-lane roadway with no shoulders. It may be possible to reduce this width to about 20 feet; however, the design will need to conform to the Caltrans right-of-way requirement to "replace in kind or better" and be constructed to meet the California Department of Forestry's Fire Safe road standards as required by Mendocino County. Haul trucks delivering imported borrow from the Oil Well Site will utilize a haul road to reach the south end of the project area. The temporary haul road will begin near the Quail Meadows interchange and will be constructed adjacent to the floodway viaduct. The haul road will be removed after construction of the viaduct is complete and the footprint of the haul road has been restored to pre-construction condition.

Imported Borrow

Before the construction of the embankments, all environmentally sensitive areas will be fenced to prevent encroachment from the contractor's operations.

The proposed project will be constructed largely on fill material imported to the site. The bypass requires approximately 2.5 million cubic yards of fill (1.4 million cubic yards in Phase 1). The construction contractor will determine the source of material for earthwork.

Caltrans has designated a borrow site in the project area as a possible source of material that the contractor may use for the project. The site is located at Oil Well Hill, just north of Little Lake Valley and the U.S. 101 bridge over Outlet Creek. Material from the Oil Well Hill site could be transported to the project corridor by trucks, via U.S 101. Once the haul trucks reach the project site near the Quail Meadows interchange, they may travel on a haul road constructed within the ultimate roadway footprint.

Caltrans has prepared a site-specific reclamation plan that requires the borrow site be excavated by cutting the hillside back beginning at the toe and excavating back toward the top of the hill, creating a "cut slope." Prior to hillside excavation, all topsoil and duff will be harvested and stockpiled for reapplication on excavated areas. Once use of the borrow site is finished, cut slopes will be contour graded and stockpiled topsoil and duff will be reapplied. Soil will be amended with organic slow release fertilizer and compost as necessary. Cut slopes will be planted with native plants, propagated from local source material, to stabilize slopes and prevent erosion, and to protect water quality.

Wick Drains

Before any bridge or viaduct abutments can be constructed, the embankment for the abutments must settle. The estimated settling period ranges from 30 days to as long as 10 years. To accelerate the settling period, wick drains will be used.

Wick drains are vertical drains that provide an escape path for groundwater. The groundwater usually drains to a subsurface permeable layer, but some groundwater may reach the surface. Each drain is driven into the ground, and the surface ends of all the drains are connected with a strip drain that drains into a small catch basin. Any groundwater effluent collected in the catch basins will be pumped into holding tanks for disposal or used on the project for dust control.

Beginning with the north abutment of the floodway viaduct and continuing through the north abutments of the Upp Creek bridges, wick drains will be installed before the placement of embankment. Wick drains will be used for both the roadway embankment and the abutments.

Drainage

Highway drainage will be collected from the new impervious surfaces through the use of curbs and dikes, over-side drains, drop inlets, and culverts. This runoff is routed to detention basins, then treated and discharged.

Natural flows passing through the right-of-way that existed before the project will continue to flow through the right-of-way. Temporary cross culverts will be placed where they pass though embankments requiring settling periods. After the fill prism has finished settling, the permanent culvert will be jacked and bored through the embankment.

Pavement Construction

Pavement construction for the project consists primarily of placing and compacting layers of pavement materials consisting of aggregate base (AB), hot mix asphalt (HMA), and hot mix asphalt (open graded). The pavement will be placed sometime toward the end of construction, after all embankments have settled and structures have been completed. Aggregate for both the AB and HMA layers will most likely be obtained from a commercial rock quarry located near Ridgewood Grade south of Willits. The contractor may choose to construct a temporary HMA batch plant on-site to minimize haul time. The batch plant may be located on a property located south of East Valley Street, west of Haehl Creek.

Structures Construction

General Discussion

The permanent bridges will consist of separate southbound and northbound structures. Bridge sites will be cleared of vegetation before construction for a distance of approximately 75 feet upstream and 75 feet downstream of the structures. Removal of vegetation below the top of banks is required to provide access for large equipment, but will be minimized to the extent possible to maintain bank slope stability and to provide some shade for salmonids.

Bridge construction will begin with the approach fills, where necessary, followed by construction of the abutments. The abutment work will include excavation for the footings, pile driving or drilling for the foundations, formwork for concrete placement, steel reinforcement bar placement, concrete pouring, finishing, and curing. Each of the permanent bridge abutments may require 20 or more H piles, which will be placed by pile drivers, at or near the top of bank. After the concrete for the abutments has cured, the forms will be removed and construction of the superstructure falsework will begin. The temporary falsework will be constructed during the low-flow work window[1]. Falsework supports may consist of hollow steel pipe piles, H piles, or timber pads. Installation of these supports may require pile driving. The permanent bridge superstructure forms will then be erected and the concrete poured, finished, and cured. After the concrete has set and strengthened, the falsework will be removed, and other work, including bridge rail and approach work, will be completed.

The use of temporary culverts for construction of the viaduct and bridges crossing salmonid-bearing streams is not anticipated. If dewatering is required at any of these stream crossings, cofferdams may be constructed in the channel.

Erosion protection will be required on disturbed slopes where new stream crossings are constructed. RSP will be required where scour potential is higher: on the banks of upper Haehl Creek; at the southbound off-ramp; and for the northbound on-ramp (on both banks). RSP will also be required on the south bank at the highway crossing over the middle reach of Haehl Creek, south of Shell Lane.

Floodway Viaduct

The floodway viaduct has 32 two-column supports (bents[2]), which require the installation of two footings each. Each footing measures approximately 16 feet by 16 feet and requires eight or nine 2-foot-diameter steel pipe piles. The floodway viaduct bents will require 240-inch hollow steel pipe piles, typically with nine piles per footing or column. The installation of the columns and deck construction will require a 100-foot-wide work area on the east side of the viaduct, and a 55-foot-wide work area on the west side of the viaduct. Access will also be required underneath the viaduct structure. The larger work area on the east side of the viaduct is required for access by large cranes and other equipment. Constraining the work area to 55 feet on the west side of the viaduct will serve to minimize loss of riparian habitat along Baechtel Creek. The temporary work areas will be used for vehicle access and for storage of equipment and materials, as well as foundation, column, and falsework erection and removal. Permanent fill in the floodplain will be limited to the total surface area encompassed by the column footings (i.e., approximately 1% of the area under the viaduct). Each viaduct structure will be constructed in sections of several spans each; as soon as one section is complete, work will start on the next section.

Construction of the viaduct over lower Haehl Creek will require removal of vegetation for a distance of 100 feet upstream and 55 feet downstream of the viaduct overcrossings.

[1] The low-flow work window is typically the period from April 15th through October 30th; however, Caltrans is requesting that work be allowed outside of this period given favorable weather conditions.

[2] A bent is a substructure unit supporting each end of a bridge span (also called a pier) made up of two or more columns or column-like members connected at their topmost ends by a cap, strut, or other member holding them in their correct position.

The viaduct crossing over Baechtel and Broaddus Creeks will require the removal of vegetation for a distance of 100 feet downstream and 55 feet upstream of the viaduct structures. The top of the footing will be 8 feet below the bottom of the creek. This may require RSP that will be located on both banks under the structures and for a maximum distance of 25 feet upstream and 25 feet downstream of the structures. Placement of the RSP will require a toe trench below the ordinary high water mark (OHWM).

The viaduct crossing over Mill Creek will require vegetation removal only, for a distance of 100 feet downstream and 50 feet upstream of the structure. Piles could be located within 10 to 50 feet of top of bank, and RSP will not be required.

Depending on the time of year each footing is constructed, groundwater may be encountered during the excavation of the footings, requiring dewatering.

Dewatering

A single bent (two columns) will be constructed at the confluence of Baechtel and Broaddus Creeks ("Bent 24"). Dewatering will be necessary for installation. This will include the installation of a cofferdam for concrete footing construction, as described in the 2005 BA (Attachment E).

Installation of permanent and temporary piles during project construction may require stream dewatering. At each of the nine stream crossings, the maximum distance that streams will need to be dewatered at each site where piles are driven into creek channels will be 230 feet (70 meters).

The project will require that temporary H piles be driven into creek beds to support trestles associated with haul roads and falsework construction. Temporary piles may be driven in the creek bed at the middle and lower Haehl Creek, Baechtel Creek, Broaddus Creek, and Mill Creek crossings. Vibratory driving and proofing of temporary piles also may occur within the creek bed at Upp Creek; however, the Upp Creek channel is expected to be dry when pile-driving activities are initiated. Driving of temporary piles in creek beds may require that streams be dewatered 62 feet (19 meters) upstream and downstream of piles, based on results of sound level analyses undertaken for salmonid impact assessment. Because the actual distance that may need to be dewatered will vary with summer flow conditions at the time that pile driving is occurring, and the stream length requiring dewatering associated with driving of permanent piles will be reduced, it is not possible to accurately predict the total additional length of stream that may need to be dewatered during project construction. For stream segments requiring dewatering, cofferdams will be installed and water diverted through appropriately sized pipes. The cofferdams may be constructed with impermeable liners placed over clean, (i.e., washed) commercially available river gravel (i.e., rounded, not angular), ranging in size from approximately 1 to 3 inches (2.5 to 7.5 centimeters), or with sandbags, water filled rubber bladders, or other similar devices. Upon completion of construction at each crossing, material used for the cofferdams and water diversion will be removed from the channel and any imported washed river gravel will be spread over the channel..

The floodway viaduct has 32 two-column supports (bents) that require the installation of two footings each. Each footing is approximately 16 feet by 16 feet (4.88 meters by 4.88 meters) and encapsulates either eight or nine 2-foot-diameter steel pipe piles. Groundwater may be encountered and de-watering may be required during the excavation of footings for the viaduct structures depending on the time of year each footing is constructed.

Disposal methods may include pumping into holding tanks for site reuse and as a water source for use in construction activities in embankment construction or dust control, discharge into ground (upland) infiltration, discharge into receiving waters, or off-site disposal, as determined by the Contractor. Water that has come into contact with concrete must be pumped out of the cofferdam or other impoundment areas and disposed of outside the channel and away from the stream zone or any wetland area and in conformance with the North Coast RWQCB regulations.

Retaining Walls

To construct the retaining walls, some riparian vegetation will be removed and later replaced. A portion of these walls will require RSP. The RSP will be re-vegetated using a native seed mix for the establishment of riparian habitat and is included in the fish passage design. The wall foundation will require the installation of H piles by pile driving.

Concrete Batch Plant

The contractor may choose to minimize haul time by constructing a temporary Portland cement concrete plant near the project site. One possible site for a batch plant is state-owned property located south of East Valley Street, east of the south abutment of the floodway viaduct and west of Haehl Creek (APN 007-040-09). If a different location is selected, the contractor will be responsible for the environmental compliance associated with the establishment a batch plant.

Temporary Stream Crossings

Ten temporary bridges may be required to access portions of the project site at the initial stages of construction. The type and location of the temporary bridges would be determined by the contractor. Each temporary bridge would likely consist of a Bailey Bridge, railroad flatcar, or similar type of structure. Information on Bailey Bridges can be found at <http://www.baileybridge.com>[3]. Many of the crossings are too wide for a single structure and will require temporary trestle piles to support the spans . Once these temporary bridges are installed, the temporary piles and bridges will remain in place throughout the entire Phase 1 4-year construction period. There are projected to be 40 temporary H piles for trestle bents. The trestle crossings that will require installation of piles within the creek channels include:

- lower Haehl Creek (one bent consisting of five piles total),
- middle Haehl Creek (four bents consisting of 20 piles total),
- Baechtel Creek (two bents consisting of 10 piles total), and
- Mill Creek (one bent consisting of five piles total).

[3] Bailey bridges are built on site from a pre-engineered system of ready-to-assemble components. Utilizing standardized prefabricated components, Bailey bridges can be built to match a wide range of vehicular bridging applications.

Temporary bridges will be located where minimal removal of vegetation is be neccessary. Where riparian vegetation is present, placement of these bridges will require removal of vegetation for a distance of 10 feet on both sides of the structure. The bridges will be installed during the low-flow season, usually June 15 through October 15. All areas of disturbed soil will be stabilized at the end of each season through implementation of BMPs in the storm water pollution prevention plan (SWPPP) and National Pollutant Discharge Elimination System (NPDES) permit.

Pile Driving

Driven piles will support the bridge abutments, columns, and retaining walls, and will be used to support the temporary falsework. All the bridge abutments will be located above the top of the bank except for Bent 24, which will require 18 pipe piles within the OHWM of the confluence of Baechtel, Broaddus, and Outlet Creeks. All other proposed piles will be located below the tops of the stream banks but not within the OHWM.

The selected Caltrans contractors will use pre-formed concrete pads or timber-grade beams set on the earth, or driven piles to support falsework. Generally, when contractors use piles to support the falsework, the piles are relatively small (about 15 inches or smaller in diameter) or equivalently sized H piles.

Block 19: Project Purpose

U.S. 101 is an important route for interstate and interregional travel and is considered the economic lifeline of California's North Coast. It is the principal arterial route for people and goods between the San Francisco Bay Area and the greater Eureka/Arcata area. Travel times and costs of transporting goods to and from the communities along U.S. 101 are high. Travel times and transportation costs are exacerbated by congestion-related delays, such as those at Willits, where U.S. 101 passes through developed areas on surface streets.

Because U.S. 101 also serves as Main Street in Willits and is the only continuous north-south street through the city, U.S. 101 must accommodate nearly all local traffic traversing Willits as well as interregional traffic. Traffic congestion has been a concern in Willits for a number of years, and it is becoming worse as traffic volumes increase. The proposed project is needed to correct a number of deficiencies that exist on the current highway.

As a solution to these traffic problems, Caltrans and the FHWA propose to construct a new segment of U.S. 101 that will bypass Willits to reduce delays, improve safety, and achieve a minimum LOS of C for interregional traffic on U.S. 101 within the project area though a 20-year design period.

As a byproduct of the proposed project, the following benefits will occur:

- Improved traffic safety on Main Street in Willits.
- Reduced noise and vibration experienced by nearby homes, businesses, schools, and other community facilities in Willits due to interregional commercial truck and other through traffic.
- Improved conditions for bicyclists and pedestrians, as well as less mobile groups such as the young, disabled, and elderly. Removing interregional traffic from Willits will improve the existing conditions for bicyclists and pedestrians, provide new opportunities for non-motorized circulation improvements, and enhance the friendly small-town character of Willits.
- Improved conditions for local residents who use Main Street for routine trips to workplaces, shops, and schools. Removal of interregional traffic from Main Street will reduce congestion for local traffic.

Block 20: Reasons for Discharge

Implementation of the proposed project will require temporary and permanent fill of wetlands or other waters of the United States. The reason for the proposed fill is to allow construction activities associated with the project, as well as proposed mitigation for the project. Project components and activities that will result in the discharge of fill material into waters of the United States include the following:

- Bridges and retaining walls
- Roadway construction (e.g., bypass and on- and off-ramps)
- Haehl Creek interchange
- Quail Creek interchange
- Viaduct structures
- RCB culverts
- Excavation and construction of embankment
- Creek stabilization (e.g., RSP, TRM, RECP)
- Pile driving for bridge abutments, columns, and retaining walls
- Temporary access routes, haul roads, and stream crossings
- Creek re-alignment, restoration, and enhancement activities
- Wetland creation

Block 21: Types of Material Being Discharged and Amount of Each Type in Cubic Yards

The proposed project will affect 5.50 acres of "other waters" of the United States (streams, ditches, and ponds) by placing approximately 13,745. 79 cubic yards of fill along 10,608.45 linear feet (LF) of "other waters" of the United States " during project construction and mitigation activities. The fills include 8306.39 cubic yards of permanent fill along 8047.10 LF of other waters" of the United States and 5439.40 cubic yards of temporary fill along 2561.35 LF of other waters" of the United States. The surface area (in acres) of "other waters" of the United States are summarized in Table 2 below. Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 1, below, lists the volume (temporary and permanent) and types of fill material that will be discharged to "other waters" of the United States as a result of the proposed project. Maps depicting impacted wetlands and "other waters" of the United States" are included in Appendix A and Appendix B of this permit application.

Table 1: Willits Bypass "Other Waters" of the US - Locations of features

Map Sheet	LF Perm	LF Temp	Feature Type	Comment/Location	Fill Volume Perm	Fill Volume Temp	Fill Type	Roadway Work	Structure Work
					(cu-yards)	(cu-yards)			
B-04	400.8	0	EPH	South of haehl Interchange, parallels west side of 101	9.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), Rock Slope Protection (RSP), RSP Fabric	Roadway fill, roadside ditch, Drainage System No. 5 (STA "A" 102+43.645) & Drainage Basin No. 1 (STA "A" 102+61.854)	
B-04	155.3	0	EPH	South of haehl Interchange, on east side of 101 (across from FID 0)	14.7	0	Imported borrow (fill), concrete (DI), Alternative Pipe Culvert (APC), Alternative Flared End Section (AFES), RSP, RSP Fabric	Roadway fill & Drainage System No. 6 (STA "A" 102+67.835)	

B-06	605.5	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101	8.7	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 13 (STA "U1" 106+30.000) & 14 (STA "U1" 105+50.000)	
B-08	309.3	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101, east of FID 4	3.1	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), Concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 8 (STA "H" 97+61.686)	
B-08*	8.6	3.4	EPH	Trib To Haehl Creek from Roadway Ditch culvert, north side of hwy 101	0.2	0.1	Import borrow (fill)	Roadway fill Drainage System No. 9 (STA "H" 97+96.641)	
B-06	144.9	0	EPH	Trib To Haehl Creek, north side of hwy 101	4.1	0	Cut	Roadway excavation, Begin STA "H" 99+13.723 - End STA "H" 99+32.816 & Drainage System No. 11 ("H" 99+31.464)	
B-06	99.5	0	EPH	Trib To Haehl Creek, north side of hwy 101. extension of FID 7	3.4	0	Import borrow (fill)	Roadway fill, Begin STA "A" 106+77.199 - End STA "A" 106+97.700	
B-06	96.4	3.4	EPH	Trib To Haehl Creek, conflunecing with Haehl Cr from NE	80.5	2.8	Import borrow (fill), roadway excavation, concrete (headwall), APC, RSP, RSP Fabric	Roadway fill, roadway excavation, Drainage System No. 18 (STA "U4" 106+35.000)	
B-06	577.6	0	EPH	Trib To Haehl Creek, parallels dirt road on north side of hwy 101	71.2	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (bridge abutment), RSP, RSP Fabric, Turf Reinforcement Mat (TRM)	Roadway fill, Begin STA "A" 105+35.903 - End STA "A" 107+46.190	
B-12	1006.6	0	EPH	On NE side of J1T align, NW of haehl interchange, “Schmidbauer”	362.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 30 ("A" 110+71.840)	

B-12	12.6	12.6	EPH	On Nw side of J1T align, NW of haehl interchange	3.2	3.2	Imported borrow (fill), APC, AFES, RSP, RSP Fabric	Roadway fill & Drainage System No. 30 ("A" 110+71.840)	
B-12	0	74.5	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 13, "Schmidbauer"	0	36.7	Import borrow (fill)	Roadside ditch	
B-14	920.3	0	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 15, "Schmidbauer"	274.5	0	Imported borrow (fill), RSP, RSP Fabric	Roadside ditch & Drainage System No. 33 ("A" 114+44.741)	
B-14	77	3.4	EPH	Trib runs to the NE, to "Schmidbauer"	8.1	0.4	Cut	Median ditch	
B-34	149.2	3.4	EPH	Ditches in Log Yard	11.9	0.3	Import borrow (fill)	Roadway fill	
B-34	118.6	3.4	EPH	Ditches in Log Yard	9.4	0.3	Import borrow (fill)	Roadway fill	
B-34	71.7	3.4	EPH	Ditches in Log Yard	5.7	0.3	Import borrow (fill)	Roadway fill	
B-34	55.9	3.4	EPH	Ditches in Log Yard	4.5	0.3	Import borrow (fill)	Roadway fill	

B-34	58.7	3.4	EPH	Ditches in Log Yard	4.7	0.3	Import borrow (fill)	Roadway fill	
B-34	74.3	3.4	EPH	Ditches in Log Yard	5.9	0.3	Import borrow (fill)	Roadway fill	
B-34	41.8	3.4	EPH	Ditches in Log Yard	3.3	0.3	Import borrow (fill)	Roadway fill	
B-34	90.9	3.4	EPH	Ditches in Log Yard	7.2	0.3	Import borrow (fill)	Roadway fill	
B-34	17.2	3.4	EPH	Ditches in Log Yard	1.4	0.3	Import borrow (fill)	Roadway fill	
B-34	123.2	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	11.8	3.4	EPH	Ditches in Log Yard	0.9	0.3	Import borrow (fill)	Roadway fill	
B-34	122.6	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	

B-34	153.7	3.4	EPH	Ditches in Log Yard	12.2	0.3	Import borrow (fill)	Roadway fill	
B-06	59.3	1027.1	INT	Haehl Creek (Main Fork) – Re-Align	221.3	3832.6	Import borrow (fill), Concrete (headwall & wingwall), APC, RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (9402.7 m^3) 2. Sand & Gravel (1559.3 m^3) **Above OHW:** 1. RSP(4161.5 m^3) 2. Sand & Gravel (2611.3 m^3)	**Haehl Creek Bridges: Br No.** **10-0129F, 10-0129G & 10-0129RL** 1. Potential Temp. stream crossing (1 trestle bent in channel) at bridge 10-0129RL. 2. Potential Falsework (1 falsework bent in channel) at each structure . 3. Potential stream Diversion/temporary culvert.
B-18	188.6	160.25	INT	"Schmidbauer"	53.3	47	Import borrow (fill)	Roadway fill	
B-24	401	6.8	INT	Crosses align north of east Hill road	404.7	6.9	Imported borrow (fill), roadway excavation & concrete (headwall)	Roadway fill & Drainage Basin No. 3 ("A" 127+50.000)	
B-57	433	6.8	INT	RR Ditch at RR x-ing, east side of tracks	262.2	4.1	Import borrow (fill)	Abutment fill, new ditch (to be design by Design) & temp. culvert	**Quail Meadows OH (Br No. 10-0171)** 1. Temp. dirt road across RR tracks (Temp Haul Road) 2. Temp. Culvert crossing
B-26	514.1	6.8	INT	East Fork Haehl Creek, Handley parcel, south of Shell rd.	2324.5	30.7	Imported borrow (fill), roadway excavation, APC, AFES, RSP, RSP Fabric	Roadway fill, Drainage Basin No. 4 ("A" 132+00.000), Drainage System No. 45 ("A" 132+52.219)	

B-40	65.13	26.3	INT	Heahl Creek, Near Baechtel Confluence – Under Viaduct, Just north of East valley Street	260.0 (culvert work)	105.0 (culvert work)	Trestle/falsework construction		**Haehl Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-49	7	10	INT	Broadus, Baechtel, Outlet Confluence - Under Viaduct, NE of WWTP	54.0 (footing for bents?)	77.2 (falsework)	Concrete (Bent 24), RSP, RSP Fabric, Trestle/falsework construction		**Confluence of Broaddus/Baechtel Creek** 1. Footing Impact (329.9 m3) 2. Potential temp. stream crosssing (Baechtel Creek - 2 falsework bents in channel, Broaddus Creek - 1 falsework bent in channel, & Outlet Creek- 2 trestle bents in channel)
B-51	0	429.8	INT	Mill Creek - Under Viaduct	0	0 (access and veg removal only, no temp fills below OHWM)	Trestle/falsework construction		**Mill Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-37	0	403.1	INT	Baechtel Creek, south of center valley road, west side of J1T align	0	595.7		Current Design does not show any impact at this location.	

B-26	0	270.5	INT	West (Main) Fork Haehl Creek, along west side of handley parcel	0	692.6	RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (2857.9 m^3) 2. Sand & Gravel (348.1 m^3) **Above OHW:** 1. RSP(3444.9 m^3) 2. Sand & Gravel (2309.7 m^3)	**Haehl Creek (Br No. 10-0159)** 1. potential temp. stream crossing (4 trestle bents in channel). 2. potential temp. falsework (4 trestle bents in channel).
B-57	1172.6	82.4	INT	Upp Creek and RR ditch on west side of RR x-ing, and Mill Creek on the east side of RR x-ing	1817.5	127.7	Import borrow (fill), roadside ditch (RR), Concrete (bridge structures), APC, RSP (Fish Passage Design at Upp Creek)	**Upp Creek** **Below OHW:** 1. RSP (5848.5 m^3) 2. Sand & Gravel (1258.3 m^3) **Above OHW:** 1. RSP(3100.0 m^3) 2. Sand & Gravel (1325.1 m^3)	**Quail Meadows OH** **Br No. 10-0171** 1. Potential Temp. culvert crossing 2. Potential dirt road crossing over RR tracks (temp haul road) **Upp Creek Bridges** **Br No. 10-0305, 10-0174, 10-0174K & 10-0174S** 1. Potential Temp. stream crossing (1 trestle bent in channel) at Quail Meadows I.C. 2. Potential Falsework (1 falsework bent in channel) at each structure 3. Potential Stream Diversion at each structure
B-31 and B-34	139.8	3.4	POND	Rutledge Pond	2263.1	55	Class 3 Permeable Material Filter Fabric Embankment	Class 3 Permeable Material (3213 m^3) Filter Fabric (6802 m^2) Embankment (3505 m^3)	
C-86	**375.95**	288.16	EPH	Stream Entering Watson East Mitigation Parcel	29.59	0	Grading for wetland creation		
Totals:	**8860.48**	**2862.91**			**8306.39 yd^3**	**5439.40 yd^3**			

Block 22: Surface Areas of Wetlands or Other Waters Filled

The proposed project will directly affect a total of 89.12 acres of wetlands and other waters of the United States, of which 56.23 acres will be permanently filled and 32.89 acres will be temporarily disturbed during project construction and mitigation activities. Fill types affecting wetlands include those listed in Table 1 for "other waters of the United States" (permanent fills consisting of roadway and structures fill, asphalt concrete, RSP, TRM and RECP, new culverts, culvert end and treatments; temporary fills consisting of temporary falsework and falsework supports, cofferdams, temporary roadway fills, stream re-alignments, and temporary access routes). Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 2 shows the surface area (acres) of the resources that will be affected by the bypass. Maps depicting impacted wetlands and "other waters" of the United States" are included in Appendix A and Appendix B of this permit application.

Table 2. Summary of Project Construction Impacts on Wetlands and Other Waters of the United States

Wetland Type / Other Waters	Project Impacts on Wetlands and Other Waters (acres)			Mitigation Impacts on Wetlands and Other Waters (acres)			Total Impacts on Wetlands and Other Waters (acres)
	Temporary	Permanent	Total	Temporary	Permanent	Total	Total
Marsh	1.38	8.15	9.53	0.49	0.00	0.49	**10.02**
Riparian Scrub	0.17	0.21	0.38	0.00	0.00	0.00	**0.38**
Riparian Woodland	1.61	3.21	4.82	0.07	0.02	0.09	**4.91**
Swale	0.03	0.00	0.03	0.26	0.05	0.31	**0.34**
Vernal Pool	0.05	0.16	0.21	0.00	0.00	0.00	**0.21**
Wet Meadow	20.69	41.64	62.33	4.98	0.45	5.43	**67.76**
Subtotal Wetlands	**23.93**	**53.37**	**77.30**	**5.80**	**0.52**	**6.32**	**83.62**
Other Waters	3.10	2.25	5.35	0.06	0.09	0.15	**5.50**
Total	**27.03**	**55.62**	**82.65**	**5.86**	**0.61**	**6.47**	**89.12**

Block 23: Description of Avoidance, Mitigation, and Compensation

Mitigation and Monitoring Proposal

Caltrans developed a mitigation and monitoring proposal (MMP) for impacts of the bypass on jurisdictional wetlands, other waters of the United States, riparian habitat, state-listed plants, and oak woodlands. In addition to compliance with federal Clean Water Act (CWA) Section 404 permitting, the MMP will provide compliance with CWA Section 401, Section 1602 of the California Fish and Game Code (FGC), and Section 2081 of the California Endangered Species Act (CESA).

The overall goal of the MMP is to compensate successfully for impacts resulting from bypass construction on sensitive biological resources resulting from bypass construction by restoring some of the historical ecological functions and values to habitat in Little Lake Valley through a combination of habitat restoration, creation, enhancement, and preservation. Additionally, the MMP aims to restore and enhance many previously lost or degraded wetland functions and values and to help offset past damage to parts of the Outlet Creek Basin. As stated in Block 22, construction of the bypass will result in temporary and permanent impacts on wetlands and other waters of the United States. Table 3 shows the total amount of USACE jurisdictional habitat that will be created, enhanced, or preserved as compensation for the proposed project's impacts on waters of the United States.

Table 3. Mitigation Approach for USACE-Jurisdictional Habitat

Resource	Mitigation Acres			
	Creation	Enhancement	Preservation	Restoration
Wetlands	33.4	1032.90	1122.11	5.96
Other Waters of the United States	0	17.32	24.7	0.06
Total	**33.4**	**1,050.22**	**1,146.481**	**6.02**

The proposed project's MMP will be provided in its entirety in a separate transmission.

Avoidance and Minimization Measures

In addition to the creation, enhancement, and preservation strategies included in the MMP, Caltrans has incorporated numerous minimization measures into the project design. The following minimization measures have been incorporated into the design since the final EIS/EIR:

- The bypass re-alignment will avoid conflicts with the planned WWTP expansion project which will allow the WWTP to avoid impacts to waters of the United States; specifically, the profile over the railroad has been lowered, resulting in a significant reduction of the embankment footprint and corresponding reduction in wetlands impacts between the end of the viaduct and the railroad crossing;
- The bypass's profile over the railroad was lowered, resulting in a significant reduction of the embankment footprint and therefore a reduction in impacts on wetlands;
- An existing box culvert at Upp Creek can will be removed given the implementation of the roundabout and, therefore, will allow for the restoration of this area;
- The roundabout at the Quail Meadows interchange allows for an existing box culvert at Upp Creek to be removed, and all of the Upp Creek crossings will now be bridges rather than box culverts;
- Construction of the viaduct minimizes impacts to floodplain and special-status species (preserving connectivity);
- The project was redesigned to avoid direct impacts to park and recreation complex and a business park;
- The highway median was reduced to 45.3 feet which will reduce the project's area of impact;
- Omission of a second passing lane on the interchange ramps will reduce the project's area of impact; and
- The proposed Oil Well Hill borrow site has been reduced from approximately 40 ac to 12.17 ac (4.93 ha) and has been configured to avoid impacts on jurisdictional wetlands, and other waters of the United States, and riparian habitat including Category I– III riparian corridor .
- Environmental Sensitive Areas (ESA), such for wetlands and waters (State and U.S.) and to protect trees, is to be identified in the contract plans and to be delineated by Temporary Fence (Type ESA) through out the limits of the project. The locations of the ESAs will be determined by the Resident Engineer and Environmental Monitor and will be installed prior to commencement of ground disturbing activities.

In addition to preparation of a SWPPP, Caltrans will implement the following measures to minimize disturbances of aquatic resources:

- In-channel construction, including creek bank and channel-bed construction below the OHWM at each of the flowing creek crossings will be implemented between June 15 and October 15 of each year, unless earlier and/or later dates for construction activities at the creek crossings are approved by NMFS, the California Department of Fish and Game, and the North Coast Regional Water Quality Control Board,on a year-by-year basis;
- All construction-related materials will be stored in designated staging areas at least 100 feet from waterways and drainages.
- Refueling and vehicle maintenance will be performed at least 100 feet from creeks and other water bodies.
- Operation of heavy equipment will be minimized in waterways to the greatest extent possible.
- Temporary sedimentation barriers, such as sandbags or siltation fencing, will be installed to minimize the amount of silt entering the creeks and any ephemeral/intermittent drainages with water present in the channel. The locations of these barriers will be determined by the resident engineer and environmental monitor, and will be clearly marked in the field before construction activities begin.
- Additional BMPs will be implemented to prevent runoff from adjacent lands from flowing across construction areas, slow down the runoff traveling across construction sites, remove sediment from on-site runoff before it leaves the site, and provide soil stabilization.
- To address potential water quality impacts during construction, Caltrans will require the contractor to use a combination of BMPs to control potential erosion and sedimentation that could result from construction activities. Caltrans has developed a suite of construction site BMPs that will be implemented on the proposed project. The construction site BMP manual can be downloaded at: http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm
- Caltrans will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters. For example, on this project, equipment operating in water bodies will be required to be steam cleaned prior to arrival onsite, and be maintained in a clean condition during the length of activities.
- Following the construction process, the contractor will stabilize disturbed soil areas through permanent revegetation or other means. An appropriate design will be used that will allow all finished slopes to achieve stabilization, even under severe conditions, and also provide erosion control BMPs at all point source discharges of stormwater runoff. Treatment BMPs, such as biofiltration, will be incorporated where feasible.
- As part of standard operation and maintenance procedures, Caltrans has developed a standard Hazardous Waste and Spill Response Plan, which Caltrans will ensure is implemented during the project. These BMPs address water quality issues associated with accidental spills.

Measures designed to further control sedimentation and turbidity within waters of the U.S. and State, including BMPs for operation of heavy equipment in wetlands and waterways will include:

- Non-rainy season BMPs will be implemented in accordance with the SWPPP, including inspection, maintenance and repair, to minimize delivery of soil to the stream channels;
- The use of vehicles and heavy equipment in areas below the top of bank will be limited to the extent feasible; equipment may enter the stream reaches that are normally dry during the summer months (upper Haehl Creek and Upp Creek) to facilitate construction; however, no vehicles or heavy equipment will be allowed below the OHWM for the other crossings where flowing water is likely to occur, at any time, either for crossing the creeks or for construction activities (with the exception of installing a cofferdam to isolate work areas from flowing or standing water);
- The project's contractor will be required to implement appropriate BMPs to prevent the discharge of equipment fluids to the stream channel; the minimum requirements will include:
  - storing hazardous materials outside of the stream banks;
  - checking equipment for leaks and preventing equipment with leaks from accessing any areas below the top of bank or from going onto the falsework structures;
  - pressure washing equipment to remove fluid residue on any of its surfaces prior to its entering the live channel (if equipment is needed in the channel to establish a flow diversion);
  - maintaining spill response material and suitably trained personnel at the project site;
  - responding immediately to any fluid releases and applying containment booms and absorbent materials as appropriate; and
  - notifying the RWQCB of releases and discharges; or minor accidental releases of equipment fluid to the dewatered channel, the contractor will be required to remove and properly dispose of contaminated material;
- Equipment will not be stored in the channel when not in use; all equipment will be removed from the channel at the end of each work day; all equipment will be fueled, maintained, and repaired at sites well away from the streambanks;
- Where feasible, Rolled Erosion Control Product (RECP; netting) will be substituted in as many locations as possible that traditionally would receive RSP. Unlike RSP, RECP allows native riparian vegetation to grow through the mat structure while providing erosion protection for affected banks and bridge abutments; and
- Erosion control measures will be implemented at the end of each work window or completion of project activities to prevent material from entering watercourses.

Other non-compensatory measures include:

- Seed collection and topsoil harvesting to minimize impacts on state-listed plants;
- Salvage of North Coast semaphore grass populations for replanting onsite and relocation to offsite mitigation parcels; and

Block 25: Addresses of Adjoining Property Owners and Lessees

A complete list of the property owners whose property adjoins any project features is provided in Attachment 8 of this permit application.

Block 26: List of Other Certifications or Approvals and Denials Received

Table 4 below shows the approvals and consultations required before project implementation.

Table 4. List of Authorizations, Approvals, and Consultations That May Be Required

Agency	Type of Approval	Identification No.	Date Applied	Date Approved	Date Denied
U.S. Army Corps of Engineers	CWA Section 404 Individual Permit	–	March 2010	–	–
North Coast Regional Water Quality Control Board	CWA Section 401 Water Quality Certification (Attachment 9)	–	March 2010	–	–
California Department of Fish and Game	FGC Section 1602 lake and Streambed Alteration Agreement (Attachment 9)	–	March 2010	–	–
	FGC Section 2080.1 consistency determination	–	March 2010	–	–
	FGC Section 2081 CESA Incidental Take Permit	-	March 2010		
U.S. Fish and Wildlife Service	Federal Endangered Species Act (ESA) Section 7 consultation; biological opinion (Attachment 5)	1-14-1998-0095	September 2005	March 2005	–
National Marine Fisheries Service	ESA Section 7 consultation; Biological Opinion (Attachment 5)	2005/07370:TKD	October 2005	September 2006	–
National Marine Fisheries Service	ESA Section 7 consultation addendum; Biological Opinion		March 2010		
California State Office of Historic Preservation	Concurrence (Attachment 6)	FHWA000717A	November 2005	December 2005	–
Mendocino County	SMARA exception	–	–	March 2008	–

Agency Coordination and Compliance

Endangered Species Act

Formal consultation under Section 7 of the federal Endangered Species Act (ESA) between the FHWA and the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) resulted in the issuance of biological opinions in March 2005 and September 2006, respectively. However, Caltrans will be submitting a revised biological assessment to NMFS that will analyze impacts on federally listed endangered and threatened anadromous fish species caused by project design changes and implementation of the MMP. NMFS will need to amend the existing biological opinion to reflect these project changes. The project design changes and HMMP do not affect the biological opinion issued by the USFWS; therefore, no re-initiation of consultation is required.

National Historic Preservation Act

Cultural resources studies pursuant to National Historic Preservation Act (NHPA) Section 106 for the proposed project were performed as required by Caltrans and in accordance with the guidelines and recommended procedures outlined in Caltrans' *Environmental Handbook*, Volume 2, "Cultural Resources." Archeological sites were identified within the area of potential effect (APE) of the proposed project. Site CA-MEN-2645/H was determined to be eligible for listing on the National Register of Historic Places (NRHP), as well as site CA-MEN-3111H, the NWPRR. Details regarding the significance of cultural resources found within the APE and potential impacts on these resources are detailed in the draft EIS/EIR.

Caltrans requested State Historic Preservation Officer (SHPO) concurrence that responsibilities pursuant to 36 CFR 800.4(d) implementing Section 106 of the NHPA have been met. In a letter to the North Region Environmental Branch of Caltrans dated December 6, 2005, SHPO concurred (FHWA000717A). A copy of the final concurrence letter is attached as Attachment 6.

Additional Information

Section 404(b)(1) of the Clean Water Act

In 1994, Caltrans initiated the NEPA/404 integration process for the project; in 1995, Caltrans, the FHWA, and the NEPA/404 signatory agencies concurred with the purpose and need statement, modal choice, and range of alternatives to be studied. Engineering and environmental studies on several alternatives continued through 1994. Then, as a result of the 1994 Northridge earthquake and the 1995 winter storms, resources were redirected to seismic safety and storm damage restoration projects, and bypass project development was suspended until 1998. In 1998, with new funding and resources allocated to the project, studies resumed on the alternatives approved by the NEPA/404 signatory agencies.

A number of alternative routes to bypass Willits were originally considered. Approximately 30 alternatives, including a two-lane concept and additional interchange locations, were considered but later rejected because they were determined to be infeasible, to be not practicable, or to have severe environmental consequences. Seven alternatives were included in the final 404(b)(1) alternatives analysis, including six build alternatives and a no-build alternative. These alternatives were screened to identify the least environmentally damaging practicable alternative (LEPDA).

The 404(b)1 alternatives analysis identified the following screening criteria to evaluate project alternatives and the selection of the LEPDA. Practicable alternatives must do the following:

- Meet the basic project purpose and need
- Be capable of implementation after taking into consideration cost, existing technology, and logistics in light of overall project purposes
- Avoid or minimize impacts on wetlands and other regulated waters of the United States to the maximum extent practicable
- Avoid or minimize impacts on listed species and other sensitive biological resources, including habitats, to the maximum extent practicable
- Avoid or minimize impacts on the 100-year floodplain
- Be consistent with RWQCB's water quality control plan for the North Coast. Protect public parklands and recreational resources, wildlife and waterfowl refuges, and historic properties listed on or eligible for listing on the NRHP
- Protect human-use resources, including parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves, that consist of areas designated under federal and state laws or local ordinances to be managed for their aesthetic, educational, historical, recreational, or scientific value
- Minimize socioeconomic impacts and disproportionate impacts on low-income minority residents

Modified Alternative J1T (proposed project) meets the LEDPA criteria because it is a practicable alternative that minimizes impacts on jurisdictional wetlands and other waters of the United States, compared to the other viable alternatives, while minimizing impacts on sensitive species. Although Modified Alternative J1T will affect approximately 9.4 acres more wetlands than the original Alternative J1T, it avoids human-use characteristics/Section 4(f) resources and other environmental resources that would be affected by the other alternatives. The proposed project would not result in significant adverse impacts on human health and welfare, including effects on aesthetic, educational, historical, recreational, or scientific values. The proposed project will not reduce or eliminate the uses of the regional park and recreation complex, including the skate park. Caltrans and the FHWA coordinated extensively with local government and community representatives and the NEPA /404 integration process agencies to develop the proposed project to avoid the Section 4(f) resource and industrial park that would be affected by Alternative J1T. The proposed placement of fill will comply with the 404(b)(1) guidelines, to the extent practicable.

The Section 404(b)(1) alternatives analysis clearly demonstrates that the proposed project meets criteria for the LEDPA because it will result in the least overall environmental harm. A copy of the Section 404(b)1 alternatives analysis, as approved by is included in this permit application as Attachment 7.

Attachment 2: Figures

Figure 1-1
Regional Location

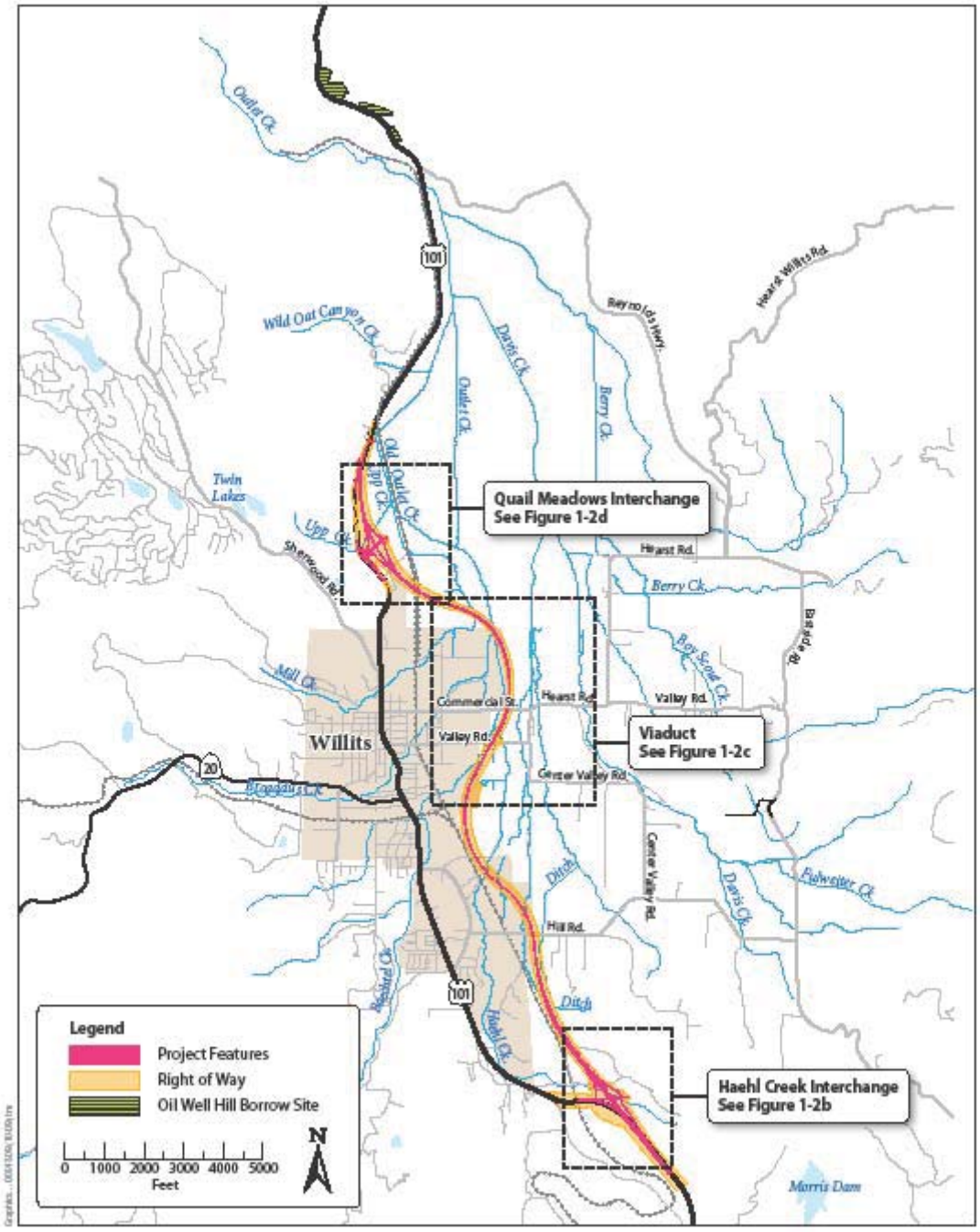


Figure 1-2a
Project Features—Overview Phase 1

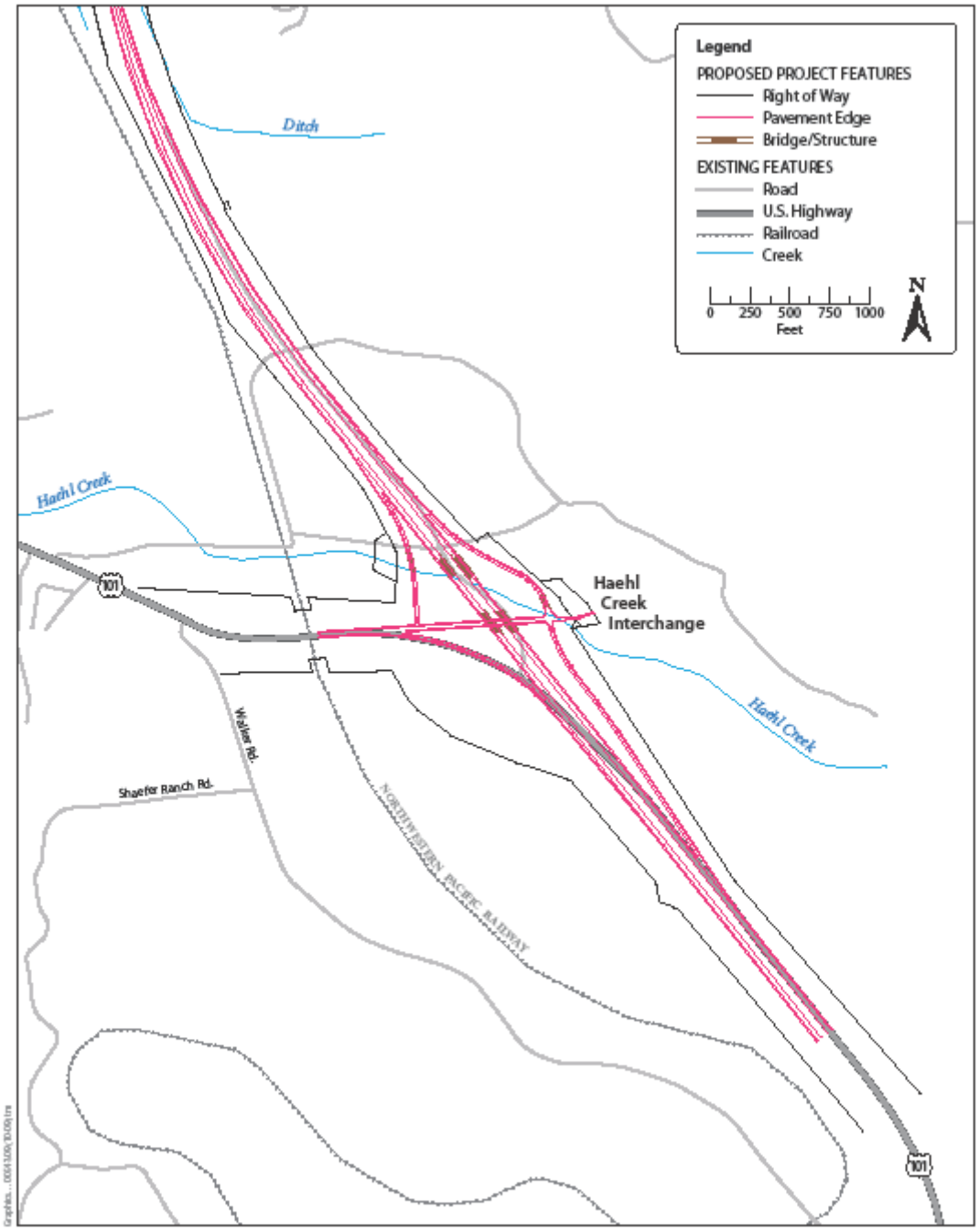


Figure 1-2b
Southern End Project Features—Haehl Creek Interchange Phase 1

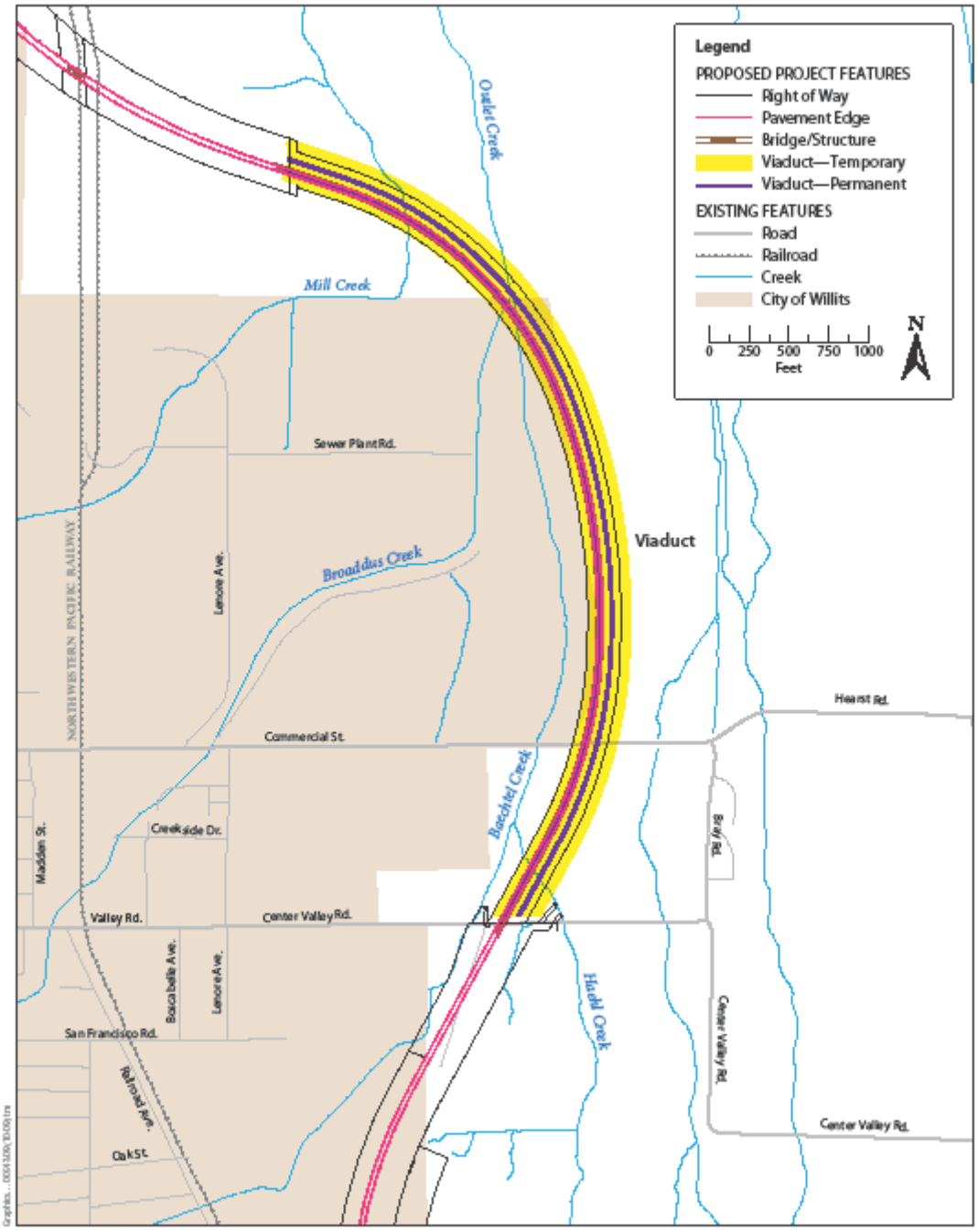


Figure 1-2c
Middle Project Features—Viaduct Phase 1

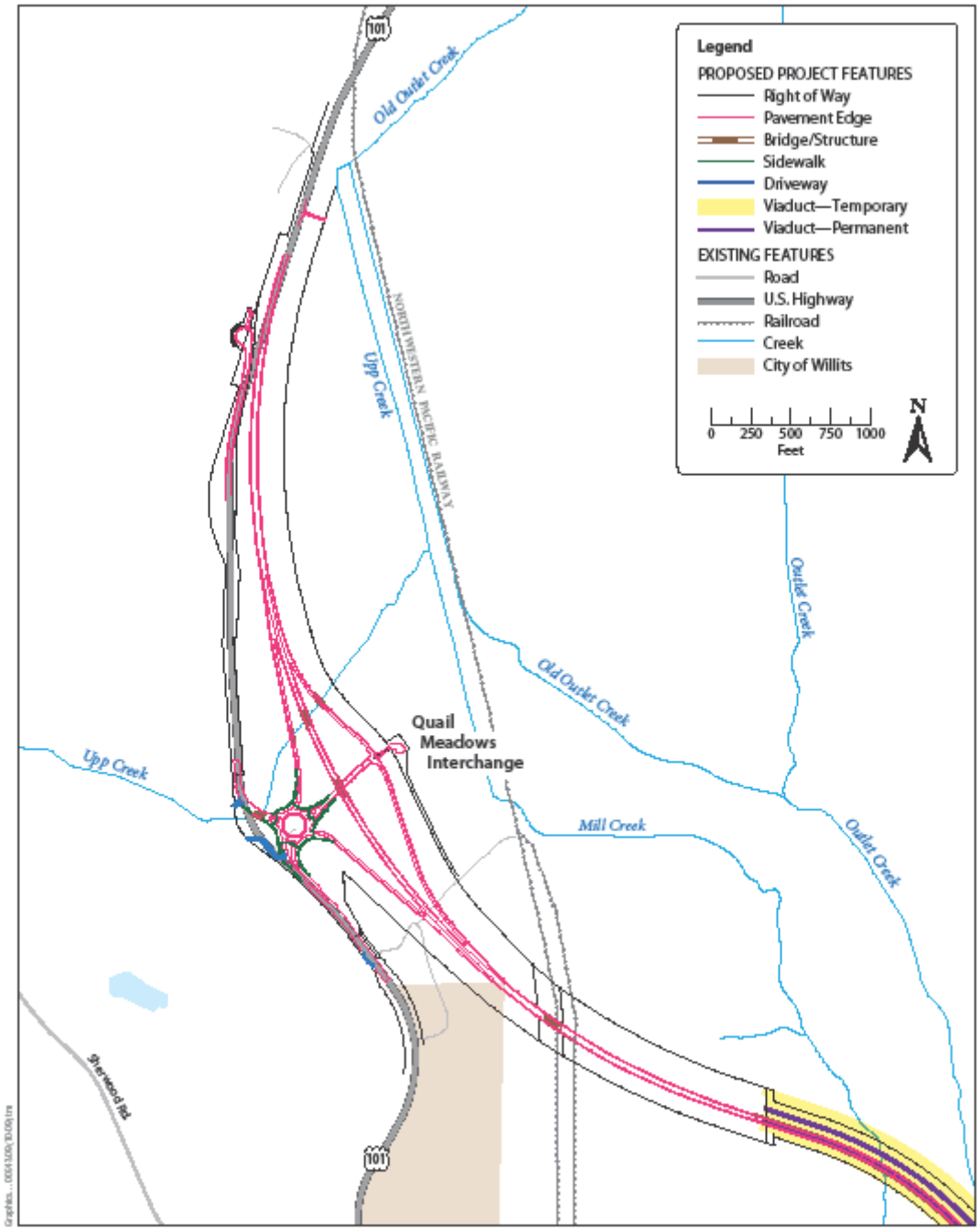


Figure 1-2d
North End Project Features—Quail Meadows Interchange Phase 1

Attachment 3: Jurisdictional Determinations

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
333 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94105-2197

REPLY TO

MAR 0 1 2005

Regulatory Branch

Subject: File No. 194741N

Mr. Jeremy Ketchum
California Department of Transportation
District 3-Sacramento Office
Office of Environmental Management, S-1
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letters of February 11, 2004, and February 6, 2005, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring within the Modified J1T Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California.

The enclosed map entitled, "Potential Jurisdictional Wetlands and Waters of the United States Within Alternative Modified J1T," in five (5) sheets date certified February 23, 2005, accurately depicts the extent and location of Corps jurisdiction within the project alignment study area. The jurisdictional delineation is based on the current conditions of the site, as verified during field investigations of April 20-22, June 1-3, and July 13, 2004, and January 19, 2005, and other data included with your submittals. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change in field conditions warrants a revision to the delineation map prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States and within the lateral extent of wetlands adjacent to these waters will require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters, and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce. Section 404 waters within the project alignment study area include both seasonal and perennial wetlands, and numerous intermittent and perennial drainages, including Haehl, Broaddus, Mill, and Upp Creeks, that are tributary waters to Outlet Creek and ultimately the Eel River. The wetland basins and swales are adjacent (neighboring or bordering) to these tributary waters, and their lateral extents are defined by the presence of hydrophytic vegetation,

hydrology, and hydric soils. The plane of ordinary high water of the tributary waters is defined by the presence of shelving, debris lines, and transitional vegetation on the banks.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 CFR Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. Peter Straub of my staff by telephone at 415-977-8443 or by e-mail at peter.s.straub@spd02.usace.army.mil. All correspondence should be addressed to the Regulatory Branch, North Section, referencing the file number at the head of this letter.

Sincerely,

Jane M. Hicks

Jane M. Hicks
Acting Chief, Regulatory Branch

Enclosures

Copy Furnished:

US EPA, San Francisco, CA (w/o encls)

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

AUG 15 2008

REPLY TO

Regulatory Division

Subject: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letters of January 26, 2007, and April 10, 2008, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring in portions of the Modified J1T Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California. This request is related to minor changes to the footprint of the proposed Haehl Creek Interchange and the road alignment to the north, and the inclusion of the proposed borrow area at Oil Well Hill.

The enclosed maps entitled, "Figures 3-4, Oil Well Hill Wetland Delineation," "Figure 5, Haehl Creek Interchange Expanded Area Wetland Delineation," "Figure 6, Existing Embankment Creek Expanded Area Wetland Delineation," in four (4) sheets date certified August 1, 2008, accurately depict the extent and location of Corps jurisdiction within the project boundary area. The jurisdictional determination is based on the current conditions of the site, as verified during a field investigation of February 13, 2008, and other data included with your submittal. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation maps prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States, or below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters, require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce.

Section 404 waters within the expanded project alignment study area include both seasonal and perennial wetlands, and several intermittent and perennial unnamed streams and drainages that are tributary waters to Outlet Creek and ultimately the Eel River and the Pacific Ocean. The additional wetland basins and swales are adjacent (abutting) to these tributary waters, and their lateral extents are defined by the presence of hydrophytic vegetation, hydrology, and hydric soils. The plane of ordinary high water of the tributary waters is defined by the presence of scouring, sediment deposits, shelving, debris lines, and transitional vegetation on the banks. This jurisdictional determination is presumed to be consistent with the official interagency guidance of June 5, 2007, interpreting the Supreme Court decision, *Rapanos v. United States*, 126 S. Ct. 2208 (2006).

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. Peter Straub of my Regulatory staff by telephone at 415-503-6774 or by e-mail at peter.s.straub@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

Peter S. Straub

for Jane M. Hicks
Chief, Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 02 2009

Regulatory Division

Subject: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letter of September 29, 2009, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring within the W-Line Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California.

The enclosed map entitled, "Potential Jurisdictional Wetlands and Waters of the United States Within the W-Line, " in seventeen (17) sheets date certified December 1, 2009, accurately depicts the extent and location of Corps jurisdiction within the project alignment study area. The jurisdictional determination is based on the current conditions of the site, as verified during field investigations of August 6, 2009, and other data included with your submittals. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation map prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States and within the lateral extent of wetlands adjacent to these waters will require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters, and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. David Wickens of my Regulatory staff by telephone at 415-503-6787 or by e-mail at david.m.wickens@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

Jane M. Hicks
Chief, Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 01 2009

Regulatory Division

Subject: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letter of September 29, 2009, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring within the following proposed mitigation sites for the State Highway 101 Willits By-Pass Project: MGC Plasma North Parcel, MGC Plasma South Parcel, and the Frost Parcel. The aforementioned study areas are located in Little Lake Valley, Mendocino County, California.

The enclosed map entitled, "Caltrans Willits Bypass Project Potential Mitigation Sites, Modifications for Verification," in eight (8) sheets updated by Jason Meigs, Caltrans District 3 on April 6, 2009, accurately depicts the extent and location of Corps jurisdiction within the project alignment study area. The jurisdictional determination is based on the current conditions of the site, as verified during field investigations of February 18, 2009, and other data included with your submittals. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation map prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States and within the lateral extent of wetlands adjacent to these waters will require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters, and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. David Wickens of my Regulatory staff by telephone at 415-503-6787 or by e-mail at david.m.wickens@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

for

Jane M. Hicks
Chief, Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 16 2009

Regulatory Division

SUBJECT: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2800 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to a previous Jurisdictional Determination letter you received from our office regarding your proposed "Modified J1T Alignment" dated March 1, 2005. The aforementioned letter confirmed the Corps jurisdiction within the Modified J1T Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California. This letter re-confirms the Corps jurisdiction within the Modified J1T Alignment Study Area.

Enclosed are five (5) sheets titled, "Potential Jurisdictional Wetlands and Waters of the US Within Alternative Modified J1T." These drawings were originally date certified by the Corps February 23, 2005. They continue to accurately depict the extent and location of the Corps jurisdiction. Therefore, the enclosed drawings have received a new certification date of November 19, 2009. The jurisdictional determination is based on the current conditions of the site as verified during field investigations of April 20-22, June 1-3, and July 13, 2004, and January 19, 2005. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation maps prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States, or below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters, require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce. This jurisdictional determination is presumed to be consistent with the official interagency guidance of June 5, 2007, interpreting the Supreme Court decision, *Rapanos v. United States*, 126 S. Ct. 2208 (2006).

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. David Wickens of my Regulatory staff by telephone at 415-503-6787 or by e-mail at david.m.wickens@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

Jane Monaus
for

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Attachment 4: Record of Decision, and Notice of Determination (Final EIS/EIR included on separate CD)

NOTICE OF DETERMINATION

TO: Office of Planning and Research
PO Box 3044, 1400 Tenth Street, Room 222
Sacramento, CA 95812-3044

FROM: California Department of Transportation
1120 N Street
Sacramento, CA 95814

Subject:
Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code

Project Title

Willits Bypass Project

State Clearinghouse Number	Lead Agency Contact Person	Area Code/Telephone
1990030006	Jeremy Ketchum	916-274-0621

Project Location (include County)

The project, which involves bypassing a segment of existing U.S. 101, is located in the vicinity of the City of Willits, Mendocino County, California.

Project Description:

The California Department of Transportation, in conjunction with the Federal Highway Administration, proposes to construct a new segment of U.S. 101 that would bypass the City of Willits in Mendocino County. The proposed bypass would be a four-lane freeway with full access control and grade separation. The existing U.S. 101 facility within the project study limits is a two-lane conventional highway, which currently serves as the Main Street through the town of Willits. The purpose of the project is to reduce delays, improve safety, and achieve a minimum level of service (LOS) of at least 'C' for interregional traffic on U.S. 101 within the vicinity of Willits through the 20-year design period (i.e., 2028). One no-build alternative and four build alternatives (E3, C1T, J1T, and LT) were considered in the Draft EIS/EIR. Since public circulation of the Draft EIS/EIR, revisions were made to one of the build alternatives, which resulted in the *Modified Alternative J1T*. The Modified Alternative J1T has been selected as the preferred alternative because it would have the least overall impact to the environment. The proposed new U.S. 101 bypass would diverge from the existing facility approximately 0.8 mi south of the Haehl Overhead (Post Mile R43.1). The alignment would then traverse the valley east of Willits and converge back with the existing facility 2.9 km south of Reynolds Highway (Post Mile R49.0). The overall length of the bypass would be approximately 5.8 miles.

This is to advise that the California Department of Transportation has approved the above-described project on (date) **12/15/06** and has made the following determinations regarding the above-described project:

1. The project [☐ will ■ will not] have a significant effect on the environment.
2. ■ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☐ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [■ were ☐ were not] made a condition of the approval of the project.
4. A Statement of Overriding Considerations [☐ was ■ was not] adopted for this project.
5. Findings [■ were ☐ were not] made pursuant to the provisions of CEQA.

The ■ certified EIR or ☐ adopted ND with comments and responses and record of the project approval is available to the general public at:

Willits Public Library – 390 East Commercial Street, Willits, CA

Ukiah Public Library – 105 North Main Street, Ukiah, CA

Fort Bragg Public Library – 499 East Laurel Street, Fort Bragg, CA

Caltrans District 1 Office – 1656 Union Street, Eureka, CA

Caltrans Website – http://www.dot.ca.gov/dist1/d1projects/willits/reports.feir.htm

Signature (California Department of Transportation)	Date	Title
Wells	12/15/06	Environmental Manager

Date received for filing at OPR:

RECEIVED
DEC 18 2006
STATE CLEARING HOUSE

FHWA-CA-EIS-02-02-F
P56038

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

RECORD OF DECISION

Willits Bypass
Mendocino County

This Record of Decision (ROD) was developed pursuant to 40 CFR 1505.2 and 23 CFR 771.127. The California Department of Transportation (Caltrans), in cooperation with the Federal Highway Administration (FHWA), has identified the need to reduce delays, improve safety, and achieve a minimum level of service (LOS) "C" for interregional traffic on U.S. Highway 101 in the vicinity of the City of Willits, Mendocino County, California.

The project's purpose and need are described in Chapter 2 of the Willits Bypass *Final Environmental Impact Statement* (FEIS), approved by FHWA on October 25, 2006. The FEIS is incorporated into the ROD by reference. The Notice of Availability for the FEIS was published in the *Federal Register* on November 9, 2006.

A. Decision

This ROD approves the preferred alternative identified in the Willits Bypass FEIS. After reviewing public comments, as well as coordinating with the regulatory agencies and local stakeholders, including the City of Willits in Mendocino County, California, it was determined that the **Modified Alternative J1T** is the Least Environmentally Damaging Practicable Alternative (LEDPA). The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency have concurred in this determination. The Modified Alternative J1T has, therefore, been identified as the selected alternative. This decision is based upon information in the Draft and Final EIS, as well as comments from other Federal and state agencies, elected officials, and members of the public. Following approval of this ROD, the project will be advanced to final design, right-of-way acquisition, and construction.

All practicable measures to avoid or minimize harm to the environment have been employed in the design of this project and are described in Section D of this document.

The Department could design and construct all or part of the proposed project depending on funding availability. In an effort to balance potential funding limitations and the need for the project, the Willits Bypass could be constructed in phases, whereby a functional interim facility would be constructed initially, and completion of the full facility would occur at a later date when additional funding is available.

B. Alternatives Considered

Based on input from the community and the resource agencies, as well as on engineering and environmental analyses, the **Modified Alternative J1T** has been identified as the Preferred Alternative for the proposed Willits Bypass project. In accordance with Section 404(b)(1) of the Clean Water Act, a Final Alternatives Analysis, which compares the alternatives considered in the DEIS/EIR, was completed in April 2005 (see FEIS, Appendix G). As a result of the Final Alternatives Analysis, the Modified Alternative J1T, which shares design elements with Alternatives LT and J1T, was identified as the LEDPA for the proposed project. Modified Alternative J1T was determined to be the LEDPA/Preferred Alternative because it would have the least overall impact to both natural and community resources, while still meeting the purpose and need for the project. The factual determinations in the Final Alternatives Analysis demonstrate the following:

Alternative E3, which would affect approximately 15 acres of wetlands and other waters, should be eliminated from consideration as the LEDPA for the following reasons: (a) it has the greatest potential to degrade water quality because of highly erosive soils and numerous of stream crossings, as well as the extensive earthwork required, and therefore; (b) it has the greatest potential to affect local populations of three federally listed salmonid species; (c) it would have the largest direct impact to foraging habitat for northern spotted owl because of the removal of approximately 300 acres of coniferous forest; (d) it would displace the largest number of homes and businesses (133); (e) it has the potential to affect the largest number of archaeological sites (18); (f) it would convert a large amount of Williamson Act Contract farmland (59.3 ha/146.6 ac); and (g) it would impact larger areas of upland/foothill habitats, including oak woodland which is more difficult to replace, than the other alternatives.

Alternatives C1T and L/C (the south segment of Alternative LT plus the north segment of Alternative C1T) should be eliminated from consideration as the LEDPA because of substantial impacts to wetlands and other waters of the U.S. and to federally-listed fish species. The impacts associated with Alternatives C1T and L/C include the greatest direct impact to jurisdictional wetlands and other waters of the U.S. when compared to the other build alternatives: 52.7 ha (130.2 ac) for Alternative C1T, and 48.5 ha (119.9 ac) for Alternative L/C. Both alternatives would require realignment of approximately one mile of salmon-bearing creek, which is critical habitat for three federally-listed fish species.

Alternative LT should be eliminated from consideration as the LEDPA because it would directly impact approximately 29.9 ha (73.8 ac) of jurisdictional wetlands and other waters of the U.S. Alternative LT would also result in fragmentation of the largest stand of valley oak riparian woodland in the valley.

Alternative J1T does not meet LEDPA criteria because, while it has impacts to wetlands and other waters of the U.S. comparable to those of Modified Alternative J1T, it creates

unacceptable impacts to the local and regional park/recreation complex ("human use characteristics" under Section 404(b)(1) Subpart F of the Clean Water Act) and the Sanhedrin industrial park. In addition impacts to the industrial park would result in the loss of businesses that would not or could not relocate in Willits. Thus, even though wetlands impacts would be comparable impacts to those of Modified Alternative J1T, Alternative J1T is the more environmentally damaging of the two alternatives.

Modified Alternative J1T meets LEDPA criteria because it would result in the least overall environmental harm. The Draft Alternatives Analysis had identified Alternatives J1T and LT as potential candidates for the LEDPA; however, it became necessary to develop a modified alignment that incorporated portions of these two alternatives in order to avoid important community and biological resources. The Modified Alternative J1T would have comparable wetlands impacts to those of Alternative J1T, but it avoids the important community resources that Alternative J1T would have otherwise impacted. Modified Alternative J1T has fewer impacts to wetlands than Alternative LT and avoids a large stand of valley oak riparian woodland that would have been impacted and fragmented by Alternative LT.

No-Build Alternative is not a practicable alternative because it does not meet the purpose and need of the project.

The U. S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (USEPA) have issued letters of concurrence that Modified Alternative J1T is the LEDPA (see FEIS, Appendix C). Both the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) have issued Biological Opinions (BOs), which state that construction of the Preferred Alternative is not likely to jeopardize the continued existence of federally listed species (see FEIS, Appendix D).

C. Section 4(f)

The Modified Alternative J1T avoids impacts to Section 4(f) properties; therefore, no formal Section 4(f) evaluation is required for this project.

D. Measures To Minimize Harm

All practicable measures to avoid or minimize environmental harm have been incorporated into the decision and are described as follows.

Air Quality

The bypass project would not generate any additional long-term carbon monoxide (CO) emissions to local air quality. Activities during construction would produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and vehicles transporting the construction crew. The use of construction equipment on site would result in localized exhaust emissions. The Department's standard specifications for

construction would be adhered to in order to reduce construction related emissions. Dust emissions during construction, could also have a substantial temporary impact on local air quality. Dust emissions would result from earthmoving (dust generation) and heavy equipment use. Such dust emissions could be generated from land clearing, ground excavation, cut and fill operations, and the construction of the roadway itself. Dust emissions would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing weather. A major portion of these emissions probably would result from equipment traffic over temporary construction roads. The following measures, which are standard best management practices and comply with Rule 430 (Mendocino Air Quality Management District), will minimize construction-related air quality impacts due to dust emissions. Naturally Occurring Asbestos (NOA) is not known to occur in the vicinity of Oil Well Hill; however, measures are in place in the event NOA is encountered during construction. The following measures will avoid or minimize impacts to air quality:

- The contractor will apply water and/or chemical dust suppression on dirt haul roads and surfaces over which equipment will travel.

- The contractor will cover and/or water exposed dirt storage piles to inhibit wind erosion.

- The contractor will stagger the time and location of fugitive dust-generating activities.

- Caltrans Standard Special Provisions for the identification and handling of soils containing NOA will be included in the construction contract documents.

- The contractor will ensure that grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.

- The contractor will utilize electric powered equipment in lieu of gasoline-powered engines where feasible.

- The contractor will ensure that grading plans include a statement that work crews will shut off equipment when not in use.

- The contractor will time the construction activities so as not to interfere with peak hour traffic and minimize obstruction of through traffic lanes adjacent to the site. If necessary, a flag person shall be retained to maintain safety adjacent to existing roadways.

- The contractor will support and encourage ridesharing and transit incentives for the construction crew.

Cultural Resources

Two historic properties were identified within the Area of Potential Effects (APE) established for the Modified Alternative J1T alignment (one archaeological site and one built environment property). The cultural resource investigation conducted for the project concluded that the two cultural resources could be avoided and would not be adversely affected by the project. An Environmentally Sensitive Area (ESA) Action Plan has been developed, as part of the SHPO-approved cultural resource compliance documents, to further ensure the avoidance and protection of cultural resources during the construction phase of the project. The following measures will avoid or minimize potential impacts to cultural resources.

- It is Caltrans' standard policy to avoid cultural resources whenever possible. If buried cultural materials are encountered during construction, it is Caltrans' policy that all work in that area must halt until a qualified archaeologist can evaluate the nature and significance of the find (Caltrans Environmental Handbook, Volume 2, Chapter 1).

- If human remains are unearthed during construction, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur, in the immediate vicinity of the discovery, and the county Coroner shall be notified so that a determination can be made as to origin of the remains. If the Coroner determines that the remains are associated with a Native American archaeological site, the provisions of California Public Resources Code 5097.98 shall be followed to notify the Native American Heritage Commission and to identify the Most Likely Descendent from the local Native American community.

- The ESA Action Plan, which is included as part of the Historic Property Survey Report, has been developed to ensure the avoidance and protection of historic properties during project construction. The ESA Action Plan details the protective measures to be employed at various stages of the project (before, during, and after construction) and identifies the parties responsible for the implementation of such measures, which include the placement of protective fencing and monitoring by a qualified archaeologist. The ESA Action Plan will be included in the Resident Engineer pending file.

Biological Resources

Modified Alternative J1T, as well as the designated borrow site at Oil Well Hill, would result in direct impacts to the following biological resources: Sensitive plant communities and habitats, including wetlands and other waters of the U.S., oak woodland, and riparian woodlands; Three listed salmonid species; One listed plant species (Baker’s meadowfoam); One listed wildlife species (Northern spotted owl); and Seven non-listed plant and wildlife species (white-tailed kite, Cooper’s hawk, yellow-breasted chat, California yellow warbler, foothill yellow-legged frog, northwestern pond turtle, and red tree vole). The following measures will avoid, minimize, or compensate for impacts to biological resources resulting from construction of the Willits Bypass, Modified Alternative J1T, project:

- The project will comply with the terms and conditions provided by the USFWS and NMFS, in their BOs. Caltrans will also comply with conditions of the permits issued by all of the resources agencies, and will implement mitigation and monitoring measures provided in the Conceptual Mitigation Plan (CMP; see FEIS, Appendix L). The CMP includes measures that would compensate for impacts to wetlands and other waters; riparian woodlands, oak woodlands, listed salmonids; northern spotted owl and Pacific fisher; Baker's meadowfoam and non-listed special-status species.

- Compensatory mitigation would include the creation, restoration, enhancement, and/or preservation of sensitive habitats affected by the project. Conceptual mitigation ratios are provided in the CMP for the Modified Alternative J1T alignment. These ratios were developed through consultation with the USACE, USFWS, NMFS, USEPA, the California Department of Fish & Game (CDFG), and the Regional Water Quality Control Board (RWQCB). A number of mitigation sites have been considered and evaluated for their potential for the creation, restoration, enhancement and/or preservation values. A Final Mitigation and Monitoring Plan will be developed and adopted after approval and distribution of the Final Environmental Impact Report/Environmental Impact Statement.

- During the final design phase of the Modified Alternative J1T project, Caltrans biologists, Caltrans design engineers, and resource agency staff will work together on additional design solutions that will avoid or minimize impacts to sensitive biological resources.

- ESAs will be established and delineated on project plans and specifications to protect sensitive biological resources adjacent to the construction corridor by prohibiting construction activities in those areas.

- Caltrans/FHWA will develop and implement an environmental awareness and training program that informs the contractor and construction workers of the environmental regulations with which Caltrans is committed to comply and measures established for the project to minimize and avoid sensitive habitats and species.

- Qualified biologists will monitor construction activities in sensitive biological resource areas to ensure adherence to permit conditions and mitigation requirements.

- Working in live stream channels to the extent feasible will be avoided. Construction associated with stream crossings (bridges, viaduct, and culvert) would conform to the work window of June 15 though October 15 of each year for work associated with bridge, viaduct, and culvert construction over salmonid bearing streams.

- Oak woodland occurring in the project corridor consists of valley oak woodland, Oregon white oak woodland, and black oak woodland. Minimization efforts during construction would consist of the removal of only the minimum number of trees necessary to allow for efficient project construction. ESA fencing would be installed around oak woodlands adjacent to the work areas. Any encroachment beyond the ESA fencing during construction (including driving, material or equipment storage and vehicle parking) would be prohibited. The ESA fencing would be accurately depicted on the final contract drawings. Compensation for the permanent loss of oak woodland would consist of in-kind creation/restoration, enhancement, and preservation of oak woodlands on newly acquired parcels. These parcels would be purchased in fee or by a conservation easement and be preserved in perpetuity. On sites where creation/restoration or enhancement is to occur, oak trees would be initially planted in these areas at the ratio of five new saplings for each oak lost with the goal of three of them surviving after a ten-year monitoring period. Other compensation options may include: 1) a monetary contribution to the California Oak Woodlands Conservation Fund, administered by the State Wildlife Conservation Board for the purpose of purchasing oak woodland conservation easements, or; 2), if there is an established CDFG oak woodland mitigation bank, the mitigation bank could be used to fulfill the off-site compensation requirements (refer to Conceptual Mitigation Plan; Appendix L of FEIS).

- Riparian woodlands within the project corridor are divided into three categories for management purposes (CMP; see FEIS, Appendix L). Category I riparian woodlands are associated with salmonid bearing streams, and Categories II and III riparian woodlands are other riparian woodlands that are not associated with salmonid streams. Minimization measures that would occur during construction would include: (1) removing the minimum amount of vegetation necessary; (2) installing ESA fencing, and enforcing protection of riparian vegetation located within established protected areas; (3) implementation of appropriate BMPs; and (4) pre-construction training sessions to inform contractors and construction workers of the status of sensitive habitats and special-status species and the requirements for avoidance of protected areas. Mitigation for all affected riparian woodlands would be implemented through creation/restoration, enhancement, and preservation within Little Lake Valley. Local native plant species would be used for the revegetation of impacted riparian zones along salmonid streams within the project limits, as well as off-site mitigation areas. Mitigation would be in-kind, and plant propagules would be collected in Little Lake Valley. Riparian trees would be replanted initially, and associated shrubs, herbaceous plants, and annuals would be seeded or planted along with the riparian trees. Planting methods would include the installation of stem (pole) cuttings from plants such as willows, cottonwood, thimbleberry, coyote bush, or other species capable of easy rooting from cuttings. Pole cuttings would also be used to revegetate areas where Rock Slope Protection (RSP) is required on the stream banks. In mitigation areas where some riparian vegetation is already present, additional vegetation would be

planted. Revegetation of unvegetated stream banks would be considered creation. Removal of invasive exotic vegetation and planting of additional vegetation on sparsely vegetated streambanks would be considered enhancement.

- Modified Alternative J1T would temporarily and permanently affect two populations of Baker's meadowfoam, one in the central portion of the project (in the area of the Colli Ranch) and one in the northern portion of the project, in the vicinity of the Quail Meadows Interchange. The project would avoid most of the central population of Baker's meadowfoam, but would impact the majority of the northern population. Impacts to Baker's meadowfoam plants would be mitigated by off-site preservation of existing populations and habitat, as well as by creation/enhancement of new habitat for populations occurring on upland sites and on wetland sites (refer to CMP, FEIS, Appendix L). Portions of temporarily impacted Baker's meadowfoam habitat could be restored where feasible. Baker's meadowfoam habitats occurring within jurisdictional wetlands would be mitigated by a combination of creation/restoration at the same ratios as jurisdictional wetlands, and preservation. Baker's meadowfoam creation/restoration parameters would be based on specific hydrologic and soil conditions specified and described for the species in a formerly prepared study titled "Hydrologic and Soil-Geomorphic Conditions Associated with Baker's Meadowfoam in Little Lake Valley, Mendocino County, California". Baker's meadowfoam preservation sites would be acquired within Little Lake Valley. Additionally, funds would be necessary in order to set up a long-term management and maintenance program. The Baker's meadowfoam preserves would be maintained in perpetuity and their management could be transferred to CDFG or a mitigation bank (refer to FEIS, Appendix L).

- To comply with the provisions of the Migratory Bird Treaty Act, vegetation required for removal will be removed or trimmed during the fall and/or winter months, to the extent possible, to avoid impacts to nesting birds. If vegetation cannot be removed during the non-breeding season, Caltrans will arrange to have a qualified biologist conduct preconstruction surveys of impact areas to check for nesting activity of all bird species. If nesting activity is detected, Caltrans will, if possible, establish a buffer around the nest(s). The buffer width would be determined through consultation with USFWS and CDFG. The buffer will be maintained and construction activities will avoid nest sites until the biologist determines that the young have fledged or nesting activity has ceased.

- Excavation at the designated borrow site at Oil Well Hill could affect a maximum of 40 acres of Northern spotted owl (NSO) foraging and dispersal habitat. Caltrans will conduct additional pre-construction protocol-level surveys to determine the status of NSO in the vicinity of the Oil Well Hill borrow site. If NSO is found nesting within 1.3 miles of the borrow site, Caltrans/FHWA will consult with the USFWS (refer to USFWS Biological Opinion, FEIS, Appendix D). Caltrans/FHWA will document the results of all protocol surveys conducted

for NSOs. Caltrans will implement measures provided in the USFWS BO for NSO, which include: **(1)** All large trees that can reasonably be avoided at Oil Well Hill will be protected; **(2)** Vegetation removal at Oil Well Hill will occur during the non-breeding season (September 15 – February 1), to the extent feasible, to minimize potential impacts to NSOs. Vegetation will be removed incrementally (i.e., only on those portions of the site that are needed for borrow material), rather than removing all vegetation on the approximately 16 ha (40 ac) site prior to excavation; **(3)** Planting the same tree species that occurred at the borrow site following excavation, if feasible, could restore vegetation at Oil Well Hill; **(4)** If an active NSO nest is found within 0.8 km (0.5 mi) of any proposed construction activity, USFWS may require that Caltrans establish a 0.8 km (0.5 mi) diameter buffer around the activity center during the breeding season (February 15 to August 31).

- If non-listed special-status wildlife species are found nesting on or near the project site, including California yellow warbler, yellow-breasted chat, and raptors, Caltrans will establish buffers around each nest. The buffer width will be determined through consultation with CDFG. The buffer shall be maintained and construction activities shall avoid nest sites until the Caltrans biologist determines that the young have fledged or nesting activity has ceased. For white-tailed kites and other raptors, Caltrans shall conduct a pre-construction survey during the spring or early summer (April-early July) to determine whether nesting raptors (e.g., white-tailed kites, Cooper's hawks, red-tailed hawks, red-shouldered hawks) are present on or within 0.40 km (0.25 mi) of the selected alternative. If the survey detects nesting raptors on or within 0.40 km (0.25 mi) of the selected alternative, Caltrans will maintain buffer areas and seasonal construction constraints (e.g., no work during active nesting periods) in coordination with USFWS and CDFG.

- The proposed viaduct and bridge crossings would provide access for wildlife to cross under the proposed alignment. Caltrans may construct additional wildlife under-crossings, if feasible, that would be suitable for use by deer and other wildlife species. If the construction of other wildlife crossings were feasible, the location, number and design of the under-crossings would be determined through consultation with CDFG.

- In addition to requiring the contractor to prepare a Storm Water Pollution Prevention Plan (SWPPP), Caltrans will implement the following measures to minimize disturbances to aquatic resources: **(1)** All construction-related materials shall be stored in designated staging areas at least 100 feet from perennial waterways and drainages; **(2)** Refueling and vehicle maintenance shall be performed at least 100 feet from creeks and other water bodies; **(3)** Operation of heavy equipment shall be minimized in perennial creeks (to the greatest extent possible). If equipment must access perennial creeks, this will occur during the late summer months when the stream flows are low, or when no water is in the channels. If water is flowing, the channels will be dewatered; **(4)** Temporary sedimentation barriers, such as sandbags or siltation fencing, shall be installed to

minimize the amount of silt entering the creeks and any ephemeral drainages with water present in the channel. The location of these barriers shall be determined by the resident engineer and environmental monitor, and shall be clearly marked in the field before construction activities begin; **(5)** Additional Best Management Practices (BMPs) shall be implemented to prevent runoff from adjacent lands from flowing across construction areas, slow down the runoff traveling across construction sites, remove sediment from onsite runoff before it leaves the site, and provide soil stabilization.

- To reduce the spread of invasive non-native plant species and minimize the potential for disturbance activities to decrease palatable vegetation for wildlife species, Caltrans will implement the following protection measures to comply with Executive Order (EO) 13112: **(1)** Prior to construction, Caltrans will conduct surveys in the construction corridor of the NEPA/404 preferred alternative for populations of plants listed on the California Department of Food and Agriculture (CDFA) noxious weed list. Populations of noxious weeds will be mapped. This will establish a baseline from which to evaluate the possible impacts of this construction on the spread of these invasive exotic plants or the establishment of other invasive exotic plants; **(2)** Caltrans will not allow disposal of soil and plant materials from any areas that supports invasive species in areas that support stands dominated by native vegetation; **(3)** Plant species used for erosion control will consist of native, non-invasive species or non-persistent hybrids that will serve to stabilize site conditions and prevent invasive species from colonizing; **(4)** All off highway equipment used on the project shall be free of mineral soil and vegetation. Evidence of high pressure washing or steam cleaning, prior to initial entry to the project limits, will be required to minimize the potential for the spread of invasive weeds from outside the Little Lake Valley area. Contract language will inform Contractors and Caltrans inspection staff of the methods to be used to control and prevent the spread of identified invasive non-native species. Gravel and/or fill material from borrow areas and commercial sources will come from weed free sources. Certified weed-free, landscape and erosion control materials will be used; **(5)** Following construction, Caltrans will conduct a three-year program of invasive exotic weed monitoring, which will consist of conducting surveys every six months during the spring and late summer. The percent cover of invasive exotic plant species occurring within the construction corridor must not exceed the cover of invasive exotic plant species found outside the construction corridor, or the cover found in the construction corridor prior to construction. Monitoring potential invasive species will occur only where ground was disturbed within the construction corridor; **(6)** If, during the three-year monitoring program, invasive weeds show evidence of spreading, Caltrans will develop an Invasive Weed Eradication Plan, targeting identified invasive species on the CDFA list. Herbicides would not be used since Caltrans does not use herbicides in Mendocino County.

- During pile driving activities below the top-of-bank and within 15 m (50 feet) of salmonid bearing streams, Caltrans will dewater the stream (including relocating fish), and a qualified fisheries biologist will monitor underwater noise levels both

upstream and downstream of the dewatered area. If noise levels exceed 187 dB_{SEL} or 208 dB peak, Caltrans will cease pile driving at this location and immediately contact NMFS to discuss further reasonable and prudent measures to minimize potential impacts to fish, which could include additional fish relocation and dewatering. Dewatering could be required for six weeks or more at some stream crossings. See also NMFS Biological Opinion (FEIS, Appendix D).

Business and Residential Relocation

Modified Alternative J1T would require the relocation of 10 residences. The Final Relocation Impact Statement (FRIS) prepared for this alternative concludes that replacement housing would be available for all impacted households in the replacement area and would not dramatically alter the local housing market. Modified Alternative J1T would also impact six industrial businesses and one non-profit organization. Adequate relocation facilities exist in Willits and the surrounding valley for these business uses. The following measures will reduce impacts related to residential and/or business relocations.

- Caltrans will provide relocation assistance payments and counseling to persons and businesses in accordance with the Federal Uniform Relocation Assistance and Real Properties Acquisition Policies Act, as Amended, to ensure adequate relocation and a decent, safe, and sanitary home for displaced residents (see Volume 3, DEIS/EIR, Appendix J for a detailed discussion). All eligible displacees will be entitled to moving expenses. All benefits and services will be provided equitably to all residential and business relocatees without regard to race, color, religion, age, national origins and disability as specified under Title VI of the Civil Rights Act of 1964.

- Caltrans will arrange for Last Resort Housing payments to displaced residents unable to utilize standard relocation benefits to locate existing housing within the project area.

- Caltrans will work with potentially displaced residents and local agencies to develop a comprehensive Relocation Plan to provide displaced residents with the greatest possible use of relocation benefits and Last Resort Housing payments.

Farmland

The Modified Alternative J1T does not exceed the 160-point impact threshold in its conversion of Prime and Unique farmland to other uses; however, this alternative would have several irreversible impacts on agriculture in this area. It would convert over 100 acres of Prime and Unique farmland to non-farm uses, relocate one ranch, and affect over 50 acres of land held in Williamson Act contracts. The following mitigation measures are proposed to offset these impacts.

- The Purchase of Agricultural Conservation Easements (PACE) program enables the landowners to separate and sell their right to develop land from their other property rights. After selling easements, the landowner retains all other rights of

ownership, including the right to farm the land, prevent trespass, and sell the land. Caltrans may purchase an agricultural conservation easement in or near the project area, consisting predominantly of Prime Farmland, which will ensure preservation of the land for farming uses in perpetuity. This mitigation may be combined with mitigation for lost wetlands, assuming that wetlands are suitable for grazing purposes. Easement titles could be deeded to non-profit environmental organizations or to organizations such as the American Farmland Trust.

- Caltrans will stockpile as much topsoil as is feasible for local and re-vegetation use to conserve valuable Prime Farmland (soils). The use of topsoil facilitates the reestablishment of plant communities on disturbed soils and reintroduces this important resource back into the local ecosystem. The topsoil will be stored at an environmentally approved site. Possible applications for the topsoil include: mitigation sites; landscaping the Willits bypass project corridor; and use by the City of Willits, Mendocino County, and local/county residents/businesses/ farming operations.

- Caltrans may contribute to the Department of Conservation's Farmland Conservancy Fund, in an amount to be determined in coordination between Caltrans and the Department of Conservation. The fund provides grants for projects that use and support agricultural conservancy easements for protection of agricultural lands. Caltrans can buy "credits" per Public Resources Code 10231.5, which states "the Department may accept donations of funds if the department is the designated beneficiary of the donation and agrees to use the funds for the purposes of the program in a county specified by the donor." The Department of Conservation, which oversees the Farmland Conservancy Fund can accept funds and apply them within a designated area (Little Lake Valley or near the Willits Bypass Project).

Floodplain

The construction of Modified Alternative J1T within the floodplain would have minimal impact related to additional impervious surface area or to beneficial floodplain values. The following measures will minimize potential floodplain impacts.

- According to FEMA, the floodway is "the area of the floodplain that should be reserved (kept free of obstructions) to allow floodwaters to move downstream." For each valley alternative, the Floodway Viaduct (bridge) spans the floodway. The only encroachments in the floodway are the columns supporting the structure. In addition, the structure designs have relatively long spans, in the range of 30 m (100 ft). These structure design features limit the impacts on the floodplain by minimizing the actual footprint of the impacts and obstructions to flow.

- The valley alternatives include equalizing culverts at periodic points along the embankments, which should minimize the redirection of flows, maintaining the existing flood patterns. The culverts will not, however, be included if detailed

hydraulic studies indicate the culverts would cause other problems with flood patterns.

- The cross sectional design of the facility, the side slopes, median, pavement widths, and so forth, has been established to limit impacts to floodplains as well as other resources. The median width, at 13.8 m (45 ft), is 4.8 m (16 ft) less than Caltrans' current design standard. This median width reduces the footprint of impact along the entire alignment, including the floodplain. Sideslopes are the slopes connecting the roadbed with the existing ground. When the embankment is low, the sideslopes can be constructed at relatively low angles without extending an unreasonable distance from the roadbed. But as embankments increase in height, sideslopes constructed at the same angles would cover much wider areas and add to the volume of earth to be placed. To reduce the earthwork and footprint of higher embankments, sideslopes are constructed at steeper angles. In the floodplain, the higher embankments occur at bridge approaches, and the steeper sideslopes constructed in connection with these higher embankments limit the impacted areas.

- The use of tight diamond interchanges rather than spread diamonds reduces the footprint of impacts on the floodplain.

Geology and Soils

Geologic conditions in the project area consist of active faults, shallow groundwater, and soil deposits that could be subject to liquefaction, shear failures, and settlement. Based on sampling and data analyses, the primary geotechnical considerations for the Modified Alternative J1T is the potential for differential settlement. The following measures will reduce potential impacts related to these geologic conditions:

- If necessary, Caltrans will incorporate special design considerations into the project, such as specialized foundation treatments, specialized cut slope and fill slope design, mechanically reinforced embankments, stabilization trenches, catchment areas, and specialized subsurface drainage techniques.

- Where deposits are highly erodible and prone to landsliding, Caltrans will design the project to include specific slope ratios, special foundation treatments, and other engineering solutions.

- To minimize or prevent settlement, Caltrans will incorporate foundation treatments or long-term settlement periods into the design and construction of the project.

- For any structures overlying potentially liquefiable deposits, Caltrans will design the project to be constructed on foundation piles that could be extended through the susceptible zones into structurally competent materials.

Hazardous Materials

No hazardous waste issues have been identified within the Modified Alternative J1T alignment, and no hazardous waste/materials issues have been identified at the Oil Well Hill borrow site area. On a short-term basis, during construction/demolition activities, the Modified Alternative J1T has potential for the presence of asbestos-containing building materials (ACBM) and lead-based paint in the buildings within the project boundaries. The following measures will avoid or minimize hazardous waste impacts:

- Caltrans will complete an asbestos and lead-based paint survey prior to demolition activities. Caltrans will obtain a Mendocino County Air Quality Management District permit (i.e., NESHAP permit – National Emission Standards for Hazardous Air Pollutants), which is required for demolition.

- Inspections for a NESHAP permit are done by Cal/OSHA certified inspectors. Regulated Asbestos Containing Materials (RACMs), Category I and II materials, are identified during the survey and are noted on NESHAP permit**.** Caltrans will have all Regulated Asbestos Containing Materials (RACM) and lead-based paint abated by a licensed asbestos and lead-based paint contractor.

Noise

Projected noise levels for the Modified Alternative J1T are below the Noise Abatement Criteria; therefore no abatement is to be undertaken under Title 23, Part 772, Code of Federal Regulations, "Procedures for Abatement of Highway Traffic Noise". During the construction phase of the project, noise from construction activities would dominate the noise environment in the immediate area. Activities involved in construction would generate noise levels ranging from 70 to 90 dB at a distance of 15 m (50 ft). Construction activities would be temporary in nature, typically occurring during normal working hours. Noise levels related to pile driving activities would exceed this range, but would vary depending upon the type of equipment, the size/type of piles, and the soil conditions where the work is occurring. The following mitigation measures are proposed to address noise impacts during construction.

- The contractor shall comply with all local sound control and noise level rules, regulations and ordinances, which apply to any work performed pursuant to the contract (Caltrans Standard Specifications Section 7-1.01(I) "Sound control requirements").

- Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without the muffler (Caltrans Standard Specifications Section 7-1.01(I) "Sound control requirements".

- Although standard practice requires that construction be restricted to between the hours of 7:00 am and 7:00 pm (8:00 am and 7:00 pm on Saturdays), some

nighttime work may be needed. Standard practice precludes construction work on Sundays and federal holidays.

- Stationary construction equipment, such as compressors and generators, will be shielded and located as far away as feasible from receptor locations.

- Place any maintenance yard, batch plant, haul roads, and other construction operations as far as possible from sensitive receptor locations.

- Caltrans will keep area residents informed regarding construction work, the time involved, and control measures that will be used to reduce construction-related impacts.

- A Traffic Management Plan will provide methods and restrictions to minimize construction traffic impacts to residents.

Public Services

During construction of the project, traffic delays would not be anticipated since most of the project would be constructed on new alignment, and therefore, would have minimal impact on local roadways. However, to reduce conflicts with emergency services providers and other public services, and local traffic, the following measures are proposed:

- Caltrans will make preconstruction contacts with the fire department, law enforcement, and ambulance services.

- Caltrans will notify concerned agencies of the construction schedule.

- Caltrans will implement a traffic management plan to minimize impacts to roadway users during construction of the project.

SMARA/Grading Permit (Disposal, Borrow, Staging)

Removal of embankment material from the designated borrow site would result in impacts to some biological resources. The biological measures described above will avoid or minimize impacts, as will the following:

- Caltrans/FHWA will obtain a permit pursuant to the State Mining and Reclamation Act (SMARA), if required, before construction activities begin. Caltrans will submit a permit application, a Mendocino County-approved Reclamation Plan, and financial assurance to the Department of Conservation, Office of Mine Reclamation. Caltrans will implement the reclamation plan, which will include steps for maintaining water and air quality, minimizing flooding, erosion and damage to wildlife and aquatic habitats caused by the surface mining. The reclamation process will include topsoil replacement and revegetation with suitable plant species. The reclamation plan also will contain measures to mitigate visual impacts.

Visual Resources

The Modified Alternative J1T would have a less than adverse visual impact to the South Valley, Little Lake Valley, Miracle Mile, and Historic District Landscape Assessment Units (LAUs), and no visual impact to the Brooktrails LAU. At the designated borrow site, one home near the excavation on the east side of the highway and higher on the hill could be impacted visually. The following measures are proposed to minimize visual impacts:

- Caltrans will have the contractor avoid and preserve trees and vegetation where feasible. Native vegetation that is removed for construction of the project will be replaced with like varieties to blend the freeway into the landscape. Tree mitigation is discussed under Biological Resources.

- Caltrans will use stockpiled topsoil in revegetation efforts.

- Slope protection will blend with existing features, simulating natural forms (i.e., rounding tops and bottoms of cut and fill slopes).

- The contractor will avoid/preserve large rock formations that do not interfere with construction of the project.

- Caltrans will provide plantings in appropriate locations, including adjoining highway slopes, to reduce visual impacts. Plant materials will include a combination of native oaks, pines, and/or redwood trees, as well as native shrubs and ground covers, where appropriate.

- For Oil Well Hill only: Caltrans will incorporate into the project design slope rounding, contour grading, and to the extent feasible, leaving a vegetative buffer between the highway and cut slope. At the time of final design, the Caltrans Office of Landscape Architecture will provide specific design solutions for slope treatment.

- For Oil Well Hill only: Caltrans will provide screen planting for the home closest to excavation at the designated borrow site.

- Caltrans Structures and Aesthetics Division, in cooperation with the Office of Landscape Architecture, will provide design treatments for project structures, such as bridges and viaduct, and to highway appurtenances.

- Landscape Plantings for the South Valley Landscape Assessment Unit: After the initial erosion control seeding, Caltrans may provide permanent landscape plantings for this area. Plant material selection is to include native species. Plantings must be concentrated at areas where existing groves of trees occur and leaving open areas unplanted. This method will preserve the existing grassland and horizontal views, which are unique to this landscape unit.

Water Quality

Construction of the bypass would increase the overall impervious surface within Little Lake Valley, which could result in a higher volume of storm water runoff. This will, to some degree, modify the drainage patter near the proposed alignment, which can increase the potential for erosion. Generally, the increase in storm water runoff can increase the potential for erosion due to point discharges, overland flow, and stream bank erosion. Storm water runoff, both during and after construction, and other long-term maintenance activities could potentially introduce chemicals, oil, and grease to surface waters. Construction activities, including the removal of embankment material at Oil Well Hill, would result in soil and ground disturbances, creating loose or unprotected soil that could be transported by storm water runoff or wind to nearby watercourses. Such increases in sediment and turbidity could impact receiving water quality. Modified Alternative J1T does not propose stream channel realignments for any salmonid bearing streams therefore, impacts due to loss of canopy cover and elevated stream temperatures are significantly reduced, compared to the other build alternatives.

- To address potential water quality impacts during construction, Caltrans will require the contractor to use a combination of Best Management Practices (BMPs) to control potential erosion and sedimentation from the project site. Caltrans has developed a suite of construction site BMPs that will be implemented on the proposed project. The Plans, Specifications and Estimates (PS&E) developed for the project will require the contractor to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP), and other project specific construction BMPs, which will effectively reduce potential pollutants of concern in storm water discharges. The SWPPP will be reviewed and approved by the Caltrans Resident Engineer to ensure all the necessary BMPs are incorporated. The SWPPP will also include a final Revegetation Plan to be implemented at the end of construction activities.

- Caltrans' Standard Special Provisions (SSPs) will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters. For example, on this project, equipment operating in water bodies will be required to be steam cleaned prior to arrival on site, and be maintained in a clean condition during the length of activities.

- Where vegetation along streams is removed or severely trimmed back, Caltrans will plant replacement vegetation using native species for shading of creeks to reduce temperature related impacts to water quality.

- Following the construction process, the contractor will stabilize disturbed soil areas through permanent re-vegetation or other means. The Storm Water Quality Handbook, Project Planning and Design Guide (revised July 2005), provides detailed procedures for design of permanent slope stabilization controls, design pollution prevention, and permanent treatment BMPs. The procedures are intended to ensure that an appropriate design is developed that will allow all finished slopes to achieve stabilization, even under severe conditions, and also

provide erosion control BMPs at all point source discharges of storm water runoff. Treatment BMPs, such as biofiltration, will be incorporated where feasible.

- The placement of sand on roads in the Willits area occurs relatively infrequently. When applied, Caltrans uses clean sand and follows the practices and procedures in Maintenance BMP (R1) Snow and Ice Control.

- As part of standard operation and maintenance procedures, Caltrans has developed a standard Hazardous Waste and Spill Response Plan (HW&SRP), which Caltrans will ensure is implemented during the project. These BMPs address water quality issues associated with accidental spills.

Wetlands Only Practicable Alternative Finding

Pursuant to Executive Order 11990 [23 CFR 771.125(a)(1)], Caltrans/FHWA has determined that there is no practicable alternative to constructing the project in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands, which may result from such use. The analysis for this Wetlands Only Practicable Alternative Finding is located in Appendix J of the FEIS.

E. Monitoring or Enforcement Program

In cooperation with the NEPA/404 resource agencies, Caltrans has prepared a Conceptual Mitigation Plan (CMP; see FEIS, Appendix L), which contains detailed information about: the biological resources identified within the project area; how these resources would be impacted by the proposed project; the avoidance and minimization measures to be implemented; and a conceptual plan for the compensatory mitigation of project-related impacts. The USACE, USEPA, USFWS, and NMFS have issued letters of concurrence that the CMP, which will serve as the basis for the Final Mitigation Plan, is adequate (see FEIS, Appendix C). Caltrans will continue to work with the resource agencies to develop the Final Mitigation and Monitoring Plan, which will detail the location and extent of all biological mitigation requirements to be implemented for the project.

The USFWS and NMFS have each issued the BO, which states that the proposed project is not likely to jeopardize the continued existence of Northern spotted owl, Pacific fisher, and three listed salmonid species, after implementation of mitigation measures. The BOs issued by the USFWS (March 2006) and NMFS (September 2006) can be found in Appendix D. The project shall comply with the terms and conditions of the USFWS and NMFS BOs to further minimize impacts to these resources.

F. Comments on Final EIS

This portion of the ROD includes comments received by Caltrans on the Final EIS for the Willits Bypass. The Final EIS was approved by FHWA on October 25, 2006. A Notice

of Availability of the FEIS was published in the Federal Register on November 9, 2006, with the wait period ending December 11, 2006.

Four letters were received in response to the notice in the Federal Register.

Letter Number	Letter From	Date Sent
1	Federal Emergency Management Agency (FEMA)	11/21/06
2	Individual Citizen (Mr. Freddie Long)	11/28/06
3	Willits Environmental Center	12/8/06
4	United States Environmental Protection Agency	12/11/06

Caltrans and FHWA have reviewed the comment letters and have concluded that all substantive comments in the letter have been addressed and FHWA has considered all Final EIS comments before reaching the decisions documented in this ROD.

Letter 1

The FEMA letter contained four recommendations (bold). The following are the recommendations and Caltrans and FHWA's response:

1. **All buildings constructed within a riverine floodplain must be elevated so that the lowest floor is at or above the Base Flood Elevation level in accordance with the effective Flood Insurance Rate Map (FIRM).**

   As stated in Section 2.3 of the FEIS, the highway will be built on elevated structures above the 100-year floodwater surface level.

2. **If the area of construction is located within a Regulatory Floodway as delineated on the Flood Insurance Rate Map, any development must not increase base flood elevations.**

   A detailed hydraulics study has been conducted. Results of the study were included in Section 3.6 of the FEIS. Construction of the floodway viaduct will avoid any increase in the floodway water surface elevation.

3. **Areas within a coastal high hazard area must be elevated on pilings and columns, so that the lowest horizontal structural member is elevated to or above the base flood elevation level.**

   The project is not within a coastal area.

4. **Upon completion of any development that changes existing Special Flood Hazard Areas, the National Flood Insurance Program directs all**

participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision.

Caltrans will complete and submit necessary hydrologic and hydraulic data as appropriate upon completion of the project.

Letter 2

Mr. Long's letter contained the following comments (bold) with Caltrans and FHWA's response below them.

The demand for oil is outstripping the supply resulting in higher fuel prices. As a result traffic levels on 101 will be lower rather than higher in the future. The funds for the project should be spent on pedestrian and bicycle improvements, thereby saving money and impacts to the environment.

There is no data available that shows a substantial change in the mode of transportation in the Willits area in the foreseeable future. A discussion on the appropriateness of a 4-lane bypass has been addressed in General Response 1.10 Two-Lane Bypass in Volume 2 of the FEIS.

Letter 3

The Willits Environmental Center letter contained three comments. The following are the comments and Caltrans and FHWA's response:

1. **The 2-lane Alternative has inappropriately been dismissed as a practical alternative.**
   General Response 1.10 in Volume 2 of the FEIS addresses the suggestion of a 2-lane bypass.

2. **Cost estimates fall short of true costs of the project.**
   Project costs have been continually updated using the best available information to Caltrans staff. Estimates do include funding set aside for mitigation. As stated in Section 1.2 of the FEIS, a combination of funding strategies will be utilized to bridge the gap between construction estimates and programmed amounts. The project may be constructed in full or in part depending on funding availability.

3. **The final mitigation plan does not disclose specific proposed methods for mitigating environmental impacts.**
   The comment that mitigation measures proposed by the project are too conceptual in nature was presented as a comment to the DEIS. General Response 1.14 in Volume 2 of the FEIS addresses this comment.

4. **The project does not address the issue of global warming and rising oil prices. The Environmental documents do not address the community**

responses to these issues, which include increased public transit, reducing vehicle use and greenhouse gases.
Please see the response to letter 2 for the issue on rising oil prices and anticipated public reaction. As for global warming and greenhouse gases, the project has been reviewed pursuant to all applicable air quality regulations. The results of these studies are included in Section 3.12 of the FEIS.

Letter 4

The Environmental Protection Agency letter contained one recommendation. The following are the recommendations and Caltrans and FHWA's response.

The EPA recommends Caltrans to continue to work collaboratively with the City of Willits and resource and regulatory agencies on this project on the development of a final detailed mitigation plan. Caltrans is also encouraged to work jointly with the City and EPA on exploring mitigation opportunities for the bypass and wastewater treatment facility.

Caltrans intends to continue its collaboration with the City and resource and regulatory agencies during the development of the final mitigation plan and with respect to the wastewater treatment plant.

G. Record of Decision Approval

Based on the analysis and evaluation contained in the proposed project's FEIS and after careful consideration of all the identified social, economic, and environmental factors and project commitments outlined in this ROD, it is the decision of FHWA to approve the Modified Alternative J1T as the Selected Alternative for the Willits Bypass Project.

12/18/06
Date of Approval

Gene K. Fong
GENE K. FONG
Division Administrator
Federal Highway Administration

Attachment 5: Section 7 Concurrence Documents

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Arcata Fish and Wildlife Office
1655 Heindon Road
Arcata, California, 95521
Phone: (707) 822-7201 Fax: (707) 822-8411

In Reply Refer To:
1-14-1998-0095

MAR 3 0 2006

Gene K. Fong
Division Administrator
Federal Highway Administration
California Division
650 Capitol Mall, Suite 4-100
Sacramento, California 95814

Subject: Formal Consultation on the Proposed Willits Bypass Project, on U.S. Highway 101, Mendocino County (EA 01-262000, Document # P53181)

Dear Mr. Fong:

This correspondence transmits the Fish and Wildlife Service's (Service's) biological opinion, based on our review of the Federal Highway Administration's (FHWA's) proposed action, construction of the Willits Bypass Project, located between post miles (PM) 43.1 and 52.3, on U.S. Highway 101, in Mendocino County, California, and its effects on the threatened northern spotted owl (*Strix occidentalis caurina*) (spotted owl). You determined that the proposed action may affect and is likely to adversely affect the spotted owl. You also determined that the proposed action may affect but is not likely to adversely affect the threatened bald eagle (*Haliaeetus leucocephalus*). In this response, we also transmit the Service's concurrence with your determination of effects to the bald eagle. This document is prepared in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 O.K. 1531 et seq.) (Act). We received your September 7, 2005, request for consultation on September 12, 2005.

The proposed action is not located within critical habitat designated or proposed for any listed or proposed species, and will not affect any primary constituent element of critical habitat. Therefore, critical habitat need not be addressed further in this consultation.

This consultation is based on information you provided in the August 2005 biological assessment (BA) and its appendices submitted with your request, telephone conversations between staff biologists of the Service's Arcata Fish and Wildlife Office (AFWO) and the California Department of Transportation (Caltrans), field visits to the site of the proposed construction

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project, and other sources of information. A complete administrative record of this consultation is on file at this office.

Consultation History

As early as 1995, Caltrans and other Federal and State agencies began planning numerous design and alignment alternatives for the Willits Bypass project. Various studies and documents have been published by Caltrans since that time. A complete list of those documents can be found on page 14 of the BA. More intensive planning has occurred since 1998, and especially during the most recent five-year period. Field visits to the Willits Bypass project area occurred on several occasions during the years 2002 through 2005, including a visit to the proposed excavation site. The purpose of those field visits was to gain a better understanding of the effects of the proposed project on wetlands in Little Lake Valley, the potential spotted owl suitable habitat in the vicinity of Oil Well Hill, and the effects of design alternatives on fish, wildlife and plant habitat. Several meetings of the project development team (PDT) occurred during this time period as well to discuss project design alternatives, potential effects to wetlands and listed species, and community needs. Additional meetings among Federal, State and local agency representatives were held to discuss effects of various design alternatives, mitigation measures for impacts to wetlands, and scheduling of planning and construction activities. On September 27, 2005, FHWA submitted a request for formal consultation on the Willits Bypass project to AFWO. A biological assessment, dated August 2005, was enclosed with that request.

Concurrence on Effects to Bald Eagle

FHWA determined that the Willits Bypass Project may affect bald eagles in or near Little Lake Valley. These potential effects are analyzed in the August 2005 BA. Based on this analysis, FHWA determined that the proposed action may affect but is not likely to adversely affect the bald eagle. The following discussion documents the Service's concurrence with FHWA's determination. The proposed action is briefly described in the biological opinion which follows, and is discussed in detail in the BA, and will not be repeated here. The reader is referred to the BA for details regarding location, extent of effects, and timing of the proposed action.

Bald eagle nest sites are always associated with a lake, river, or other body of water, and usually occur within approximately 1 mile (1.6 km) of these water bodies (Lehman 1979). Nests are usually constructed in a tree that provides an unobstructed view of the water body and that is almost always the dominant or co-dominant tree in the surrounding stand (Lehman 1979). Snags and dead-topped live trees are important habitat components in a bald eagle nesting territory and provide perch and roost sites. Bald eagles winter along rivers, lakes, or reservoirs that support adequate fish or water bird prey, and that have mature trees or large snags available for perch sites. They often roost communally during the winter, typically in mature trees or snags with open branching structures that are isolated from human disturbance.

No bald eagle nests were observed during field surveys, and no bald eagles are known to nest in the Little Lake Valley area (Caltrans 2000). One adult bald eagle was observed incidentally during other surveys conducted in winter 1993 (Caltrans 1997). Scott Harris (CDFG fisheries biologist, pers. comm., cited in BA) has observed bald eagles in Little Lake Valley on only three

or four occasions over the past 10 years while conducting salmonid surveys in Little Lake Valley, and noted that these birds did not remain in the area for any length of time.

The proposed project will permanently affect approximately 48 acres of wetlands, with approximately 81 percent (39 acres) consisting of wet meadow habitat, and approximately 5.4 acres (11 percent) of mixed marsh. The remaining 8 percent of wetlands affected consist of jurisdictional riparian woodland and scrub habitat. These wetlands are located primarily in the central and southern portions of the valley, and are in the topographically higher central portion of the valley, where flooding occurs only during the wettest years. Hence, these wetlands would provide lower quality habitat for waterfowl, used only during very wet periods. In addition, the majority of the stream reaches within the Modified Alternative J1T project corridor that support salmonids have a fairly dense riparian woodland canopy cover over the creeks, which would restrict the use of these streams by eagles, which require open water to capture their prey.

The northern portion of the valley, north of the project corridor, is topographically lower than the rest of the valley, and standing water in this portion of the valley occurs more regularly, is deeper, and remains longer during the winter months. Approximately 700 acres of higher quality winter waterfowl habitat were identified in the northern portion of the valley outside the action area, which provides the primary habitat for wintering waterfowl in Little Lake Valley (Caltrans 1997). Also, riparian vegetation is sparse along the reach of Outlet Creek north of the project corridor, which would facilitate access to migrating fish by eagles. These areas, which comprise the significant foraging habitat for bald eagles in Little Lake Valley, would not be affected by the proposed action.

Due to the low number of observations of bald eagles in Little Lake Valley, the absence of nesting activity, and the absence of higher quality foraging habitat in and near the proposed project corridor, it is likely that bald eagles observed in the valley are individuals that are occasional winter visitors that forage opportunistically during wet winters, when waterfowl or other suitable prey are present. Hence, project related impacts to wetlands and the streams reaches in the central and southern portions of the valley are not expected to result in a significant loss of foraging habitat for bald eagles.

The Service concurs with your determination that the proposed action may affect but is not likely to adversely affect the bald eagle, based on the following factors:

1. No forest habitat that currently functions as nesting habitat for the bald eagle will be removed, degraded or downgraded. The bald eagle does not currently nest in Little Lake Valley or on Oil Well Hill, and no nest trees currently used or known to have historically been used will be removed as a result of this proposed action.

2. The proposed action will not result in noise or visual disturbance to the species. Bald eagles use Little Lake Valley sporadically during some winters as foraging habitat, and may roost on occasion in or near the valley. However, no communal roosts are known to exist in the valley, so none will be subject to noise or visual disturbance. As indicated above, bald eagles are not known to nest in Little Lake Valley, so nesting bald eagles would not be subject to disturbance.

3. The proposed action will not result in injury or death of any individuals of the species.

4. The action will not result in adverse effects to any primary constituent element of critical habitat, since critical habitat is not designated for the species.

BIOLOGICAL OPINION

The following biological opinion addresses the effects of the proposed action on the northern spotted owl. No other species has been determined by FHWA and Caltrans to be adversely affected by the proposed action. Hence, no other species need be addressed by this opinion.

DESCRIPTION OF THE PROPOSED ACTION

Introduction

A complete description of the proposed action, including construction activities and equipment necessary to complete this action, can be found in the August 2005 BA and its appendices. That document is hereby included by reference. The following discussion provides a brief description of the construction activities most pertinent to this consultation. The reader is referred to the BA for complete details and additional clarification regarding the proposed activities.

Scope of Activities

FHWA and Caltrans propose to construct a bypass highway through Little Lake Valley around the community of Willits. The purposes of this project are to improve the level of service and safety for travelers along U.S. Highway 101; reduce delays for interregional traffic; and improve traffic flow and safety on Main Street, which currently functions as Highway 101 through the city. Caltrans proposes to construct a four-lane, divided highway along an alignment to the east of the city limits. This alignment, referred to as the Modified J1T alternative, would be constructed on a combination of imported fill material and elevated viaduct. Two interchanges are proposed, one each on the south and north ends of the new alignment, to access the community along the existing Highway 101/Main Street.

Construction activities along the proposed alignment through Little Lake Valley will not occur within or near habitat currently occupied, or likely to be occupied in the foreseeable future, by listed species under the regulatory jurisdiction of the Service. However, the road alignment passes through substantial wetlands, and may affect several streams in Little Lake Valley currently occupied by listed salmonid fishes under the jurisdiction of the National Marine Fisheries Service (NOAA Fisheries). Section 7 consultation has been initiated with NOAA Fisheries for those species.

In order to obtain enough fill material to construct the elevated roadway through the valley, Caltrans proposes to import fill material from a major excavation site north of the main roadway construction area and adjacent to the existing highway on Oil Well Hill north of Outlet Creek. Figures 1-3 and 1-4 of the BA, Appendix I, depict the location of the excavation site. Although

Caltrans anticipates that the contractor will obtain fill material from this site, the contractor may choose to import fill from another site if feasible. Caltrans requires that any use of an alternative site comply with all local, state and federal environmental and permitting use regulations, and requires the contractor to prepare and submit documentation of compliance to the Caltrans Resident Engineer. The present consultation addresses only the proposed excavation site on Oil Well Hill, and does not address effects to listed species that may arise from use of any alternative extraction site.

The Oil Well Hill borrow site is immediately adjacent to Highway 101 and north of Outlet Creek. It has been designated as a proposed borrow site because of its proximity to the project corridor, its location within the existing Caltrans right-of-way, and the presence of soil material suitable for use as fill for this project. Other sites were not proposed as designated borrow site(s) for this project due to the cost involved in acquiring land and the distance from the proposed project corridor.

Proposed Construction Activities

Fill material extraction at the Oil Well Hill site would require the removal of forested habitat. This habitat removal has the potential to remove, downgrade or degrade habitat suitable for the spotted owl. Hence, activities related to the extraction and transport of this fill material from Oil Well Hill to the proposed highway alignment in Little Lake Valley are the focus of the following description of proposed activities.

Caltrans proposes to extract soil fill material on a maximum of 40 acres (16.2 ha) for use in constructing the roadbed of a major portion of the Willits Bypass. Caltrans estimates the fill requirements for the Modified J1T alignment to be 1.9 million cubic meters (2.5 million cubic yards), although revisions to the final design standards could reduce the actual acreage and volume of excavated materials. For purposes of this consultation, the estimate of 40 acres of habitat removal and 1.9 million cubic meters of fill are assumed to be reasonable worst case figures. Although the exact amount of fill material to be excavated, and the acreage of forest habitat to be removed, are not precisely known at this time, the extent of habitat removed will be minimized to the extent practicable. As indicate above, some or all of this fill material may come from alternative sites at the discretion of the contractor, provided Caltrans-specified conditions are met.

The material will be excavated by using heavy equipment, assumed to include large excavators, bulldozers, loaders, and large dump trucks, as well as a variety of small power tools and equipment. The material will be transported by truck to the abandoned truck scale area, located about two miles south of the borrow site, via Highway 101, and from there along the new road alignment to its final deposition site. Use of this equipment will modify existing traffic noise dynamics at the excavation site, especially on the east side of extraction area which currently is buffered from the direct noise effects of existing highway use. Changes to the noise dynamics will occur along the haul route as well. The actual effects of these changes to the sound regime on listed species are discussed in detail in the Effects to the Species section of this biological opinion.

Excavation of fill material at Oil Well Hill may require the use of explosives. The number and frequency of charges will be determined by the contractor. The charges will be set below ground to fracture and loosen rock; above-ground use is not anticipated.

Excavation will remove portions of the cut slope on the east side of the existing highway and establish a new cut slope a maximum of 183 meters (600 feet) east of the highway. Caltrans anticipates that these changes will result in minimal alteration of the sound regime within the remaining spotted owl habitat.

Night work is proposed at the excavation site to reduce the cost and time period for construction. Limiting the excavation activities to daylight hours would extend the duration of construction from 2 years to a total of 4 years, and are anticipated to increase costs by approximately $5 million per year of extension (Dave Kelley, Caltrans, pers. comm., as cited in BA).

The area where this fill material would be extracted is currently covered by forested habitat, primarily of the Douglas-fir series. As indicated above, up to 40 acres of forest habitat may be removed to allow the extraction of fill material, although this figure may be reduced to less than 20 acres should substantial modifications be made to the project design. No provisions are identified to reestablish forest habitat on the excavation site due to the permanent removal of suitable topsoil during bypass construction, and the potential use of some of the excavation area for future highway expansion. However, some vegetation reestablishment, including grasses, herbs, and shrubs, is likely as a result of natural colonization. This natural colonization is not expected to result in the establishment of forest habitat in the foreseeable future.

Caltrans anticipates that no disposal sites are needed for this project, as no excess fill material will be generated.

Minimization Measures

Caltrans proposes the following minimization measures at the excavation site to minimize adverse effects:

- The amount of fill material will be minimized to that necessary to complete the proposed project.
- During all timber clearing operations at the proposed Oil Well Hill excavation site, monitoring for the presence of spotted owls will be conducted by a Service-approved biologist to assess potential adverse effects to roosting or nesting adults, their eggs, or juvenile spotted owls. If spotted owls are found on or within 0.8 km (0.5 mile) of the borrow site during timber clearing, Caltrans will consult with the Service immediately to develop a strategy for minimizing impacts to the species.
- All equipment will have sound control devices that are no less effective than those provided by the manufacturer of the equipment.
- All equipment will be operated and maintained to minimize noise generation, and no equipment will have unmuffled exhaust systems.
- Acoustic barriers will be installed around all stationary construction noise sources.
- All large trees that can be avoided will be protected.

- During each construction season, the contractor will limit the removal of vegetation to those portions of the borrow site necessary to provide fill material for that season's construction needs.

Appropriate Best Management Practices (BMP's) would be implemented to minimize impacts to spotted owls and other sensitive resources in the area, and could include: Preservation of Existing Vegetation; Hydroseeding (where feasible); Silt Fencing; Sandbag Barriers; Stabilized construction Entrances/Exits; Material Delivery and Storage; Stockpile Management; Spill Prevention and Control; Solid Waste Management; Hazardous Waste Management; and Sanitary/Septic Waste Management (BMP descriptions are attached as Appendix G of the BA).

A 2-year protocol-level survey will be conducted prior to the start of construction to determine the status of spotted owls in the vicinity of the borrow site prior to excavation. Surveys are anticipated to occur during the years 2007 and 2008. Survey results will be provided to the Service each year upon completion of each survey. If spotted owls are found nesting within 0.8 km (0.5-mile) of the borrow site, Caltrans will reinitiate consultation with the Service to develop a strategy for minimizing adverse impacts.

Conservation Measures

When used in the context of the Act, "conservation measures" represent actions pledged in the project description that the action agency will implement to further the recovery of the species under review. Caltrans is not proposing to include any conservation measures as part of the proposed action.

Action Area

The regulations governing section 7 consultation define "action area" as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). Delineating the analysis area enables the Service to more fully understand the cumulative, interrelated, and interdependent effects of the action within a more appropriate landscape context.

The action area for this proposed action is located in a rural area of Mendocino County, California in the Coast Range Mountains east and north of the community of Willits. The action area includes the existing roadway of U.S. Highway 101 through Willits, as well as the proposed new alignment of the highway as described in planning alternative Modified J1T. The action area also includes the proposed site of fill material excavation adjacent to and east of the highway alignment north of Willits on the grade known as Oil Well Hill.

Areas to be directly affected by the proposed project include the existing road alignment, the proposed new road alignment, and all newly created road cuts, roadbed fills, shoulders, and turnouts. Further, the action area includes all areas affected by the extraction of fill material on the proposed excavation site adjacent to the existing highway on Oil Well Hill. This portion of the action area is also referred to as the "construction footprint".

The action area also extends into a band of natural habitat immediately adjacent to both sides of the road, to a distance of up to one-half mile. This portion of the action area may be subject to elevated sound levels generated by the construction activities, including blasting, heavy machinery, and other sources that have a potential to adversely affect listed species.

STATUS OF THE SPECIES

NORTHERN SPOTTED OWL

Legal Status

The Service listed the northern spotted owl under the Act as a threatened species on June 26, 1990, due to widespread habitat loss across the entirety of its range and the inadequacy of existing regulatory mechanisms to provide for its conservation (USFWS 1990b).

Life History

Taxonomy

The northern spotted owl is one of three subspecies currently recognized by the American Ornithologists' Union, and is the subspecies with the most northerly distribution. The taxonomic separation of these three subspecies is supported by genetic (Barrowclough and Gutiérrez 1990), morphological (Gutiérrez et al. 1995) and biogeographic information (Barrowclough and Gutiérrez 1990). More detailed accounts of the taxonomy, ecology, and reproductive characteristics of the spotted owl are found in the 1987 and 1990 Status Reviews (USFWS 1987, 1990a); the 1989 Status Review Supplement (USFWS 1989); the Interagency Scientific Committee (ISC) Report (Thomas et al. 1990); the Forest Ecosystem Management Assessment Team (FEMAT) Report (Thomas and Raphael 1993); the final rule designating the spotted owl as a threatened species (USFWS 1990b); and the Scientific Evaluation of the Status of the Northern Spotted Owl (Courtney et al. 2004).

Physical Description

The northern spotted owl, the largest of the three subspecies of spotted owl, is medium sized, approximately 46-48 cm in length and 490-850 g in weight (Gutiérrez et al. 1995). The body is dark brown, with a barred tail and white spots on the head and breast. A prominent facial disk surrounds dark brown eyes. Three age classes are distinguishable, based on plumage characteristics (Forsman 1981, Moen et al. 1991). The spotted owl closely resembles the barred owl (*S. varia*), a congeneric species with which it occasionally hybridizes (Kelly et al. 2003). Hybrids exhibit characteristics of both species (Hamer et al. 1994).

Current and Historical Range

The current range and distribution of the spotted owl extends from southern British Columbia through western Washington, Oregon, and California, as far south as Marin County (USFWS 1990a). The southeastern boundary of its range is the Pit River area of Shasta County,

California. The range of the spotted owl is partitioned into 12 physiographic provinces (provinces), based upon recognized landscape subdivisions exhibiting different physical and environmental features (Thomas et al. 1993). These provinces are distributed across the range as follows: four provinces in Washington (Washington Cascades East, Olympic Peninsula, Washington Cascades West, Western Lowlands); five provinces in Oregon (Oregon Coast Range, Willamette Valley, Oregon Cascades West, Oregon Cascades East, Klamath Mountains); and three provinces in California (California Coast, California Klamath, California Cascades). The current range of the spotted owl is similar to its historical range where forested habitat still exists. The relatively contiguous distribution is influenced by the natural insularity of habitat patches within the geographic provinces and by natural and man-caused fragmentation of vegetation. The spotted owl is extirpated or rare in some areas within its historic range, such as southwestern Washington and British Columbia. Timber harvest activities have eliminated, reduced or fragmented spotted owl habitat sufficiently to decrease overall population densities across its range, particularly within the coastal provinces where habitat reduction has been concentrated (Thomas and Raphael 1993).

Behavior

Spotted owls are territorial. However, home ranges of adjacent pairs may overlap (Forsman et al. 1984, Solis and Gutiérrez 1990), which suggests that the area defended is smaller than the areas used for foraging. Territorial defense is primarily effected by hooting, barking and whistle type calls.

Spotted owls are monogamous and usually form long-term pair bonds. "Divorces" occur but are relatively uncommon. There are no known examples of polygyny in this species, although associations of three or more birds have been reported (Gutiérrez et al. 1995).

Habitat Relationships

Home Range

Spotted owl home range size varies by province. Home range generally increases from south to north, which is likely in response to decreasing habitat quality (USFWS 1990a). Home range size is linked to habitat type, availability, and abundance of prey (Zabel et al. 1995).

Based on available radio-telemetry data (Thomas et al. 1990), the Service estimated median annual home range size for the spotted owl by province. Because the actual configuration of the home range is rarely known, and may change from year to year, a circle representative of the median home range size approximates the provincial home range. The circle centers upon a spotted owl activity center, with an area approximating the provincial median annual home range. For example, estimated home range area varies from 3,340 acres (based on a 1.3-mile radius area) in California to 14,271 acres (based on a 2.7-mile radius circle) in Washington. The Service approximates the area most heavily used by spotted owls during the nesting season, identified as the core area, by a 0.7-mile-radius circle (985 acres). The nest tree, location of pre-fledged juveniles, or most significant location of the pair determines the center of the circle. Spotted owls in northern California focused their activities in core areas that ranged from about

167 to 454 acres, with a mean of about 409 acres; approximately half the area of the 0.7-mile radius circle (Bingham and Noon 1997). Spotted owls maintain smaller home ranges during the breeding season and often dramatically increase their home range size during fall and winter (Forsman et al. 1984, Sisco 1990).

Although differences exist in natural stand characteristics that influence provincial home range size, habitat loss and forest fragmentation caused by timber harvest effectively reduce habitat quality in the home range. A reduction in the acreage of suitable habitat results in a reduction in spotted owl abundance and nesting success (Bart and Forsman 1992, Bart 1995).

Habitat Use

Forsman et al. (1984) report that spotted owls have been observed in the following forest types: Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), grand fir (*Abies grandis*), white fir (*Abies concolor*), ponderosa pine (*Pinus ponderosa*), Shasta red fir (*Abies magnifica shastensis*), mixed evergreen, mixed conifer hardwood (Klamath montane) and redwood (*Sequoia sempervirens*). Use of these types coincides with appropriate forest structure (see below). In parts of the Oregon Coast Range, spotted owls have been recorded in pure hardwood stands (Glenn et al. 2004). In California, spotted owls are found from near sea level in coastal forests to approximately 2130 m (7000 ft) in the Cascades (Gutiérrez 1996). The upper elevation limit at which spotted owls occur decreases with increasing latitude in Oregon and Washington (Lint et al. 2005). In all areas, the upper elevation limit at which spotted owls occur corresponds to the transition to subalpine forest, which is characterized by relatively simple structure and severe winter weather (Gutiérrez 1996).

Roost sites selected by spotted owls have more complex vegetation structure than forests generally available to them (Barrows and Barrows 1978, Forsman et al. 1984, Solis and Gutiérrez 1990). These habitats are usually multi-layered forests having high canopy closure and large diameter trees in the overstory.

Spotted owls nest almost exclusively in trees. Like roosts, nest sites are found in forests having complex structure dominated by large diameter trees (Forsman et al. 1984, Hershey et al. 1998). Even in forests that have been previously logged, spotted owls select forests having a structure (i.e., larger trees, greater canopy closure) different than forests generally available to them (Folliard 1993, Buchanan et al. 1995, Hershey et al. 1998).

Foraging habitat is the most variable of all habitats used by territorial spotted owls (Thomas et al. 1990). Descriptions of foraging habitat have ranged from complex structure (Solis and Gutiérrez 1990) to forests with lower canopy closure and smaller trees than forests containing nests or roosts (Gutiérrez 1996).

Habitat Selection

Spotted owls generally rely on the structures and characteristics of older forested habitats for nesting, roosting, foraging, and dispersal. These characteristics include (Thomas et al. 1990, USFWS 1990a):

- A multi-layered, multi-species canopy dominated by large overstory trees;
- Moderate to high canopy closure;
- A high incidence of trees with large cavities and other types of deformities;
- Numerous large snags;
- An abundance of large, dead wood on the ground; and
- Open space within and below the upper canopy for spotted owls to fly.

Forested stands with high canopy closure also provide thermal cover (Weathers et al. 2001), as well as protection from predation. Recent landscape-level analyses in portions of the Klamath Province suggest that a mosaic of late-successional habitat interspersed with other vegetation types may benefit spotted owls more than large, homogeneous expanses of older forests (Zabel et al. 2003, Franklin et al. 2000, Meyer et al. 1998). In redwood forests along the coast range of California, spotted owls may be found in younger forest stands with structural characteristics of older forests (Thomas et al. 1990). However, spotted owls do not generally appear to select for stands of intermediate or younger ages (Solis and Gutiérrez 1990, Thomas et al. 1990).

In mixed conifer forests of the East Cascades province in Washington, 27 percent of nest sites were in old-growth forests, 57 percent in the understory reinitiation phase of stand development, and 17 percent in the stem exclusion phase (Buchanan et al. 1995). In the West Cascades province in Oregon, 50 percent of spotted owl nests were in late-successional (greater than 80 years old) or old-growth stands, and none were found in stands less than 40 years old (Irwin et al. 2000).

Ward (1990) reported that spotted owls foraged in areas that had lower variance in prey densities (prey were more predictable in occurrence) within older forests and near ecotones of old forest and brush seral stages. Zabel et al. (1995) showed that spotted owl home ranges are larger where flying squirrels (*Glaucomys sabrinus*) are the predominant prey. Conversely, home ranges are smaller where woodrats (*Neotoma* spp.) are the predominant prey.

In the Western Washington Cascades, spotted owls used mature/old forests dominated by trees greater than 50 cm diameter-at-breast height (dbh) with greater than 60 percent canopy closure more often than expected for roosting during the non-breeding season. They used young forest (trees 20-50 cm dbh with greater than 60 percent canopy closure) less often than expected based on availability (Herter et al. 2002).

Reproductive Biology

Adult spotted owls exhibit high annual survival rates and are relatively long-lived (USFWS 1992a and Anthony et al. 2004). Spotted owls do not typically reach sexual maturity until after 2 years (Miller et al. 1985 and Thomas et al. 1990). Adult females lay an average of two eggs per clutch, with a range of one to four eggs. Spotted owl pairs typically do not nest every year, nor are nesting pairs successful every year (USFWS 1990a). The small clutch size, temporal variability in nesting success, and somewhat delayed maturation all contribute to the relatively low fecundity of this species (Gutiérrez 1996).

In the Douglas-fir region, nest sites are usually located within stands of old-growth and late-successional forest dominated by Douglas-fir, and they contain structures such as cavities, broken tree tops, and mistletoe (*Arceuthobium* spp.) brooms (Forsman et al. 1984, Blakesley et al. 1992, LaHaye and Gutiérrez 1999). In general, courtship and nesting behavior begins in February to March with nesting occurring from March to June; however, timing of nesting and fledging varies with latitude and elevation (Forsman et al. 1984). After young fledge from the nest, they depend on their parents until they are able to fly and hunt on their own. Parental care continues post-fledging into September (USFWS 1990b), and sometimes into October (Forsman et al. 1984). During this time, the adults may not roost with their young during the day, but they respond to begging vocalizations by bringing food to the young (Forsman et al. 1984).

Some spotted owls, known as "floaters", do not demonstrate territorial behavior, but either remain as residents within the territory of a pair or move among territories (Gutiérrez 1996). Floaters have special significance in spotted owl populations because they may buffer the territorial population from decline (Franklin 1992). Little is known about floaters other than that they exist and typically do not respond to calls as vigorously as territorial birds (Gutiérrez 1996).

Dispersal Biology

Natal dispersal of spotted owls from Oregon and Washington typically begins during mid- to late-September, and shows remarkable synchrony across broad areas (Forsman et al. 2002). When data from many dispersing spotted owls are pooled, the direction of dispersal away from the natal site appears random (Miller 1989, Ganey et al. 1998, Forsman et al. 2002). Dispersal direction from individual territories, however, may be non-random in response to the local distribution of habitat and topography (Forsman et al. 2002). Natal dispersal occurs in stages, with juvenile spotted owls settling in temporary home ranges between bouts of dispersal (Forsman et al. 2002). Median natal dispersal distance is about 10 miles for males and 15.5 miles for females (Forsman et al. 2002, see also Miller 1989, Ganey et al. 1998). Successful dispersal of juvenile spotted owls may depend on their ability to locate unoccupied suitable habitat in close proximity to other occupied sites (LaHaye et al. 2001).

Breeding dispersal occurs among a small proportion of adult spotted owls; these movements were more frequent among females and unmated individuals (Forsman et al. 2002). Breeding dispersal distances were shorter than natal dispersal distances and are apparently random in direction (Forsman et al. 2002).

Large non-forested valleys are apparent barriers to natal and breeding dispersal; forested foothills between valleys may provide the only opportunities for dispersal (Forsman et al. 2002). The degree to which extensive water bodies, such as the Columbia River estuary and Puget Sound, function as barriers to dispersal is unclear. Analysis of genetic structure of spotted owl populations suggests adequate rates of gene flow may occur across the Puget Trough between the Olympic Mountains and Washington Cascades, and across the Columbia River between the Olympic Mountains and the Coast Range of Oregon (Haig et al. 2001). Both telemetry and genetic studies indicate inbreeding is rare.

Dispersing juvenile spotted owls experience high mortality rates, exceeding 70 percent during their first year in some studies (USFWS 1990b, Miller 1989). Leading known causes of mortality are starvation, predation, and accidents (Miller 1989, USFWS 1990b, Forsman et al. 2002). Parasitic infection may contribute to these causes of mortality (Forsman et al. 2002). In a study on habitat use by dispersing juvenile spotted owls in the Oregon Coast Range, Klamath and Western Oregon Cascades Provinces (Miller et al. 1997), mature and old-growth forest were used slightly more than expected, compared to availability, during the transient phase and nearly twice its availability during the colonization phase. Dispersing juvenile spotted owls used closed pole-sapling-sawtimber habitat roughly in proportion to availability in both phases; they used open sapling and clearcuts less than expected based on availability during colonization.

Food Habits

Spotted owls are mostly nocturnal (Forsman et al. 1984), but may forage opportunistically during the day (Laymon 1991, Sovern et al. 1994). Composition of prey in the spotted owl's diet varies regionally, seasonally, annually, and locally, likely in response to prey availability (Laymon 1988, Ganey 1992, Verner et al. 1992, Carey 1993, Ward and Block 1995, Forsman et al. 2001). Northern flying squirrels and woodrats are usually the predominant prey, in biomass and in frequency (Barrows 1980; Forsman et al. 1984; Ward 1990; Bevis et al. 1997; Forsman et al. 2001, 2004), with a clear geographic pattern of diet, paralleling differences in habitat (Thomas et al. 1990). Northern flying squirrels are generally the dominant prey item in the more mesic Douglas-fir/western hemlock forests characteristic of the northern portion of the range. Woodrats are generally the most abundant prey item in the drier mixed conifer/mixed evergreen forests typically found in the southern portion of the range (Forsman et al. 1984, Thomas et al. 1990, Ward et al. 1998, reviewed by Courtney et al. 2004). These prey items were found to be approximately equally abundant in the southwest interior of Oregon (Forsman et al. 2001, 2004).

Other prey species, such as the red tree vole (*Arborimus longicaudus*), red backed voles (*Clethrionomys gapperi*), mice, rabbits and hares, birds, and insects, may be seasonally or locally important (reviewed by Courtney et al. 2004). For example, Rosenberg et al. (2003) showed a strong correlation between annual reproductive success of spotted owls (number of young per territory) and abundance of deer mice (*Peromyscus maniculatus*) ($r^2 = 0.68$), despite the fact they only made up 1.6±0.5 percent of the biomass consumed. However, it is unclear if the causative factor behind this correlation was prey abundance or a synergistic response to weather (Rosenberg et al. 2003). Ward (1990) also noted that mice were more abundant in areas selected for foraging by owls. Nonetheless, spotted owls deliver larger prey to the nest and eat smaller food items, perhaps to reduce foraging energy costs. Therefore, managers should not underestimate the importance of smaller prey items such as *Peromyscus* in the spotted owl diet (Forsman et al. 1984, 2001, 2004).

Population Dynamics

The spotted owl is a relatively long-lived species, produces few but relatively large young, invests significantly in parental care, experiences later or delayed maturity, and exhibits high adult survivorship. The spotted owl's long reproductive life span allows for some eventual recruitment of offspring, even if recruitment does not occur each year (Franklin et al. 2000).

Annual variation in population parameters for spotted owls has been linked to environmental influences at various life history stages (Franklin et al. 2000). In coniferous forests, mean fledgling production of the California spotted owl (*S. o. occidentalis*), a closely related subspecies, was higher when minimum spring temperatures were higher (North et al. 2000), a relationship that may be a function of increased prey availability. Across their range, spotted owls have previously shown a pattern of alternating years of high and low reproduction (Franklin et al. 1999). For reasons unknown, highest reproduction has occurred during even-numbered years. Annual variation in breeding may relate to weather conditions and fluctuation in prey abundance (Zabel et al. 1996). Forsman et al (1996) provided the results of multiple studies showing the effects of weather, specifically temperature and precipitation, on northern spotted owl productivity.

A variety of factors may regulate spotted owl population levels. These factors may be density-dependent (e.g., habitat quality, habitat abundance) or density-independent (e.g., weather). Interactions may occur among factors. For example, severe weather may prove more detrimental to individual spotted owls in fragmented or otherwise poor quality habitat than those living in high quality, contiguous habitat. As habitat quality decreases, density-independent factors may have more influence on variation in survival, which tends to increase variation in the rate of population growth (Franklin et al. 2000). A consequence of this pattern is that, at some point, lower habitat quality may cause the population to be unregulated (i.e., have negative growth) and decline to extinction (Franklin et al. 2000).

Threats

Reasons for Listing

The Service listed the spotted owl as threatened throughout its range "due to loss and adverse modification of suitable habitat as a result of timber harvesting and exacerbated by catastrophic events such as fire, volcanic eruption, and wind storms" (USFWS 1990a). More specifically, significant threats to the spotted owl included low or declining populations; limited or declining habitat; fragmented or isolated distribution of habitat and populations; isolation of provinces; predation and competition; lack of coordinated conservation measures; and vulnerability to natural disturbance (USFWS 1992a). The Service characterized the threats within each province as severe, moderate, low, or unknown. Declining habitat was recognized as a severe or moderate threat to the spotted owl in all 12 provinces, isolation of provinces within 11 provinces, and declining populations in 10 provinces. Consequently, these three factors represented the greatest concern range-wide to the conservation of the spotted owl. Limited habitat was considered a severe or moderate threat in nine provinces, and low populations a severe or moderate concern in eight provinces, suggesting that these factors are a concern throughout the majority of the range. The Service rated the vulnerability to natural disturbances as low in five provinces.

The degree to which predation and competition poses a threat to the spotted owl was unknown in more provinces than any of the other threats, and indicates a need for additional information. Few empirical studies exist to confirm that habitat fragmentation contributes to increased levels of predation on spotted owls (Courtney et al. 2004). However, great horned owls (*Bubo virginianus*), an effective predator on spotted owls, are closely associated with fragmented

forests, openings, and clearcuts (Johnson 1992, Laidig and Dobkin 1995). As mature forest harvest continues, great horned owls may colonize fragmented forests, thereby increasing spotted owl vulnerability to predation.

New Threats

Barred Owls

Since the listing of the spotted owl under the Act, new information suggests that hybridization with the barred owl is less of a threat (Kelly and Forsman 2004) and competition with the barred owl is a greater threat than previously anticipated (Courtney et al. 2004). Since 1990, the barred owl has expanded its range south into Marin County, California and the central Sierra Nevada Mountains, such that it is now roughly coincident with the range of the northern spotted owl and the California spotted owl (Courtney et al. 2004). Further, notwithstanding the likely bias in survey methods towards underestimating actual barred owl numbers (Courtney et al. 2004), barred owl populations appear to be increasing throughout the Pacific Northwest, particularly in Washington and Oregon (Zabel et al. 1996, Dark et al. 1998, Wiedemeier and Horton 2000, Kelly et al. 2003, Pearson and Livezey 2003, Anthony et al. 2004a). Barred owl numbers now may exceed spotted owl numbers in the northern Washington Cascades (Kuntz and Christopherson 1996) and British Columbia (Dunbar et al. 1991) and appear to be approaching spotted owl numbers in several other areas, including Redwood National and State Parks in California (Schmidt 2003). Barred owl populations in the Pacific Northwest appear to be self-sustaining based on current density estimates and apparent distribution (Courtney et al. 2004).

Barred owls apparently compete with spotted owls through a variety of mechanisms: prey overlap (Hamer et al. 2001), habitat overlap (Hamer et al. 1989, Dunbar et al. 1991, Herter and Hicks 2000, Pearson and Livezey 2003), and agonistic encounters (Leskiw and Gutiérrez 1998, Pearson and Livezey 2003). New information on encounters between barred owls and spotted owls comes primarily from anecdotal reports that corroborate initial observations that barred owls react more aggressively towards spotted owls than vice versa (Courtney et al. 2004). Limited circumstantial evidence exists documenting barred owl predation on spotted owls (Leskiw and Gutiérrez 1998, Johnston 2002). Information collected to date indicates that encounters between these two species tend to be agonistic in nature, and that the outcome is unlikely to favor the spotted owl (Courtney et al. 2004).

Although biologists initially thought barred owls were more closely associated with early successional forests than spotted owls (Hamer 1988, Iverson 1993), recent studies indicate that barred owls utilize a broader range of forest successional stages than do spotted owls (Courtney et al. 2004). The only study comparing spotted owl and barred owl food habits in the Pacific Northwest indicated that barred owl diets overlapped strongly (greater than 75 percent) with spotted owl diets (Hamer et al. 2001). However, barred owl diets were also more diverse than spotted owl diets, including species associated with riparian and other moist habitats, as well more terrestrial and diurnal species.

Evidence that barred owls are causing the displacement of spotted owls is largely indirect, based primarily on retrospective examination of long-term data collected on spotted owls. Correlations

between local spotted owl declines and barred owl increases have been noted in the northern Washington Cascades (Kuntz and Christopherson 1996, Herter and Hicks 2000, Pearson and Livezey 2003), on the Olympic peninsula (Wiedemeier and Horton 2000; Gremel 2000, 2003), in the southern Oregon Cascades Johnston 2002), and in the coastal redwood zone in California (Schmidt 2003).

Spotted owl occupancy was significantly lower in spotted owl territories where barred owls were detected within 0.8 km (0.5 mi) of the spotted owl territory center than in spotted owl territories where no barred owls were detected (Kelly et al. 2003). Kelly et al. (2003) found spotted owl occupancy to be significantly lower ($P < 0.001$) when barred owls detections occurred within 0.8 km of the spotted owl territory center. Occupancy was "only marginally lower" ($P = 0.06$) if barred owls were located more than 0.8 km from spotted owl territory centers. In a Roseburg, Oregon, study area, 46 percent of spotted owls moved more than 0.8 km, and 39 percent of spotted owls were not relocated in at least two years, after barred owls were detected within 0.8 km of the territory center. Observations provided by Gremel (2000) from the Olympic National Park are consistent with those of Kelly et al. (2003); he documented significant displacement of spotted owls following barred owl detections "coupled with elevational changes of northern spotted owl sites on the east side of the Park" (Courtney et al. 2004). Pearson and Livezey (2003) reported similar findings on the Gifford Pinchot National Forest where unoccupied spotted owl sites were characterized by significantly more barred owl sites within 0.8-km, 1.6-km, and 2.9-km from the territory center than in occupied spotted owl sites.

In two study areas in Washington, investigators found relatively high numbers of territories, previously occupied by spotted owls, that are now apparently not occupied by either spotted or barred owls. Forty-nine of 107 territories in the Cascades (Herter and Hicks 2000), and 23 of 33 territories in the Olympic Experimental State Forest (Wiedemeier and Horton 2000) were no longer occupied by either species. Since the habitat was still present in these vacant territories, some factor or factors may be reducing habitat suitability or local abundance of both species. For example, weather conditions could cause prolonged declines in abundance of both species (Franklin et al. 2000). Because spotted owls have been reported anecdotally to give fewer vocalizations when barred owls are present, it is possible that these supposed vacant territories are still occupied by spotted owls that do not respond to surveys. Likewise, survey protocols for spotted owls are believed to under-detect barred owls (Courtney et al. 2004). Preliminary results from Olson et al. (2005) suggest that barred owl presence had a negative effect on spotted owl detection probabilities. Thus, some proportion of seemingly vacant territories may be an artifact of reduced detection probability. Nonetheless, previously occupied territories apparently vacant of both *Strix* species suggests that factors other than barred owls alone are contributing to declines in spotted owl abundance and territorial occupancy (Courtney et al. 2004).

Two studies (Kelly 2001, Anthony et al. 2004a) attempted to determine whether barred owls affected fecundity of spotted owls in the long-term demographic study areas. Neither study was able to clearly do so, although the Wenatchee and Olympic demographic study areas showed possible effects (Anthony et al. 2004a). However, both studies described the shortfalls of their methods to adequately test for this effect. Iverson (2004) reported no effect of barred owl presence on spotted owl reproduction, but his results could have been influenced by small sample size (Livezey, in review). Barred owls had a negative effect on spotted owl survival on

the Wenatchee and Olympic study areas and possibly an effect on the Cle Elum study area (Anthony et al. 2004a). Olson et al. (in press) found a significant but weak negative effect of barred owl presence on spotted owl reproductive output but not on survival at a Roseburg, Oregon study area (Courtney et al. 2004).

Regarding interactions between barred and spotted owls, the uncertainties associated with methods, analyses, and possible confounding factors, such as the effects of past habitat loss and weather, warrant caution in interpretation of the patterns emerging from the data and information collected to date (Courtney et al. 2004). Further, data are currently lacking that would allow accurate prediction of how barred owls will affect spotted owls in the southern, more xeric, provinces in the California and Oregon Klamath region. In spite of these uncertainties, the preponderance of the evidence gathered thus far is consistent with the hypothesis that barred owls play some role in spotted owl population decline, particularly in Washington, portions of Oregon, and the northern coast of California (Courtney et al. 2004).

Although the barred owl currently constitutes a significantly greater threat to the northern spotted owl than originally thought at the time of listing (Courtney et al. 2004), it is unclear whether forest management influences the outcome of interactions between species (Courtney et al. 2004, summarized by Lint et al. 2005). The most recent summaries compiled on the barred owl (Courtney et al. 2004, Lint et al. 2005, USDI Fish and Wildlife Service 2004) do not provide recommendations on how to deal with this potential threat. In their status review of the northern spotted owl, the Service (U.S. Fish and Wildlife Service 2004) did not consider the increased risk to northern spotted owl populations due to the uncertainties surrounding barred owls and other factors sufficient to reclassify the subspecies as endangered at this time. Because it was not clear if additional protection of northern spotted owl habitat would reverse the population trends in some portions of the species' range, and because the results of their study did not identify the causes of those trends, Anthony et al. (2004) declined to make any recommendations to alter the current NWFP management strategy.

Wildfire

In 1994, the Hatchery Complex wildfires burned 43,480 acres (17,603 ha) in the Wenatchee National Forest, eastern Cascades, Washington, affecting six spotted owl activity centers (Gaines et al. 1997). Spotted owl habitat within a 2.9 km radius of the affected activity centers was reduced by 8 to 45 percent (mean = 31 percent) due to direct effects of the fire and by 10 to 85 percent (mean = 55 percent) due to delayed mortality of fire-damaged trees and insect caused tree mortality. Spotted owl habitat loss was greater on mid to upper slopes (especially south-facing) than within riparian areas or on benches (Gaines et al. 1997). Direct mortality of spotted owls was assumed to have occurred at one site. Data were too sparse for reliable comparisons of site occupancy or reproductive output between sites affected by the fires and other sites on the Wenatchee National Forest.

Two wildfires burned in the Yakama Indian Reservation, eastern Cascades, Washington, in 1994, affecting home ranges of two radio-tagged spotted owls (King et al. 1997). Although the amount of home ranges burned was not quantified, spotted owls were observed using areas that received

low and medium intensity burning. No direct mortality of spotted owls was observed, even though thick smoke covered several spotted owl site centers for a week.

The short-term effects of wildfires on spotted owl demography are an important consideration for resources managers. Bond et al. (2002) examined the demography of spotted owls post wildfire, in which wildfire burned through spotted owl nest and roost sites in varying degrees of severity. Depending on the severity of the burn, wildfires may have relatively little short-term impact on spotted owl demography (i.e., survival, reproduction and site fidelity). In a preliminary study conducted by Anthony et al. (2004) in the Klamath Province of Oregon, their sample of spotted owls appeared to be using a variety of habitat types within the Timbered Rock Fire, including areas that had experienced moderate burning.

At the time of listing there was recognition that catastrophic wildfire posed a threat to the spotted owl (USFWS 1990a). New information suggests fire may be more of a threat than previously thought. In particular, the rate of habitat loss in the relatively dry East Cascades and Klamath provinces has been greater than expected (see "Habitat Trends" below). However, the total amount of habitat affected by wildfires has been relatively small (Lint et al. 2005). We may be able to influence, through silvicultural management, how fire prone forests will burn, and the extent of the fire when the inevitable fire occurs. Such silvicultural efforts are currently being implemented throughout the spotted owl's range, in an attempt to overcome nearly 100 years of effective fire suppression. However, we now recognize that our ability to protect spotted owl habitat and viable populations of spotted owls from these large fires through risk-reduction endeavors is largely uncertain (Courtney et al. 2004). Lint et al. (2005) indicated that the NWFP recognized wildfire as an inherent part of managing spotted owl habitat in certain portions of the range. The repetitive design of the NWFP can help mitigate the risks associated with large-scale fire (Lint et al. 2005).

West Nile Virus (WNV)

WNV has killed millions of wild birds in North America since it arrived in 1999 (McLean et al. 2001, Caffrey 2003, and Marra et al. 2004). Mosquitoes are the primary carriers (vectors) of the virus that causes encephalitis in humans, horses, and birds. Mammalian prey may also play a role in spreading WNV among predators, like spotted owls. Owls and other predators of mice can contract the disease by eating infected prey (Garmendia et al. 2000, Komar et al. 2001). Recent tests of tree squirrels from Los Angeles County, California, found over 70 percent were positive for WNV (R. Carney, pers. comm. 2004, cited in USFWS 2004). One captive spotted owl in Ontario, Canada, contracted WNV and died.

Health officials expect that WNV will eventually spread throughout the area that includes the range of the spotted owl (Courtney et al. 2004), but it is unknown how WNV will ultimately affect spotted owl populations. Susceptibility to infection and mortality rates of infected individuals vary among bird species, and even within groups of species (Courtney et al. 2004). Owls appear to be quite susceptible. Breeding eastern screech owls (*Megascops asio*) in Ohio experienced 100 percent mortality (T. Grubb, pers. comm., cited in Courtney et al. 2004). In contrast, barred owls showed lower susceptibility (B. Hunter, pers. comm., cited in Courtney et al. 2004). Some level of innate resistance may occur (Fitzgerald et al. 2003), which could

explain observations in several species of markedly lower mortality in the second year of exposure to WNV (Caffrey and Peterson 2003). Wild birds also develop resistance to WNV through immune responses (Deubel et al. 2001). The effects of WNV on bird populations at a regional scale have not been large, even for susceptible species (Caffrey and Peterson 2003), perhaps due to the short-term and patchy distribution of mortality (K. McGowan, pers. comm., cited in Courtney et al. 2004) or annual changes in vector abundance and distribution.

Courtney et al. (2004) offer competing propositions for the likely outcome of spotted owl populations being infected by WNV. One proposition is that spotted owls can tolerate severe, short-term population reductions due to WNV, because spotted owl populations are widely distributed and number in the several hundreds to thousands. An alternative proposition is that WNV will cause unsustainable mortality, due to the frequency and/or magnitude of infection, thereby resulting in long-term population declines and extirpation from parts of the spotted owl's current range.

West Nile virus (WNV) has been identified as a potential threat of unknown magnitude to the spotted owl (Courtney et al. 2004), and has the potential to reduce the population numbers beyond the projected decline anticipated under the NWFP (Lint et al. 2005). Thus far, no mortality in wild, northern spotted owls has been recorded. Habitat restoration and recovery for northern spotted owls is anticipated to take decades, due to the long-term regrowth and development of late-successional forest structure. As such, it is too early to evaluate the long-term effectiveness of conservation efforts and regulatory changes in conserving northern spotted owls. However, the WNV threat to the northern spotted owl may not be influenced by habitat management or improvement (USFWS 2004).

Sudden Oak Death

Sudden oak death was recently identified as a potential threat to the spotted owl (Courtney et al. 2004). The fungus-like pathogen *Phytopthora ramorum* that recently invaded from Europe causes this disease, and it is rapidly spreading. At the present time, sudden oak death is found in natural forest stands that include various oak (*Quercus* spp.) species from Monterey County to Humboldt County in California, and has reached epidemic proportions in oak and tanoak (*Lithocarpus densiflorus*) forests along approximately 300 km of that coast (Rizzo et al. 2002). It also occurs near Brookings, Oregon, killing tanoak, and causing dieback of closely associated wild rhododendron (*Rhododendron* spp.) and evergreen huckleberry (*Vaccinium ovatum*) (Goheen et al. 2002). It has been found in several different forest types and at elevations from sea level to over 800 m elevation. It poses a threat of uncertain proportion because of its potential impact on forest dynamics and alteration of key habitat components (i.e., hardwood trees), especially in the southern portion of the spotted owl's range (Courtney et al. 2004). However, the potential for management to address the additive effects of sudden oak death on habitat availability is unknown and substantial uncertainty about its effects mediated against placing too much weight on this factor in the USFWS Five-Year Review Evaluation (USFWS 2004).

Inbreeding Depression, Genetic Isolation, and Reduced Genetic Diversity

The Service did not consider inbreeding and other genetic problems due to small population sizes an imminent threat to the spotted owl at the time of listing. Recent studies show no indication of reduced genetic variation and past bottlenecks in Washington, Oregon, or California (Barrowclough et al. 1999, Haig et al. in press, Henke et al. unpublished). However, in Canada, Harestad (2004) estimated the breeding population to be less than 33 pairs and annual population decline may be as high as 35 percent. Canadian populations may be more adversely affected by issues related to small population size including inbreeding depression, genetic isolation, and reduced genetic diversity (Courtney et al. 2004). Low and persistently declining populations throughout the northern portion of the species range (see "Population Trends" below) may be at increased risk of losing genetic diversity.

Climate Change

Climate change, a potential additional threat to northern spotted owl populations, is not explicitly addressed in the NWFP. Climate change could have direct and indirect impacts on northern spotted owls and their prey. However, the emphasis on maintenance of serial stage complexity and related species diversity in the Matrix under the NWFP should contribute to the resiliency of the federal forest landscape to the impacts of climate change (Courtney et al. 2004).

Based upon a global meta-analysis, Parmesan and Yohe (2003) discussed several potential implications of global climate change to biological systems, including terrestrial flora and fauna. Results indicated that 62 percent of species exhibited trends indicative of advancement of spring conditions. Bird species manifest these trends in earlier nesting activities. Because the spotted owl exhibits a limited tolerance to heat relative to other bird species (Weathers et al. 2001), subtle changes in climate have the potential to affect this species. However, at this time, there is no agreed-upon, objective means to measure that potential.

Conservation Needs of the Northern Spotted Owl

Based on the above assessment of threats, the spotted owl has the following habitat-specific and habitat-independent conservation (i.e., survival and recovery) needs:

Habitat-Specific Needs

- Large blocks of suitable habitat to support clusters or local population centers of spotted owls (e.g., 15 to 20 breeding pairs) throughout the owl's range;

- Suitable habitat conditions and spacing between local spotted owl populations throughout its range to facilitate survival and movement;

- Suitable habitat distributed across a variety of ecological conditions within the spotted owl's range to reduce risk of local or widespread extirpation;

- A coordinated, adaptive management effort to reduce the loss of habitat due to catastrophic wildfire throughout the spotted owl's range, and a monitoring program to clarify whether these risk reduction methods are effective and to determine how owls use habitat treated to reduce fuels; and

- In areas of significant population decline, sustain the full range of survival and recovery options for this species in light of significant uncertainty.

Habitat-Independent Needs

- A coordinated research and adaptive management effort to better understand and manage competitive interactions between spotted and barred owls; and

- Monitoring to better understand the risk that WNV and sudden oak death pose to spotted owls and (for WNV) research into methods that reduce the likelihood or severity of outbreaks in spotted owl populations.

Conservation Strategy

Since 1990, various efforts have addressed the conservation needs of the spotted owl and attempted to formulate conservation strategies based upon these needs, beginning with the ISC's Conservation Strategy (Thomas et al. 1990). Several ensuing efforts continued to use the basic conservation strategy designed by Thomas et al (1990), including:

- The designation of critical habitat (USFWS 1992b),

- The preparation of a Draft Recovery Plan (USFWS 1992a),

- The Scientific Analysis Team report (Thomas et al. 1993),

- The report of the Forest Ecosystem Management Assessment Team (Thomas and Raphael 1993); and

- The Northwest Forest Plan (USDA/USDI 1994a).

Each conservation strategy was based upon the reserve design principles first articulated in the ISC's report, which are summarized as follows.

- Species well distributed across their range are less prone to extinction than species confined to small portions of their range.

- Large blocks of habitat, containing multiple pairs of the species, are superior to small blocks of habitat with only one to a few pairs.

- Blocks of habitat that are close together are better than blocks far apart.

- Habitat that occurs in contiguous blocks is better than habitat that is more fragmented.

- Habitat between blocks is more effective as dispersal habitat if it resembles suitable habitat.

Federal Contribution to Recovery

The NWFP is the current conservation strategy for the spotted owl on federal lands. It is designed around the conservation needs of the spotted owl and based upon the designation of a variety of land-use allocations whose objectives are either to provide for population clusters (i.e., demographic support) or to maintain connectivity between population clusters. Several land-use allocations, including Late-Successional Reserves (LSRs), Managed Late-Successional Areas (MSLAs), Congressionally Reserved Areas (CRAs), Managed Pair Areas, and Reserve Pair Areas, are intended to contribute primarily to supporting population clusters. The remaining land-use allocations, including Matrix, Adaptive Management Areas (AMAs), Riparian Reserves (RRs), Connectivity Blocks, and Administratively Withdrawn Areas (AWAs), provide connectivity among habitat blocks intended for demographic support.

The range-wide system of LSRs set up under the NWFP captures the variety of ecological conditions within the 12 different provinces to which spotted owls are adapted. This design reduces the potential for extinction resulting from large catastrophic events in one or more provinces. Multiple, large LSRs in each province reduce the potential that spotted owls will be extirpated in any individual province and reduce the potential that large wildfires or other large-scale events will eliminate all habitat within an LSR. In addition, LSRs are generally arranged and spaced to ensure a reasonable likelihood that spotted owls disperse among two or more adjacent LSRs. This network of reserves reduces the likelihood that catastrophic events will substantially reduce habitat connectivity and population dynamics among provinces.

Although FEMAT scientists predicted that spotted owl populations would decline in the Matrix over time, they expected populations to stabilize and eventually increase within LSRs as habitat conditions improved over the next 50 to 100 years (Thomas and Raphael 1993, USDA/USDI 1994a and 1994b). Based on the results of the first decade of monitoring, the NWFP's authors cannot determine if the declining population trend will be reversed because not enough time has passed to provide the necessary measure of certainty (Lint et al. 2005). However, the results from the first decade of monitoring do not provide any reason to depart from the objective of habitat maintenance and restoration as described under the NWFP (Lint et al. 2005). Other stressors, some already in action (e.g., barred owl), and some yet unrealized (West Nile virus), complicate the conservation of the spotted owl. Currently, the new reports generated on the science of the spotted owl offer few management recommendations to address the emerging threats facing the owl. The redundancy and flexibility of the system of NWFP land use allocations may prove to be the most appropriate strategy in responding to these unexpected challenges (Courtney et al. 2004).

Under the NWFP, the agencies anticipated a decline of northern spotted owl populations during the first decade of implementation. Recent reports (Courtney et al. 2004, Anthony et al. 2004a) identified greater than expected northern spotted owl declines in Washington and northern

portions of Oregon, and more stationary populations in southern Oregon and northern California. The reports found no direct correlation between habitat conditions and changes in northern spotted owls at the metapopulation scale. In addition, no evidence currently exists to suggest that dispersal habitat is currently limiting (Courtney et al. 2004, Lint et al. 2005). Even with the population decline, Courtney et al (2004) noted that there is little reason to doubt the effectiveness of the core of the NWFP conservation strategy.

According to the Service (U.S. Fish and Wildlife Service 2004), the current scientific information, including information showing northern spotted owl population declines, indicates that the spotted owl continues to meet the definition of a threatened species. That is, populations are still relatively numerous over most of its historic range, which suggests that the threat of extinction is not imminent, and that the subspecies is not endangered even in the northern part of its range where greater than expected population declines were documented.

Conservation Efforts on Non-Federal Lands

FEMAT noted that limited Federal ownership in some areas constrained the ability to form an extensive reserve network to meet conservation needs of the spotted owl. Thus, non-federal lands were an important contribution to the range-wide goal of achieving conservation and recovery of the spotted owl. The Service's primary expectations for private lands are their contributions to demographic support (pair or cluster protection) to and/or their connectivity with Federal lands. In addition, forest practice rules in effect in each state govern timber harvest, and provide protection of spotted owls and/or their habitat to varying degrees.

Washington: In 1993, the State Forest Practices Board adopted rules (Forest Practices Board 1996) that would "contribute to conserving the spotted owl and its habitat on non-Federal lands" based on recommendations from a Science Advisory Group which identified important non-Federal lands and recommended roles for those lands in spotted owl conservation (Hanson et al. 1993, Buchanan et al. 1994). Spotted owl-related Habitat Conservation Plans (HCPs) in Washington generally provide both demographic and connectivity support as recommended in these reports and the draft recovery plan (USFWS 1992a).

Oregon: The Oregon Forest Practices Act provides for protection of 70-acre core areas around known spotted owl nest sites, but it does not provide for protection of spotted owl habitat beyond these areas (ODF 2000). In general, no large-scale strategy or mechanism for spotted owl habitat protection currently exists for non-federal lands in Oregon. The four spotted owl-related HCPs currently in effect in Oregon address relatively few acres of land; however, they will provide some nesting habitat and connectivity over the next few decades.

California: In 1990, the State amended the State Forest Practice Rules (FPRs), which govern timber harvest on non-federal lands, to require surveys for spotted owls in suitable habitat and to provide protection around activity centers (CDF 2001). Under the FPRs, no timber harvest plan (THP) can be approved if it is likely to result in incidental take of Federally listed species, unless authorized by a federal HCP. The California Department of Fish and Game initially reviewed all THPs to ensure that take was not likely to occur; the Service took over that review function in 2000. Several large industrial owners operate under Spotted Owl Management Plans that have

been reviewed by the Service; the plans specify basic measures for spotted owl protection. The Service has approved three HCPs that authorize take of spotted owls. Implementation of these plans will provide for spotted owl demographic and connectivity support to NWFP lands.

Current Condition of the Spotted Owl

The current condition of the species incorporates the effects of all past human and natural activities or events that have led to the present-day status of the species and its habitat (USFWS and NMFS 1998).

Range-wide Habitat and Population Trends

Habitat Trends

The Service has used information provided by the Forest Service, Bureau of Land Management, and National Park Service to update the habitat baseline conditions on Federal lands for spotted owls on several occasions since the listing of the spotted owl in 1990. The estimated 7.4 million acres used for the NWFP in 1994 (USDA/USDI 1994a) was believed to be representative of the general amount of spotted owl habitat on these lands. This baseline was used to track relative changes over time in the subsequent analyses. The plan's effectiveness monitoring program resulted in the production, in 2005, of a new map depicting suitable spotted owl habitat throughout the species' range (Lint et al. 2005). However, this new habitat map is not yet available for use in tracking individual actions. Therefore, the following analyses indicate changes to the baseline condition established in 1994. The Service is beginning a process to evaluate the map for future use of tracking habitat trends.

Currently, there are no reliable estimates of spotted owl habitat on other land ownerships. Consequently, consulted-on acres can be tracked but not evaluated in the context of change with respect to a reference condition on non-federal lands. However, the production of the monitoring program habitat map provides an opportunity to evaluate trends in non-federal habitat.

Range-wide Analysis 1994 – 2001

In 2001, the Service assessed habitat baseline conditions (USFWS 2001), the first assessment since implementation of the NWFP in 1994. This range-wide evaluation of habitat was necessary to determine if the rate of potential change to spotted owl habitat was consistent with the change anticipated in the NWFP. In particular, the Service considered habitat effects documented through section 7 consultations since 1994. In general, the analytical framework of these consultations focused on the reserve or connectivity goals established by the NWFP land-use allocations (USDA/USDI 1994a). The Service expressed these effects in terms of changes in acreage of suitable spotted owl habitat within those land-use allocations. The Service determined that actions and their effects were consistent with the expectations for implementation of the NWFP from 1994 through June 2001 (USFWS 2001).

Range-wide Analysis 1994 – 2004 (first decade of the NWFP)

This section updates the information considered in USFWS (2001), relying particularly on information in documents the Service produced pursuant to section 7 of the Act and information provided by NWFP agencies on habitat loss resulting from natural events (e.g., fires, windthrow, insect and disease).

In 1994, about 7.4 million acres of suitable habitat were estimated to exist on federal lands. As of April 12, 2004, the Service had consulted on the proposed removal of 575,447 acres of spotted owl habitat range-wide, of which 190,429 acres occurred on federal lands managed under the NWFP. Federal lands were expected to experience an approximate 2.6 percent decline in suitable habitat due to all management activities (not just timber harvest) over the past decade, with about 167,134 acres[1] (approximately 2.3 percent) removed by timber harvest. These anticipated changes in suitable spotted owl habitat were consistent with the expectations for implementation of the NWFP.

Most management-related habitat loss on federal lands, considered range-wide, was concentrated in the Oregon physiographic provinces. In particular, the percentage of habitat to be removed from the Oregon Klamath Mountains province was relatively high (approximately 11 percent) in comparison to other provinces, most of which were characterized by less than a 4 percent decrease in habitat. Habitat removed from the Oregon Klamath Mountains province and the two Oregon Cascades provinces made up 44 percent and 36 percent, respectively, of the habitat loss range-wide since 1994. In summary, habitat loss in Washington accounted for 9.06 percent of the range-wide loss, but it only resulted in a loss of 0.73 percent of available habitat on Federal lands in Washington. In Oregon, habitat loss accounted for 82.37 percent of the range-wide losses, but only 4.13 percent of available habitat on Federal lands in Oregon. Loss of habitat on federal lands in California accounted for 8.57 percent of the losses range-wide, but only 1.34 percent of habitat on federal lands in California.

Since 1994, habitat lost due to natural events was estimated at approximately 168,301 acres range-wide. About two-thirds of this loss was attributed to the Biscuit Fire that burned over 500,000 acres in southwest Oregon (Rogue River basin) and northern California in 2002. This fire resulted in a loss of approximately 113,451 acres of spotted owl habitat, including habitat within five LSRs.

Little information is available regarding spotted owl habitat trends on non-federal lands. Internal Service consultations conducted since 1992 have documented the eventual loss of 407,849[2] acres of habitat on non-federal lands. Most of these losses have yet to occur because they are part of large-scale, long-term HCPs.

Subsequent to the analysis for the first decade (1994–2004) of the NWFP, the Forest Service and Bureau of Land Management reported revised estimates of fire impacts. They also reported that not all effects anticipated during section 7 consultations actually occurred on the landscape, since

[1] Data compiled by the U.S. Fish and Wildlife Service, Northern Spotted Owl Coordination Group.

[2] Data compiled by the U.S. Fish and Wildlife Service, Northern Spotted Owl Coordination Group.

the action agencies have not implemented some projects. Together these reports reduce the anticipated habitat loss during that decade. Therefore, the analysis above represents a reasonable, worst-case assessment. In addition, at the time of this assessment, we had no empirical information on increases in spotted owl habitat on any ownership resulting from suitable habitat that had developed through forest succession and in-growth. The 2005 NWFP monitoring program's recently released reports suggests that approximately 515,000 to over 1 million acres of younger forests may have transitioned into late-successional forest condition, range-wide, since 1994.

Range-wide Analysis from 2004 (first decade) to the Present

This section updates the information considered in the first range-wide, decadal (1994-2004) analysis of the NWFP to the present writing of this BO. In 1994, about 7.4 million acres of suitable habitat were estimated to exist on Federal lands. As of April 2004, the Service had consulted on the removal of 575,447 acres of spotted owl habitat range-wide, of which 190,429 acres occurred on Federal lands managed under the NWFP. From April 12, 2004, to the present, the Service has consulted on the removal or downgrading of 15,455 acres of spotted owl habitat range-wide on Federal lands managed under the NWFP (190,429 acres consulted on for removal through April 12, 2004, subtracted from 205,884 acres consulted on for removal through July 19, 2005). This amount of habitat loss (0.21 percent) is consistent with the expectations for timber management under the NWFP for the second decade of implementation, using the 2004 baseline of 7,038,368 acres of suitable habitat (1994 baseline with all suitable habitat losses subtracted out).

Currently, an estimated 4,876,646 acres of spotted owl habitat in Reserves receive protection under the NWFP.

Spotted Owl Numbers, Distribution, and Reproduction Trends

There are no estimates of the historical population size and distribution of the spotted owl within preferred habitat, although spotted owls are believed to have inhabited most old-growth forests throughout the Pacific Northwest prior to modern settlement (mid-1800s), including northwestern California (USFWS 1989). According to the final rule listing the spotted owl as threatened (USFWS 1990a), approximately 90 percent of the roughly 2,000 known spotted owl breeding pairs were located on federally managed lands, 1.4 percent were located on State lands, and 6.2 percent were located on private lands. The percent of spotted owls located on private lands in northern California was slightly higher (Forsman et al. 1984, USFWS 1989, Thomas et al. 1990).

Gutiérrez (1994), using data from 1986-1992, tallied 3,753 known pairs and 980 singles throughout the range of the spotted owl. At the time the NWFP was initiated (July 1, 1994), BLM estimated 5,431 known locations or site centers of spotted owl pairs or resident singles: 851 sites (16 percent) occurred in Washington, 2,893 (53 percent) occurred in Oregon, and 1,687 (31 percent) occurred in California (BLM 1995). Because some areas were unsurveyed (USFWS 1992a, Thomas et al. 1993), and many remain so, the actual population of spotted owls across the range was believed to be larger than either count.

Because current survey coverage and effort are insufficient to produce reliable population-size estimates, researchers use other indices, such as demographic data, to evaluate trends in spotted owl populations. Analysis of demographic data can provide an estimate of the rate and direction of population growth, identified by the parameter lambda (λ). A λ of 1.0 indicates a stationary population that is neither increasing nor decreasing, a λ less than 1.0 indicates a declining population, and a λ greater than 1.0 indicates a growing population.

In January 2004, at the spotted owl demographic meta-analysis workshop, two meta-analyses were conducted on the rate of population change using the re-parameterized Jolly-Seber method (λ_{RJS}). One meta-analysis applied to all 13 study areas, and a second meta-analysis applied to the eight study areas included in the Effectiveness Monitoring Program of the NWFP (Anthony et al. 2004a). Data were analyzed separately for individual study areas, as well as simultaneously across all study areas (true meta-analysis).

Estimates of λ_{RJS} ranged from 0.896-1.005 for the 13 study areas, and all but one (Tyee) of the estimates were <1.0, suggesting population declines for most areas (Anthony et al. 2004a) (Figure 1). There was strong evidence that populations on the Wenatchee, Cle Elum, Warm Springs, and Simpson study areas declined during the study, and there also was evidence that populations on the Rainer, Olympic, Oregon Coast Range, and HJ Andrews study areas were decreasing (Figure 1). Precision of the λ_{RJS} estimates for the Rainier and Olympic study areas were poor and not sufficient to detect a difference from 1.00. The estimate of λ_{RJS} for the Rainier study area (0.896) was the lowest of all of the areas. Populations on the Tyee, Klamath, South Oregon Cascades, Northwest California, and Hoopa study areas appeared to be stationary during the study, but there was some evidence that the South Oregon Cascades, Northwest California, and Hoopa study areas were declining (λ_{RJS} <1.00).

The weighted mean λ_{RJS} for all of the study areas was 0.963 (SE = 0.009, 95 percent CI = 0.945-0.981), suggesting that populations over all study areas collectively were declining by about 3.7 percent per year from 1985-2003. The mean λ_{RJS} for the eight demographic monitoring areas on Federal lands was 0.976 (SE = 0.007, 95 percent CI = 0.962-0.990), and the mean for non-Federal lands was 0.942 (SE = 0.016, 95 percent CI = 0.910-0.974), an average decline of 2.4 versus 5.8 percent per year, respectively. This suggests that spotted owl populations on Federal lands were declining but at a lower rate than elsewhere. However, interspersion of non-federal and federal land ownership on the study areas confounds this analysis.

The number of populations that have declined and the rate at which they have declined are noteworthy, particularly the precipitous declines on the four Washington study areas (Wenatchee, Cle Elum, Rainier, and Olympic). In these study areas, the population decline is estimated at 30-50 percent over 10 years. A similar decline is estimated for the Warm Springs study area in Oregon (Anthony et al. 2004a). Declines in adult survival rates may be an important factor contributing to declining population trends. Survival rates declined over time on five of the 14 study areas: four study areas in Washington, which showed the sharpest declines, and one study area in the Klamath province of northwest California (Anthony et al. 2004a). In Oregon, apparent survival for four of six study areas showed no time trends, and the remaining two study areas had weak non-linear trends. In California, two study areas showed no

trend, one showed a slight decline, and one showed a significant linear decline (Anthony et al. 2004a). Like the trends in annual rate of population change, trends in adult survival rate showed clear declines in some areas, but not in others.

A small population of spotted owls occurs in British Columbia. This relatively isolated population apparently is declining sharply. Large areas of apparently suitable habitat are currently unoccupied (Courtney et al. 2004). Breeding populations have been estimated at fewer than 33 pairs. The species may be declining as much as 35 percent per year (Harestad et al. 2004). The amount of interaction between spotted owls in Canada and the U.S. is unknown (Courtney et al. 2004). The Canadian population has reached the point where it is now vulnerable to stochastic demographic events that could cause further declines and perhaps extirpation; conditions are not likely to improve in the short term (Courtney et al. 2004).

Status in the Project Vicinity

Information for northern spotted owl territories in Mendocino County was obtained by Caltrans from the most current version of the California Department of Fish and Game (CDFG) database. This database is maintained by CDFG and tracks all known northern spotted owl territories throughout the state of California. Currently, the CDFG northern spotted owl database lists 556 territories in Mendocino County.

Crude density (i.e., the number of owls per square kilometer) has been calculated for several forest lands in northwestern California. The current density of northern spotted owls on Mendocino Redwoods Company lands is 0.272 owls/km^2. This density appears to be one of the greater densities throughout forest lands in northern California. The Biological Opinion for Pacific Lumber Company cites a density of 0.325 owls/km^2 (USFWS 1999c), the greatest known density reported for northern California. Lower densities were found in the Willow Creek study area in Humboldt County, 0.235 owls/km^2 (Franklin et al. 1990); Green Diamond lands in northern California, 0.209 owls/km^2 (Diller and Thome 1999); and Redwood National Park, 0.163 owls/km^2 (Tanner 1999).

Research in California indicates that several northern spotted owl study populations may be stable or slightly declining (Franklin et al. 1996, Franklin et al. 2002). A minimum population estimate for northern spotted owls in California during the late 1980s and early 1990s was 1,111 pairs (Gutierrez et al. 1995). Although populations may be stable in northern California, northern spotted owl populations are declining across a large portion of their range due to destruction and fragmentation of old-growth habitat (Noon and McKelvey 1996). Fragmentation of old-growth and other late-successional forest habitat has isolated populations and reduced prey availability in areas of the northern spotted owls' range other than northern California (Thomas et al. 1990).

ENVIRONMENTAL BASELINE (in the Action Area):

Regulations implementing the Act (50 CFR §402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have

already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation process.

Distribution of Northern Spotted Owls in the Action Area

Field Surveys

Potential northern spotted owl habitat was mapped by Caltrans within the Oil Well Hill area according to California Board of Forestry guidelines (Caltrans 1997). Several vegetation communities in the project area were found to be generally consistent with spotted owl habitat characteristics. Initial preparation of the habitat map was conducted using information from the vegetation assessment.

Caltrans' surveys for northern spotted owls followed guidelines endorsed by the Service. Surveys for northern spotted owls occurred from April through August 1991; additional surveys were conducted in 1992 and 1993. Surveys were conducted in areas that provide functional nesting, roosting, and foraging habitat for spotted owls. The surveys were conducted to determine spotted owl presence and nesting status in the project area. The quality and amount of suitable habitat within an occupied spotted owl territory were described in order to assess the effects of altering spotted owl habitat in the project area. The amount of functional nesting, roasting, foraging, and dispersal habitat was measured within the proposed project corridor to determine the ability of these areas to support spotted owls (Caltrans 1997). After spotted owls were detected during night surveys in 1991, intensive day surveys were conducted to locate nest sites or activity centers. Once located, spotted owls were moused to locate nests (Caltrans 1997).

Caltrans biologists conducted informal, non-protocol, site-specific surveys for northern spotted owls in 1998, in habitat known to support spotted owls. These surveys were conducted in order to locate spotted owls detected in the 1991, 1992, and, 1993 surveys (Caltrans 2000). Following this informal survey, protocol-level surveys for northern spotted owls were initiated again, in 1999, in order to assess the status and presence of spotted owls in the project area. These surveys followed the two-year method as described in the 1992 California State Board of Forestry guidelines.

In addition to these survey results, Caltrans also utilized the Natural Environment Study (NES) (Caltrans 1997), local CDF/CDFG Timber Harvest Plans, the California Natural Diversity Database (CNDDB 2003, CNDDB 2005), and discussions with CDFG biologists to update and assess presence of northern spotted owls in the project area.

Current Condition in the Action Area

Northern spotted owls were not found within the Modified J1T project corridor, nor within the footprint of the designated borrow site at Oil Well Hill during the most recent (i.e., 1999) surveys. However, spotted owls were found historically near the project corridor and at Oil Well Hill, west of the existing U.S. Highway 101. Suitable nesting/roosting/foraging habitat does not occur within the Modified JIT corridor; the area is not capable of supporting such habitat.

However, suitable spotted owl foraging and dispersal habitat exists at the Oil Well Hill designated borrow site (Figure 3-2, Appendix I, of the BA).

Suitable northern spotted owl nesting and foraging habitat occurs in the densely forested areas around the western and northwestern perimeter of Little Lake Valley, consisting of mixed north-slope forest, Douglas-fir forest, mixed conifer forest, mixed evergreen forest, and some of the black oak and Garry oak woodland. Large stands occur at the extreme northern end of the valley, north of Outlet Creek, and west of U.S. Highway 101, just southwest of the Louisiana-Pacific mill along the west side of U.S. Highway 101 (Figure 3-2, Appendix I of the BA).

Protocol-level surveys within potential northern spotted owl habitat in the project area resulted in finding two pairs of spotted owls in 1991 and 1992 (Figure 5-4, Appendix I of the BA). Both pairs were located outside of the Modified J1T corridor and outside the proposed Oil Well Hill borrow site. One pair (pair 1) was located west of U.S. Highway 101 in the Wild Oat Canyon drainage, and the second pair (pair 2) was observed just west of U.S. Highway 101 and north of Outlet Creek (Figure 5-4, Appendix I of the BA).

Pair 1 was a breeding pair observed in 1991 and 1992. In 1991, the pair produced one young at a nest within a mature forest grove covering several hectares along an unnamed drainage. The land surrounding the nesting area (or activity center) consisted of dense mixed-conifer forest on all sides. The nest site was within 0.8 km (0.5-mile) of a rural residential area along Highway 101 north of Willits. In late 1991 all but approximately 5.7 hectares (14.1 acres) (designated as a protected area) of this nesting grove was selectively harvested. All large conifers were removed, except those within the 5.7 hectares (14.1 acres) protected area. In 1992, this pair nested in an old stick nest just north of the remnant nesting grove and produced two young. No adults were found during a one-day survey conducted on April 8, 1993. A two-year protocol-level survey conducted in 1999 and 2000 found no evidence of spotted owls nesting at this site. The nesting grove is located outside of the project corridor and designated borrow site at Oil Well Hill, approximately 2.3 km (1.4 miles) southwest of Oil Well Hill.

Pair 2 was located in the area of Outlet Creek, west of Highway 101 and north of Outlet Creek. This pair did not breed in 1991 but did breed in 1992. In 1992, this pair nested within a small unnamed drainage between Highway 101 and Outlet Creek Road, approximately 150 meters (500 feet) west of Oil Well Hill, and produced two young. Based on results of the one-day survey conducted on April 8, 1993, this pair did not breed in 1993. Most of the area is dense, second growth mixed-conifer forest with small pockets of older forest. The nesting grove is outside of the project corridor, but is near the designated borrow site at Oil We1 Hill. A two-year protocol-level survey conducted in 1999 and 2000 found no evidence of nesting activity at this nest site.

The area immediately north of Little Lake Valley, including the proposed borrow site, is the southernmost area in the Coast Range with continuous spotted owl dispersal habitat that connects the coastal spotted owl populations with more interior coastal range spotted owl populations east and south of Willits. South of this area, connections between coastal and more interior populations are fragmented by river valleys, drier forest types, agriculture, and developed areas less conducive to dispersal by spotted owls.

Critical Habitat

No designated critical habitat for northern spotted owl occurs within or near the Modified J1T alignment or the designated borrow site at Oil Well Hill. Therefore, no critical habitat will be affected by this proposed action.

EFFECTS OF THE ACTION

Scientific Basis for Evaluating Potential Effects

This section describes the scientific basis for analyzing the potential direct and indirect effects of human actions, including their interrelated and interdependent actions, on the northern spotted owl. While the implementation of most proposed actions, including the proposed Willits Bypass Project, would not result in all of the potential effects described herein, this discussion provides a general framework and understanding under which the proposed action considered in this biological opinion may be objectively analyzed.

Potential Effects of Habitat Modification

Site-Specific Effects

Forest and fire management practices have the potential to reduce the quantity and quality of spotted owl nest and roost sites. Spotted owls depend upon existing forest structures, such as cavities and broken treetops, for nest sites. Silvicultural prescriptions, timber harvest activities, and fire management activities which result in the removal of the oldest, most decadent trees or require removal of hazard trees and snags may remove potential spotted owl nest sites (Blakesley et al. 1992). Further, prescriptions designed to reduce ladder fuels or release the growth of co-dominant trees often simplify vertical structure in the understory, where spotted owls perch for hunting or roosting (Forsman et al. 1984).

Timber harvest and fire management activities can contribute to changes in habitat microclimate by reducing overall canopy closure within nesting and roosting habitat. A reduction in canopy closure often results in reduced protection from environmental factors, such as rain, wind, snow, and temperature. Laboratory and field studies have determined that spotted owls are less heat tolerant than many other bird species. Physiological limitations corroborate these observations (Weathers et al. 2001).

Removing trees, snags, and downed wood can affect prey composition and/or availability by altering characteristics of the habitat upon which prey species depend. Because the amount of snags and down material on the forest floor is positively correlated with densities of some prey species, a reduction in the abundance of these components may contribute to localized, short-term declines in prey (Williams et al. 1992). Reductions in populations of these prey species could lower spotted owl recruitment.

Landscape-Level Effects

Site-specific effects could change the function which forested stands provide for northern spotted owls. For the purposes of the following discussion, changes in habitat function resulting from cutting of trees and other vegetation are categorized as removal, downgrade, or degrade. Removal represents a complete loss of habitat function following an action. For example, an area functioned as nesting/roosting habitat; after habitat modification, the area does not provide any habitat function. Downgrade is a subset of the term removal and refers to a loss of habitat function and change from one habitat function to another. For example, if an area functioned as nesting/roosting habitat before habitat modification, but is capable of providing only foraging habitat post-project, this would be classified as downgrade. This term could also be used to signify a change in function from foraging to dispersal as well. Degrade, to be distinguished from downgrade, indicates a reduction in habitat quality, but not habitat function. For example, an area that functioned as foraging habitat prior to an action still provides foraging habitat after the effect, but prey abundance may be reduced due to a reduction in some structural components or vegetation.

Removal or downgrading of habitat within home ranges, especially when located close to the nest site, can reasonably be expected to negatively affect northern spotted owls. A reduction in northern spotted owl productivity and survivorship occurs as the amount of suitable habitat within a spotted owl home range declines (Bart 1995). In northwestern California, survivorship of adult spotted owls was greater where greater amounts of older forest were present around the activity center, but reproductive success increased where the amount of edge between older and younger forest was relatively high (Franklin et al. 2000).

Research indicates that spotted owls in northern California focus their activities in heavily-used "core areas" that range in size from about 167 to 454 acres, with a mean of about 409 acres (Bingham and Noon 1997). These core areas, which included 60 to 70 percent of the spotted owl telemetry locations during the breeding season, typically comprised only about 20 percent of the home range area. Therefore, habitat removal within core areas could have disproportionate effects on spotted owls. Spotted owl abundance and productivity significantly decrease when the proportion of suitable habitat within 0.7 mile of an activity center falls below 500 acres, which represents 50 percent of the total 1,000 acres within 0.7 mile (O'Halloran 1989; Simon-Jackson 1989; Thomas et al. 1990). For the purpose of consultation, the Service identifies the following guidelines for the amount of suitable habitat needed to maintain essential behaviors, such as breeding, within the home range area: 500 acres within 0.7 mile of the activity center and 1,336 acres within 1.3 mile of the activity center.

Potential Effects of Noise Disturbance

Some activities, such as timber harvesting, road construction and decommissioning, landslide rehabilitation, trail maintenance, and fire management, use motorized equipment (e.g., helicopters, heavy equipment, or chainsaws) that introduces high levels of noise into the environment. This elevated noise level may have adverse effects on wildlife species by interfering with essential behaviors. The effects of noise on birds are difficult to determine (Knight and Skagen 1988) and quantify. Confounding factors include the tolerance level of individual birds, type and frequency of human activity, ambient sound levels, how sound reacts

with topography and vegetation, and differences in how species perceive noise. Regardless of these difficulties, research conducted on a variety of bird species suggests that disturbance can have a negative impact on their reproductive success (Tremblay and Ellison 1979; Belanger and Bedard 1989; Piatt et al. 1990; Henson and Grant 1991). Disturbance can affect productivity in a number of ways, including interference of courtship (Bednarz and Hayden 1988), nest abandonment (White and Thurow 1985), egg and hatchling mortality, exposure and predation (Drent 1972; Swensen 1979), and altered parental care (Fyfe and Olendorff 1976; Bortolotti et al. 1984).

The few studies which examined responses of northern and Mexican spotted owls to several disturbance sources, such as helicopters, small chainsaws, and hikers, indicate that noise can disrupt spotted owl behaviors, such as flushing from roosts and prey delivery rates (Delaney et al. 1999; Delaney and Grubb 2001; Swarthout and Steidl 2001). However, spotted owl sensitivity varies with stimulus distance, location (i.e., aerial or ground), type, and timing, as well as individual tolerance (Delaney et al. 1999; Delaney and Grubb 2001; Swarthout and Steidl 2001).

Potential Effects of Injury or Mortality

In extreme cases, forest or fire management activities could result in direct injury or mortality of adults, eggs, or young. The potential for northern spotted owls to be struck and killed or injured by falling trees during harvesting or exposed to high levels of smoke during prescribed burning is confined to the area relatively close to the nest tree. Individual adult spotted owls reasonably can be expected to move from the area of disturbance and avoid injury or death. However, adult spotted owls which are incubating eggs or brooding young may be reluctant to leave the area (Delaney et al. 1999) and be vulnerable to injury or death. Young spotted owls are poor fliers immediately after leaving the nest; they develop their flight skills during their first months after leaving the nest. Thus, they are most vulnerable to being struck by falling trees during this time. Young are also susceptible to smoke inhalation. They may disperse prematurely in response to disturbance such as tree falling or smoke, thus increasing the likelihood of predation or starvation outside of the nest grove. Adults may abandon eggs in response to tree felling near the nest (Drent 1972; Swensen 1979; White and Thurow 1985). Forest management that includes falling trees may crack or destroy eggs.

Effects of the Proposed Action

The proposed project corridor and road alignment will avoid direct and indirect impacts to northern spotted owl nesting and foraging habitat, because it is greater than 0.8 km (0.5 mile) from known nesting activity centers, and would not remove any suitable habitat. Because much of the alignment through Little Lake Valley will require fill material upon which to build the road bed, very little excavation will occur in the proposed road prism. However, a substantial amount of fill material is needed to build the roadbed, and a borrow site will be needed. Oil Well Hill, located alongside Highway 101 approximately 3 miles north of the proposed road alignment, is the designated borrow site. Excavation of fill material there will require the removal of existing forest vegetation.

Potential effects of this proposed action to spotted owls within the action area include loss of suitable nesting, roosting and foraging habitat, and temporary noise and visual disturbance within potentially occupied habitat during construction. Minimization measures identified earlier in this biological opinion will reduce but will not eliminate adverse effects. The potential effects to the spotted owl from the proposed action, and reductions in the effects as a result of implementing the proposed minimization measures, are discussed below.

Caltrans anticipates the removal of a maximum of 40 acres (16 ha) of nesting, roosting, foraging and dispersal habitat, and disturbance resulting from potential differences in noise patterns during the excavation activities. In addition, existing traffic noise dynamics resulting from extensive landscape modification on the east side of the highway could change. These impacts to spotted owls are discussed in detail in the following sections. Because of the historic presence of northern spotted owl nesting within approximately 152 meters (500 feet) of the proposed Oil Well Hill borrow site, and the removal of approximately 40 acres (16 ha) of nesting, roosting, foraging and dispersal habitat at the proposed borrow site, the proposed project may adversely affect northern spotted owl.

Effects Due to Habitat Removal and Degradation

Excavation of fill material within the borrow site will require a substantial removal of native forest vegetation. The area has been subject to previous logging activities, but mature and old-growth trees are found within the forest matrix in the excavation area. The removal of this forest habitat will result in the loss of nesting, roosting, and foraging habitat for the spotted owl, as well as some dispersal habitat.

Provincial Home Range

The provincial home range of a spotted owl in the vicinity of the action area is approximated by a circle of radius 1.3 mi. (2.1 km). This circle encompasses the median area of a spotted owl home range within the California Coast Range province, as estimated through research, of approximately 3,340 ac.(1,352 ha). Provincial home ranges apply to nesting or territorial pairs as well as individual spotted owls that demonstrate multi-year occupancy of suitable nesting habitat. The center of the provincial home range is identified by a known nest tree, location of fledglings, or other sign of spotted owl occupancy of a given area.

Project effects to suitable habitat are based on the types of activities and their location within identified provincial home ranges. The threshold for harm to the spotted owl is defined as the reduction of available suitable habitat to less than 1,336 acres (40 percent of the area) within a provincial home range as a result of the current action combined with effects of previous actions. The home range is further defined by a more critical area of about 1,000 ac. (405 ha), approximated by a 0.7 mi. (1.1 km) radius circle from the spotted owl activity center. The threshold within this critical area is the reduction below 50 percent (500 acres) of suitable habitat as a result of the current action combined with previous actions in the area. Any suitable nesting/roosting habitat removal within the closest 70 ac. (2.8 ha) area to the activity center constitutes harm to spotted owls. This 70-acre core area can be approximated by a circle of

radius 985 ft. (0.186 mi., 0.304 km), or may be described as a specific polygon of habitat in a site-specific analysis.

Existing potentially suitable nesting/roosting/foraging habitat was mapped in 2005 within a 1.3-mile radius of the Oil Well Hill borrow site by Caltrans wildlife biologist Peter Lewendal (Appendix F of the BA). This study involved assembling a base map consisting of portions of the USGS 7.5 minute Longvale, Burbeck, Willis Ridge and Willits quadrangles. Aerial photographs were not available, so Caltrans had the area flown to created stereo-pair photographs of the site in 2005. The aerial photos were reviewed in April 2005 to assess spotted owl nesting/roosting, foraging and unsuitable habitats. The area was ground-truthed on April 25 and 26, 2005.

Caltrans' analysis determined that within the 1.3-mile radius polygon of this borrow site (encompassing approximately 4839.1 acres), approximately 3070.3 acres consist of suitable foraging habitat, and 99.2 acres consist of suitable nesting/roosting habitat, encompassing an area of approximately 3169.5 acres of suitable habitat, or approximately 65.5 percent of the 1.3-mile radius polygon.

Approximately 32.4 acres of the Oil Well Hill borrow site consists of suitable nesting, roosting, and foraging habitat. Hence, if the entire Oil Well Hill borrow-site is excavated, Caltrans estimated that approximately 3,137.1 acres (approximately 64.9 percent) of suitable foraging and nesting/roosting habitat would remain within the 1.3-mile radius of the Oil Well Hill borrow site (Habitat Analysis Report, Appendix F of the BA).

In a separate analysis using a slightly different classification of habitat, the Service estimated that approximately 4,802.9 acres occurs within 1.3 miles of the footprint of the borrow site, of which 2,435.5 acres (50.7 percent) currently support suitable nesting, roosting and foraging habitat. For the owl site on Oil Well Hill that would be directly affected by the removal of suitable habitat, approximately 1828.6 acres (53.9 percent) of suitable nesting, roosting, and foraging habitat currently exists within the provincial home range of the known site on Oil Well Hill.

Following the removal of a maximum of 32.4 acres of suitable habitat, the 1.3 mile buffer area around the borrow site would retain at least 2,403.1 acres of suitable, or 50.0 percent of the area. For the affected owl site, the removal of 32.4 acres of suitable will result in an estimated retention of 1,796.2 acres (53.8 percent) of suitable within the provincial home range.

In the more critical area within 0.7 miles of the site center, the Service estimates that approximately 597.9 acres of suitable habitat currently exists, or about 59.8 percent of the area. Following the removal of suitable habitat from the borrow site, approximately 565.5 acres of suitable will remain, or about 56.6 percent of the area.

Site Center

One known owl site center is located near the proposed borrow site, and we estimate that up to 10 acres of suitable nesting, roosting, and foraging habitat would be removed from the 70-acre core area. This estimate is based on the anticipated core area around the known nest site including the most favorable, contiguous nesting and roosting habitat. For this particular site,

approximately 10 acres occurs within the proposed borrow site. The known site center was not occupied during the most recent protocol surveys completed in 1999 and 2000. However, its occupancy status has not been documented since 2000, so it is presumed to still be a functional site center. Site surveys will be conducted during the two years prior to the initiation of project construction to confirm presence or absence during project implementation. These surveys are anticipated to occur during the years 2007 and 2008. It is possible that the site center for this owl site has moved to a new, undetected location since the last confirmed sighting. However, in the absence of new information, the known site center will be adversely affected by the removal of nesting and roosting habitat near a known site center.

Effects Due to Noise Disturbance

Excessive noise generated by the proposed action has the potential to disrupt essential breeding behaviors of spotted owls, or result in reduced reproductive performance through adverse effects to nesting spotted owls and their young. Based on surveys conducted during 1991 to 1993 and repeated in 1999 and 2000, only one spotted owl nest site is known to occur within 0.5 miles or less of the proposed action, on Oil Well Hill. The last known occupancy of this nest site was 1993. Spotted owls located farther than 0.5 miles from the project footprint would not be affected by noise generating activities.

A 65-hour-long, continuous noise survey conducted by Caltrans at Oil Well Hill during the period May 6-8, 2004, found that existing traffic sound levels were fairly high throughout one 24 hour period, ranging from approximately 60 to 83 decibels (dB) (L_{max}, from table in Appendix E of the BA), but were lower during the late evening and early morning hours for the other 24 hour period, ranging between approximately 37 and 52 dB (Appendix E of the BA). Caltrans anticipates that noise levels generated by heavy equipment used for excavation would range from approximately 70 to 80 dB at the project site (Keith Pommerenck, pers. comm.). Hence, it is anticipated that excavation noise levels are not expected to significantly exceed existing traffic levels for excavation occurring immediately adjacent to the existing highway. However, because excavation is expected to occur continuously during both day and night hours, the difference in the frequency of noise patterns could potentially disturb spotted owls, if they are nesting and foraging in the area.

Excavation can occur as far as 600 ft. (183 m) from the edge of the existing highway surface, if the need for fill material dictates. The ambient sound environment at this distance from the highway is anticipated to be substantially lower than what occurs nearer to the highway. The sound level generated by excavation activities may, therefore, substantially exceed the ambient condition. However, these excessive sound levels would be farther from the known nest site, and would likely have less effect on nesting owls there than if their nest site nearer this eastern edge of the excavation area.

The contractor may use explosives at Oil Well Hill as part of the excavation of fill material. The number and frequency of charges would be determined by the contractor. Blasting typically produces a rapid series of impulse type noise with mostly low frequency noise content (Illingsworth and Rodkin 2005). If explosives are used at Oil Well Hill, the charges would be set below ground rather than on the surface, to fracture and loosen the rock. Estimates of noise

levels generated by blasts in a study for the Confusion Hill Relocation Project (Illingsworth and Rodkin 2005) recorded a noise level of approximately 85 dBA at approximately 550 feet. In addition, blasting noise levels recorded for emergency work performed at Confusion Hill, Mendocino County, which involved a surface blast, recorded noise levels of 83 dBA at approximately 500 feet line-of-site from the point of detonation, as reported in the BA.

These numbers reported by Caltrans would translate to sound levels substantially higher than sound levels within the site center or at a potential nest tree under ambient conditions. Sound levels reported for blasting (85 dB at 550 feet) would translate to approximately 106 dB at 50 ft. (15 m), which substantially exceeds the reported sound level (60-83 dB) of traffic on the existing highway. Should owls attempt to nest at the site on Oil Well Hill, this level of disturbance could lead to behavioral modifications, such as flushing from the nest, and injury to owls.

Highway noise levels are not anticipated to increase significantly in the future, and the existing cut banks absorb sound and contribute no more than a minimal echo effect. Therefore, Caltrans anticipates that the transmission of highway traffic noise eastward into potential NSO habitat east of Oil Well Hill would not be significantly higher than existing levels (K. Pommerenck, pers. comm.).

Interrelated and Interdependent Activities

Regulations implementing the Act require the Service to consider the effect of activities which are interrelated and interdependent to the proposed action (50 CFR 402.02). The Act defines interrelated activities as those which are part of a larger action and depend upon the larger action for their justification, and interdependent activities as those projects which have no independent utility apart from the action that is under consideration. This proposed action does not include any interrelated and interdependent activities.

Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur within the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Within the Action Area, the only foreseeable action with known construction dates which potentially would have cumulative effects associated with the Willits Bypass is the proposed wastewater treatment facility for the City of Willits. This action would include the construction of new wastewater treatment facilities, including the construction of expanded oxidation ponds, treatment wetlands, mitigation areas for wetland use, and a public trail around these facilities. This project does not occur within or near suitable spotted owl habitat, and is not expected to have any effects on the species.

Other potential activities in or near the Action Area include: a second access road to the Brooktrails subdivision, which may be routed in or near Wild Oat Canyon; a third access road to Brooktrails, connecting to Highway 20 west of Willits; the expansion of public transit and

bicycle/pedestrian facilities near Baechtel Road/Railroad Avenue; repairs to the existing Northwest Pacific Railroad, including its route through the Outlet Creek Canyon; the build-out of the Brooktrails subdivision; the build-out of the City of Willits and adjacent unincorporated Mendocino County lands; and, future timber harvest plans (THPs) in the Action Area. However, none of these activities are currently designed or planned to a level where effects to listed species or their habitats can be reasonably considered at this time, and so do not contribute to cumulative effects for the project considered in this consultation.

The CDF has records of six THPs within, or partially within, the 2.6 km (1.6-mile) radius circle around Oil Well Hill that have been recorded since 1990. These are 1-90-364 MEN (50 acres [20 ha]); 1-90-631 MEN (665 acres [370 ha]); 1-94-155 MEN (20 acres [8 ha]); 1-94-591 MEN (238 acres [96 ha]); 1-95-487 MEN (50 acres [20 ha]); and 1-99-051 MEN (11 acres 4.5 ha]). Portions of two THPs, 1-90-631 and 1-94-591 extend outside the 2.6 km (1.6-mile) radius. The majority of these logging activities involved seed tree and shelterwood cuts.

Because of the existing market the current value of timber is low, there are no immediate future plans to harvest timber within the Oil Well Hill area. Hence, it is not possible to predict future logging activities. All of the land within the 1.6-mile radius is privately owned, and logging on the areas encompassed by these THPs has occurred in the past, and could occur in the future if timber prices are more favorable.

No other actions likely to result in cumulative effects to listed species are currently being implemented or planned in the action area at this time.

CONCLUSION

After reviewing the current status of the northern spotted owl, the environmental baseline for the action area, the effects of implementing the proposed construction of the Willits Bypass project in Mendocino County, and its cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the northern spotted owl. The Service reached this non-jeopardy conclusion based on the following factors:

1. The proposed action will remove suitable spotted owl nesting, roosting and foraging habitat. Most of this loss of habitat will be permanent. That is, those portions of the habitat that will be permanently maintained as roadway, cut banks, fill slopes, and other areas permanently unvegetated or maintained as low vegetation will never recover its function as suitable spotted owl habitat. Despite this loss, the removal of suitable habitat has been reasonably minimized, in regards to the purpose and need of the action, through implementation of minimization measures identified in the project description. After completion of the proposed action, the known active spotted owl site will still encompass more than 40 percent suitable habitat within the provincial home range (1.3 mile radius of the known nest), and will contain more than 50 percent suitable habitat within the 0.7 mile radius area.

2. One owl site will be affected by the loss of up to 32.4 acres of suitable habitat. Only a small portion of this 32.4 acres occurs within the 70-acre owl core area, likely to be less

than 10 acres. All of these acres to be removed are across the highway from the known site center. However, some of the acres to be removed are the better quality habitat remaining available to this already compromised site center. Despite the potential loss of this site center, the regional scale of the effect is small, affecting only a single known site within this province.

3. One spotted owl nest site is known to occur within a distance of the borrow site such that it may be adversely affected by noise disturbance resulting from construction activities, under the proposed minimization measures. However, this site was not occupied when last surveyed in 1999 and 2000. Surveys will be conducted during the two years prior to the start of construction, to confirm occupancy of this site at that time. Surveys are anticipated to occur during the years 2007 and 2008. Should this spotted owl site, or another new site within one-quarter mile of the borrow site, be found to be occupied at that time, FHWA and Caltrans will consult with the Service at that time to address new information and consider minimization measures appropriate to the exact location of any known spotted owls.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under that Act provided that such taking is in compliance with this Incidental Take Statement.

Any Reasonable and Prudent Measures described below are non-discretionary, and must be undertaken by the FHWA so that it becomes a binding condition of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. FHWA has a continuing duty to regulate the activity covered by this incidental take statement. If FHWA (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, FHWA must report the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement [50 CFR §402.12(I)(3)].

AMOUNT OR EXTENT OF INCIDENTAL TAKE

The Service anticipates that up to one pair of northern spotted owls associated with the site center on Oil Well Hill will be taken as a result of this proposed action. Implementing the proposed action would result in the removal of suitable habitat, and would adversely affect the species. This removal of suitable habitat would occur within a known northern spotted owl site center, and would harm the species as a result of loss of suitable habitat around an historically occupied and successfully nest. The removal of up to 32.4 acres of suitable habitat would occur within the provincial home range of an known owl site, but would not remove sufficient habitat to result in harm to the species at the home range scale. Finally, should blasting occur at the excavation site, the sound level generated by such subsurface explosives would harass the species as a result of substantially elevated sound levels at a potentially occupied nest site. Up to one pair of northern spotted owls would be harassed by this elevated sound level.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the northern spotted owl.

REASONABLE AND PRUDENT MEASURES

No reasonable and prudent measures are necessary to minimize impacts of incidental take of northern spotted owls. Minimization measures agreed to by Caltrans and incorporated into the project description would sufficiently reduce the amount of take.

TERMS AND CONDITIONS

No terms and conditions are necessary because reasonable and prudent measures are deemed unnecessary.

MONITORING REQUIREMENTS

No monitoring requirements are necessary.

REPORTING REQUIREMENTS

Upon locating a dead or injured northern spotted owl, initial notification must be made to the Service's Division of Law Enforcement in Chico, California at (530) 342-8724 and Michael Long, Field Supervisor, Arcata Fish and Wildlife Office at (707) 822-7201 immediately, and in writing within three (3) working days. Notification must include the date, time, and location of the carcass; cause of death or injury, if known; and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state for later analysis of cause of death. The finder has the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed, unless to remove it from the path of further harm or destruction. Should any treated listed species survive, the Service should be contacted regarding the disposition of the animal. In the case of take or suspected take of northern spotted owl not exempted in this

biological opinion, the Arcata Fish and Wildlife Office and the Division of Law Enforcement shall be notified within 24 hours.

COORDINATION OF INCIDENTAL TAKE WITH OTHER LAWS

The Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), of the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service provides Caltrans with the following conservation recommendations:

1. Portions of the habitat disturbed during construction of the Willits Bypass may be appropriate to restore to conditions that promote the future growth of suitable habitat conditions. These conditions include limiting the extent of tree removal to that necessary for completing the construction work, replanting disturbed areas as appropriate to local, native conifer and hardwood tree species, and retention of large woody debris within planted areas.

2. To minimize the permanent loss of suitable habitat, Caltrans should consider ways to minimize the width of the extraction area to that necessary for future highway alignment and right-of-way, avoiding creation of broad areas will little habitat value in the future. This approach would reduce overall habitat loss in the long term, and retain habitat that exists farther from the existing and future highway alignment.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in your September 27, 2005, request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat is designated that may

be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Please contact staff biologist Ray Bosch at (707) 822-7201 should you have further questions regarding this consultation.

Sincerely,

for Amelia Bricker

Michael M. Long
Field Supervisor

cc:
Federal Highway Administration, Sacramento, California (Attn: Lanh Phan)
California Department of Transportation, Eureka (Attn: John Bulinski)
California Department of Transportation, Sacramento (Attn: Don Schmoldt)
National Marine Fisheries Service, Santa Rosa (Attn: Tom Daugherty)
California Department of Fish and Game, Yountville (Attn: Corinne Gray)

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802- 4213

SEP 1 1 2006

In response refer to:
2005/07370:TKD

Gene K. Fong
Division Administrator
U.S. Department of Transportation
Federal Highway Administration
California Division
650 Capitol Mall, Suite 4-100
Sacramento, California 95814

Dear Mr. Fong:

This document transmits NOAA's National Marine Fisheries Service's (NMFS) biological opinion (Enclosure 1) based on NMFS' review of the U.S. Federal Highway Administration's (FHWA) and California Department of Transportation's (Caltrans) proposed construction of the Route 101 Willits Bypass, in Mendocino County, California. FHWA and Caltrans have proposed the Willits Bypass Project to reduce delays, improve safety, and improve conditions for interregional traffic. The primary feature of the proposed project is a new segment of U.S. 101 that would bypass the City of Willits in Mendocino County, California.

The enclosed biological opinion is based on NMFS' review of information provided with FHWA's request of October 18, 2005, for formal consultation and other documents, meetings, telephone conferences, site visits, and analyses provided during consultation. It addresses potential adverse effects on the following listed species (Evolutionarily Significant Unit or Distinct Population Segment) and designated critical habitat, in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §1531 *et seq.*):

California Coastal Chinook salmon (*Oncorhynchus tshawytscha*)
threatened (June 28, 2005, 70 FR 37160)
critical habitat (September 2, 2005, 70 FR 52488)
Southern Oregon/Northern California Coasts coho salmon (*O. kisutch*)
threatened (June 28, 2005, 70 FR 37160)
critical habitat (May 5, 1999, 64 FR 24049)
Northern California steelhead (*O. mykiss*)
threatened (January 5, 2006, 71 FR 834)
critical habitat (September 2, 2005, 70 FR 52488)

Based on the best available information, the enclosed biological opinion concludes the proposed Willits Bypass Project is not likely to jeopardize the continued existence of California Coastal Chinook salmon, Southern Oregon/Northern California Coasts coho salmon, or North Coast steelhead, or result in the destruction or adverse modification of designated critical habitat for these species. However, NMFS expects the action is likely to result in take of listed anadromous

salmonids. An incidental take statement is included with the enclosed biological opinion. The incidental take statement includes non-discretionary terms and conditions that are expected to minimize the impacts of incidental take of listed salmonids as a result of the Willits Bypass Project road and bridge building activities. In addition, a conservation recommendation is included in the enclosed biological opinion.

Regarding the project's Conceptual Mitigation Plan, Caltrans has proposed creation/restoration, enhancement and preservation of salmonid habitat and riparian areas within Little Lake Valley. Due to the preliminary nature of future in-channel mitigation proposals, NMFS was unable to analyze the impacts of these projects. NMFS staff will work with FHWA and Caltrans to design these future mitigation actions. If these actions may affect listed species or their critical habitats, reinitiation of consultation would be needed.

This letter also transmits NMFS' Essential Fish Habitat (EFH) Conservation Recommendations pursuant to section 305(b) of the Magnuson-Stevens Fisheries Conservation and Management Act (MSFCMA) (Enclosure 2). The Willits Bypass project site includes areas identified as EFH for various life stages of species managed under the Pacific Coast Salmon Fishery Management Plan. Based on our review, NMFS concludes that the Willits Bypass Project has the potential to adversely affect EFH. The enclosed EFH Conservation Recommendations are designed to minimize potential adverse effects on EFH.

Mr. Thomas Daugherty is the lead biologist for this project. If you have any questions regarding the enclosed documents, please contact Mr. Thomas Daugherty at (707) 468-4057.

Sincerely,

for Rodney R. McInnis
Regional Administrator

Enclosures

cc: Russell Strach, NMFS Sacramento
Jeremy Ketchum, Caltrans Sacramento

Enclosure 1

BIOLOGICAL OPINION

ACTION AGENCY:	U.S. Department of Transportation, Federal Highway Administration, California Division
ACTION:	Funding and Construction of the Highway 101 Willits Bypass Project
CONSULTATION CONDUCTED BY:	National Marine Fisheries Service, Southwest Region
PCTS TRACKING NUMBER:	2005/07370
DATE ISSUED:	_____

I. CONSULTATION HISTORY

In 1994, the U.S. Army Corps of Engineers (ACOE), U.S. Environmental Protection Agency (USEPA), U.S. Department of Transportation Federal Highway Administration (FHWA), U.S. Fish and Wildlife Service (USFWS), NOAA's National Marine Fisheries Service (NMFS), and California Department of Transportation (Caltrans) signed a formal Memorandum of Understanding (MOU) that would integrate the National Environmental Policy Act (NEPA) process and Clean Water Act Section 404 procedures, as well as improve coordination among stakeholder agencies. The NEPA/404 integration process was designed to implement Section 404 more effectively to preserve wetlands and the plants and animals that depend on this type of habitat. Under the guidelines of the MOU, signatory agencies (NEPA/404 Resource Agencies) are to agree to a project's Purpose and Need Statement, which sets forth the criteria for selecting project alternatives. The guidelines also specify that signatory agencies are to agree to the alternatives to be studied, early in the environmental review process.

Shortly after the MOU was signed, Caltrans and FHWA initiated the NEPA/404 integration process for the Route 101 Willits Bypass project with USEPA, ACOE, USFWS, and NMFS, and invited these agencies to join the Project Development Team (PDT). In 1995, the participating agencies approved the alternatives that would be studied and the Purpose and Need Statement that would guide the project design and operation.

In 1997, Jones and Stokes Associates Inc. prepared a Natural Environmental Study for the Highway 101/Willits Bypass Project Area that was submitted to Caltrans, Eureka, California (Jones and Stokes 1997).

On June 1, 1998, NMFS received a letter from Caltrans stating that studies on the Highway 101 Willits Bypass would be resuming and six distinct four-lane corridor alignments were to be evaluated. This correspondence also formally invited NMFS to take part in the PDT and to bring forth any concerns regarding the potential effects of the proposed action on threatened Northern California (NC) steelhead (*Oncorhynchus mykiss*), threatened California Coastal (CC) Chinook salmon (*O. tshawytscha*), and threatened Southern Oregon/Northern California Coasts (SONCC) coho salmon (*O. kisutch*) and designated critical habitat for these species.

NMFS participated in ten PDT meetings from June 1998 to October 2003. During this time, a number of major decisions were made with respect to the project. Caltrans determined that two alternatives (Alternatives K and K2) were no longer prudent or feasible, and a third alternative (Alternative TSM) did not meet the project's purpose and need. NMFS brought forth concerns with one of the remaining alternatives (Alternative E3) due to the potential impacts to high-quality stream habitats located in the upper reaches of Baechtel, Broaddus, and Mill creeks. In addition, NMFS expressed concern with an alternative (Alternative C1) due to potential effects to salmonid spawning and rearing habitat in reaches of Outlet Creek.

Alternatives C1T, J1T, LT, E3, and No Build were considered in the draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS). In addition, the NEPA/404 Resource Agencies agreed that Caltrans would examine the remaining alternatives using a nodal approach, whereby each segment of the remaining alternatives would be evaluated in the draft EIR/EIS. During development of these alternatives, NMFS participated in a number of site visits and meetings regarding the effects of the project and possible mitigation actions to reduce the overall effect to the environment.

On August 22, 2002, NMFS provided Caltrans with comments on the draft EIR/EIS. In that letter, NMFS raised various issues, including potential effects of proposed alternatives on water quality, salmonid habitat, and specific life stages of Federally-protected salmonids. Caltrans conducted alternatives analysis based on public and agency comments on the draft EIR/EIS, and identified the Modified J1T Alternative as the least environmentally damaging practical alternative (LEDPA). NMFS provided Caltrans with a letter on January 23, 2004, which supported the Modified J1T Alternative as the LEDPA, yet provided Caltrans with concerns related to riparian removal and sediment delivery associated with the Modified J1T Alternative. Once FHWA and Caltrans received concurrence from the NEPA/Section 404 agencies on the LEDPA, they initiated formal section 7 consultation with NMFS on October 17, 2005.

During late May and June 2006, Caltrans and NMFS discussed potential changes to the project's construction techniques including dewatering of bridge construction sites and sound monitoring during pile driving. On June 1, 2006, NMFS provided to Caltrans a preliminary draft of the Incidental Take Statement (ITS) attached to the NMFS internal draft biological opinion. Caltrans provided comments on the draft ITS on June 9, and June 22, 2006. Caltrans suggested that dewatering and relocation of salmonids not occur unless sound levels during pile driving exceeded 187 dB_{SEL} or 208 dB peak. The September 2005 biological assessment for the project proposed that NMFS would establish the sound threshold which would trigger dewatering of the project sites.

NMFS and Caltrans then met in Sacramento, California, on June 26, 2006, to discuss sound monitoring, project site dewatering, and sound level impacts on fish. During the meeting, Caltrans continued to propose that dewatering of the stream area near a pile driving work site not occur unless injurious levels of sound were detected. NMFS expressed concern that waiting until injury occurred does not minimize impacts. NMFS proposed that measures be implemented to protect the fish prior to the onset of injury.

To resolve this issue, Caltrans proposed to dewater stream reaches in advance of pile driving to ensure listed salmonids would not be exposed to unsafe levels of sound. An electronic mail message from Sarah Allred (Caltrans) to Thomas Daugherty (NMFS) on June 30, 2006, confirmed that Caltrans would remove fish and de-water stream areas in the vicinity of pile driving and would not rely on sound monitoring thresholds to determine if dewatering is needed. Above and below each dewatered reach, Caltrans proposed to conduct hydroacoustic monitoring during pile driving to assess sound levels.

By letter dated July 13, 2006, to NMFS, Caltrans expressed concern with the delay in issuance of the NMFS biological opinion for the Willits Bypass Project. Caltrans' letter suggested the sound threshold issues associated with pile driving be set aside for this project, because they agreed to dewater all wetted stream crossings prior to pile driving.

On July 19, 2006, Caltrans and NMFS exchanged additional information by electronic mail regarding the hydroacoustic monitoring above and below dewatered areas of the stream.

A complete administrative record for this consultation is on file at the NMFS Ukiah, California field office.

II. DESCRIPTION OF THE PROPOSED ACTION

A. General Description

Caltrans and FHWA propose the Highway 101 Willits Bypass to reduce delays on U.S. Route 101. Currently Highway 101 runs through the City of Willits, California. The bypass project will re-route Highway 101 around the City of Willits, providing a stable flow of traffic at 65 miles per hour. The proposal includes the construction of a four-lane freeway that crosses the Little Lake Valley east of Willits. The bypass would begin 3.3 kilometers (km) south of Willits, where the existing Highway 101 becomes a two-lane road, and extend to about 2.2 km north of Willits, where the new alignment would merge with the existing two-lane Highway 101. Construction would begin in 2009 and likely take four years to complete.

The southern end of the proposed bypass project begins at the Haehl Creek Interchange, where future traffic will be able to remain on the freeway by taking the bypass, or exit to the south end of Willits. The freeway bypass project will continue from the Haehl Creek interchange approximately five km along existing and new imported fill to a proposed viaduct structure. The viaduct structure begins near Center Valley Road and crosses Haehl, Baechtel, Broaddus, and Mill creeks for a distance of 1.7 km. The proposed freeway bypass then continues on new fill for approximately 0.4 km, crosses the railroad grade before reaching the Quail Meadows Interchange

1.5 km to the north of Willits. The proposed freeway bypass continues for approximately one additional km after crossing Upp Creek before re-joining the existing route of Highway 101. The overall length of the proposed freeway bypass will be approximately 9.3 km.

North and southbound lanes of the new alignment will be 3.6 meters wide. A 13.8-meter median will separate the northbound and southbound lanes. Inside shoulder width, nearest the medium, will be 1.5 meters and 3.0 meters on the outside shoulder. Cut slopes will vary from 1:1 (vertical: horizontal) to a 1:4 ratio. Fill slopes generally will vary between 1:2 and 1:4 ratios.

Interchange ramps will have single lanes. Some local roads will be improved or constructed, and these roads will be two lanes with 2.4 meter shoulders. Private access roads will be improved or constructed to meet Mendocino County Standards.

The proposed bypass will cross Haehl Creek at three locations (hereafter termed upper, middle and lower), Baechtel Creek, Broaddus Creek, Mill Creek, and Upp Creek. The crossings at upper Haehl Creek will consist of the southbound and northbound freeway bridge structures; one bridge each for the southbound off-ramp and the northbound on-ramp associated with the southern interchange; and replacement of an existing culvert for the Schmidbauer (private landowner access) access road with a natural bottom culvert. The crossings at middle Haehl Creek would consist of bridges for the north- and south-bound lanes, south of Shell Lane. The crossing at Upp Creek, at the northern end of the project, will consist of a natural bottom culvert for the north-and southbound lanes. The crossings at lower Haehl, Baechtel, Broaddus, and Mill creeks will consist of the north and southbound viaduct structures.

B. Specific Construction Actions

1. Staging Areas

The first phase of construction is the establishment of three staging areas, one each in the southern, central, and northern portions of the project corridor. The "southern" staging area will be located south of East Hill Road and east of the railroad tracks, and is approximately 365 meters east of Haehl Creek. The "central" staging area is located between Center Valley Road and East Commercial Street (Hearst-Willits Road), and borders Baechtel Creek, just upstream and downstream of the confluence with Haehl Creek. The northern staging area will be located near the proposed Quail Meadows interchange.

The staging areas may be used by the contractor(s) to store equipment and materials, and will be located where the contractor can gain easy access to the project corridor. Access roads from the staging areas to the project corridor will be constructed where necessary. It is anticipated that work will begin at several areas at the same time. Where staging areas are located adjacent to salmonid bearing creeks, a sufficient buffer will be maintained along with appropriate best management practices (BMPs) to ensure storm runoff from these areas does not directly flow into any natural drainage. No riparian vegetation would be removed within the staging areas.

2. Road Construction

Caltrans will lay out the new alignment and the contractor will demolish structures and clear the area to be worked. Excavated material from a permitted borrow site, such as Oil Well Hill, will be transported to the alignment where it is placed and compacted to support the pavement section. A maximum of 1.9 million cubic meters of earthen material will be excavated, transported, and compacted to build the project. A haul road will constructed within the limits of the alignment, and it will be used to transport material from the borrow site to the areas of new construction.

Once the material is transported to its desired location, heavy equipment including bulldozers, graders, scrapers, and large trucks will shape the freeway embankment. Compaction occurs simultaneously during this process. Drainage facilities will be installed during this phase of the project.

When the embankment is completed, aggregate will be brought in with belly dump trucks and spread on the roadbed surface. The roadbed will then be watered, shaped and compacted to design specifications. Trucks will then haul in asphalt concrete, spread it with specialized paving equipment, and compact it to specified dimensions.

3. Borrow of Earthen Fill from Oil Well Hill

Up to 1.9 million cubic meters of earthen material may be excavated from the borrow site at Oil Well Hill. Up to 16.2 hectares will be excavated. This activity will occur on the east side of Highway 101, beginning approximately 425 meters north of the Highway 101 bridge over Outlet Creek. Material would be transported to the project corridor via trucks using existing Highway 101, and from Highway 101, material will be transported along haul roads within the limits of the new alignment. Sediment basins and other BMPs will be used to minimize and avoid sediment entering Outlet Creek.

If the contractor selected by Caltrans opts to use an alternative borrow site, the contractor will be required to submit a new borrow site plan to the Caltrans Resident Engineer. All borrow sites, whether designated by Caltrans or the contractor must comply with the project contract and environmental laws and regulations.

4. Concrete Batch Plant

It may be necessary to supplement the current commercial production of concrete and to minimize specified haul time, by allowing contractors to construct a temporary plant(s) near the project site. Caltrans has indicated a likely site for a batch plant is the existing Schusters Transportation site, located north of East Valley Street, and between Haehl Creek and Baechtel Creek. This biological opinion assumes one concrete batch plant will be constructed at the Schusters Transportation site. If an alternative site is selected or additional temporary concrete plants are constructed, additional review by NMFS and reinitiation of section 7 consultation may be necessary.

5. Retaining Walls

Three retaining walls will be constructed for this project. Two retaining walls will be located near Haehl Creek, at the southern freeway interchange. At this site, one will be located along the west side of the northbound on-ramp. The second retaining wall will be located on the east side of the northbound mainline lanes just south of the new crossing over upper Haehl Creek. Rock slope protection may be needed for a distance of up to 15 meters along the south bank of Haehl Creek. The third retaining wall will be located on the west side of the southbound lanes south of the viaduct, and east of Baechtel Creek.

To construct the two retaining walls at the southern interchange, removal of riparian vegetation will be required. A portion of these walls may require rock slope protection. The wall foundation will require the installation of "H" piles by pile driving. Equipment may need to enter the Haehl Creek channel at this location for construction activities. However, because this reach of Haehl Creek is normally dry during the summer months, work in this area will likely occur when the channel is dry.

The third retaining wall south of the viaduct will be constructed on grassland. This site will not require the removal of riparian vegetation.

6. Permanent Bridge Construction

At the upper Haehl Creek crossing location, the proposed bridges will consist of the two freeway structures (northbound and southbound lanes); the southbound off-ramp; and the northbound on-ramp. Rock slope protection may be required along both banks at the southbound off-ramp and northbound on-ramp for a distance of approximately 8 meters above and below each structure.

The proposed new Schmidbauer Ranch access road will be located off the east side of the interchange and will connect with an existing dirt road that crosses over Haehl Creek. The reconstruction of this access road will require removal of an existing culvert. This culvert will be replaced with an appropriately sized culvert that provides flood flow conveyance and anadromous fish passage.

At the middle Haehl Creek crossing, the proposed bridges will consist of two freeway structures (northbound and southbound lanes). The proposed bridge sites will be cleared of vegetation prior to construction. Rock slope protection may be required along the south bank for a distance of approximately 8 meters above and below each structure.

At lower Haehl Creek, Baechtel Creek, Broaddus Creek, and Mill Creek, permanent stream crossings will consist of two freeway structures (northbound and southbound lanes) for the viaduct. These viaduct crossings and construction methods are described in detail below.

Permanent bridge building will begin with construction of approaches, where necessary, followed by construction of the abutments. The abutment work will include excavation for the footings, pile driving, or drilling for the foundations (which will occur outside the creek channels), formwork for concrete placement, steel reinforcement bar placement, concrete pouring, finishing, and curing. Each of the permanent bridge abutments may require 20 or more

35 centimeter to 51 centimeter "H" piles, which will be placed by pile drivers, at or near the top of bank.

The temporary false work at each permanent bridge site will be constructed between June 15 and October 15. The false work substructure will consist of steel beams supported by the piles or wood pads and will span the creek channel, thus eliminating the need to place piles in the streambed below ordinary high water mark. False work supports will consist of hollow, 61 centimeter to 76 centimeter diameter steel piles, "H" piles, or wood pads. Installation of these supports may require pile driving. The permanent bridge superstructure forms would then be erected and concrete poured, finished, and cured. After a suitable time to allow the concrete to set and strengthen, the falsework would be removed and other work, including bridge rail and approach work, would be completed.

The use of temporary culverts for construction of the structures crossing salmonid bearing streams is not anticipated. If dewatering is required at any of these stream crossings, cofferdams will be used to divert stream flow around the work area. Any salmonids in work areas will be collected prior to and during dewatering for relocation to other suitable habitats nearby in the same sub-basin.

7. Temporary Bridge Construction

Temporary bridges may be required to access portions of the project site at the initial stages of construction. The temporary bridges will likely consist of Bailey Bridges, railroad flatcars, or similar type of structures. These bridges would not require placing any piers in the stream channels or banks. No access into the live stream channels would be required.

Temporary bridges may be located at Haehl, Baechtel, Broaddus, Upp and Mill creeks, or at several (5 or less) other non-fish bearing streams, as necessary. If the placement of these bridges is outside of areas already proposed for temporary riparian removal areas, an additional distance of three meters of riparian vegetation will be removed on both sides of the structure. The bridges would be installed during the dry season between June 15 through October 15.

8. Viaduct Construction

The proposed viaduct crossings will be located on lower Haehl Creek, Baechtel Creek, Broaddus Creek, and Mill Creek. The proposed viaduct crossings would consist of separate northbound and southbound elevated structures. These viaducts would be elevated above the valley floor for their full lengths of approximately 1730 meters. The viaducts will span the Little Lake Valley and allow for runoff in the valley floodway. Each of the elevated viaduct structures would be approximately 12.5 meters wide. The viaduct superstructures will be supported by piles with a maximum diameter of 2.1 meters. The size and number of columns and the distance between the sets of columns has yet to be determined. The installation of the columns and deck construction would require a 30.5-meter wide temporary work area on the east side of the viaduct, and a 17-meter wide temporary work area on the west side of the viaduct.

Permanent fill in the floodway would be limited to the total surface area encompassed by the columns (estimated to be approximately one percent of the area under the viaduct). It is likely

that the northbound and southbound viaduct structures will be constructed simultaneously. When each frame (consisting of multiple spans) is completed, work would begin on the next frame, where material and equipment would be located. One of the viaduct spans would require support columns at the site of the existing aeration ponds at the Willits Wastewater Treatment Plant. These ponds will be decommissioned or relocated prior to construction of the viaduct.

The viaduct crossing over Baechtel Creek may require rock slope protection. Rock slope protection may be installed on both banks under the structures and for a maximum distance of 8 meters upstream and downstream of the structures.

9. Pile Driving Associated with Bridge and Viaduct Construction

Pile driving will be required to construct the bridge abutments and piers, the columns for the viaduct, and installation of the temporary falsework supports. The exact number and size of the piles for each of the structures have not been determined. However, there will be no permanent or temporary piles in any stream channel below ordinary high water. For the proposed viaduct, piles could be as large as 2 meters in diameter. Falsework supports may be piles approximately 61 centimeters to 76 centimeters in diameter on wood pads. Where necessary, benches will be excavated on the stream bank above ordinary high water to provide temporary footings for the false work. Each permanent bridge abutment may require approximately 20, 36-centimeter to 51-centimeter "H" piles. All permanent bridge abutments would be located above the top-of-bank. The approximate number of piers and columns within 15 meters of the stream channels are summarized below:

- Upper Haehl Creek: 455, 30-centimeter "H" piles would be driven within 15 meters of the top-of-banks for the upper Haehl Creek crossings for the bridge abutments and retaining walls; and 69, 61 to 76 centimeter falsework piles would be driven, with 12 of these piles, within 15 meters of the top-of-banks and 28 below the top-of-banks (but above the ordinary high water mark).

- Middle Haehl Creek: 186, 30-centimeter "H", piles would be driven within 15 meters of the top-of-banks for the middle Haehl Creek crossing for the bridge abutments; one 2-meter diameter cast in steel shell (CISS) pile would be located below the top-of-bank; and 50, 61- to 76-centimeter diameter falsework piles would be driven, with 20 of these piles within 15 meters of the top-of-banks and 30 piles below the top-of-banks.

- Lower Haehl Creek: 4, 2-meter diameter CISS piles would be driven within 15 meters above the top-of-banks at Haehl Creek, near it's confluence with Baechtel Creek; and 25, 61 to 76-centimeter falsework piles would be driven, with 20 of these piles within 15 meters of the top-of-banks, and 5 piles below the top-of-banks.

- Baechtel Creek: 12, 2-meter diameter, CISS piles would be driven, with 6 of these piles within 15 meters of the top-of-banks, and 6 piles below the top-of-banks; and 70, 61- to 76-centimeter falsework piles would be driven, with 25 of these piles within 15 meters of the top-of-banks and 45 piles below the top-of-banks.

- Broaddus Creek: 6, 2-meter diameter, CISS piles would be driven within 15 meters of the top-of-banks, with no large piles being driven below the top-of-banks; 30, 61 to 76-centimeter falsework piles would be driven, with 20 of these piles located within 15 meters of the top-of-banks, and 10 piles located below the top-of-banks.

- Mill Creek: 6, 2-meter diameter, CISS piles would be driven within 15 meters above the banks at Mill Creek; and 20, 61 to 76-centimeter falsework piles would be driven, with 10 of these piles within 15 meters of the top-of-banks and 10 piles below the top-of-banks.

All temporary and permanent piles will be installed with an impact or vibratory hammer. It is anticipated that the time required to drive each 2-meter diameter pile could be approximately 10 to 20 hours, but may take longer. The time required to drive typical small diameter piles may be one hour. Pile driving activities within 15 meters of the top-of-bank may require up to a week, or more, at each crossing.

Prior to the driving of piles in or near the stream banks of Haehl, Baechtel, Broaddus, or Upp creek, Caltrans proposes to dewater the adjacent reach of wetted streams for a distance up to 150 meters. Fish including anadromous salmonids will be collected prior to and during dewatering for relocation to suitable and unaffected aquatic habitat nearby. Cofferdams will be constructed and water diverted through appropriately sized pipes. The cofferdams will likely be constructed with impermeable liners placed over clean, washed, commercially available river gravel, ranging in size from approximately 2.5 centimeters to 7.5 centimeters, or by use of sand bags or rubber bladders. No native streambed material or angular rock material would be used. Water will be diverted into the upstream entrance of a diversion pipe and around the construction site.

A qualified fisheries biologist who has authorization from NMFS will be on-site to capture and relocate salmonids trapped in dewatered areas and pools. The biologist would relocate fish to suitable habitat outside of the construction area. The methods of fish removal will be selected in coordination with NMFS and California Department of Fish and Game (CDFG). Upon completion of construction at each crossing, material used for the cofferdams and water diversion will be removed from the channel. Any imported washed gravel used for cofferdams would be spread out within the stream channel. Cofferdams and diversion facilities will be removed from the channel no later than October 15 of each year.

10. Stream Realignment

The project will require the realignment of approximately 915 meters of an unnamed ephemeral watercourse, located east of the existing roadbed fill near the Schmidbauer Ranch, north the proposed southern freeway interchange. The 915-meter reach affected occurs south of East Hill Road, and averages approximately 3 meters wide. This watercourse has a small watershed, consisting of a small portion of the Schmidbauer Ranch. A new channel may be constructed east of the existing watercourse, and would be completed in one construction season while the watercourse is dry.

11. Culvert Construction, Removal, and Replacement

An existing culvert on Upp creek, under existing Highway 101, will be replaced to improve fish passage. The culvert will be either a steel arch design or a cast-in-place box culvert with a natural bottom. The culvert that spans the creek will be constructed in a manner that maintains the original channel configuration and gradient. If a cast-in-place design is used, temporary construction formwork will require supports in multiple locations within the creek channel. If a steel arch design is selected, no temporary false work will be used in the creek. Removal of vegetation up to a distance of 23 meters above and below the Upp Creek culvert site may be required for construction. The new culvert site may also require placement of rock slope protection on the banks for a maximum distance of 8 meters above and below the culvert

An existing culvert in upper Haehl Creek will be replaced during the improvement of the Schmidbauer Ranch access road. The existing culvert will be replaced with a natural bottom arch or box culvert. Construction will occur during the summer months when this reach of Haehl Creek is normally dry. However, flows through the existing culvert have created an outfall pool that can retain water throughout the year. If water is present, a qualified fisheries biologist will survey the pool for the presence of salmonids. If present, the fish would be removed prior to removal and replacement of the culvert.

A second culvert located in upper Haehl Creek under the proposed freeway bridge will be removed to improve fish passage. Stabilization of the creek channel following removal of the culvert may consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Stream channel stabilization would follow guidelines provided in the *California Salmonid Stream Habitat Restoration* Manual (CDFG 1998). Guidance from NMFS and CDFG will be used in development of appropriate stream stabilization structures at this site.

12. Freeway Maintenance and Use

Long-term maintenance for the completed bypass will include mowing, ditch and culvert cleaning, vegetation pruning, pavement sweeping, applying sand, and repair. These normal maintenance activities are conducted using Caltrans BMPs as described in the Storm Water Quality Handbook Maintenance Staff Guide (Caltrans 2003). Caltrans estimates that the freeway bypass will be used by 14,400 vehicles per day (average annual daily traffic estimated for 2008).

C. Proposed Measures to Minimize and Avoid Impacts

In addition to the impact minimization measures described above, the following measures are proposed by Caltrans and FHWA to further minimize impacts to salmonids during implementation of the project:

- Construction at each of creek crossings will be limited to the period between June 15 and October 15 of each year, unless earlier and/or later dates for construction activities at the creek crossings are approved by NMFS. This work window is intended to minimize the impacts to migrating salmon and steelhead that utilize Haehl, Baechtel, Broaddus, Mill, and Upp creeks.

- If a rain event occurs between June 15 and October 15, and rock slope protection or other erosion control measures have not been completed, non-rainy season BMPs would be implemented in accordance with the Storm Water pollution Prevention Plan (SWPPP), including inspection, maintenance and repair, to minimize delivery of soil to the stream channels.

- The use of vehicles and heavy equipment may not occur in areas below the top-of-bank when standing or flowing water is present with the exception of establishing a flow diversion around a work site.

- BMPs will be used to prevent the discharge of equipment fluids to the stream channel.

- Equipment will not be stored in the channel when not in use. All equipment will be removed from the channel at the end of each workday. All equipment will be fueled, maintained, and repaired at sites well away from the stream banks.

- Caltrans will monitor underwater sound pressure levels in the wetted stream habitats immediately above and below dewatered areas. A minimum of 10 blows per pile will be monitored for underwater sound levels. If in-stream peak sound pressure levels exceed 187 dB_{SEL} or 208 dB peak (Caltrans 2006), Caltrans will immediately contact NMFS for recommendations to reduce the potential for harm to listed salmonids. Possible measures to reduce harm could include dewatering additional areas and fish relocation. The length of channel that would be dewatered would be determined through consultation with NMFS and CDFG fisheries biologists. If the streambed is dry for a distance of approximately 75 meters upstream and downstream of the piles/columns, such that no cofferdams or dewatering is required, no underwater sound monitoring is proposed by Caltrans.

- Appropriate BMPs will be developed and implemented in accordance with the Statewide National Pollutant Discharge Elimination System (NPDES) permit for all soil disturbance activities. These BMPs will be submitted by the contractor to Caltrans for approval as a SWPPP prior to engaging in any construction activities related to the proposed Willits Bypass Project.

- Caltrans/FHWA will have a qualified biologist monitor construction activities in sensitive biological resource areas (*e.g.*, stream crossings) as necessary, to ensure permit conditions and mitigation requirements are implemented and enforced.

D. Proposed Willits Bypass Conceptual Mitigation Plan

Pursuant to the NEPA/404 MOU, Caltrans has prepared a conceptual mitigation plan to serve as a guide in the preparation of the final mitigation and monitoring plan and as a basis for further negotiations with resource agencies. Mitigation for impacts to riparian vegetation would occur both on-site and off-site. Appropriate, local native plant species would be used for the revegetation of impacted riparian areas within the project limits as well as in off-site mitigation areas. Riparian trees are proposed for planting at the ratio of five new trees for each tree lost with the goal of four living trees after five years of monitoring. Associated shrubs, herbaceous

perennial plants and annuals would be seeded or planted along with riparian trees. Planting methods would include the installation of stem (pole) cuttings from plants such as willow (*Salix spp.*), cottonwood (*Populus spp.*), thimbleberry (*Rubus parviflorus*), California blackberry (*Rubus ursinus*), coyote bush (*Baccharis spp.*), or other species capable of easy rooting from cuttings.

Pole cuttings will also be utilized to revegetate areas where riprap is installed. Cuttings would be planted in openings between the rock riprap. As part of the mitigation, pole cuttings may be utilized to armor active erosion headcuts, eroding gully banks, and unstable stream banks in the project area and its vicinity. Installation of container grown or bare rootstock plants, such as alder, Oregon ash, valley oak, or box elder would also be utilized in areas at or above ordinary high water. Selected sensitive plants growing in areas impacted by the project could be relocated.

Mitigation for permanently impacted project area riparian habitats would be implemented as creation/restoration, enhancement, and preservation of stream bank. All temporarily impacted riparian areas would be restored to their original condition in addition to compensatory mitigation elsewhere in Little Lake Valley. The purpose of the compensatory mitigation in addition to restoration of impacted project areas is to offset the temporal loss of the riparian habitat functions in the impacted areas.

In addition to re-planting of native vegetation, Caltrans may pursue a program to remove invasive exotic vegetation. Invasive exotic vegetation would be removed in compliance with the California Invasive Plant Council's *Invasive Plants of California's Wildlands* manual. Areas where invasive exotic plants are removed would be closely monitored for several years for the plant's re-emergence.

For compensation of impacts to anadromous salmonid habitat, Caltrans may construct instream structures such as opposing wing deflectors, anchored large woody debris, or stepped pool systems in project streams or elsewhere in the Willits Valley. Another possible mitigation activity could be the removal of fish passage barriers on primary salmonid streams in Little Lake Valley. Fish passage barriers within Caltrans right-of-way areas would be prioritized. These projects have not been designed and were not analyzed in this biological opinion. Reinitiation of consultation with NMFS may be necessary for these projects if one or more of them may affect listed salmonids or their critical habitat.

In coordination with state and federal agencies, Caltrans will develop a final mitigation and monitoring plan prior to project construction to ensure project impacts to listed species will be fully mitigated. By separate memorandum with the CDFG, Caltrans will ensure adequate funding to implement mitigation and monitoring measures for purposes of obtaining a consistency determination pursuant to CDFG Code Section 2080.1.

E. Action Area

The action area for a consultation includes all areas affected directly and indirectly by the project. For the purposes of this consultation, the action area consists of stream segments of Haehl,

Baechtel, Broaddus, Mill, Outlet, and Upp creeks within the Willits Bypass Project footprint. Indirect effects could extend to reaches of Outlet Creek below the confluence of Baechtel and Broaddus creeks, a reach of Mill Creek, and reaches of Haehl Creek between the construction sites. All of the action area stream reaches eventually flow to Outlet Creek, which flows north out of the Little Lake Valley.

Impacts from direct, indirect, and beneficial effects by this project vary between streams. The extent of the potential impacts by stream length will be greatest along Haehl and Outlet creeks. Baechtel, Broaddus, and Upp creeks will be exposed to less impact by stream length, with one proposed freeway crossing (north and south lanes) at each of them. The Outlet Creek stream reach included in the action area is located downstream of the of the freeway construction project. Table 1 summarizes the length of each stream that is included as in the action area for this biological opinion.

Table 1. Streams and expected lengths of impacted areas for the Willits Bypass Project.

Stream Name	Number of Crossings	Type of Crossings	Action Area Length
Haehl Creek	6	6 bridges, 1 culvert, 1 culvert removal, 2 viaduct crossings	5 kilometers
Baechtel Creek	1	2 viaduct crossings	1250 meters
Broaddus Creek	1	2 viaduct crossings	150 meters
Mill Creek	1	2 viaduct crossing	2 kilometers
Upp Creek	1	1 culvert	400 meters
Outlet Creek	None		5 kilometers
			Total = 13.8 kilometers

* All action area lengths are approximate.

III. STATUS OF THE SPECIES AND CRITICAL HABITAT

This biological opinion analyzes the effects of the proposed action on the following listed salmonids and their designated critical habitat:

Threatened Southern Oregon/Northern California Coasts coho salmon. (*Oncorhynchus kisutch*)
Listing determination (70 FR 37160; June 28, 2005)
Critical habitat designation (64 FR 24049; May 5, 1999);

Threatened California Coastal Chinook salmon (*Oncorhynchus tshawytscha*)
Listing determination (70 FR 37160; June 28, 2005)
Critical habitat designation (70 FR 52488; September 2, 2005);

Threatened Northern California steelhead (*Oncorhynchus mykiss*)
Listing determination (71 FR 834; January 5, 2006).
Critical habitat designation (70 FR 52488; September 2, 2005).

A. Species Description and Life History

Coho salmon, Chinook salmon, and steelhead are anadromous fish, spending some time in both fresh- and saltwater. The older juvenile and adult life stages occur in the ocean, until the adults ascend freshwater streams to spawn. Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles all rear in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults. Juveniles migrating to the ocean are called smolts. Both smolts and adults go through physiological changes as they emigrate from fresh- to saltwater (smolts) and immigrate from salt- to freshwater (adults). The timing of migrations, freshwater habitat preferences for spawning and rearing, the duration of freshwater and ocean rearing, distribution in the ocean, age at maturity, and other traits vary by species. Coho salmon and Chinook salmon die after spawning, whereas steelhead can sometimes survive to spawn again (Shapovalov and Taft 1954, Sandercock 1991, Healy 1991, Busby *et al.* 1996).

1. Coho Salmon

The life history of the coho salmon in California has been well documented (Shapovalov and Taft 1954, Hassler 1987, Weitkamp *et al.* 1995). In contrast to the life history patterns of other anadromous salmonids, coho salmon in California generally exhibit a relatively simple 3-year life cycle. Adult salmon typically begin the immigration from the ocean to their natal streams after heavy late-fall or winter rains breach the sand bars at the mouths of coastal streams (Sandercock 1991). Coho salmon are typically associated with small to moderately-sized coastal streams characterized by heavily forested watersheds; perennially-flowing reaches of cool, high-quality water; dense riparian canopy; deep pools with abundant overhead cover; instream cover consisting of large, stable woody debris and undercut banks; and gravel or cobble substrates (Sandercock 1991). Immigration continues into March, generally peaking in December and January, with spawning occurring shortly after arrival at the spawning ground (Shapovalov and Taft 1954). The timing of adult coho salmon migration to the Eel River watershed is October through February, peaking in November and December (Fukushima and Lesh 1998).

The eggs generally hatch after four to eight weeks, depending on water temperature. Survival and development rates depend, in part, on fine sediment levels within the redd. Under optimum conditions, mortality during this period can be as low as 10 percent; under adverse conditions of high scouring flows or heavy siltation, mortality may be close to 100 percent (Baker and Reynolds 1986). McMahon (1983) found that egg and fry survival drops sharply when fines make up 15 percent or more of the substrate. The newly-hatched fry remain in the redd from two to seven weeks before emerging from the gravel (Shapovalov and Taft 1954). Upon emergence, fry seek out shallow water, usually along stream margins. As they grow, juvenile coho salmon often occupy habitat at the heads of pools, which generally provide an optimum mix of high food availability and good cover with low swimming cost (Nielsen 1992). Chapman and Bjornn (1969) determined that larger juveniles tend to occupy the head of pools, whereas smaller juveniles are found further down the pools. As the fish continue to grow, they move into deeper water and expand their territories until, by July and August, they reside exclusively in deep pool habitat. Preferred rearing habitat has little or no turbidity and high sustained invertebrate forage production. Juvenile coho salmon feed primarily on drifting terrestrial insects, much of which

are produced in the riparian canopy, and on aquatic invertebrates growing within the interstices of the substrate and in leaf litter in pools. Juvenile coho salmon prefer well shaded pools at least 1 meter deep with dense overhead cover; abundant submerged cover composed of undercut banks, logs, roots, and other woody debris; and preferred water temperatures of 12-15° Celsius (C) (Brett 1952, Bell 1991, Reiser and Bjornn 1979, McMahon 1983), but not exceeding 22-25°C (Brungs and Jones 1977) for extended time periods. Growth is slowed considerably at 18°C and ceases at 20°C (Stein *et al.* 1972, Bell 1991).

In the spring, as yearlings, juvenile coho salmon undergo a physiological process, or smoltification, which prepares them for living in the marine environment. In the Eel River watershed, coho salmon smolts migrate to the ocean from May through July, peaking in April, May, and June (Fukushima and Lesh 1998). Emigration timing is correlated with precipitation events and peak upwelling currents along the coast. Entry into the ocean at this time facilitates more growth and, therefore, greater marine survival (Holtby *et al.* 1990).

2. Chinook Salmon

Chinook salmon are the largest anadromous member of Oncorhynchus; adults weighing more than 120 pounds have been reported from North American waters (Scott and Crossman 1973, Page and Burr 1991). Chinook salmon exhibit two main life history strategies: ocean-type fish and river-type fish (Healy 1991). Ocean-type fish typically are fall- or winter-run fish that spawn shortly after entering freshwater and their offspring emigrate shortly after emergence from the redd. River-type fish are typically spring- or summer-run fish that have a protracted adult freshwater residency, sometimes spawning several months after entering freshwater. Progeny of river-type fish frequently spend one or more years in freshwater before emigrating. The Chinook salmon in the Eel River watershed and Outlet Creek sub-basin are ocean-type fish.

Chinook salmon in the CC Chinook salmon ESU generally remains in the ocean for two to five years (reviewed in Myers *et al.* 1998 – Appendix B). In the ocean, Chinook salmon from California tend to stay along the California and Oregon coasts, but migration may continue to higher latitudes if oceanographic conditions are appropriate (Allen and Hassler 1986). Some Chinook salmon return from the ocean to spawn one or more years before full sized adults return, and are referred to as jacks (males) and jills (females). Fall-run Chinook salmon enter the Eel River from October through January (Fukushima and Lesh 1998). These fish typically enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas on the mainstem or lower tributaries of rivers, and spawn within a few weeks of freshwater entry. Fall-run Chinook salmon typically spawn in the lower reaches of rivers and tributaries at elevations of 200 to 1,000 feet. Run timing is also, in part, a response to stream flow characteristics.

Egg deposition must be timed to ensure that fry emerge during the following spring at a time when the river or estuary productivity is sufficient for juvenile survival and growth. Adult female Chinook salmon prepare redds in stream areas with suitable gravel composition, water depth, and velocity. Spawning generally occurs in swift, relatively shallow riffles or along the edges of fast runs at depths greater than 24 centimeters (cm). Optimal spawning temperatures range between 5.6 and 13.9°C. Redds vary widely in size and location within the river. Preferred spawning substrate is clean, loose gravel, mostly sized between 1.3 and 10.2 cm, with no more than 5 percent fines. Gravels are unsuitable when they have been cemented with clay or fines or

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when sediments settle out onto redds, reducing intergravel percolation. Minimum intergravel percolation rate depends on flow rate, water depth, and water quality. The percolation rate must be adequate to maintain oxygen delivery to the eggs and remove metabolic wastes. The Chinook salmon's need for a strong, constant level of subsurface flow may indicate that suitable spawning habitat is more limited in most rivers than superficial observation would suggest. After depositing eggs in redds, adult Chinook salmon guard the redd from 4 to 25 days before dying.

Chinook salmon eggs incubate for 90 to 150 days, depending on water temperature. Successful incubation depends on several factors including dissolved oxygen levels, temperature, substrate size, amount of fine sediment, and water velocity. Maximum survival of incubating eggs and pre emergent fry occurs at water temperatures between 5.6 and 13.3°C with a preferred temperature of 11.1°C. Fry emergence begins in December and continues into mid April (Leidy and Leidy 1984). Emergence can be hindered if the interstitial spaces in the redd are not large enough to permit passage of the fry. In laboratory studies, Bjornn and Reiser (1991) observed that Chinook salmon and steelhead fry had difficulty emerging from gravel when fine sediments (6.4 millimeters or less) exceeded 30 to 40 percent by volume.

After emergence, Chinook salmon fry seek out areas behind fallen trees, back eddies, undercut banks, and other areas of bank cover (Everest and Chapman 1972). As they grow larger, their habitat preferences change. Juveniles move away from stream margins and begin to use deeper water areas with slightly faster water velocities, but continue to use available cover to minimize the risk of predation and reduce energy expenditure. Fish size appears to be positively correlated with water velocity and depth (Chapman and Bjornn 1969, Everest and Chapman 1972). Optimal temperatures for both Chinook salmon fry and fingerlings range from 12 to 14°C, with maximum growth rates at 12.8°C (Boles 1988). Chinook salmon feed on small terrestrial and aquatic insects and aquatic crustaceans. Cover, in the form of rocks, submerged aquatic vegetation, logs, riparian vegetation, and undercut banks provide food, shade, and protect juveniles from predation.

The low flows, high temperatures, and sand bars that develop in smaller coastal rivers during the summer months favor an ocean-type life history (Kostow 1995). With this life history, smolts typically emigrate as subyearlings during April through July (Myers *et al.* 1998). The ocean-type Chinook salmon in California tend to use estuaries and coastal areas for rearing more extensively than stream type Chinook salmon. The brackish water areas in estuaries moderate the physiological stress that occurs during parr smolt transitions.

3. Steelhead

General reviews for steelhead in California document much variation in life history (Shapovalov and Taft 1954, Barnhart 1986, Busby *et al.* 1996, McEwan and Jackson 1996). Juvenile steelhead live 1 to 4 years in freshwater before smolting and emigrating, then spend 1 to 4 years maturing in the ocean. Steelhead spawn at 2 to 8 years, and may spawn 1 to 4 times over their life. Although variation occurs, in coastal California, steelhead usually live in freshwater for 2 years, then spend 1 or 2 years in ocean before returning to their natal stream to spawn. Steelhead exhibit much variation in migration timing too. Steelhead can be divided into two reproductive ecotypes, based upon their state of sexual maturity at the time of river immigration and the duration of their spawning migration: stream maturing and ocean maturing. Stream maturing

steelhead enter freshwater in a sexually immature condition and require several months to mature and spawn; whereas, ocean maturing steelhead enter freshwater with well developed gonads and spawn shortly after river entry. These two reproductive ecotypes are more commonly referred to by their season of freshwater entry (*i.e.*, summer [stream maturing] and winter steelhead [ocean maturing]). Summer steelhead typically immigrate between May and October and spawn in January and February; winter steelhead typically immigrate between November and April spawning soon after reaching the spawning grounds. Both summer and winter steelhead are reported from the South Fork Eel River, but only winter steelhead are likely found in the action area.

Survival to emergence of steelhead embryos is inversely related to the proportion of fine sediment in the spawning gravels. However, steelhead are slightly more tolerant than other salmonids, with significant reductions in survival when fines of less than 6.4 millimeters (mm) comprise 20-25 percent of the substrate. Fry typically emerge from the gravel two to three weeks after hatching (Barnhart 1986). Upon emerging from the gravel, fry rear in edgewater habitats and move gradually into pools and riffles as they grow larger. Older fry establish territories which they defend. Cover is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation (Shirvell 1990, Meehan and Bjornn 1991). Steelhead, however, tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids. Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. In winter, juvenile steelhead become inactive and hide in available cover, including gravel or woody debris. Rearing steelhead juveniles prefer water temperatures of 7.2-14.4°C and have an upper lethal limit of 23.9°C (Barnhart 1986, Bjornn and Reiser 1991). They can survive in water up to 27°C with saturated dissolved oxygen conditions and a plentiful food supply. Fluctuating diurnal water temperatures also aid in survivability of salmonids (Busby *et al.* 1996).

In Waddell Creek, in Santa Cruz County, Shapovalov and Taft (1954) found steelhead juveniles migrating downstream at all times of the year, with the most juvenile steelhead emigrating during spring and summer. Fukushima and Lesh (1998) report the steelhead emigrate from the Eel River watershed from April through July.

B. Status of Species and Critical Habitat

In this opinion, NMFS assesses the status of each species by examining four types of information, all of which help us understand a population's ability to survive. These population viability parameters are: abundance, population growth rate, spatial structure, and diversity (McElhany *et al.* 2000). While there is insufficient information to evaluate these population viability parameters in a quantitative sense, NMFS has used existing information to determine the general condition of populations in each ESU and factors responsible for the current status of each ESU.

1. SONCC Coho Salmon

A comprehensive review of estimates of historic abundance, decline, and present status of coho salmon in California is provided by Brown *et al.* (1994). They estimated that the coho salmon annual spawning population in California ranged between 200,000 and 500,000 fish in the 1940s,

which declined to about 100,000 fish by the 1960s, followed by a further decline to about 31,000 fish by 1991. Brown *et al.* (1994) concluded that the California coho salmon population had declined more than 94 percent since the 1940s, with the greatest decline occurring since the 1960s. More recent population estimates vary from approximately 600 to 5,500 adults (Brown *et al.* 1994). Available information suggests that SONCC coho salmon abundance is very low, and the ESU is not able to produce enough offspring to maintain itself (population growth rates are negative) and has experienced many local extirpations (NMFS 2001, Good *et al.* 2005). In addition, SONCC coho salmon have experienced range constriction, fragmentation, and a loss genetic diversity. Many subpopulations that may have acted to support the species' overall numbers and geographic distribution, have likely been lost. While the amount of data supporting these conclusions is not extensive, NMFS is unaware of information that suggests a more positive assessment of the condition of the SONCC coho salmon ESU and its critical habitat. Recent status reviews for SONCC coho salmon conclude that this ESU is presently "likely to become endangered" (NMFS 2001, Good *et al.* 2005). Recently NMFS evaluated the listing status of SONCC coho salmon and maintained the threatened status of SONCC coho salmon (70 FR 37160).

2. CC Chinook Salmon

Rigorous population estimates for the CC Chinook salmon are lacking. Myers *et al.* (1998) reviewed early estimates and reported estimated historic (prior to 1965) Chinook salmon escapement for the Eel River as 55,500. Recent estimates of abundance within the Eel River exceeds 4,000 Chinook salmon and show a -29.7 percent trend in abundance from 1987-1997 (Myers *et al.* 1998). Evidence suggests that CC Chinook salmon populations have been extirpated or nearly extirpated in the southern part of the ESU, or are extremely low in abundance – Chinook salmon in the Russian River are an exception. In addition, an apparent loss of the spring-run Chinook life history in the Eel River Basin and elsewhere in the ESU indicates risks to the diversity of the ESU. Although there are few data available, recent status reviews for CC Chinook salmon conclude that population abundance levels remain depressed relative to historical levels and that this ESU is presently "likely to become endangered" (NMFS 2001, Good *et al.* 2005). Recently NMFS evaluated the listing status of CC Chinook salmon and maintained the threatened status of SONCC coho salmon (70 FR 37160). Chinook salmon runs observed in the South Fork Eel River and the Van Duzen River in 1992/93 through 1994/95 indicated a slight increase in numbers (CDFG 1997).

3. NC Steelhead

Based on the limited data available (dam counts of portions of stocks in several rivers), NMFS' initial status review of NC steelhead (Busby *et al.* 1996) determined that population abundance was very low relative to historical estimates (1930s and 1960s dam counts), and recent trends were downward in most stocks. Overall, population numbers are severely reduced from pre-1960s levels, when approximately 198,000 adult steelhead migrated upstream to spawn in the major rivers of this Distinct Population Segment (DPS) (Busby *et al.* 1996, 65 FR 36074). Updated status reviews reach the same conclusion, and noted the poor amount of data available, especially for winter run steelhead (NMFS 1997, Adams 2000, Good *et al.* 2005). The information available suggests that the population growth rate is negative. Comprehensive geographic distribution information is not available for this DPS, but steelhead are considered to

remain widely distributed (NMFS 1997). It is known that dams on the Mad River and Eel River block large amounts of habitat historically used by NC steelhead (Busby *et al.* 1996). Hatchery practices in this DPS have exposed the wild population to genetic introgression and the potential for deleterious interactions between native stock and introduced steelhead. Historical hatchery practices at the Mad River hatchery are of particular concern, and included out-planting of non-native Mad River hatchery fish to other streams in the DPS and the production of non-native summer steelhead (65 FR 36074). The conclusion of the most recent status review (Good *et al.* 2005) echoes that of previous reviews. Abundance and productivity in this DPS are of most concern, relative to NC steelhead spatial structure (distribution on the landscape) and diversity (level of genetic introgression). The lack of data available also remains a risk because of uncertainty regarding the condition of some stream populations. Recently, NMFS evaluated the listing status of NC steelhead and proposed maintaining the threatened listing determination (71 FR 834). NMFS is unaware of recent population status information specific to steelhead in the mainstem Eel River, or more specific to the Outlet Creek subbasin.

4. Critical Habitat

Critical habitat is defined in section 3(5)(A) of the Endangered Species Act (ESA) as "(i) the specific areas within the geographical area occupied by the species . . . on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species . . . upon a determination by the Secretary of Commerce (Secretary) that such areas are essential for the conservation of the species" (see 16 U.S.C. 1532(5)(A)). The term 'conservation', as defined in section 3(3) of the ESA, means ". . . to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary" (see 16 U.S.C. 1532(3)). Therefore, critical habitat is the geographic area and habitat functions necessary for the recovery of the species.

The condition of critical habitat, for all the Chinook and coho salmon ESUs and the steelhead DPS, has been degraded from conditions known to support viable salmonid populations. These conditions are, in part, the result of the following human-induced factors affecting critical habitat[1]: logging, agricultural and mining activities, urbanization, stream channelization, dams, wetland loss, and water withdrawals, including unscreened diversions for irrigation (reviewed in Good *et al.* 2005). Impacts of concern include alteration of stream bank and channel morphology, reduced surface flow, alteration of water temperatures, loss of spawning and rearing habitat, fragmentation of habitat, loss of downstream recruitment of spawning gravels and large woody debris, degradation of water quality, removal of riparian vegetation resulting in increased stream bank erosion, increases in erosion entry to streams from upland areas, loss of shade (higher water temperatures), and loss of nutrient inputs. Depletion and storage of natural river and stream flows have drastically altered natural hydrologic cycles in many of the streams in the ESUs and the DPS.

[1]Other factors, such as over fishing and artificial propagation have also contributed to the current population status of these species. All these human induced factors have exacerbated the adverse effects of natural environmental variability from such factors as drought and poor ocean conditions.

Assessment of the CC Chinook and NC steelhead designated critical habitat is included in NMFS (2005), which addresses critical habitat for seven salmon and steelhead ESUs/DPSs. The NMFS Southwest Region established Critical Habitat Analytical Review Teams (CHARTs) consisting of NMFS fishery biologists that assessed the habitat conservation value of Hydrologic Subareas (HSAs) within the ESUs/DPSs. Conservation values of "high", "medium", and "low", were determined from a variety of data sources on quality, quantity, and distribution of physical or biological features associated with spawning, rearing, and migration in each HSA.

For CC Chinook salmon, the CHART identified 45 occupied HSAs within the freshwater and estuarine range of the ESU. Eight HSAs were rated low in conservation value, 14 were rated medium, and 27 were rated high in conservation value (NMFS 2005). Essential features for spawning, rearing and migration are contained in approximately 5,036 km of occupied habitat within these HSAs. The proposed project is located within the Outlet Creek HSA, which contains 96 km of spawning, 65 km of rearing, and 72 miles of migration habitat for Chinook salmon. The Outlet Creek HSA was considered by the CHART to have high conservation value for CC Chinook critical habitat (NMFS 2005).

The CHART identified 50 occupied HSAs within the freshwater and estuarine range for the NC steelhead DPS. Nine HSAs were rated as low conservation value, 10 were rated medium, and 27 were rated high in conservation value (NMFS 2005). Essential features for spawning, rearing, and migration are contained in approximately 2,931 km of occupied stream habitat within the HSAs. The Outlet Creek HSA contains 133 km of spawning, rearing and migration habitat, which represents 4.5 percent of the total habitat of the DPS occupied habitat. A high conservation value was given to the Outlet Creek HSA for NC steelhead critical habitat (NMFS 2005).

IV. ENVIRONMENTAL BASELINE

This biological opinion analyses the areas affected directly and indirectly by the proposed Willits Bypass construction project. The action area evaluated in this biological opinion includes stream segments of Haehl, Baechtel, Broaddus, Mill, Outlet and Upp creeks identified above.

A. Status of the Species in the Action Area

All of the stream segments identified in the action area are located within the Outlet Creek watershed, sub-basin within the Eel River watershed. This basin currently provides habitat for populations of CC Chinook, SONCC coho salmon, and NC steelhead. Chinook salmon, coho salmon, and steelhead utilize the low gradient reaches of the action area streams as migration corridors during adult spawning and smolt migrations (LeDoux-Bloom 2006).

Chinook and coho salmon spawning and rearing are known to occur in upstream areas of Baechtel, Broaddus, and Mill creeks (S. Harris, CDFG, personal communication, 2005). Coho salmon spawning and rearing is not expected to occur in the action areas of Haehl, Upp, or Outlet creeks. There is some potential for straying of adult coho salmon into these streams (S. Harris,

CDFG, personal communication, 2006). Some Chinook salmon spawning does occur in reaches of Outlet, and Haehl creeks. Juvenile Chinook and coho may rear for short periods of time during their outmigration during the spring, but are not expected to utilize any stream reaches identified in action area for summer rearing.

Juvenile steelhead have been found to utilize all stream segments that are within the project action area (LeDoux-Bloom 2006). Although many of the reaches within the action area either have very low (less than 1 cfs) flow, are intermittent, or dry during the summer months, juvenile steelhead are expected to be found in aquatic habitat present during the summer low flow period. CDFG observed low numbers of juvenile steelhead in Baechtel and Broaddus creeks during 1995 habitat typing surveys. CDFG (2004) conducted spring stream surveys of proposed project crossings and visually observed juvenile steelhead in Baechtel, Broaddus, Mill, lower Haehl, but did not observe salmonid juveniles in Upp or upper Haehl creeks.

B. Habitat Conditions in the Action Area

The majority of the action area is located on the valley floor area of the Willits Valley that has a history of intermittent flow from July to September in most years. LeDoux-Bloom (2006) reports that in 1920 the U.S. Department of Agriculture Soil Survey for the Willits area stated that all streams entering the valley are intermittent, including Baechtel, Broaddus, Haehl, Davis, and Berry creeks. CDFG conducted habitat typing in twenty reaches of the Outlet Creek basin. The following is summary of the habitat conditions for stream segments within the action area.

1. Baechtel Creek

The action area stream reach is located in the valley bottom where several tributaries meet to form Outlet Creek. This lower reach of Baechtel Creek characterized by an F3 channel type which are characterized by low gradients (< 2%), are well entrenched, and have gravel/cobble substrates (Rosgen 1994). CDFG (1995) surveys found that pools in Baechtel Creek are relatively shallow in the summer with only 174 of 463 pools having a maximum depth of greater than two-feet. Pool shelter ratings for Baechtel Creek indicate that habitat complexity is low. Pool tail-outs, or areas where adult fish spawn, had high embeddedness ratings during the 1995 CDFG surveys, indicating poor gravel quality for salmonid spawning. Surveys conducted by CDFG in the spring of 2004 characterized the Baechtel Creek crossing site as having a high proportion of run habitat, high levels of silt and sand substrate and very low gradient, less than 0.5% (CDFG 2004). The lower reach of Baechtel also has poor water temperature conditions, with stream temperatures up to 29° C in late July and August (CDFG 1995).

2. Broaddus Creek

Surveys of Broaddus Creek by CDFG in 1995 and 2004 characterize this reach as well entrenched, low gradient, and with fine substrates of sand and silt. CDFG's 2004 survey of the stream reach at the proposed crossing indicates a high number of run and riffle habitats with few pools. Spawning habitat is rated as very poor in the CDFG 1995 survey results, with seventy-five percent of the pool tail-outs having high embeddedness ratings (>50% fine sediment). Stream temperatures during July of 1995 ranged from 14.5°C to 24°C in Broaddus Creek. The

action area considered in this biological opinion is located at the lower end of Broaddus Creek where stream temperatures are likely in the upper end of the documented range.

3. Haehl Creek

Haehl Creek is a well entrenched, low gradient stream with gravel as the dominant substrate (CDFG 1995). Stream temperatures measured by CDFG habitat inventory crews in 1995 ranged from 15.5°C to 24°C in the summer. CDFG reports poor spawning conditions at all three of the proposed Haehl Creek crossing locations (S. Harris, CDFG, personal communication, 2005). Elevated percentages (estimated > 90%) of fine-grained sediment are present within Haehl Creek (CDFG 2004). Riparian canopy cover averaged 80 percent along the total length of Haehl Creek (CDFG 1995). Based on site visits by NMFS in 2005, the proposed crossings areas along Haehl Creek have areas that are sparse or have no riparian vegetation. CDFG characterizes Haehl Creek as having degraded conditions from past land use practices and low potential as summer rearing habitat for salmonids (S. Harris, CDFG, personal communication, 2005).

4. Mill Creek

Current habitat conditions for Mill Creek have not been well documented. A general stream survey conducted by CDFG in 2004 evaluated stream conditions at the proposed crossing location (CDFG 2004). This area of Mill Creek is also a very low gradient valley reach characterized by intermittent flows during the summer months. The portion of the action area in Mill Creek consists of a high proportion of pool habitat (85 percent), and substrates dominated by fine sand sized material (CDFG 2004). This area of Mill Creek has a riparian canopy that consists of red alder (*Alnus rubra*), willow (*Salix spp.*), Himalayan blackberry (*Rubus discolor*), and poison oak (*Toxicodendron diversilobum*).

5. Outlet Creek

The portion of the action area in Outlet Creek was created by local ranchers to maintain transport of accumulated sediment where Baechtel, Broaddus and Mill Creek join. The original channel that drained these streams is located to the west, and is currently known as the Outlet overflow channel. This newer channel, created in the 1950s, is a "U" shaped channel that provides marginal salmonid rearing habitat, but does function as a migration corridor for all three listed salmonid species (C. LeDoux-Bloom, CDFG, personal communication, 2005). The Outlet Creek channel provides little in the way of rearing habitat during the summer months. Intermittent pools having high temperature and stagnant conditions characterize the channel during this time (C. LeDoux-Bloom, CDFG, personal communication, 2005).

6. Upp Creek

The segment of stream that makes up the Upp Creek action area is considered to be very degraded habitat for salmonids, and is typically dry during the summer months. Migration conditions at the existing Highway 101 culvert limit adult salmonids passage to the upper segments of Upp Creek that provides spawning and rearing habitat. Spring surveys at the culvert replacement site by CDFG (2004) did not document the presence of salmonids. These surveys

also noted that flow was intermittent and the dominant substrate was fine sand sized sediment mixed with gravel.

C. Value of the Action Area as Critical Habitat for Salmonids

Outlet, Haehl, Baechtel, Broaddus, Mill and Upp creeks in the action area are designated critical habitat for CC Chinook salmon, SONCC coho salmon, and NC steelhead. These streams are part of the Outlet Creek hydrologic sub-area, which has a high conservation value as determined by NMFS (NMFS 2005). Conservation Value was determined by the CHARTs by evaluating the quantity and quality of habitat features, the relationship of the area (HSA) to other areas within the ESU/DPS, and the significance to the ESU/DPS of the population occupying that area (NMFS 2005). Because quality of habitat was only one of the rating factors used to determine conservation value, and habitat quality was considered at the geographic scale of an HSA, specific stream reaches within an HSA may, or may not, contain high quality of habitat, regardless of the HSA's overall rating for conservation value.

The longest stream reaches included in the action area are Haehl Creek and Outlet Creek. Both of these stream reaches currently have marginal salmonid rearing habitat during the summer due to intermittent flow and lack of riparian canopy to maintain suitable salmonid stream temperature conditions. During 2004, CDFG conducted stream temperature monitoring in nine streams located within the southern subbasin (action area) of the Outlet Creek basin and all nine had maximum weekly average temperatures (MWATs) considered unsuitable for salmonid rearing (LeDoux-Bloom 2006).

Spawning habitat in the Outlet Creek reach of the action area is limited due to its very low gradient and is typically inundated during the winter by the "Little Lake" for which the valley was named. This reach of Outlet Creek serves as primarily as migration corridor for adult salmon and steelhead during the fall and winter months, as well as smolts as they migrate out of tributaries to the Eel River. Chinook salmon and steelhead spawn in Haehl Creek, but it is only used by Chinook salmon in years when high adult escapement occurs (S. Harris, CDFG, personal communication, 2005).

The action areas of Baechtel, Broaddus, Mill, and Upp Creek represent much shorter stream reaches (150-1250 meters) of habitat, which are located on the valley floor in the most downstream area of each named stream. These valley segments currently have low quality habitat for juvenile steelhead summer rearing; steelhead have been found at low densities in these areas. Some reaches such as Outlet Creek may not be occupied by salmonids during the late summer months (C. LeDoux-Bloom, CDFG, personal communication, 2005). For the most part these segments provide migration passage for adult and smolts to and from higher quality habitat, which is upstream and outside of the action area. Some limited spawning and rearing use by steelhead is likely to occur in the lower reaches of Baechtel, Broaddus, Mill, and Outlet creeks, but is not expected to occur in Upp Creek.

D. Factors Affecting the Species and Critical Habitat in the action Area

Pomo Native Americans occupied the Outlet Creek sub-basin when the first European settlers arrived in the early 1840s. In 1855, Sam and Harry Baechtel drove cattle to the valley from Marin County and settled in the Little Lake Valley (LeDoux-Bloom 2006). In 1892, the California Northwestern Railroad Company began scouting locations along their routes for an egg taking station and hatchery under the direction of Colonel LaMotte. By 1897, fish facilities were open on Gibson Creek in the Russian River Basin and Outlet Creek. Steelhead eggs collected from the Little Lake Valley were grown in the Gibson Creek Hatchery and planted throughout the Outlet Creek Basin, parts of Big River, Russian River, and possibly Lagunitas Creek (LeDoux-Bloom 2006). LeDoux-Bloom (2006) also reports that trout eggs from the Shasta or McCloud rivers were grown out and planted in Outlet Creek and other Mendocino County watersheds until the facility was closed in 1920.

During the late 1800s and early 1900s many of the creeks in the Outlet Creek basin were relocated for the building of railroads. Today in several areas one can observe where Outlet Creek was moved by cutting off the meander and straightening the stream to build the existing Highway 101 alignment (C. LeDoux-Bloom, CDFG, personal communication, 2005). Beginning in 1910, channels were created with oxen and plows to facilitate draining of the Little Lake Valley to lower Outlet Creek for agricultural purposes such as potato production and cattle grazing (DWR 1965, as cited in Le-Doux Bloom 2006). The largest channel, according to longtime landowner John Ford, was constructed to form a straight channel that drains flow from Baechtel, Broaddus, and Haehl creeks, this is what is currently know as Outlet Creek. The original Outlet Creek, as reported in Le-Doux Bloom (2006), is located to the west and is referred to as the Outlet overflow channel.

By the 1950s and 1960s, many of the upper areas of the Outlet Creek Basin had been logged with little attention to erosion control. According to LeDoux-Bloom (2006), many of the valley floor stream reaches such as Baechtel, Broaddus, and Haehl became aggraded during the winter storms of 1955 and 1964. These same stream reaches went through additional aggradation in the 1980s and in some areas the adjacent meadows were lower in elevation than the streams. Juvenile steelhead and coho were found rearing in some of the meadow areas only to perish when water temperatures reached lethal levels (W. Jones, private consultant, personal communication, 2006). In order to maintain passage in the aggraded reaches along the valley floor, CDFG funded barrier and sediment removal projects to define channels for adult salmonid migration (LeDoux-Bloom 2006).

Currently reaches within the action area are affected by cattle grazing, which occurs on Haehl, Baechtel, Outlet, and Upp creeks. Based on field observations by NMFS during site visits of the action area, the current grazing practices continue to impact the riparian areas along streams located on the valley floor. The current riparian zone consists of a narrow strip of riparian vegetation including alder, willow, oak, Himalayan blackberry, and poison oak. Much of the riparian zone is inconsistent in forming a functional riparian community, which does not provide adequate protection for salmonid habitat. Evidence of inadequate riparian zones within the action area were found during 2004 temperature monitoring, which documented unsuitable stream temperature conditions for salmonids (LeDoux-Bloom 2006).

Planwest Partners (2002) reports that localized flooding in upstream areas has resulted in efforts to reduce the amount of brush and debris in these valley streams that are part of the action area. An existing water treatment plant releases treated wastewater in Outlet Creek near the confluence with Baechtel Creek. Releases occur during the winter period and are reported to have no impact on spawning salmonids other than providing slightly more flow (Planwest Partners 2002).

Non-native fish have been introduced to some of the streams located within the action area. Bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), and smallmouth bass (*Micropterus dolomieu*) have been reported to inhabit reaches of Haehl, Mill, and Outlet Creek (S. Harris, CDFG, personal communication, 2005). Introduction of these non-native species is believed to be from farm ponds and local reservoirs from which they escape. Presence of these warm water species effects salmonids in a number of ways, including competition for habitat space, and predation, elimination of natives, reduced growth and survival, and changes in community structure (Spence *et al.* 1996).

V. EFFECTS OF THE ACTION

Pursuant to section 7(a)(2) of the ESA (16 U.S.C. § 1536), Federal agencies are directed to ensure that their activities are not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat. This biological opinion assesses the effects of the proposed Willits Bypass Project on listed salmonids, and the designated critical habitats for SONCC coho salmon, CC Chinook salmon, and NC steelhead. The proposed freeway construction project is likely to adversely affect listed salmonids and critical habitats. An overview of the action is provided in the *Description of the Proposed Action* section of this opinion. In the *Status of the Species and Critical Habitat* and *Environmental Baseline* sections of this Opinion, NMFS provided an overview of the threatened and endangered species and critical habitat that are likely to be affected by the activity under consultation.

Regulations that implement section 7(a)(2) of the ESA require NMFS to evaluate the direct and indirect effects of Federal actions and actions that are interrelated with or interdependent to the Federal action to determine if these actions appreciably reduce listed species' likelihood of surviving and recovering in the wild by reducing their reproduction, numbers, or distribution (16 U.S.C. §1536, 50 CFR 402). Section 7 of the ESA also requires NMFS to determine if Federal actions would destroy or adversely modify critical habitat (16 U.S.C. §1536). This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR §402.2. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

The purpose of this consultation is to examine the total range of potential beneficial and detrimental effects to the ESA listed salmonids and their critical habitats that may occur as a result of constructing the proposed Willits Bypass over a four-year period, and to ascertain the likelihood that construction activities and proposed mitigations would jeopardize the survival and recovery of the subject species and or destroy or adversely modify their critical habitats.

A. NMFS Assumptions Regarding the Effects Analysis in this Biological Opinion

To date, Caltrans proposed plans for the construction of the Willits Bypass are at a 30 percent design level. SWPPP BMPs will be developed once the contractor(s) have acquired contracts from Caltrans. In addition, the mitigation plan is at a "Conceptual" level and few specific mitigation areas or plans have been developed to date. In order to facilitate the development of this biological opinion, NMFS has had to make certain assumptions regarding the effectiveness of the conceptual BMPs and the mitigation plans. NMFS assumes that the BMPs, SWPPP, and mitigation actions will be effective with regard to minimizing impacts of the proposed construction and mitigating and improving habitat over time. NMFS expects that Caltrans will provide proposed plans for the SWPPP, mitigation, and final project design prior to implementing these actions. Furthermore, NMFS must review these plans to determine if they are sufficient to meet the effectiveness assumptions in this biological opinion regarding potential project impacts.

B. Direct and Indirect Effects to Salmon and Steelhead or Their Critical Habitats

1. Effects of Dewatering the Project Areas

Construction of bridges at four locations (six bridges), construction of viaduct crossings at four locations (eight viaduct bridges), two culvert crossings, and one culvert removal will require in-channel work and pile driving. To minimize effects of the proposed construction and pile driving, Caltrans proposes to dewater stream construction areas and relocate fish to other appropriate streams within the Outlet Creek sub-basin. By removing fish from the stream reaches in and adjacent to construction areas, the project is expected to significantly reduce the number of juvenile anadromous salmonids injured or killed during the summer work season. In the absence of fish relocation, juvenile steelhead, coho and Chinook salmon would be exposed to dewatering, thermal stress, desiccation, physical injury from construction equipment and elevated sound levels during pile driving.

Although fish relocation avoids significant impacts to fish in the project area, the fish relocation activities themselves are expected to result in some stress and mortality. Direct effects to juvenile salmonids from this dewatering and relocation will occur in action areas at Haehl, Baechtel, Broaddus, and Mill creeks. The action area for Upp Creek is expected to be dry during the construction phase of the project.

The actual distance that may need to be dewatered will vary with actual summer flow conditions. Summer flows in the Outlet Creek sub-basin are dependant on precipitation levels during the winter and spring preceding construction. Haehl Creek has five stream crossing locations that can vary from dry channel condition to wetted surface flow conditions in the summer depending the previous winter and spring rains. For evaluation purposes in this biological opinion NMFS assumes that all stream crossings except for Upp Creek, will have surface flow at the beginning of the proposed construction period (June 15). Upp Creek is expected to be dry by June 15 of each year at this location.

Nine stream crossings will have up to 150 meters dewatered at each site with the use of cofferdams for up to six weeks during the summer months. The Haehl Creek culvert replacement for the Schmidbauer Ranch road access and the Haehl Creek culvert removal may require dewatering of intermittent pools. Caltrans proposes to allow the contractor to choose various methods of cofferdam construction, including the use of rubber bladders, clean gravel, or sand bags to block stream flow and divert water around the construction sites. During dewatering of each stream crossing area, juvenile fish, including listed salmonids, will be relocated to other appropriate stream reaches. Capture and relocation efforts will result in stress and potential mortality of some juvenile steelhead and salmon. These activities may occur at each construction site over two construction seasons.

During the dewatering and fish relocation phase, juvenile steelhead are expected to be present at each stream crossing site. Juvenile steelhead densities are expected to be low based on habitat quality and prior survey work by fishery biologists. The likelihood of juvenile Chinook salmon and coho salmon being present during the construction/dewatering phase of the proposed project is very low (S. Harris, CDFG, personal communication, 2005). Juvenile coho salmon may be present in low numbers at Baechtel Creek, Broaddus Creek, and Mill Creek project locations, but not present at the four Haehl Creek project sites. Because ocean-type Chinook salmon can reside within streams for up to a year it is possible that juvenile Chinook salmon could be present at the lower Haehl, Baechtel, Broaddus, and Mill creek project areas during the dewatering and relocation activities. Ocean-type juvenile Chinook salmon normally migrate out of their natal stream from 60-150 day post-hatching, but under some conditions may remain in freshwater their first year (Myers *et al.* 1998).

Fish relocation at the proposed project sites will be conducted with electroshocking gear, seining gear, or dip nets by qualified biologists. Once cofferdams are in place, water in pool habitats may be removed using screened pumps. When stream habitats have been sufficiently dewatered, relocation efforts will continue until all fish have been removed from the dewatered reach. Despite these measures, some mortality of fish is likely at each stream crossing construction due to injury from relocation equipment (seining or electrofishing), stress related to handling, and individual fish eluding capture. These latter fish will die when the work areas are dewatered.

Mortality associated with fish relocation activities is expected to be low. To minimize impacts during fish collection and relocation, Caltrans proposes to use only experienced biologists, approved by NMFS and the CDFG. Fish will be relocated to suitable habitats outside of the construction area. Based on review of up-to-date fish relocation techniques and protocols, unintentional mortality of juvenile anadromous salmonids is expected to not exceed three percent of the fish collected. Biologists with electrofishing experience and skill can reduce injury and mortality rates to near one percent. Juvenile NC steelhead will comprise most or all of the salmonids collected at the stream crossing project sites. Due to the very low densities of juvenile Chinook and coho salmon in the project area, few are likely to be present and, thus, very few coho and Chinook salmon mortalities are expected. Juvenile salmonids that avoid capture in the project work area are not likely to survive within the construction sites once they are dewatered. Due to the poor habitat conditions (lack of hiding cover) at the construction sites, NMFS expects that relocation efforts will be effective and mortalities from dewatering and fish relocation will be less than three percent of the total number of fish present in the affected reach of stream.

2. Effects of Pile Driving During Project Construction

Pile driving will be required at eight of the ten proposed stream crossings, requiring combinations of smaller piles ("H" piles) and large CISS piles. All piles are proposed to be driven above ordinary high water levels of each stream channel. The majority of the piles at stream crossings will be located outside of the stream channel all together, but will be within 15 meters of the top-of-bank. Piles that will be located within the channel, yet above ordinary high water will be smaller, measuring from 61 to 76 centimeters. Caltrans has not specified whether pile driving will be performed with an impact hammer or vibratory hammer. The analysis below assumes either hammer type could be used to install the project's temporary and permanent piles. As described above, Caltrans has proposed to dewater construction areas and relocate fish to minimize the potential impacts of high sound pressure waves from the pile driving.

Available information indicates that fish may be injured or killed when exposed to elevated underwater sound pressure waves generated from driving steel piles with impact hammers (Abbott and Bing-Sawyer 2002, Abbott and Reyff 2004, Abbott *et al* 2005, Caltrans 2001, Caltrans 2003, Caltrans 2004, Nedwell *et al.* 2003, Vagle 2003). Pathologies associated with very high sound levels are collectively know as barotraumas. These include hemorrhage and rupture of internal organs, including the swimbladder and kidneys in fish. Death can be instantaneous, occur within minutes after exposure, or occur several days later. High sound pressure levels can also result in hearing damage and elicit stress responses in fish (Popper et al. 2003/2004).

Based on data collected during the installation of piles with a vibratory hammer in Richmond Inner Harbor (Reyff 2003), the adverse effects described above are not expected with the use of a vibratory hammer. Sound levels produced by pile driving with a vibratory hammers are not only lower, but generate different sound wave forms and lower sound frequencies that are less injurious than those produced by an impact hammer. Therefore, it is expected that underwater sound produced during the driving of the project's permanent piles and temporary piles with a vibratory hammer will not exceed levels that result in injury or mortality of listed anadromous salmonids.

If an impact hammer is used for construction in combination with timber piles, no physical injuries or mortality of salmonids are expected. Similar to a vibratory hammer, the driving of wooden and concrete piles with an impact hammer generates sound wave forms that are less injurious to fish (Reyff and Anderson 2005).

Alternatively, when steel piles are used in combination with an impact hammer at the stream crossing locations, high sound levels are likely to be generated during construction. However, all pile driving will be performed on the stream bank or further upland with adjacent stream areas either naturally dry or dewatered by a constructed flow diversion. Elevated sound levels generated by pile driving are expected to travel through the ground and streambed. Although below the level of physical injury, juvenile steelhead could be exposed to high sound pressure waves traveling through the streambed. Juvenile steelhead, coho, and Chinook salmon will be present in wetted habitats immediately upstream and downstream of the dewatered stream reaches. The degree to which an individual salmonid may be affected by high sound pressure

waves is dependent on many variables including size of fish, peak sound pressure, frequency, *etc.* Depending on these factors, effects on juvenile salmonids during the driving of steel piles with an impact hammer will range from a stress response to no response.

Juvenile salmonids are expected to be present upstream and downstream of the dewatered reaches during pile driving. Given what is currently known about the effects on salmonids from pile driving and conditions at the project site, NMFS expects that dewatering of each crossing site (up to 150 meters) will be a sufficient distance to reduce sound exposure in nearby wetted habitats to safe levels. Since fish will likely be at least 75 meters from the sound source, decibel levels during pile driving are not expected to cause mortality or injury of juvenile salmonids. Decibel levels may cause juvenile fish to become startled and abandon preferred habitats, which are adjacent to the dewatered areas. Caltrans has proposed to monitor underwater sound pressure in the wetted aquatic areas immediately above and below dewatered reaches. This information will allow for evaluation of sound exposure levels to fish rearing upstream and downstream of the stream crossing construction sites.

In the event that hydroacoustic monitoring in areas above and below the dewatered stream reach reveals excessively high sound levels, Caltrans can dewater additional areas and relocate fish to increase the distance between listed salmonids and the pile driving sound source. Based on the results of the hydroacoustic monitoring program, NMFS may recommend additional areas be dewatered. If additional dewatering is performed, numbers of juvenile salmonids collected and handled would increase, but the numbers will likely be small.

3. Effects of Riparian Vegetation Removal

Removal of riparian vegetation along banks of proposed construction areas is expected to adversely affect designated critical habitat for listed anadromous salmonids and impact juvenile steelhead within the action area. When streamside vegetation is removed, summer water temperatures typically increase in proportion to the increase in sunlight that reaches the stream surface (Chamberlain *et al.* 1991). Increases in solar radiation to stream reaches may also change aquatic species composition, increase algal biomass and alter invertebrate communities (Beschta *et al.*1987). Primary elements of salmonid habitat such as large woody debris, pool and riffle formation, and food inputs are likely to be impacted by the riparian vegetation removal (Caltrans, 2005a). In addition, removal of riparian vegetation can change local microclimate, soil moisture, groundcover, and susceptibility to bank erosion, and influence the re-establishment of vegetation (Spence *et al.* 1996).

Removal of riparian vegetation will be performed with heavy equipment and hand crews. Permanent and temporary removal of vegetation will be conducted along upper Haehl Creek (southern interchange), the Schmidbauer culvert replacement near Haehl Creek, middle Haehl Creek crossing, lower Haehl Creek viaduct crossing, Baechtel Creek viaduct crossing, Broaddus Creek viaduct crossing, Mill Creek viaduct crossing, and the Upp Creek culvert replacement location. Riparian vegetation removal is proposed from the edge of ordinary high water to areas above the top of bank that encompass most of the existing riparian zone. Table 2 presents the amount of bank length of permanent and temporary riparian vegetation removal at each stream crossing on the salmonid bearing streams.

Table 2. Permanent and temporary (replanted) riparian removal at proposed stream crossings and construction sites along the Willits Bypass.

Stream Name	Permanent Removal in meters	Temporary Removal in meters	Total Bank Length Affected in meters	Total Stream Reach Length Affected in meters
Upper Haehl Creek	772	12	784	392
Middle Haehl Creek	105	92	197	98.5
Lower Haehl Creek	34	161	195	97.5
Baechtel Creek	300	370	670	335
Broaddus Creek	33	157	190	95
Mill Creek	37	170	207	103.5
Upp Creek	179	4.6	184	92

With three distinct construction areas, Haehl Creek will require the most extensive amount of permanent riparian vegetation removal. Construction of the north and southbound viaduct crossings at Baechtel, Broaddus, and Mill creeks requires both permanent and temporary removal of riparian bank vegetation. Approximately 92 meters of channel will be affected by the permanent removal of riparian vegetation at the Upp Creek culvert crossing.

Impacts associated with the riparian vegetation removal vary within the action area depending on removal type (permanent or temporary), stream flow (absent, intermittent, surface flow present) during the summer, and presence of salmonids. The current condition of riparian habitat also influences the potential impact to salmonid habitat.

a. Removal of Riparian Vegetation along Salmonid Streams

The proposed removal of riparian vegetation at stream crossings is expected to adversely affect water temperature on the salmonid streams in the project action area. Water temperature is a critical environmental factor in most aquatic ecosystems. Chemical and biological processes in aquatic environments ultimately are regulated by temperature. As cold-blooded animals, the metabolism, reproduction, development, and scope of activity of anadromous salmonids are largely controlled by environmental temperature (Marcus *et al.* 1990). The Willits Bypass Project's proposed temporary and permanent removal of riparian vegetation is expected to result in increased solar radiation input and increase summer/fall water temperatures on the five salmonid-bearing streams in the action area.

Gillies (2000) conducted a focused study of the effects of riparian canopy removal on stream water temperature in the Little Lake Valley. Using local stream habitat inventory data, Gillies (2000) concluded that in the Willits Bypass Project area there is a direct relationship between percent canopy cover and elevated water temperatures in streams. Based on this study's results,

the riparian vegetation removal associated with the proposed Willits Bypass Project is likely to result in severe consequences to habitat quality by increasing water temperatures in the action area.

The preferred temperature range for *Oncorhynchus* spp. is generally between 6 and 15° C (Reiser and Bjornn 1979). In the Eel River Basin, stream water temperature is recognized as a critical habitat parameter (Gillies 2000), particularly during the summer months for juvenile rearing salmonids. Summer and fall water temperatures influence growth rates, swimming ability, availability of dissolved oxygen, ability to capture and use food, and ability to withstand disease outbreaks. Steelhead and coho salmon juveniles are known to rear during the summer months in the five salmonid-bearing streams of the action area. Chinook salmon juveniles typically outmigrate to the ocean as smolts during the spring months in their first year and are generally not expected to be within the streams of the action area over summer.

Due to riparian vegetation losses, additional solar inputs at the project's riparian removal sites will increase summer water temperature and degrade salmonid habitat. Summer stream temperatures are expected to increase as a result of project construction in wetted areas of Haehl, Baechtel, Broaddus, and Mill creeks. In areas where riparian vegetation is re-planted post-construction, the canopy will likely be restored in five to ten years and these additional solar radiation inputs will be reduced or eliminated. In areas of permanent vegetation losses, salmonid habitat including designated critical habitat will be permanently impacted due to the effects of increased water temperature.

Since Haehl Creek contains the largest linear extent of permanent vegetation removal, thermal impacts are expected to be more extensive and may convey the warmed water into downstream reaches of Baechtel Creek, and Outlet Creek below the confluence with Haehl Creek. However, during the summer and fall months of most water years, portions of the creek bed of Haehl, Baechtel, and Outlet creeks may be naturally dry in the action area. These intermittent flow conditions could help reduce the thermal effects of riparian removal, because subsurface flow through the project area will not be subject to direct solar radiation. The extent of this amelioration due to dry and intermittent stream flows in the action area is unknown. Juvenile steelhead that reside in thermally impacted reaches of Haehl, Baechtel, and Outlet creek are likely to experience reduced survival rates due to increases in water temperatures in portions of the action area. These effects are expected to last for at least a five year period, until mitigation actions ameliorate the impacts of the project riparian vegetation removal. The few areas that permanently lose riparian vegetation may become uninhabitable to listed salmonids.

CDFG (1995) reports existing stream temperature conditions are marginal for salmonid rearing in most of Haehl Creek. Gillies (2000) estimates reduced canopy cover in the action area due to construction of the Willits Bypass Project could increase water temperatures to levels in excess of 30° C. Although existing summer habitat conditions are marginal due to elevated temperatures, the suitability of salmonid rearing habitat within Haehl Creek and Baechtel Creek is expected to further decrease due to the project's extensive removal of riparian vegetation.

Riparian vegetation removal and the associated effects at Broaddus and Mill creeks are similar, but less extensive than Haehl and Baechtel creeks. At both Broaddus and Mill creeks it is

estimated that approximately 100 meters of stream will be affected by the viaduct construction at each site. Marginal stream temperature conditions in lower reaches of Broaddus and Mill Creeks will become less suitable for salmonid rearing during the summer months due to increased solar radiation.

Approximately 92 meters of channel will be affected by the permanent removal of riparian vegetation at the Upp Creek culvert crossing. Upp Creek typically has dry channel conditions from early spring to late fall. Therefore, riparian vegetation removal along Upp Creek is not expected to effect stream temperatures due to the lack of summer flow at the site.

b. Removal of Riparian Vegetation on Non-Salmonid Streams

Non-salmonid bearing streams located within 305 meters of salmonid streams were designated at Category II streams due to their potential influence to fish bearing streams. Other stream courses which are located beyond 305 meters of a salmonid stream, and have less potential to impact salmonid streams, were categorized as Category III streams.

Category II streams are typically important sources of water, nutrients, wood, and other vegetative material for streams inhabited by fish and other aquatic organisms (FEMAT 1993). Removal of riparian vegetation in these channels has the potential to increase stream temperatures of salmonid streams, and to deliver sediment and increase turbidity in fish bearing streams. The Willits Bypass Project proposes to permanently remove 1,090 meters of riparian vegetation along five Category II stream reaches. Temporary riparian removal is proposed on 726 meters of Category II streams.

Category III streams are small ephemeral streams, which are more than 305 meters (1000 feet used in California Forest Practice Rules) from fish bearing streams. These streams typically have no flow or aquatic life during the summer months, but are capable of transporting sediment, woody debris, and nutrients during winter rainstorms. Riparian vegetation removal for permanent and temporary impacts to these channels totals 967 meters and 21 meters, respectively.

Riparian vegetation removal is expected to create increased in surface erosion, and bank erosion, which results in increased turbidity and sediment (sand sized particles) to fish bearing channels. The majority of the Category II and III stream channel reaches impacted by the Willits Bypass Project will be placed in culverts. By placing these stream types in culverts, they are not expected to increase stream temperatures of fish bearing streams. Losses of aquatic macro invertebrate food producing areas in Category II channels will likely decrease food delivery to fish bearing channels. Loss of these food-producing areas is not expected to reach levels that would adversely affect fish bearing streams because the length of Class II stream that will be placed in culverts less than 500 meters combined. In addition, there may be some minor reduction in nutrients, woody debris, and vegetative material because of the culvert installations. Response of salmonid lifestages to increased sediment levels, including Category II and Category III streams, will be discussed in the effects section below titled *Effects of Riparian Vegetation Removal on Salmonids*.

Category II channels which are not within constructed culverts may experience stream temperature increases due to vegetation removed from the riparian zone. These streams typically have very low flow, intermittent flow, or are dry by early summer. Thus, the small contribution of flow from Category II drainages is generally not enough to result in stream temperature changes to fish bearing streams during the summer months.

4. Mobilization of Sediment from Construction Activities

Suspended and deposited fine sediment can adversely affect salmonid rearing and spawning habitat if present in excessive amounts. High levels of suspended solids may abrade and clog fish gills, reduce feeding, and cause fish to avoid some areas (Cordone and Kelly 1961). Several activities associated with construction of the Willits Bypass Project may result in an increase delivery of sediment to streams in the action area. These include construction of the roadbed, operation of staging areas, riparian vegetation removal, channel realignment, in-channel work such as rock slope protection and bridge construction, culvert replacements, excavation activities at the southern interchange, and construction and removal of cofferdams. An estimated 1.9 million cubic meters of earthen material will be excavated, transported, and compacted to build the project. Caltrans estimates the total ground disturbance for all project areas will total 93 hectares (D. Schmoldt, Caltrans, personal communication, 2006). In addition to road and bridge construction activities, Caltrans construction of fish enhancement/mitigation projects could result in short-term increases in turbidity during the placement of instream structures.

Barret *et al.* (1995) reviewed various highway construction projects on an ephemeral stream in Texas and concluded that several projects built in the 1970's resulted in a 50 percent increase in sediment delivery as a result of highway construction. Other studies reviewed by Barret *et al.* (1995) showed short term and minor inputs of sediment to streams from highway construction.

Caltrans currently requires contractors implement soil stabilization and sediment control BMPs. These actions are designed to contain the majority of erodible material. Proper implementation of the BMPs is expected to reduce the mobilization and delivery of sediments to nearby streams. However, the large quantity of earthen material used in this project over a broad area is expected to result in some level of increased delivery of sediment to salmonid bearing streams in the action area. For the Willits Bypass Project, current BMPs are expected to provide more effective sediment control than that reviewed by Barret et al. (1995).

Although increased amounts of sediment input to salmonid bearing streams are expect during project construction, sediment quantities have not been estimated by Caltrans or in this biological opinion. Fine grain sediment will likely enter streams from soil disturbed by construction along stream banks and from upland areas. Staging areas, roadbeds, vegetation removal sites, excavation and compaction areas area likely sources of sediment to the stream channels of the action area. Soils disturbed during construction will provide a source of sediment that can be mobilized by rain events during the subsequent winter/spring. Sediment will travel along gullies and ravines to stream channels and then to the bottom of the creek bed. Once in the creek channel, sediment can increase turbidity levels in the water column, fill-in gravel interstices in the creek bed, and coat the bottom of the channel with layers of fine materials.

Within the action area, sediment originating from construction activities may be deposited in Haehl, Baechtel, Broaddus, Mill, and Upp creeks. In addition, a five kilometer reach Outlet Creek downstream of the construction sites was included in the action due the potential for increased rates of sediment delivery. Increased levels of fine sediment can adversely affect salmonid spawning habitat, various life stages of salmonids, and other instream habitat features within the action area.

a. Effects on Salmonid Spawning Habitat

Spawning habitat for Chinook salmon occurs within the action area; although existing conditions are poor. Surveys performed by CDFG in 2005 identified high percentages of sand which reduces the quality of the creek bed for spawning. CDFG reports that during a normal water year, up to 20 Chinook salmon redds may be constructed in creek areas adjacent to the Willits Bypass Project (S. Harris, CDFG, personal communication, 2006). Additional Chinook salmon spawning occurs in creeks both upstream and downstream of the action area. Adult coho salmon and steelhead entering the Little Lake Valley area spawn primarily upstream of the action area. CDFG estimates over 90 percent of the adult coho salmon and steelhead migrate to areas upstream of the project site to spawn (S. Harris, CDFG, personal communication, 2006). Therefore, few coho salmon and steelhead are expected to spawn within the action area.

Sediment input by project construction is expected to further degrade existing spawning habitat conditions in the action area. Fine sediments input associated with project construction will reduce the permeability of gravels, intergravel flow, and the availability of dissolved oxygen for developing embryos, and interfere with emergence success by occluding interstitial pore space (Everest *et al.*1987). Laboratory studies have found an inverse relationship between fine sediment and fry survival, with decreases of 3.4 percent survival for each one percent increase in fine sediment (Everest *et al.* 1987). Fine sediment originating from project during the four year construction period is expected to further decrease the survival of salmonid embryos and reduce the ability of fry to emerge from redds in the creeks of the action area. However, sediment delivery levels associated with project construction should diminish significantly after project construction is completed.

b. Effects on Salmonid Life Stages

Construction activities are known to cause temporary increases in water turbidity (reviewed in Furniss *et al.* 1991, Reeves *et al.* 1991, and Spence *et al.* 1996). Short-term increases in turbidity could occur during construction, but reach dewatering will generally avoid this problem because work will be performed in the dry. Post construction winter rains will likely result in short-term increases in turbidity as runoff occurs in areas of exposed soil and removed riparian vegetation. High levels of turbidity and suspended sediment in the action area may affect adult and juvenile anadromous salmonids by a variety of mechanisms. High concentrations of suspended sediment can disrupt normal feeding behavior and efficiency (Cordone and Kelly 1961; Bjornn *et al.* 1977, Berg and Northcote 1985), reduce growth rates (Crouse *et al.* 1981), and increase plasma cortisol levels (Servizi and Martens 1992). Even small pulses of turbid water will cause salmonids to disperse from established territories (Waters 1995), which can displace fish into less suitable habitat and/or increase competition and predation, decreasing chances of survival. Increased

sediment deposition can fill pools and reduce the amount of cover available to fish, decreasing the survival of juveniles (Alexander and Hansen 1986).

Increased turbidity levels associated with the Willits Bypass Project are not expected to physically injure listed salmonids or result in adverse behavioral effects. Moderate, but temporary increases in turbidity during the summer construction season and during the winter months are expected. These levels will likely result in some limited behavioral effects, such as temporarily reduced feeding efficiency of juvenile salmon or steelhead in the action area. These behavioral changes are not expected to cause mortality or decrease the probability of individual juvenile or adult salmonid survival within the action area.

5. Mobilization of Sediment from Oil Well Hill

Oil Well Hill is the proposed borrow site identified by Caltrans. Project construction could result in the excavation of 1.9 million cubic meters of material from this location. The borrow area will likely encompasses 12 to 16 hectares. This site is east of Highway 101 and approximately 425 meters from Outlet Creek.

Sediment delivery reduction measures have been proposed to prevent sediment from reaching Outlet Creek. Sediment detention basins will be located at key drainage areas to capture material that is mobilized. Proper construction and operation of these detention .basins are expected to intercept all mobilized sediments prior to reaching Outlet Creek. The detention basin design appears to be adequate to avoid adversely affecting salmonid habitat in Outlet Creek and other streams within the action area.

Caltrans has indicated that alternative borrow site areas may be selected by the contractor, but selection of an alternative site will require submittal of a borrow site plan. Alternative borrow site plans have not been evaluated in this biological opinion. Further review by NMFS may be required if an alternative non-commercial borrow site is proposed.

6. Effects of Rock Slope Protection

Rock slope protection or riprap is proposed in at several stream crossings in combination with retaining walls for protection of bridge columns and banks. A total of 140 meters of stream length will be impacted by placement of riprap along three sites on upper Haehl Creek: one site on middle Haehl Creek, and one site each on Baechtel, and Upp creeks. Use of riprap to protect banks is expected to result in effects to designated critical habitat for Chinook salmon, coho salmon, and steelhead.

General effects of riprap on salmonid habitat include, elimination of lateral bank erosion, which prevents development of undercut banks, and cover for fish (Schmetterling *et al.* 2001). Placement of large rock can change the sediment transport capacity of a stream reach and affect the natural distribution of particle sizes in a stream (Beschta and Platts 1986). Sediment size changes can affect spawning substrate and food production for salmonids and cover requirements provided by certain substrate (Platts 1979). The loss of riparian vegetation due to the placement of riprap can reduce or eliminate recruitment of new riparian vegetation, reduce habitat complexity, reduce shade to streams which maintain cold water habitat, and reduce recruitment

of large woody debris (LWD) (Schmetterling *et al.* 2001).

At each stream crossing on Haehl, Baechtel, and Upp creeks, approximately 15 meters of riprap will be placed along one or both banks. Rock will extend from the channel bed to an area approximately two-thirds up the bank. Top of bank areas will be planted with willow. Riprap is expected to reduce habitat complexity and riparian shade adjacent to stream crossings. This action is expected to have long-term adverse effects on designated critical habitat for CC Chinook salmon, SONCC coho salmon and NC steelhead. Existing habitat at the stream crossing sites is in moderate to poor condition. The proposed placement of riprap will further degrade stream habitat for salmonids. Reduced cover, LWD, shade, and changes in stream bed substrate are expected to decrease rearing habitat quality for juvenile Chinook salmon and steelhead, and to a lesser extent coho salmon. Juvenile coho are not expected to utilize the action area during the summer month due to unsuitable stream temperature conditions.

7. Toxic Chemicals

Equipment refueling, fluid leakage, and maintenance activities within and near the stream channel pose some risk of contamination of aquatic habitat and subsequent injury or death to listed salmonids. Caltrans has proposed measures which are designed to prevent the spill of contaminants into the waterways of the action area. Measures include: maintaining fuel storage and refueling sites in upland locations at an appropriate distance from the stream channel; maintaining vehicles and construction equipment be in good working condition; and servicing of equipment in an upland location.

Caltrans may use bentonite as a lubricant for pile placement and an accidental release of bentonite may occur. Bentonite is potentially lethal to fish. Sigler *et al.* (1984) reported that steelhead and coho salmon show reduced growth rates or increased emigration rates when exposed to 125 to 175 mg/l bentonite. In addition to toxic chemicals associated with construction equipment, stream water that comes into contact with wet cement can adversely affect water quality by raising the pH of water, which may result in injury or death to listed salmonids. However, these water quality impacts are not anticipated, because the stream will be dewatered around the construction work sites. Measures should minimize the potential for a spill. In addition, Caltrans and its contractors will have ample opportunity to attend to any spill prior to toxic chemicals reaching the waters of the action area.

8. Long-term Maintenance and Use

NMFS believes it unlikely that long-term maintenance actions, including mowing of vegetation, cleaning of ditches, pruning vegetation near bridges, and repairing pavement, will result in adverse affects. Post construction maintenance actions implemented with the use of appropriate BMPs are likely to minimize and avoid any sediment and turbidity entering streams in the action area. This includes any sediment generated from infrequent sand applications conducted for icy freeway conditions. BMPs are included in the Caltrans Storm Water Quality Handbook Maintenance-Planning and Design Staff Guide (P&DSG) (Caltrans 2003b), and will be used during maintenance of the Bypass. NMFS believes that in general, these BMPs are likely to be effective at avoiding maintenance impacts on listed species and critical habitats. However, a

complete maintenance plan is unavailable for the project, and maintenance actions expected to result in sediment and turbidity entering streams would require reinitiation of consultation.

Use of the freeway bypass is expected to generate grease and oil as well as other contaminants along the freeway corridor. Also, accidental spills are expected from freeway related traffic accidents. These contaminants may be washed into nearby streams during the rainy season. Caltrans has developed a standard Hazardous Waste and Spill Response Plan (HW&SRP) which would be implemented during the operation of the project. NMFS believes that hazardous waste and spill response practices contained in the HW&SRP and BMPs contained in the P&DSG are likely to be effective in minimizing the amount of contaminants entering streams. Adverse effects to salmonids and their habitat from introduced chemicals, oils, grease, or accidental spills are not expected.

The existence of the freeway bypass may cause increased runoff from impervious surfaces that could cause adverse effects to salmonids and their habitat within the action area. For example, increased runoff can scour redds and destroy salmonid eggs and alevins. To address the potential for increased runoff from the impervious freeway surfaces, Caltrans designed permanent BMPs into the design, construction, and maintenance of the project to minimize increased runoff potential (Caltrans 2000). The P&DSG requires the Caltrans design team to account for hydrologic impacts of the project, and provide measures to minimize impacts to stream stability. Based on the information provided in Caltrans' Water Quality Assessment (Caltrans 2000), NMFS concludes that design features, and permanent BMPs, will avoid adverse effects to salmonids and their habitat related to potential increased runoff from the completed project.

C. Interdependent and Interrelated Actions

NMFS does not anticipate any interdependent or interrelated actions associated with the proposed action.

D. Actions with Beneficial Effects to Salmonids or their Habitat

1. Haehl Creek and Upp Creek Culvert Replacements

Existing culverts on Haehl and Upp creeks are impediments to fish anadromous passage (Caltrans 2005a). The Willits Bypass Project proposes to replace both these culverts with new structures that improve passage for both adult and juvenile lifestages of salmonids. At Upp Creek the existing culvert will be replaced with a new culvert. On upper Haehl Creek, the existing culvert under the new propoposed Highway 101 alignment will be removed and not replaced. A second culvert on Haehl Creek will be replaced for improvement of the new Schmidbauer Ranch access road.

These culvert removals and replacements are expected to improve adult anadromous fish passage on Upp and Haehl creeks. Recent assessments of the existing culvert on upper Haehl Creek by CDFG and NMFS staff biologists have determined that the culvert is a barrier to adult salmon and steelhead. A fish passage assessment study conducted by Caltrans ranked Upp Creek as one of the top ten locations for restoration of passage conditions in Mendocino County (Caltrans

2005b). Habitat surveys on upper reaches of Upp Creek have documented the presence of approximately 2,300 meters of available anadromous habitat. Replacement of the Upp Creek culvert on existing Highway 101 would be most beneficial for NC steelhead due to the higher gradient that exists upstream of the culvert (S. Harris, CDFG, personal communication, 2006). Coho and Chinook salmon are not known to use high gradient stream habitat, and are less likely to use the newly accessible upper reaches of Upp Creek for spawning and rearing. Increased rearing opportunities would be available for juvenile NC steelhead, which, over time, would likely result in increased steelhead production in the Outlet Creek watershed.

The replacement of the culvert on upper Haehl Creek is expected to provide a lesser benefit to anadromous fisheries. Upper Haehl Creek is near the upstream end of anadromous habitat in the streams headwaters. Replacement of the culvert with one that improves fish passage is not expected to increase levels of salmonid productivity. The habitat may provide for some additional spawning of Chinook salmon and steelhead adults, and some use during the winter by juvenile Chinook and steelhead. This reach of upper Haehl Creek is usually dry during the summer months and is not expected to provide juvenile rearing habitat for steelhead or salmon.

2. Riparian Vegetation Mitigation

Caltrans proposes to restore and mitigate temporary and permanent impacts to riparian vegetation on anadromous streams, Category II streams, and Category III streams. The general extent and nature of the project's mitigation plantings are described in the "*Conceptual Mitigation Plan for the Willits Bypass Project*", dated August 19, 2006. The riparian mitigation plan is "conceptual", because it is based on early and limited level of project design. Therefore, Caltrans and FHWA have not ascertained the specific compensatory mitigation sites for this project.

The Conceptual Plan proposes replanting of riparian vegetation on anadromous stream at a 3:1 ratio. Based on the existing project design, this ratio will result in the creation/restoration of 22.2 acres of riparian area mitigation for permanent and temporary impacts. Mitigation of Category II and III stream types will result in riparian creation/enhancement of 13.6 and 1.95 acres of riparian revegetation, respectively.

Riparian vegetation mitigation by Caltrans will be designed to restore the ecosystem to its natural pre-disturbance riparian community structure and function. In order to accomplish this goal, Caltrans proposes to plant five riparian trees for every tree that has been removed. Anadromous reaches will be planted to achieve a 30-meter riparian zone, Category II streams will be re-vegetated to achieve a 15-meter riparian zone, and Category III stream will be re-vegetated to create an 8-meter riparian zone. In addition, native shrubs and herbaceous perennial plants are proposed to be planted along with riparian trees.

Proposed riparian restoration/creation is expected to compensate for project impacts in some areas and improve existing conditions in other areas. Evaluation of past riparian replanting projects in California generally shows improvement in anadromous salmonid habitat conditions. Opperman and Merenlender (2004) found positive responses in salmonid habitat to riparian restoration actions conducted 10-20 years earlier. Factors that may affect success or failure of a riparian planting project may be due to one or more reasons, including aspect, slope, existing

vegetation, upland drainage, soil moisture conditions, competing vegetation, use of imported soil, native soil conditions, and stock quality (Anderson and Welton 2005). Caltrans has proposed specific success criteria in order to provide a level of certainty for riparian mitigation success. Caltrans has estimated that after a five-year period, riparian tree canopies would provide a ten-foot strip of shade from restored vegetation, at a minimum. Other success criteria such as absolute vegetative cover, woody plant survival, and floristic composition, *etc.*, are proposed per the Conceptual Mitigation Plan.

Success of the proposed revegetation of riparian areas may take several decades to produce a riparian forest (Manci 1989). Faster growing species, such as willow (*Salix spp*), and white alder (*Alnus rhombifolia*), are expected to provide shade and bank protection within the first 5-10 years. Restoration of functional riparian areas may take 20-40 years dependent on the growth of species such as big leaf maple (*Acer macrophyllum*), cottonwood (*Populus spp*), California bay laurel (*Umbellularia californica*), and other riparian species proposed for planting. Riparian vegetation is generally in poor condition within the Little Lake Valley due to effects of grazing and urbanization over the last one-hundred years. Therefore, the proposed plan to provide restoration/creation at the proposed levels is a benefit, but this benefit to aquatic habitat may not be fully realized for 10 to 40 years. Beneficial effects will include improvement of stream temperatures, increased bank stability (5-10 years), and over a longer period, introduction of LWD and improved cover for fisheries habitat (10-40 years).

3. Instream Habitat Mitigation

Caltrans may propose to construct instream structures (such as opposing wing deflectors), anchor LWD, or contract to have other stream enhancement/restoration structures placed in stream mitigation reaches. As described previously, these projects are uncertain to occur and are not analyzed in this biological opinion. If these projects are designed and proposed, and may adversely affect listed salmonids or their critical habitats, reinitiation of consultation with NMFS will be needed.

VI. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

A variety of cumulative effects are occurring to salmonid fisheries resources within the Outlet Creek sub-basin. Following are the activities that are reasonably certain to occur within these watersheds that will likely result in cumulative effects in the future:

A. Rural Development

BLM *et al.* (1996) reports that many 64.7 hectare parcels within the South Fork Eel River watershed will continue to undergo subdivision down to 16.2 hectare parcels. Since the Outlet

Creek watershed is part of the South Fork Eel River watershed, it is reasonable to assume that similar subdivision activities are and will continue to occur within the Outlet Creek watershed. Impacts to salmonid habitat from rural development include loss of riparian vegetation, changes in channel morphology and dynamics, altered watershed hydrology, increased sediment delivery from roads, elevated water temperatures and increased water demand within the action area.

B. Chemical Use

It is anticipated that chemicals such as pesticides, herbicides, fertilizers, and fire retardants will continue to be used in the action area. Impacts to salmonids may include changes to riparian vegetation and associated organic input into aquatic systems, changes in aquatic invertebrate communities, and increased algae production. Due to the lack of specific information, we are unable to determine the effects of chemical applications in the action area. Due to the undeveloped nature of the action area, the use of chemicals is not expected to be conducted under applicable State and Federal laws.

C. California Streambed Alteration Agreements

CDFG has strengthened the permitting process for activities taking place in, or near, rivers and streams by requiring environmental review. Henceforth, streambed alteration agreements will be reviewed in accordance with the California Environmental Quality Act. This program is expected to result in lessened impacts to salmonids from projects such as temporary summer dams, and stream bank stabilization projects within the action area.

D. Illegal Marijuana Cultivation

Beginning in the 1960's a new significant land use activity arose in the South Fork Eel River watershed. The "back to the land movement" as it is known consisted of individuals leaving urban centers in an attempt to "get back to nature" (BLM *et al.* 1996). Many areas that had been logged were subdivided and real estate activities became very prominent within southern Humboldt and northern Mendocino counties. Many of the "back to the land" individuals could not find employment and turned to illegal marijuana cultivation as a means of economic support (BLM *et al.* 1996). These activities are expected to continue into the future. According to BLM *et al.* 1996 this activity has significant impacts on the ecosystem through runoff of fertilizers, poisons to control rodents, and water diversions which some have suggested may rival impacts of logging and grazing. Water withdrawal in Baechtel and Broaddus creeks has been reported to degrade summer rearing conditions for juvenile steelhead and coho salmon; these impacts are expected to continue (C. LeDoux-Bloom, CDFG, personal communication, 2005).

VII. INTEGRATION AND SYNTHESIS OF EFFECTS

The construction of the Willits Bypass Project is anticipated to affect five salmonid-bearing streams in the Outlet Creek sub-basin of the Eel River watershed over a four-year period. An estimated 1.9 million cubic meters of material will be excavated, transported and compacted to build a four-lane freeway, crossing the Little Lake Valley, beginning approximately 3.3

kilometers south of Willits to 2.2 kilometers north of Willits. New freeway stream crossings will be construction over Haehl Creek at three locations, and one crossing each at Baechtel, Broaddus, Mill, and Upp creeks. Construction is expected to adversely affect threatened NC steelhead, threatened CC Chinook salmon and threatened SONCC coho salmon by dewatering/fish relocation, temporary and permanent riparian vegetation removal, mobilization of sediment, and placement of rock slope protection. Maintenance and use of the bypass is not expected to adversely affect salmonids or their critical habitats, as described above.

Direct effects to listed salmonids associated with construction activities will be limited to the summer months when juvenile NC steelhead are likely to be present at the stream crossing sites. Construction in channels will be limited to the period between June 15 and October 15. CC Chinook are unlikely to be present during construction, because juveniles will have emigrated from the watershed as smolts during the spring months. Juvenile SONCC coho salmon are unlikely to be present in the action area due to unsuitable water temperature conditions during the summer and early fall months. Dewatering and fish collection activities prior to in-water construction are expected to result in the safe relocation of over 97 percent of the juvenile steelhead residing at the stream crossings.

Effects to salmonid habitat, including designated critical habitat, include loss of riparian vegetation, increased water temperatures, increased levels of sediment delivery to the creek, and placement of rock slope protection. These actions are expected to reduce instream cover, reduce recruitment of LWD, reduce canopy cover and associated shade (increasing water temperatures), degrade spawning habitat, and generally decrease juvenile rearing habitat diversity and complexity. A small number of listed salmonids may be injured or killed as a result. Most of these impacts to habitat are temporary. Impacts to critical habitat caused by reductions in riparian vegetation may persist for a number of years after project construction.

Riparian mitigation is expected to ameliorate impacts to stream temperatures and associated salmonid summer rearing habitat within five years of the completion of the project, and ultimately to improve habitat conditions in certain reaches of the creeks in the action area. More habitat will be improved by riparian mitigation than will be permanently lost. BMPs implemented by Caltrans to control sediment during construction are expected to be sufficient to avoid long-term adverse effects to spawning and rearing habitat in the action area. Culvert removal and replacement are expected to improve fish passage conditions for both adult and juvenile salmonids in Upp and Haehl creeks.

The project is likely to incrementally degrade critical habitat in the action area until mitigation actions are complete and riparian vegetation has re-established. This degradation is unlikely to affect the conservation value of critical habitat as a whole for these species because the degradation in the action area is minimal and short term, and therefore unlikely to adversely affect the conservation of salmonid species in the Haehl Creek HSA. Early coordination between CDFG, NMFS, and Caltrans during development of project alternatives resulted in selection of a roadway alignment that is least damaging and avoids impacts to the highest quality habitat in the Outlet Creek sub-basin. Reaches of streams that currently provide the best quality of habitat for listed salmonids in the sub-basin will not be affected by the project. Stream crossings proposed in the Willits Bypass Project are at locations that frequently dry out in the summer. In addition,

existing conditions at the proposed stream crossings are currently lacking well-developed riparian vegetation and contain high percentages of fine sediment in the streambed. Bypass alignment alternatives that traveled through the western hills of Willits had the potential to impact the highest quality spawning and rearing habitat of Baechtel, Broaddus and Mill creeks. These areas with well-developed riparian vegetation, high quality spawning gravels and perennial flow conditions for summer rearing are not affected by the proposed project. Thus, by design, the selected project alternative avoids and minimizes impacts to listed anadromous salmonids and designated critical habitat in the Outlet Creek sub-basin.

Although incidental take of NC steelhead, CC Chinook salmon, and SONCC coho salmon is anticipated, impacts within the action area are not expected to reduce the probability of these populations surviving and recovering in the wild. NMFS reasons that low numbers of individual steelhead are currently produced in the action area and very low numbers of CC Chinook salmon and SONCC coho salmon are produced in the action area. Low reproductive productivity from the action area is due to baseline habitat conditions of high levels of fine sediment and low embryo/fry survival rates.

For NC steelhead, few of the fish originating from the action area are likely to contribute to the adult population given the poor rearing conditions that currently exist. During the summer and fall months, intermittent to dry conditions in stream channels, high stream temperatures, and poor to moderate habitat diversity currently limits summer habitat conditions and juvenile survival. NC steelhead are sufficiently distributed throughout the Eel River watershed to ameliorate the small losses expected in the action area from the project during the four year construction period, and for the five to ten years required for restored riparian vegetation to provide shade over streams.

CC Chinook salmon primarily use the action area during adult and smolt migrations, although some juvenile rearing occurs prior to emigration from the basin in the spring months[2]. The majority of Chinook salmon spawn and rear in Baechtel, Broaddus, and Mill creeks upstream of the action area (S. Harris, CDFG, personal communication, 2006). A small amount of spawning annually occurs in the action area and it is anticipated sediment from the project will result in a decreased level of embryonic survival. These decreases in survival of embryos within redds are expected to occur after each of the four construction seasons and should diminish to baseline conditions a few years after construction is completed. It is anticipated that adverse affects associated with this project will not decrease the probability of survival and recovery of CC Chinook salmon at the ESU level. CC Chinook salmon are sufficiently distributed throughout the Eel River watershed to ameliorate the small losses expected in the action area during this project's 4-year implementation period.

A small population of threatened SONCC coho salmon is thought to remain in the Outlet Creek sub-basin (S. Harris, CDFG, personal communication, 2006). Due to warm water temperature conditions and poor habitat complexity, low potential for juvenile coho salmon summer rearing currently exists in the action area. For similar reasons of poor habitat quality, few adult fish are

[2] Because these juveniles rear and outmigrate in the spring, adverse effects from elevated summer water temperatures are not anticipated.

likely to spawn in the reaches of the creeks in the action area. Thus, the proposed project has minimal impact on SONCC coho salmon or their habitat in the Outlet Creek sub-basin. Upstream reaches of these creeks in the Outlet Creek sub-basin, and other streams in the Eel River Basin, provide sufficient habitat and population productivity to maintain the SONCC coho salmon ESU during and after construction of the Willits Bypass Project. NMFS expects the small impact to coho salmon associated with this project is unlikely to affect the SONCC coho ESU population trend.

The proposed Willits Bypass Project is not expected to appreciably diminish the value of designated critical habitat for NC steelhead, CC Chinook salmon or SONCC coho salmon. Habitat impacts from the project in the action area are mostly temporary and/or minor. These impacts will be ameliorated, *i.e.*, critical habitat will return to its current condition, within 5-10 years, by the proposed riparian mitigation. Proposed riparian mitigation, as well as fish passage improvements in Haehl and Upp creeks, are likely to result in improvements to the current value of critical habitat for listed anadromous salmonids throughout the action area, and Outlet Creek sub-basin, although these improvements may take as long as 40 years.

VIII. CONCLUSION

After reviewing the best available scientific and commercial information, the current status of the species and critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion that the construction of the Willits Bypass Project by FHWA and Caltrans, in Mendocino County, California is not likely to jeopardize the continued existence of SONCC coho salmon, CC Chinook salmon, or NC steelhead.

After reviewing the best available scientific and commercial information, the current status of critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS biological opinion that the construction of the Willits Bypass Project by FHWA and Caltrans, in Mendocino County, California is not likely to adversely modify or destroy designated critical habitat for SONCC coho salmon, CC Chinook salmon, or NC steelhead.

IX. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by NMFS as an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to

and not the purpose of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are nondiscretionary, and must be undertaken by the FHWA, Caltrans, and their designees for the exemption in section 7(o)(2) to apply. The FHWA and Caltrans have a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA and Caltrans: (1) fail to assume and implement the terms and conditions, or (2) fail to require any designee to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to any permit, grant document, or contract, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the FHWA and Caltrans must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement (50 CFR §402.14(i)(3)).

A. Amount or Extent of Take

The Willits Bypass Project is expected to result in the incidental take of NC steelhead, CC Chinook salmon, and SONCC coho salmon. The majority of take is associated with the de-watering and fish relocation activities at the stream crossing construction sites. Caltrans proposes to implement dewatering and fish relocation to minimize take of juvenile salmonids associated with pile driving and other instream construction activities. Dewatering and fish relocation is proposed at all stream crossings except when the stream is dry and no water is present.

Based on summer electrofishing surveys conducted by the CDFG in 1993, NC steelhead are expected to comprise the vast majority of juvenile salmonids collected during fish relocation. Few to no juvenile Chinook and coho salmon are expected to be present during reach de-watering. No adult salmonids are expected to be present or taken by this project.

The majority of take during de-watering and relocation will be non-lethal take. Qualified biologists will relocate all fish, including salmonids from the dewatered stream channel areas (as much as 150 lineal meters) at each stream crossing. Some mortality of juvenile steelhead is anticipated during seining, electrofishing and other relocation related activities. Up to three percent of the juvenile steelhead, Chinook salmon, or coho salmon could be injured or killed because of relocation efforts. Therefore, the death or injury of no more than three percent of the total number of juvenile steelhead, Chinook salmon, and coho salmon relocated is anticipated at each stream crossing site during each year of construction.

During construction, Caltrans and its construction contractor will implement a SWPPP, to reduce the mobilization of sediment to the action area. It is likely the project construction will mobilize fine-grained (sand sized) sediment and this material will eventually be deposited in the stream channels during the winter months. Increased rates of fine sediment input may decrease the survival of embryos and the emergence of fry from spawning sites (redds) within the Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet creeks within the action area (13.8 km total). It is unlikely that sediment delivery will reach levels in the action area that result in complete loss of spawning success within redds. Some incremental loss is anticipated, but due to many factors,

the loss is unquantifiable.

Similarly, loss of riparian vegetation is expected to result in injury or death to juvenile steelhead due to elevated water temperatures. The number of steelhead affected cannot be precisely quantified but is expected to be very small based on the current condition of habitat in the affected areas, which limits steelhead use of these areas for rearing. The extent of take to juvenile steelhead is likely to persist in the action area for at least a five year period. Elevated water temperatures may persist for as long as ten years, depending upon how quickly proposed revegetation provides shade to the affected streams.

Anticipated take will have been exceeded if construction activities, construction of stream crossings, culvert removal, and replacement, or related construction activities are conducted in a manner inconsistent with the proposed project description (including project minimization and avoidance measures) or do not adhere to the terms and conditions of this biological opinion.

B. Effect of the Take

In the accompanying opinion, NMFS determined that this level of anticipated take is not likely to result in jeopardy to the species.

C. Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the impacts of the incidental take of NC steelhead, CC Chinook salmon, and SONCC coho salmon:

1. Measures shall be taken to ensure that fish relocation efforts are carried out in a manner that minimizes effects to Federally-listed salmonids.

2. Measure shall be taken to minimize harm to listed salmonids resulting from bridge and roadway construction and maintenance.

3. Measures shall be taken to minimize impacts to stream water quality.

4. Measures shall be taken to monitor the effects of pile driving on listed species.

5. Measures shall be taken to ensure the final mitigation plan adequately compensates for project impacts.

6. Measures shall be taken to monitor take of salmonids.

D. Terms and Conditions

FHWA and Caltrans must comply with the following terms and conditions, which implement the reasonable and prudent measures, described above and define the reporting and monitoring requirements. These terms and conditions are non-discretionary.

The following terms and conditions implement **Reasonable and Prudent Measure 1** to ensure that any fish relocation efforts are carried out in a manner that minimizes effects to federally listed salmonids:

1. FHWA and Caltrans shall provide NMFS with a Fish Relocation and Dewatering Plan at least 30 days prior to the start of dewatering for fish relocation activities, and shall receive written approval for this plan from NMFS prior to beginning any dewatering for fish relocation in streams where federally listed salmonids are present. This plan shall outline cofferdam construction, dewatering methods, and fish relocation methods. If the plan meets NMFS' approval, NMFS shall provide approval and any comments within 30 days of plan submittal. If the plan does not meet NMFS' approval, NMFS shall provide a list of changes needed within 30 days of plan submittal.

2. The FHWA and Caltrans shall retain a qualified biologist with expertise in the areas of anadromous salmonid biology, including handling, collecting, and relocating salmonids; salmonid/habitat relationships; and biological monitoring of salmonids. The FHWA and Caltrans shall ensure that all fisheries biologists working on this project be qualified to conduct fish collections in a manner which minimizes all potential risks to ESA-listed salmonids. Electrofishing, if used, shall be performed by a qualified biologist and conducted according to the *NOAA Fisheries Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act*, June 2000.

3. The fisheries biologist shall monitor the construction site during placement and removal of cofferdams to ensure that any adverse effects to salmonids are minimized. The biologist shall be on site during all dewatering events in anadromous fish streams to ensure that all ESA-listed salmonids are captured, handled, and relocated safely. The fisheries biologist shall notify NMFS biologist Thomas Daugherty at (707) 468-4057 or tom.daugherty@noaa.gov, or other NMFS staff at (707) 575-6062 one week prior to capture activities in order to provide an opportunity for NMFS staff to observe the activities. During fish relocation activities the fisheries biologist shall contact Thomas Daugherty (or other NMFS staff) at the above numbers, if mortality of federally listed salmonids exceeds 3 percent, at which time NMFS will stipulate measures to reduce the take of salmonids.

4. If ESA-listed fish are handled, it shall be with extreme care and they shall be kept in water to the maximum extent possible during rescue activities. All captured fish shall be kept in cool, shaded, aerated water protected from excessive noise, jostling, or overcrowding any time they are not in the stream and fish shall not be removed from this water except when released. To avoid predation the biologist shall have at least two containers and segregate young-of-year fish from larger age-classes and other potential aquatic predators. Captured salmonids will be relocated as soon as possible to a suitable instream location (pre-approved by NMFS) where suitable habitat conditions are present to allow for survival of transported fish and fish already present.

5. Non-native fish that are captured during fish relocation activities shall not be relocated to anadromous streams, or areas where they could access anadromous habitat.

6. Pumps used to dewater the work area shall be equipped with screens that meet the following NMFS fish screening criteria:

- Perforated plate: screen openings shall not exceed 3/32 inches (2.38mm), measured in diameter.
- Woven Wire: screen openings shall not exceed 3/32 inches (2.38 mm measured diagonally).
- Screen material shall provide a minimum of 27% open area.
- Approach velocity shall not exceed 0.33 feet per second.

The following terms and conditions implement **Reasonable and Prudent Measure 2** to minimize impacts of bridge and roadway construction.

7. The FHWA or Caltrans shall notify the NMFS Santa Rosa Area Office, by letter stating the project commencement date, at least fourteen days prior to implementation. The letter shall be sent to the NMFS Santa Rosa Area Office, Attention: Supervisor of Protected Resources Division 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528.

8. The FHWA or Caltrans shall allow any NMFS employee(s) or any other person(s) designated by NMFS, to accompany field personnel to visit the construction sites during activities provided for in this opinion. NMFS will notify the Caltrans Resident Engineer at least 48 hours prior to the planned site visits and will contact Caltrans personnel prior to entering the construction site.

9. Representatives from NMFS and CDFG shall be notified two weeks in advance of any FHWA or Caltrans pre-construction meetings for the Willits Bypass Project.

10. Prior to commencement of work on the Upp Creek and Haehl Creek fish passage improvement components, FHWA or Caltrans shall submit the engineering design for the structures related to fish passage to NMFS for evaluation and concurrence prior to implementation. Fish passage design at these two structures shall follow the March 2000, *NMFS Guidelines for Salmonid Passage at Stream Crossings*. NMFS shall provide evaluation within 30 days of design submittal. If passage design meets the NMFS guidelines above, NMFS shall provide evaluation and concurrence within 30 days of design submittal. The designs should be sent to the NMFS Santa Rosa Area Office, Attention: Supervisor of Protected Resources Division, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528.

The following terms and conditions implement **Reasonable and Prudent Measure 3** to minimize impacts to stream water quality.

11. Water that comes in contact with wet concrete and has a pH greater than 9.0 must not be allowed to enter the ground or stream but shall be either: (1) pumped to a separate, lined basin, and then pumped to a truck or upland for disposal or treatment (not within the bank to bank of any waterway); or (2) pumped directly to a truck for disposal at a site that is not within the top of bank to top of bank of any waterway.

12. Construction equipment used within the creek channel will be checked each day prior to work within the creek channel (top of bank to top of bank) and if necessary action will be taken to prevent fluid leaks. If leaks occur during work in the channel (top of bank to top of bank), FHWA, Caltrans, or their contractor will contain the spill and remove the affected soils.

13. Water drafting must not be acquired from any source that may affect salmonid habitat. Water drafting from the action area is not permitted.

14. Working waters from the project area shall not be discharged to the live stream, unless Caltrans can demonstrate that no impact to stream water temperature or other water quality parameters will occur as a result of the discharge.

15. A biologist shall monitor in-channel activities and performance of sediment control or detention devices for the purpose of identifying and reconciling any condition that could adversely affect salmonids or their habitat. If sediment run-off does occur, work activities that are the cause of the sediment shall be halted and corrective measures implemented until the sediment source is eliminated.

16. When updates to the SWPPP occur, Caltrans shall notify NMFS of these changes. Caltrans will submit a re-certified SWPPP annually to NMFS, and indicate any substantial changes within the SWPPP.

17. All necessary erosion control BMPs shall be in place by October 31 of each construction season. FHWA and Caltrans shall provide NMFS with a site tour to view the BMPs during the month of November.

18. FHWA and Caltrans shall provide NMFS with a detailed description of any proposed contractor-constructed concrete batch plant, including the location and measures to avoid impacts to stream water quality.

19. Construction work conducted outside of the June 15 to October 15 work window shall not create conditions that mobilize sediment or concentrate over-land flow from construction areas into the stream-channel network.

20. FHWA and Caltrans shall provide NMFS with the detailed plan for non-fish bearing stream realignments that are proposed. The channel realignment plan will include a detailed map of channel(s) to be realigned, methods of construction, restoration, and BMPs to be implemented to minimize sediment delivery to downstream stream reaches.

21. Prior to the completion of Willits Bypass construction, FHWA and Caltrans shall provide NMFS with a maintenance plan for the project that includes description of specific maintenance activities and the specific BMPs that will be used to avoid impacts to listed salmonids and their critical habitats.

The following terms and conditions implement **Reasonable and Prudent Measure 4** to reduce effects of pile driving on listed species.

22. Caltrans shall submit a hydroacoustic monitoring plan to NMFS that provides details of the sound monitoring that is proposed in the project proposal. The hydroacoustic monitoring plan shall be submitted for NMFS review 30 days prior to the start of pile driving actions. If the plan meets NMFS' approval, NMFS shall provide written approval and any comments within 30 days of plan submittal. If the plan does not meet NMFS' approval, NMFS shall provide a list of changes needed within 30 days of plan submittal.

23. Caltrans shall conduct hydroacoustic monitoring during pile driving events in wetted aquatic habitats upstream and downstream of de-watered stream areas .

The following terms and conditions implement **Reasonable and Prudent Measure 5** to ensure the final mitigation plan adequately compensates for potential impacts.

24. FHWA and Caltrans shall provide the NMFS with a final mitigation plan. This plan shall include specific mitigation work that Caltrans proposes to conduct. For those mitigation efforts that Caltrans is unable to propose at this time, the plan shall provide a mechanism (such as a review committee, *etc.*) for developing and approving final mitigation efforts.

The following terms and conditions implement **Reasonable and Prudent Measure 6** to provide a monitoring take of salmonids.

25. FHWA and Caltrans shall provide NMFS with a summary report within 90 days of the completion of fish relocation activities each year. The report shall include the methods used during the fish relocation efforts, location, number and species captured, number of mortalities by species, and other pertinent information related to the fish relocation activities.

26. FHWA and Caltrans shall monitor stream temperatures associated with riparian vegetation removal, and provide the data to NMFS no later than 120 days after the last day of data collection.

27. All reports or plans required for the above terms and conditions shall be sent to:

Santa Rosa Field Office Supervisor, Protected Resources Division
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404.

X. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. One or more years in advance of construction of stream crossings, FHWA and Caltrans should plant riparian vegetation along the banks of on Haehl, Baechtel, Broaddus, Mill, and Upp creeks to enhance the riparian corridor prior to the project's vegetation removal. By increasing the canopy cover in areas with sparse or no existing riparian vegetation, the project can minimize the effects of increased solar radiation on stream water temperature.

XI. REINITIATION NOTICE

This concludes formal consultation for the proposed FHWA and Caltrans Highway 101 Willits Bypass Project in Mendocino County, California. As provided in 50 CFR §402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

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LeDoux-Bloom, C. 2005. Personal communication. California Department of Fish and Game. Fort Bragg, California.

Schmoldt, D. 2006. Personal communication. Biologist. California Department of Transportation. Sacramento, California.

B. Federal Register Citations

64 FR 24049. National Marine Fisheries Service. Final Rule and Correction: Designated Critical Habitat; Central California Coast and Southern Oregon/Northern California Coasts Coho Salmon Federal Register 64:24049-25507. May 5, 1999.

65 FR 36074. National Marine Fisheries Service. Final Rule: Threatened Status for One Steelhead Evolutionarily Significant Unit (ESU) in California. Federal Register 65:36074-36094. June 7, 2000.

70 FR 37160. National Marine Fisheries Service. Final rule: Final Listing Determinations for 16 ESUs of West Coast Salmon, and Final 4(d) Protective Regulations for Threatened Salmonid ESUs. Federal Register 70:37160-37204. June 28, 2005.

70 FR 52488. National Marine Fisheries Service. Final rule: Designation of Critical Habitat for Seven Evolutionarily Significant Units of Pacific Salmon and Steelhead in California. Federal Register 70: 52488-52586. September 2, 2005.

71 FR 834. National Marine Fisheries Service. Final rule: Endangered and Threatened Species: Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead. Federal Register 71: 834-862. January 5, 2006.

Enclosure 2

Highway 101 Willits Bypass Project

DRAFT

ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS

(Magnuson-Stevens Fishery Conservation and Management Act - EFH Consultation)

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) set forth new mandates for the National Marine Fisheries Service (NMFS), regional fishery management councils, and Federal action agencies to identify and protect important marine and anadromous fish habitat. The regional fishery management councils, with assistance from NMFS, are required to delineate essential fish habitat (EFH) in fishery management plans (FMPs) or FMP amendments for all managed species. Federal action agencies, which fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to NMFS conservation recommendations. In addition, NMFS is required to comment on any state agency activities that would impact EFH. Although the concept of EFH is similar to that of critical habitat under the Endangered Species Act, measures recommended to protect EFH are advisory, not proscriptive. The Pacific Fisheries Management Council has delineated EFH for Pacific coast salmon (PFMC 1999).

I. IDENTIFICATION OF ESSENTIAL FISH HABITAT

EFH is defined in the MSFCMA as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. NMFS regulations further define waters to include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate to include sediment, hard bottom, structures underlying the waters, and associated biological communities necessary to mean the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem; and spawning, breeding, feeding, or growth to maturity to cover a species full life cycle.

For Pacific coast salmon, the geographic extent of EFH currently being considered includes both marine and freshwater habitat. For purposes of this consultation, Pacific coast salmon EFH corresponds closely to Critical Habitat designated under the Endangered Species Act for Southern Oregon-Northern California Coasts Coast coho salmon (*Oncorhynchus kisutch*) and California Coastal Chinook salmon (*O. tshawytscha*) (64 FR 24049 and 70 FR 52488).

II. PROPOSED ACTION

The California Department of Transportation (Caltrans) and Federal Highway Administration (FHWA) propose the Highway 101 Willits Bypass to reduce delays on U.S. Route 101. Currently Highway 101 runs through the City of Willits, California. The bypass project will re-route Highway 101 around the City of Willits, providing a stable flow of traffic at 65 miles per

hour. The proposal includes the construction of a four-lane freeway that crosses the Little Lake Valley east of Willits. The bypass would begin 3.2 kilometers (km) south of Willits, where the existing Highway 101 becomes a two-lane road, and extend to about 0.6 km north of the Willits, where the new alignment would merge with the existing two-lane Highway 101. Construction would begin in 2009 and likely take four years to complete.

III. EFFECTS OF THE PROJECT ACTION

The associated biological opinion has a general description of the non-fishing related activities that directly or cumulatively, temporarily or permanently may threaten the physical, chemical, and biological properties of the habitat utilized by Pacific coast salmon and their prey within the proposed project area. The direct result of these threats is that the function of EFH may be eliminated, diminished or disrupted.

Potential impacts to salmonid habitat are described in the preceding biological opinion. Adverse effects of the proposed action on salmonid EFH may occur through dewatering and in-channel construction activities, riparian vegetation removal, and associated freeway construction work within Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet creeks, which are tributaries to the Eel River.

IV. CONCLUSION

Upon review of the anticipated effects, NMFS believes that proposed freeway construction actions are likely to cause adverse effects to Pacific coast salmon EFH.

V. EFH CONSERVATION RECOMMENDATIONS

Pursuant to Section 305(b)(4)(A) of the Magnuson-Stevens Act, NMFS recommends that the terms and conditions 7 through 21 of the preceding biological opinion's Incidental Take Statement be adopted as EFH conservation recommendations for Pacific coast salmon habitat.

VI. FEDERAL AGENCY STATUTORY REQUIREMENTS

The Magnuson-Stevens Act (Section 305(b)(4)(B)) and Federal regulations (50 CFR Section 600.920(j)) to implement the EFH provisions of the MSFCMA require Federal action agencies to provide a written response to EFH Conservation Recommendations within 30 days of its receipt. The Federal action agency included in this consultation is the Federal Highway Administration. A preliminary response is acceptable if final action cannot be completed within 30 days. The final response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on delineated EFH. If the response is inconsistent with our EFH Conservation Recommendations, it must provide an explanation of the reasons for not implementing them.

Attachment 6: Section 106 Concurrence Documents

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER,
Governor

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
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December 6, 2005

In Reply Refer To: FHWA000717A

Gene K. Fong
Division Administrator
U.S. Department of Transportation
Federal Highway Administration, California Division
650 Capitol Mall, Suite 4-100
Sacramento, CA 95814

Dear Mr. Fong:

Re: HAD-CA File #01-Men-101 K.P. 70.0/82.6 (PM 43.5/51.3) Willits Bypass Project EA 01-262000 Document # P53417.

You are continuing consultation with me regarding the above noted undertaking pursuant to 36 CFR § 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act. This aspect of the Willits Bypass Project undertaking focuses on the Modified Alternative J1T alignment and the additional studies completed on four archeological sites in the project APE, the National Register of Historic Places (NRHP) eligibility for those properties, and the determination of a finding of effect. In addition to your letter of November 7, 2005, you have submitted the following documents for my review:

- *Supplemental Historic Property Survey Report Willits Bypass Project: Site Evaluations, Finding of Effect, ESA Action Plan 03-Men-101 Willits Bypass Project EA 03-262000 PM 43.5/51.3 (KP 70.0/82.6)* (S.A. Williams, Caltrans District 3-Marysville: September 2005).

- *Phase II Investigation At Historic Archaeological Site CA-MEN-2618H (Branscomb Ranch) On State Route 101, Willits, Mendocino County 101 KP T70.0 and 82.6 (PM 42.1 and 51.3) EA: 01-262000, Contract No. 03A0574, Task Order 9, Amendment* 1 (K.M. Bartoy & R.J. Jackson, Pacific Legacy, Inc.: May 2005).

- *Phase II Investigations At CA-MEN-2645/H, CA-MEN-3037H, and CA-MEN-3190H on State Route 101, Willits, Mendocino County 01-MEN-101 KP T70.0 and 82.6 (PM 42.1 and 51.3) EA: 01-262000, Contract No. 03A0574, Task Order 9, Amendment 1* (H.S. Ballard, T. Fernandez, M.R. Bever, & R. Jackson: Pacific Legacy, Inc.: September 2004).

After reviewing your letter of November 7, 2005, and the documentation submitted in support of this undertaking, I have the following comments:

1) I concur that the documentation submitted for this undertaking is adequate regarding the identification and evaluation of historic properties pursuant to 36 CFR § 800.4.

2) I further concur that archeological site CA-MEN-2645/H is eligible for the NRHP under criterion D.

3) CA-MEN-3111H, the Northwestern Pacific Railroad, has been previously determined eligible for the NRHP under criteria A and C in an earlier consultation for this undertaking (SHPO letter of August 17, 2000).

4) I further concur that the following archeological sites are *not* eligible to the NRHP.

- CA-MEN-2618H
- CA-MEN-3057H
- CA-MEN-3190H

5) I further concur that the finding of No Adverse Effect with conditions is appropriate pursuant to 36 CFR § 800.5(b), with the implementation of the conditions outlined in: *Finding of Conditional No Adverse Effect/ESA Action Plan 03-Men-101 Willits Bypass Project EA 03-262000 PM 43.5/51.3 (KP 70.0/82.6)* (S.A. Williams, Caltrans District 3: September 2005).

Thank you for seeking our comments and for considering historic properties in planning your project. If you require further information, please contact William Soule at phone 916-654-4614 or email wsoule@parks.ca.gov.

Sincerely,

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

Attachment 7: Clean Water Act Section 404(b)(1) Alternatives Analysis

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D. This appendix intentionally left blank
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    Stream Habitat Values
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I. Instream Habitat Study

Executive Summary

The California Department of Transportation (Caltrans) in partnership with the Federal Highway Administration (FHWA) proposes to construct a new segment of U.S. 101 around the city of Willits in Mendocino County (Figure ES-1). The need for the project is caused by the current facility within the project limits, which serves both as an interstate highway and as Main Street in the city of Willits; the facility, as a result, carries both interregional and local traffic on a surface street with curb parking and multiple side streets and driveways, resulting in congestion and delays for drivers, pedestrians, and bicyclists. The purpose of the project is to reduce delays, improve safety and achieve a level of service (LOS) of at least "C" for interregional traffic on U.S. 101 within the project limits.

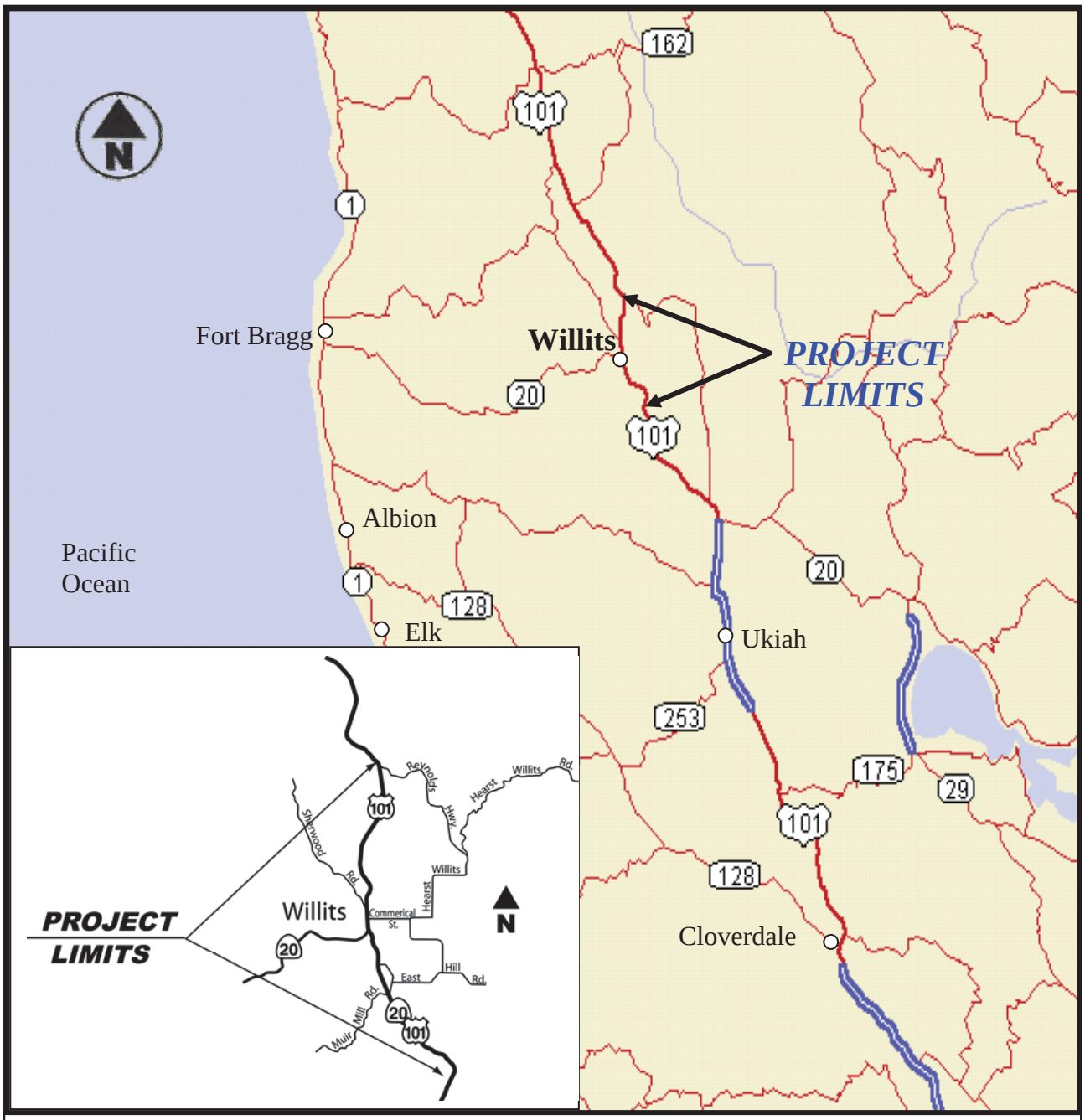
All of the six build alternatives discussed in this Section 404(b)(1) Alternatives Analysis meet the project purpose and need, stated above, with construction of an access-controlled four-lane freeway that separates U.S. 101 from Willits' Main Street.

The Willits Bypass project was funded in the 1992 State Transportation Improvement Plan (STIP) and later supplemented and programmed in the 2002 STIP for $116 million by the California Transportation Commission (CTC). The Mendocino Council of Governments (MCOG) included its entire $17.3 million share of Regional Improvement Program funds to show strong local support for the project.

Since project planning began in 1962, approximately 30 alternatives have been considered as a result of public and governmental agency input and independent investigation by Caltrans staff (Map 29, Appendix A).

Seven alternatives are included in this Section 404(b)(1) Alternatives Analysis, including six build alternatives and one No Build alternative. The six build alternatives are: E3, C1T, J1T, Modified J1T, LT, and the hybrid L/C. All of the build alternatives involve construction of a four-lane freeway. Under the No Build scenario, no new freeway or highway construction would occur.

In 1994 and again in 1995, the NEPA/404 signatory agencies concurred with the purpose and need statement (Section 3) and the range of alternatives being considered in this alternatives analysis (Section 5). Alternatives J1T, Modified J1T, LT, C1T, and L/C



Area of Enlargement

0 10 20

SCALE IN KILOMETERS

Figure ES-1. Project Location

WILLITS BYPASS

01-Men-101: KP R69.4/84.2 (PM R43.1/52.3)
EA 01-26200

would cross Little Lake Valley east of the City of Willits, and Alternative E3 would traverse the hills west of Willits (Figure 7-1 and Map 3, Appendix A). In addition, a No-Build Alternative is included in the analysis. Under the No-Build Alternative, no changes would occur, and vehicles would continue to use existing U.S. 101. See Appendix E for the complete purpose and need statement with which the signatory agencies formally concurred in 1995.

This Section 404(b)(1) Alternatives Analysis has been undertaken to determine which of the proposed alternatives is the least environmentally-damaging practicable alternative (LEDPA) to wetlands and other waters of the U.S., while meeting the project's purpose. Because selection of any of the proposed build alternatives as the preferred alternative would require a U.S. Army Corps of Engineers (ACOE) Section 404 Individual Permit, an analysis of impacts to aquatic resources and associated sensitive species for each alternative is required to comply with the Clean Water Act Section 404(b)(1) Guidelines. The U.S. Environmental Protection Agency (USEPA) (40 CFR Part 230, December 24, 1980) published these Guidelines to ensure that where projects would adversely affect aquatic resources that no other alternative exists that avoids or would have less adverse effects to those resources. Because the proposed project is not water-dependent, it is presumed that less environmentally-damaging practicable alternatives exist. Therefore, the burden is on FHWA and Caltrans as the permit applicant to clearly demonstrate compliance with the Guidelines that a less environmentally-damaging practicable alternative does not exist.

This Section 404(b)(1) Alternatives Analysis clearly demonstrates why Alternatives E3, C1T, L/C, LT, J1T, and the No Build are either not practicable or would have greater overall environmental impacts. FHWA and Caltrans have identified Modified Alternative J1T as the LEDPA.

Summary of Alternatives

The NEPA 404 signatory agencies have provided informal agreement that Alternatives E3, C1T, L/C, LT and No Build do not meet LEDPA criteria.[1] Figures ES-2 and ES-3 show the build alternatives. Table ES-1 provides a comparison of the kinds and scope of impacts of each of the alternatives under consideration.

[1] USEPA letter dated 9/9/2002 and 1/30/04; NOAA Fisheries letter dated 8/22/2002 and 1/23/04; USFWS letter, dated 11/21/2002. Verbal informal agreement at January and April 2003 Project Development Team (PDT) meetings.

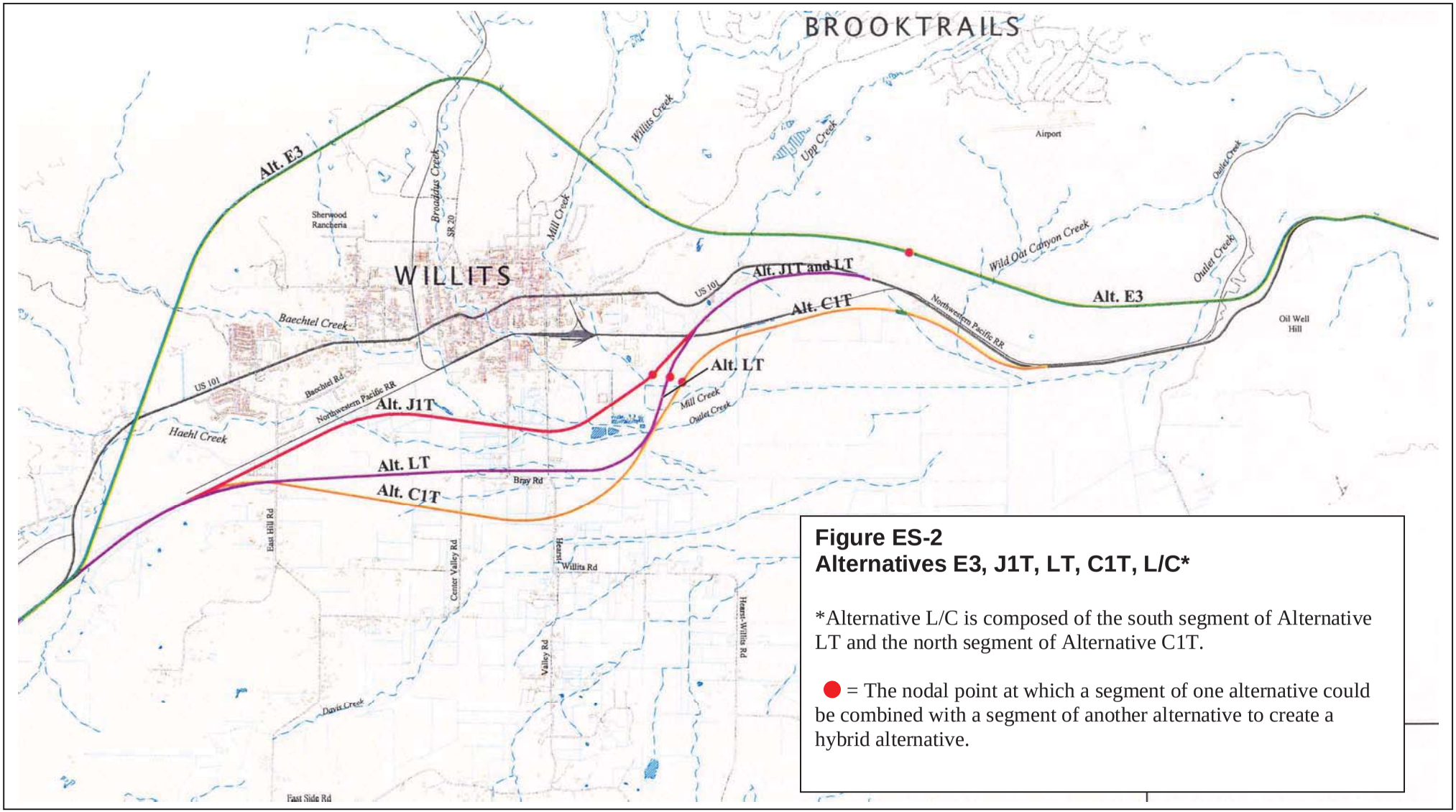


Figure ES-2
Alternatives E3, J1T, LT, C1T, L/C*

*Alternative L/C is composed of the south segment of Alternative LT and the north segment of Alternative C1T.

● = The nodal point at which a segment of one alternative could be combined with a segment of another alternative to create a hybrid alternative.

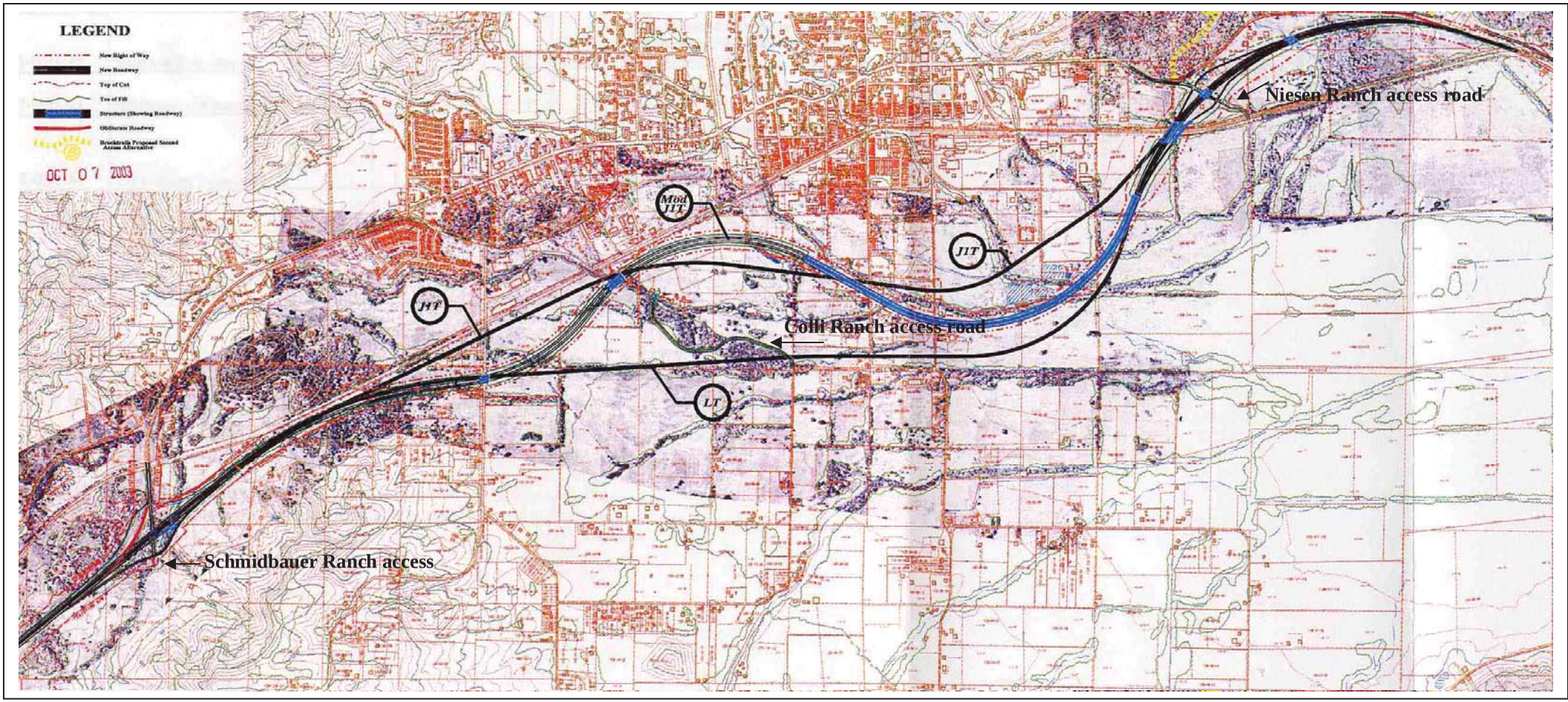


Figure ES-3. Modified Alternative J1T
(This figure also shows the centerline of Alternatives J1T and LT)

The factual determinations herein demonstrate the following conclusions for each of the build alternatives and the no build alternative:

Alternative E3

Of the build alternatives, Alternative E3 has the least direct impacts to jurisdictional wetlands and other waters of the U.S. (6.1 ha [15.1 ac]) (based on the 1998 ACOE verification)[2]. However, it would have the greatest potential indirect impact to jurisdictional aquatic resources that are habitat to federally listed species, due to the potential for large amounts of erosion-related sediments to enter major salmonid streams. Ongoing storm damage maintenance on this alternative is expected to be a major contributor to sediment loads in downstream waters that provide high quality spawning habitat for local populations of three federally-listed salmonid species (Northern California steelhead, Southern Oregon/Northern California coho salmon, and California Coastal chinook salmon).

Construction of Alternative E3 would result in the following adverse environmental effects: 1) it has the greatest potential to jeopardize the continued existence of local populations of three federally listed salmonid species; 2) it would have the largest direct impact to foraging habitat for Northern spotted owl because of this alignment's massive earthwork requirements, which could result in the removal of over 313 acres of forest habitat; 3) it has the greatest potential to degrade water quality because of highly erosive soils and extensive number of stream crossings; 4) it displaces the highest number of homes and businesses (133); 5) it has the potential to affect the highest number of archaeological sites (18); 6) it converts a large amount of Williamson Act Contract farmland (59.3 ha/146.6 ac); and 7) it would impact larger areas of upland/foothill habitats than the other alternatives, including oak woodland, a habitat type that is very

[2] See Table 7-3. The acreages of wetland impacts for Alternatives E3, C1T, L/C, LT, and J1T are based on the 1998 ACOE wetlands verification, except for access roads, which are based on the 2005 ACOE wetlands verification. Access roads do not exceed 0.9 ha/2.23 ac on any alternative. The acreage calculations for wetland impacts for Modified Alternative J1T are based on the 2005 ACOE verification. Some sites that were delineated as wetlands in the 1998 ACOE verification are no longer identified as wetlands in the 2005 ACOE verification. This is most notably the case with some riparian woodland wetland areas and some wet meadow areas which ACOE determined, in the 2005 delineation, are not subject to ACOE jurisdiction. However, the differences between the two delineations still allow for a comparable comparison of wetland impacts among the alternatives.

difficult to replace. In addition, Alternative E3 would have growth inducing impacts because of its proposed third interchange at S.R. 20.

Further, Alternative E3 is not a practicable alternative because it cannot be accomplished "within the financial resources that could reasonably be made available and it is [not] feasible from the standpoint of technology and logistics." (Guidance Papers 1994:12). Specifically, Alternative E3 is not practicable because: 1) it requires 12 million cubic yards of roadway excavation during construction; 2) even with specialized foundation treatments, specialized cut slope and fill slope design, mechanically reinforced embankments, stabilization trenches, catchment areas, and specialized subsurface drainage techniques, the potential for unpredictable landslides on the highly erosive soils on this alignment would remain high; 3) the highly unstable soils would require ongoing maintenance; and 4) the high estimated cost ($301 million in 2002 U.S. dollars) to construct Alternative E3 makes it infeasible

Alternatives C1T and L/C

Because the northern section of Alternatives C1T and L/C is shared and because the northern segment is the location of the majority of adverse impacts due to these alternatives, the analysis of Alternatives C1T and L/C is combined.

Both Alternatives C1T and L/C are practicable because they can be accomplished "within the financial resources that could reasonably be made available and [they are] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12), however, these two alternatives would result in severe impacts to wetlands and other waters of the U.S. and to federally listed salmonid species.

Alternatives C1T and L/C have the greatest direct impact to jurisdictional wetlands and other waters of the U.S. of all the build alternatives: 52.7 ha (130.1 ac) for Alternative C1T and 48.5 ha (119.8 ac) for Alternative L/C. Both alternatives would require approximately 2000 m (1.2 miles) of creek realignment.

Alternatives C1T and L/C would result in the following adverse environmental effects: 1) The extensive creek realignment would result in adverse impacts to habitat for the three federally listed salmonids and critical habitat for coho salmon; 2) direct impacts to Baker's meadowfoam, a federal species of concern and a State-listed rare species (three populations / 1.3 ha (3.2 ac) on Alternative C1T and two populations / 1.2 ha (3.0 ac) on

Alternative L/C[3]); 3) loss of riparian woodland habitat that supports special-status wildlife species including yellow warbler, yellow-breasted chat, and white-tailed kite; 4) habitat fragmentation, which may adversely affect winter waterfowl use; 5) Alternative C1T would impact 62.6 ha (154.6 ac) of farmland currently enrolled in Williamson Act Contracts; 6) both alternatives extend furthest to the east into Little Lake Valley, resulting in greater habitat fragmentation than Alternatives J1T or Modified J1T.

Alternative LT

Alternative LT is practicable because it can be accomplished "within the financial resources that could reasonably be made available and [it is] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12), however, Alternative LT would have high overall impacts compared to the remaining build alternatives.

Alternative LT would directly impact approximately 36.2 ha (89.3 ac) of jurisdictional wetlands and other waters of the U.S.

Alternative LT also would result in the following additional adverse impacts: 1) would result in the fragmentation of the largest stand of Valley oak riparian woodland in the valley; and 2) extends further into the valley than Alternatives J1T and Modified J1T, resulting in not only habitat fragmentation but possible growth-inducement. In addition, Alternative LT would require approximately 2.4 million cubic meters (3.1 million cubic yards) of borrow material; Alternatives J1T and Modified J1T, on the other hand, would require 0.5 million cu m (0.6 million cu yds) less of fill material, which would represent a reduction in loss of suitable foraging habitat for Northern spotted owl, if Oil Well Hill is the only borrow site used for the project.

Alternative J1T

Alternative J1T is practicable because it can be accomplished "within the financial resources that could reasonably be made available and [it is] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12).

Alternative J1T has the least direct impacts to jurisdictional wetlands and other waters of the U.S. of the valley alternatives with 27.1 ha (67.0 ac) of direct impacts to this resource.

[3] Baker's meadowfoam impacts based on 1991-1992 surveys.

However, Alternative J1T would result in the following adverse impacts: 1) construction of Alternative J1T through the local and regional park/recreation complex would result in adverse impacts to "human use characteristics"/Section 4(f) resources and 2) construction of the alternative would result in removal of the city's only business park and the loss of businesses that would not or could not relocate in Willits.

The NEPA/Section 404 Integration Process Guidance Papers explains that when evaluating harm to non-aquatic (i.e., Section 4(f)) resources versus jurisdictional aquatic resources is that the alternatives selection process evaluates reasonable and prudent alternatives based on the "net harm" (after mitigation) of the alternative to Section 4(f) properties or other environmental resources. Feasible mitigation is not available to reduce or compensate for impacts to the Section 4(f) resource or the business park in the project area by Alternative J1T, so Caltrans and FHWA coordinated extensively with local government and community representatives and NEPA 404(b)(1) agencies to develop the Modified Alternative J1T to avoid the potential Section 4(f) resource and the business park (see Section 7.4.4.5 and 7.4.4.6).

Modified Alternative J1T

Modified Alternative J1T is practicable because it can be accomplished "within the financial resources that could reasonably be made available and [it is] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12).

Modified Alternative J1T would result in direct impacts to 25.9 ha (64.0 ac) of jurisdictional wetlands and other waters of the U.S. (2005 Corps approved wetlands delineation).

Modified Alternative J1T minimizes impacts to jurisdictional wetlands and other waters of the U.S., compared to Alternatives E3, C1T, L/C, and LT, while minimizing impacts to sensitive species. While Modified Alternative J1T would impact approximately 3.8 ha (9.4 ac) more wetlands than Alternative J1T, it avoids human use characteristics/Section 4(f) resources, and other environmental resources that would be impacted by the other alternatives. The proposed fill activity from Modified Alternative J1T would not result in significant adverse impacts on human health and welfare, including effects on aesthetic, educational, historical, recreational, and/or scientific values. Modified Alternative J1T would not reduce or eliminate the uses of the regional recreational/park complex, including the skate park. Caltrans and FHWA coordinated extensively with local government and community representatives and NEPA 404(b)(1) signatory agencies to

develop the Modified Alternative J1T to avoid the Section 4(f) resource and business park that would be impacted by Alternative J1T. The proposed placement of fill will comply with the Guidelines, to the extent practicable, following implementation of appropriate mitigation and monitoring measures to minimize adverse effects on the aquatic ecosystem.

No Build Alternative

Although the No Build alternative would have no impact to wetland resources, traffic on existing U.S.101/Main Street is projected to increase in the future based on regional transportation demands, which would result in continued delays and safety concerns for interregional and local traffic on U.S. 101 within the City of Willits. The No Build alternative does not meet the purpose and need of the project to alleviate current and projected traffic demand and safety concerns on U.S. 101 within the project limits.

Summary and Conclusion

In 1994, Caltrans initiated the NEPA/404 Integration process for the project and in 1995, Caltrans, FHWA and NEPA/404 signatory agencies agreed to the purpose and need statement for the project and concurred with the modal choice statement, and the range of alternatives to be studied. Engineering and environmental studies continued on several alternatives through 1994. Then, as a result of the 1995 storms, resources were redirected to seismic safety and storm damage restoration projects, and bypass project development was suspended until 1998. In 1998, with new funding and resources allocated to the project, studies resumed on the alternatives approved by the NEPA/404 signatory agencies.

Throughout project development, a range of reasonable alternatives that potentially could meet the stated project purpose and need were considered by the Project Development Team (PDT), the Willits Technical Advisory Groups (TAG), and the signatory agencies. Alternative alignments were formulated and studied. Many of the alternatives studied had a number of alignment variations resulting from different interchange locations and combinations. See Table ES-2 below. Many of the alternatives that were considered have been eliminated, leaving a reasonable range of feasible alternatives considered in this alternatives analysis.

The NEPA/Section 404 Integration Process Guidance Papers explains that when evaluating harm to non-aquatic resources (such as Section 4(f) resources) versus jurisdictional aquatic resources is that the alternatives selection process evaluates reasonable and prudent alternatives based on the “net harm” (after mitigation) of the

alternative to Section 4(f) properties or other environmental resources. Feasible mitigation is not available to reduce or compensate for impacts to the Section 4(f) resource or the business park in the project area, so Caltrans and FHWA coordinated extensively with local government and community representatives and NEPA 404(b)(1) agencies to develop the Modified Alternative J1T to avoid the potential Section 4(f) resource and the business park (see Sections 7.4.4.5 and 7.4.4.6).

This alternatives analysis demonstrates why Caltrans and FHWA need to discharge fill material to waters of the U.S. in order to construct the Willits Bypass project. The analysis also demonstrates that Caltrans and FHWA have considered many alternatives to achieving the basic and overall project purpose. In this analysis, Caltrans and FHWA identify one alternative – Modified Alternative J1T – as the LEDPA.

Table ES-1
Section 404 (b)(1) Alternatives Analysis Matrix

Project Elements/Environmental Resource	E3	C1T	LT	L/C	J1T	Mod J1T LEDPA	No Build
Wetland Impacts[1]	6.1 ha(15.1 ac) [2]	52.7 ha(130.2 ac)[2]#	29.9 ha (73.8 ac)[2]	48.5 ha (119.9 ac)[2]#	22 ha (54.6 ac)[2]	25.9 ha (64.0 ac)[3]	0
Aquatic habitat: Riffle and Pool Complexes[4]	High	Moderate	Low-moderate	Low-moderate	Low-moderate	Low-moderate	low
Critical and essential fish habitat (crossings/creek realignment)[5]	8 / 880 m#	7 / 2,000 m#	4 / 0	7 / 2,000 m#	8 / 0	8/ 0	0
Water Quality Impacts	High#	High#	Mod	High#	Mod	Mod	Low
Earthwork/Borrow (cubic m/cubic yd in millions) -- for Alt. E3 (which involves excavation, no borrow), amount represents loss of suitable foraging habitat for NSO; for valley alternatives, amounts represent loss of suitable foraging habitat for NSO only if Oil Well Hill is sole borrow site.	9.1 / 12#	1.8 / 2.4	2.4 / 3.1	2.1 / 2.7	1.9 / 2.5	1.9/2.5	0
Erosion	High#	Low	Low-mod	Low-mod	Low-mod	Low-mod	Low
Potential Adverse Impacts (*permanent and direct*) to numbers of Special Status Fish Species (coho, chinook, steelhead)	3#	3#	0	3#	0	0	0
Potential Adverse Impacts to #s of Special Status Wildlife Species (NSO, red tree vole, foothill yellow-legged frog, northwestern pond turtle)	4#	3	3	3	3	3	0
Baker's meadowfoam[7] ha (ac)	--	1.3 (3.2)	0.2 (0.5)	1.2 (3.0)	1.6 (4.0)	0.2 (0.5)	0

Table ES-1
Section 404 (b)(1) Alternatives Analysis Matrix

Project Elements/Environmental Resource	E3	C1T	LT	L/C	J1T	Mod J1T LEDPA	No Build
Oak Woodland (upland) Impact (ha/ac)	22.7/56.1#	1.6/4.0	1.6/4.0	1.6/4.0	1.3/3.2	1.6/4.0[7]	0
Riparian Habitat Impact (ha/ac) Includes Valley oak riparian woodland on Alternative LT	3.0 /7.3	16.1 /39.8	4.7 /11.6	13.8 /33.9	4.54 (11.5)	4.24 (10.2)	0
Cultural resources sites	18	3	3	3	3	3	0
Williamson Act Contract (ha/ac)	59.3 (146.6)#	62.6 (154.6)#	28.1 (69.5)	60.3 (148.8)#	20.7 (51.2)	20.8 (51.4)	0
Farmland Conversion Impact Rating	170	153	155	153-155	158	161.5	0
Residential Relocation	114#	3	7	2	13	10	0
Business Relocation	19	0	5	1	20	10	0
Human Use Characteristics/ Section 4(f) Resource: Park/Recreation Complex	0	0	0	0	1#	0	0
Industrial Park	0	0	0	0	1#	0	0
Affordable Housing removed	76#	1	2	1-2	3	3	0
Project Cost estimated (millions $) (2002 dollars)	$301	$128	$130	$130	$151	$162	0

Table ES-1
Section 404 (b)(1) Alternatives Analysis Matrix

Project Elements/Environmental Resource	E3	C1T	LT	L/C	J1T	Mod J1T LEDPA	No Build

NOTES

1 Impacts include access roads
2 Based on 1998 Corps-verified wetlands delineation. Also includes access roads based on 2005 Corps verified delineation: 0.4 ha (0.9 ac) in access road for Alternatives CT, L/C, and LT; and 1.8 ha (4.4 ac) in access roads for Alternatives J1T and Modified J1T.
3 Based on 2005 Corps-verified wetlands delineation.
4 Refer to "Instream Habitat at the Proposed Willits Bypass (Modified Alternative J1T) Crossings, Spring 2004," Appendix I.
5 The proposed interchange at the south end of the project has been redesigned and will no longer require the realignment of 275 m (902 feet) of Haehl Creek, which will avoid potential impacts to salmonids in that area.
6 Baker's meadowfoam populations based on 1991-1992 survey data. URS Corporation America conducted surveys of Baker's meadowfoam in 2003 for Alternatives J1T and LT that identified approximately 3.86 acres of Baker's meadowfoam habitat in the Quail Meadows Interchange area that could be directly impacted. Modified Alternative J1T would affect the same area, but would avoid the Colli Ranch population Alternative J1T would impact.
7 Acreage is approximate. Upon LEDPA concurrence, Caltrans will conduct surveys to determine the number of each species of oak the project would impact.

Note: Greyed areas indicate highest impacts

 # Impacts that would be difficult or not possible to mitigate.

Table ES-2. Alternatives Considered Throughout Project Development

Alternatives/*Timeframe*	Comments
In 1988, Alternatives A through E and the No Build were presented to the public.	
Alternatives A, A1, A2, A3 & A4. CTC adopted Alternative A as the original alignment in 1962. Versions of Alternative A known as A1 - A4 identified different combinations of interchange locations.	The PDT rejected Alternative A due to the substantial potential impacts to wetlands and other sensitive natural habitat. Alternative A also required time-consuming and extensive construction techniques to address embankment settlement and consolidation caused by poor soil conditions in northern Little Lake Valley.
Alternative B. In an effort to modify Alternative A to avoid wetlands, Alternative B diverged from Alternative A beginning just north of the crossing of Hearst-Willits Road, then veered to the east and skirted the eastern limits of Little Lake Valley.	Preliminary investigations revealed that Alternative B, rather than having lower wetland impacts, actually had higher wetland impacts than Alternative A. In addition, a later alignment, Alternative K, better represented the intent of Alternative B.
Alternative C. Similar to Alternative B, Alternative C diverged from Alternative A beginning just north of the crossing of Hearst-Willits Road. From there, Alternative C skirted the west side of Little Lake Valley and rejoined Alternative A and the existing highway on Oil Well Hill. Alternative C1T developed from Alternative C. Versions of Alternative C known as C1-C4 identified different combinations of interchange locations.	**Alternative C1 was retained for further study.** The PDT rejected other versions of Alternative C because of the substantial potential impacts to wetlands and due to the high cost and growth-inducing impacts of additional valley interchanges. Mendocino County requested Caltrans to investigate the Alternative C/J in 1993. This was a combination of what is now the south portion of C1T and the north portion of J1. Most of Alternative J1 north of Quail Meadows is no longer under consideration, and hence, the C/J alternative is no longer considered viable.
Alternative D traversed the hilly terrain west of Willits and was similar to E3 but closer to Willits.	The PDT rejected Alternative D based on its similarity to Alternative E and due to substantial potential impacts to wetlands and riparian habitat along the north end of Little Lake Valley.
Alternative E ran through the hills near Willits cemetery. The north end connected to Alternative A after traversing the hills west of the old Louisiana Pacific mill site. Versions of Alternative E known as E1-E3 had different combinations of interchange locations.	**Alternative E3 was retained for further studies.** The PDT rejected other versions of Alternative E3 due to potential impacts to residential development and the estimated higher cost for interchanges at Wild Oat Canyon and at Oil Well Hill.
In 1989, additional scooping sessions resulted in the addition of Alternatives F through R	

Alternatives/*Timeframe*	Comments
Alternative F proposed relocating the Northwestern Pacific Railroad tracks through a portion of Willits and using the resulting right of way for a low speed expressway.	The PDT rejected Alternative F due to its similarity with Alternative O and due to the high cost of relocating railroad tracks.
Alternative G describes many variations of alternatives from the Project Study Report that connected with US 101 south of Oil Well Hill and north of Haehl Creek.	The PDT rejected Alternative G because there was no cohesive alternative described from the public scoping sessions. Many of the proposals loosely defined under this alternative were studied as variations of other alternatives.
Alternative H came out of the scoping sessions as an alignment that would relocate U.S. 101 at least 8 miles west of Willits to remove noise and air pollution from town.	The PDT rejected this alternative due to the high costs and because it was outside the scope of the study area.
Alternative I was a tunnel located roughly in the Alternative E corridor. It was suggested as a means of reducing impacts to Willits Cemetery and the other properties along the proposed D/E alignments.	With an estimated cost of $250 million to $300 million for the tunnel alone, the PDT rejected this alternative.
Alternatives J1 and J2 followed the railroad tracks after leaving existing U.S. 101 at the south end of Willits, skirted the rodeo grounds, skirted the sewage plant to the east, and headed back toward U.S. 101, conforming just north of the Willits northerly city limits.	The PDT rejected J2 because it resulted in poor service in terms of interchange locations and could have growth-inducing impacts. **The PDT retained Alternative J1 for further studies. Alternative J1 was truncated to become J1T.**
Alternatives K and "old" L were easterly wetland avoidance alternatives located in the hills to the east of Reynolds Highway. Alternative K2 followed K for about the first 1.2 miles, then continued north along the base of the hills on the east side of the valley.	With concurrence from the signatory agencies, the PDT eliminated both alternatives. Constructing facilities on the east side of the valley would result in poor service in terms of interchange locations. Studies indicated that both alternatives generated unavoidable impacts to wetlands, archaeological resources, and the destruction of millions of Baker's Meadowfoam plants, a listed species of concern and listed as rare under the California Plant Protection Act. Both alternatives required deep cuts in active landslide areas and traversed material of questionable stability.
Alternative M offered an expressway through Willits skirting the wastewater treatment plant and corporation yard and widened existing U.S. 101 at the north end of the project to four lanes.	Based on its similarity with Alternative J, and because of safety concerns and whether an expressway could meet the project's purpose and need, the PDT dropped Alternative M.

Alternatives/*Timeframe*	Comments
Alternative N departed from U.S. 101 near Holland's Lane, then skirted the east side of the Mormon Church property crossing Haehl Creek, passing over East Hill Road and the railroad tracks, then paralleled the tracks with a two lane roadway through Willits.	A portion of Alternative N included four lanes with turn pockets and a portion included a continuous left turn lane. The PDT rejected this alternative based on its similarity to Alternative O.
Alternative O was similar to Alternative N, paralleling the Northwestern Pacific Railroad tracts. Alternative O proposed a four-lane boulevard expressway that continued beyond the old truck scales and railroad crossing north of Willits.	The PDT rejected this alternative due to substantial potential impacts to multi-dwelling residential units and potential impacts to Section 4(f) eligible properties.
Alternative P was a couplet through Willits. A couplet is a pair of one-way city streets with traffic running in opposite directions usually separated by a city block.	A preliminary traffic analysis revealed that this alternative would operate poorly because of the substantial out-of-direction travel it required. Citing the failure to meet project objectives of providing a safe and efficient highway, the PDT rejected this alternative.
Alternative Q involved a concept of two-lane routes with increased railroad use.	The modal analysis indicated a need for a highway solution rather than rail and, citing failure to meet project objectives of providing a safe and efficient highway, the PDT rejected this alternative.
Alternative R was a couplet through Willits. The alignment identified Main Street as the northbound lanes and suggested southbound lanes to the west of U.S. 101.	Like Alternative P, this alternative had widely separated north/southbound legs that required out-of-direction travel. Citing the failure to meet project objectives of providing a safe and efficient highway, the PDT rejected this alternative.
In 1992, the Transportation System Management (TSM) Alternative was requested for study by members of the TAG and PDT. The same year, Willits Environmental Center requested study of a two-lane alternative to reduce environmental impacts.	
Alternative TSM was a non-freeway alternative that would parallel existing U.S. 101/Main Street within Willits.	The TSM alternative was eliminated because it did not meet the purpose and need of the project and would result in high overall adverse impacts: removal of 140 residential units; relocation of 28 commercial and industrial business (including one utility which, alone, would cost an estimated $25 million to relocate); insufficient housing in Willits for the large number of residents who would be displaced by the TSM alternative; would result in unavoidable adverse impacts to eligible historic architectural properties, including numerous structures within the Willits Historic District; increased noise, increased traffic

Alternatives/*Timeframe*	Comments
	volumes, reduction in parking supply, and reduced access in the vicinity, thus adversely impacting the existing character of the area.
Two-lane alternative	A two-lane alternative was eliminated from consideration because it would not meet the purpose and need of the project. It would not result in a considerable reduction in biological impacts, because of engineering and design requirements such as median, shoulders, merge lanes, ramps, and interchanges.
In 1993, Alternatives K2 and a "new" L were added.	
Alternative K2 was added in 1993 at request of USEPA.	With concurrence from the signatory agencies, the PDT eliminated Alternative K2. Constructing facilities on the east side of the valley would result in poor service in terms of interchange locations. Studies indicated that the alternative generated unavoidable impacts to wetlands, archaeological resources, and the destruction of millions of Baker's Meadowfoam plants, a listed species of concern and listed as rare under the California Plant Protection Act. .
The "new" Alternative L is a center valley alternative that avoids large wetland impacts along its northern half by conforming to the alignment of the existing highway and railroad.	**The PDT retained Alternative L for further studies. Alternative L, which continued to a point on Oil Well Hill, was later truncated to become LT.**
May 26, 1994	Signatory agencies met with Caltrans and FHWA and agreed to the project purpose and need statement, modal choice, and range of alternatives including Alternatives C1, J1, L, E3, K, K2, TSM, and No Build. Formal concurrence letters were submitted by signatory agencies in 1995 (Appendix F).
1999	Signatory agencies concurred with eliminating Alternatives K and K2 (explained above under each alternative).
2001	Signatory agencies concurred with truncating, or shortening, Alternatives C1, J1, and L to create Alternatives C1T, J1T, and LT (it was not feasible from an engineering standpoint to shorten Alternatives E3 or TSM); and they did not object to elimination of Alternative TSM.

Alternatives/*Timeframe*	Comments
2003	Signatory agencies expressed their positions that Alternatives C1T, L/C, and LT do not meet LEDPA criteria and that Alternative J1T could meet LEDPA criteria with modifications. The signatory agencies concurred that Alternative E3 does not meet LEDPA criteria. June 12, 2003, signatory agencies suggested developing modifications to Alternative J1T to achieve an overall reduction in environmental impacts. After additional coordination with and support from signatory agencies, local government, and other stakeholders, Caltrans began formal studies of Modified Alternative J1T.

1 Introduction

The California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) are proposing a highway bypass around the City of Willits in Mendocino County. The project is being proposed to address operational problems due to the current facility being used as both an interregional through route and a local main street in Willits. Several alternatives have been considered for the project, including five alternatives that are examined in the Draft EIS/EIR. Alternatives E3, J1T, Modified J1T, LT, C1T, and L/C would involve the construction of a four-lane freeway. Under the No Build alternative, no new freeway or highway construction would take place.

Subsequent to public circulation of the Draft EIS/EIR and Draft Alternatives Analysis, Caltrans, FHWA, the NEPA/404 signatory agencies, and local government worked together on modifications to Alternative J1T that would reduce impacts to community resources while minimizing impacts to wetlands and other Waters of the U.S. Modified Alternative J1T is described in Section 5. A Clean Water Act Section 404(b)(1) alternatives analysis of Modified Alternative J1T is included here in Section 7.6.

2 Regulatory Framework[4]

The proposed project is subject to Section 404 of the Clean Water Act (CWA). The objective of the Clean Water Act (CWA) is to restore and maintain the physical, chemical, and biological integrity of the nation's waters, including wetlands, through the elimination of discharges of pollutants, which includes dredged and fill materials. Each of the build alternatives under consideration would require a U.S. Army Corps of Engineers (ACOE) Section 404 Individual Permit under the Clean Water Act for discharging or placing fill material into wetlands and other waters of the United States. Pursuant to the 404(b)(1) Guidelines, Caltrans and FHWA must clearly demonstrate that the proposed discharge is unavoidable and is the LEDPA. Failure to do so as required under EPA's 404(b)(1) Guidelines (40 CFR 230) may result in permit denial.

The Environmental Protection Agency's 404(b)(1) Guidelines (40 CFR 230) are the substantive environmental criteria used in evaluating permit applications to the U.S. Army Corps of Engineers to discharge dredged or fill material into waters of the United States, including wetlands. Under the Guidelines, a primary screening mechanism to determine the necessity of permitting a discharge of dredged or fill material is the analysis of practicable alternatives [see 40 CFR 230.10(a)]. The Guidelines prohibit all discharges of dredged or fill material into regulated "waters," including wetlands, unless a discharge, as proposed, constitutes the LEDPA that will achieve the basic project purpose.

The Guidelines recognize that certain areas regulated by the CWA ("special aquatic sites") are deserving of special protection because of their ecological significance and contributions to the overall health or vitality of an ecosystem of a region. "Special aquatic sites" include wetlands, mudflats, coral reefs, riffle-and-pool complexes, vegetated shallows, and sanctuaries and refuges. Special aquatic sites in the project area include wetlands and riffle-and-pool complexes. Because the proposed project is not water-dependent and proposes to discharge dredged or fill material into a special aquatic site, it is subject to the Guidelines' regulatory presumption that a less environmentally damaging practicable alternative exists, unless the permit applicant (Caltrans and FHWA) can clearly demonstrate otherwise. If the presumption is not clearly rebutted, no permit may be issued for the proposed project.

[4] This discussion is taken largely from Yocom et al., 1989.

This alternatives analysis was prepared according to the Guidelines, which outlines the following discharge restrictions:

> 40 CFR 230.10(a): A discharge is not allowed if there is a practicable alternative that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences;
>
> 40 CFR 230.10(b)(1): The alternative must not cause or contribute to violations of any applicable State water quality standards;
>
> 40 CFR 230.10(b)(2): The alternative may not violate any applicable toxic effluent standard or prohibition under Section 307 of the Act;
>
> 40 CFR 230.10(b)(3): The alternative must comply with the Endangered Species Act (ESA) and not jeopardize the continued existence of species listed as endangered or threatened under the 1973 ESA;
>
> 40 CFR 230.10(c): No discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of waters of the U.S. Under the Guidelines, effects contributing to significant degradation considered individually or collectively, include:
>
> 1. Significantly adverse effects of the discharge of pollutants on human health or welfare, including but not limited to effects on municipal water supplies, plankton, fish, shellfish, wildlife, and special aquatic sites.
> 2. Significantly adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent on aquatic ecosystems, including the transfer, concentration, and spread of pollutants or their byproducts outside of the disposal site through biological, physical, and chemical processes;
> 3. Significantly adverse effects of the discharge of pollutants on aquatic ecosystem diversity, productivity, and stability. Such effects may include, but are not limited to, loss of fish and wildlife habitat or loss of the capacity of a wetland to assimilate nutrients, purify water, or reduce wave energy; or
> 4. Significantly adverse effects of discharge of pollutants on recreational, aesthetic, and economic values.
>
> 40 CFR 230.10(d): The alternative must include appropriate and practicable steps to minimize adverse impacts on the aquatic ecosystem.

Under the terms of the NEPA/404 MOU, FHWA and Caltrans agree to request written preliminary agreement from ACOE and USEPA that the final EIS NEPA preferred alternative is the LEDPA. ACOE will make findings of compliance or non-compliance with the discharge restrictions listed above, based on the potential impacts on physical and

chemical characteristics of the aquatic ecosystem and potential impacts on special aquatic sites (Subparts C-G of the Guidelines).

This alternatives analysis demonstrates why Caltrans and FHWA need to discharge fill material to waters of the U.S. in order to construct the Willits Bypass project. The analysis also demonstrates that Caltrans and FHWA have considered many alternatives to achieve the basic and overall project purpose. In this analysis, Caltrans and FHWA identify one alternative – Modified Alternative J1T – as the LEDPA.

3 Purpose and Need for the Project

In 1994, Caltrans initiated the NEPA/404 Integration process for the proposed Willits Bypass project, pursuant to the guidelines of the 1994 Memorandum of Understanding (1994 MOU)[5], and in 1995, Caltrans, FHWA and NEPA/404 signatory agencies concurred with the project's purpose and need statement, which sets forth the criteria for evaluating project alternatives; the modal choice; and the range of alternatives to be studied. Engineering and environmental studies continued on several alternatives through 1994. Then, as a result of the 1995 storms, resources were redirected to seismic safety and storm damage restoration projects, and bypass project development was suspended until 1998. In 1998, with new funding and resources allocated to the project, studies resumed on the alternatives approved by the NEPA/404 signatory agencies. The following list documents the points and dates of signatory agency concurrence:

- In 1994, the signatory agencies concurred on modal choice of four-lane freeway, purpose and need statement, and range of alternatives including Alternatives C1, J1, L, E3, K, K2, TSM, and No Build (May 26, 1994 meeting attended by Caltrans, FHWA, and signatory agencies; and documented in letters from USEPA 4/13/95; USACE 3/20/95; NOAA Fisheries 3/15/95; and USFWS 3/24/95; in addition, USACE concurred with eliminating the TSM alternative from further consideration if Caltrans determined it did not meet the project purpose and need).

- In 1999, the signatory agencies agreed to a narrowed range of alternatives to consider in the draft environmental document, including Alternatives C1, J1, L, E3, TSM, and No Build (documented in letters from USEPA 4/27/99; USACE 4/19/99; NOAA Fisheries 5/14/99; and USFWS 5/6/99).

- In January 2001, the signatory agencies concurred with Caltrans' proposal to truncate, or shorten, Alternatives C1, J1, and L to create Alternatives C1T, J1T, and LT (it was not feasible from an engineering standpoint to shorten Alternatives E3 or TSM). (January 2001, Caltrans telephone conversations with signatory

[5] The 1994 MOU implements a policy to improve coordination between agencies and to integrate National Environmental Policy Act (NEPA) and Clean Water Act Section 404 procedures.

agencies; and February 22, 2001, full Project Development Team meeting attended by signatory agencies)

- In 2001, Caltrans and FHWA determined that the TSM alternative does not meet the purpose and need for the project and none of the signatory agencies expressed concern over the elimination of the TSM alternative from further analysis (April 2001, Caltrans telephone conversations with signatory agencies).

Signatory agency letters and other supporting documentation are included in Appendix F.

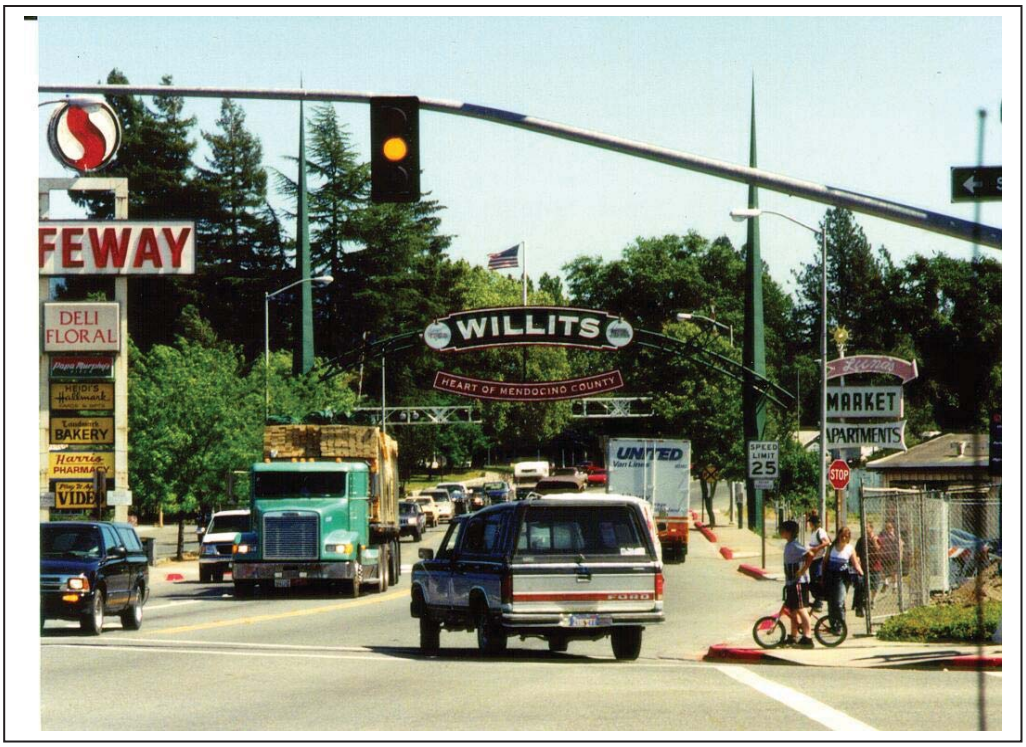
The following discussion of purpose and need is consistent with the 1995 NEPA/404 purpose and need statement agreed upon by the signatory agencies.

3.1 Need For Project

U.S. 101 is an important route for interstate and interregional travel and is considered the economic lifeline of California's North Coast, because it is the principal arterial route for people and goods between the San Francisco Bay Area and the greater Eureka-Arcata area. The need for the project is caused by the current facility within the project limits, which serves both as an interstate highway and as Main Street in the city of Willits; the facility, as a result, carries both interregional and local traffic on a surface street with curb parking and multiple side streets and driveways, resulting in congestion, and delays for drivers, pedestrians, and bicyclists. Travel through developed areas on congested surface streets, in the project area, increases interregional travel times and transportation costs.

Because U.S. 101 also serves as Main Street in Willits and is the only continuous north/south street traversing the city, it must accommodate nearly all local traffic traversing Willits as well as all interregional traffic. Traffic congestion has been a concern in Willits for a number of years, and it is becoming more prevalent as traffic volume increases. The proposed project is needed to respond to a number of deficiencies that exist on the current facility. These problems are discussed in detail in Appendix E purpose and need for the Project.

Figure 3-1. Existing U.S. 101 in Willits



A long queue of commercial trucks and automobiles crawls through Willits, while bicyclists and pedestrians wait for an opportunity to safely cross congested U.S. 101, which also serves as Willits' Main Street.

3.2 Purpose of the Project

Recognizing the importance of U.S. 101 for the interregional movement of people and commercial products, the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) propose to construct a new segment of U.S. 101 that would bypass Willits. The NEPA/404 signatory agencies agreed that the purpose of the project is to

> reduce delays, improve safety and achieve a level of service (LOS) of at least "C" for interregional traffic on Route 101 within the project limits in the vicinity of the City of Willits in Mendocino County. . . The project is proposed due to a recognition that increased congestion, delay and accidents will occur as traffic

volumes increase over time as a result of local development and increased interregional traffic volumes, if the project is not built.[6]

The project is not dependent on waters of the U.S. to fulfill its basic purpose, yet it proposes to discharge fill material into a special aquatic site. This alternatives analysis, therefore, clearly demonstrates as required by 40 CFR 230.10(a)(3) that no other less environmental damaging practicable alternative exists to Modified Alternative J1T.

[6] A copy of the 1995 Purpose and Need (P&N) statement is provided in Appendix E. In 2002, Caltrans updated the 1995 P&N statement with current data on traffic and safety conditions. This information follows the original P&N statement, in Appendix E.

4 Resource Identification

The Guidelines specify that special aquatic sites include sanctuaries and refuges (40 CFR 230.40), wetlands (40 CFR 230.41), mud flats (40 CFR 230.42), vegetated shallows (40 CFR 230.43), coral reefs (40 CFR 230.44), and riffle and pool complexes (40 CFR 230.45). The project area does not contain sanctuaries and refuges, mud flats, vegetated shallows, or coral reefs. However, wetlands and riffle-and-pool complexes do occur in the project area. They are discussed in detail in Appendix G. The resource identification discussion also summarizes the endangered species and species of special concern that occur in the project area.

5 ALTERNATIVES

5.1 Alternatives Withdrawn From Further Consideration

A number of alternative routes to bypass the City of Willits have been considered. Approximately thirty alternatives, including a two-lane concept and additional interchange locations, were considered but later rejected because they were determined to be infeasible, "not practicable," or had severe environmental consequences. The rejected alternatives and the reason(s) for their rejection are summarized in Table 5-1 and shown on Map 29, Appendix A.

The study for the Willits Bypass began in the early 1960s. In 1988, Alternatives A through E and the No Build were presented to the public. The following year, Caltrans conducted additional scoping sessions and as a result, Alternatives F through R were added to the list of alternatives to be studied during the project development process. In 1992, Caltrans investigated the Transportation System Management (TSM) Alternative and in 1993 Alternative K2 and L were also recommended for study.

In 1994, Caltrans initiated the NEPA/404 Integration process for the project and in 1995, Caltrans, FHWA and NEPA/404 signatory agencies concurred with the purpose and need statement, the modal choice, and the range of alternatives to be studied. Engineering and environmental studies continued on several alternatives through 1994. Then, as a result of the 1994 Northridge earthquake and the 1995 winter storms, resources were redirected to seismic safety and storm damage restoration projects, and bypass project development was suspended until 1998. In 1998, with new funding and resources allocated to the project, studies resumed on the alternatives approved by the NEPA/404 signatory agencies.

Table 5-1. Alternatives Considered Throughout Project Development

Alternatives/*Timeframe*	Comments
In 1988, Alternatives A through E and the No Build were presented to the public.	

Alternatives/*Timeframe*	Comments
Alternatives A, A1, A2, A3 & A4. CTC adopted Alternative A as the original alignment in 1962. Versions of Alternative A known as A1 - A4 identified different combinations of interchange locations.	The PDT rejected Alternative A due to the substantial potential impacts to wetlands and other sensitive natural habitat. Alternative A also required time-consuming and extensive construction techniques to address embankment settlement and consolidation caused by poor soil conditions in northern Little Lake Valley.
Alternative B. In an effort to modify Alternative A to avoid wetlands, Alternative B diverged from Alternative A beginning just north of the crossing of Hearst-Willits Road, then veered to the east and skirted the eastern limits of Little Lake Valley.	Preliminary investigations revealed that Alternative B, rather than having lower wetland impacts, actually had higher wetland impacts than Alternative A. In addition, a later alignment, Alternative K, better represented the intent of Alternative B.
Alternative C. Similar to Alternative B, Alternative C diverged from Alternative A beginning just north of the crossing of Hearst-Willits Road. From there, Alternative C skirted the west side of Little Lake Valley and rejoined Alternative A and the existing highway on Oil Well Hill. Alternative C1T developed from Alternative C. Versions of Alternative C known as C1-C4 identified different combinations of interchange locations.	**Alternative C1 was retained for further study.** The PDT rejected other versions of Alternative C because of the substantial potential impacts to wetlands and due to the high cost and growth-inducing impacts of additional valley interchanges. Mendocino County requested Caltrans to investigate the Alternative C/J in 1993. This was a combination of what is now the south portion of C1T and the north portion of J1. Most of Alternative J1 north of Quail Meadows is no longer under consideration, and hence, the C/J alternative is no longer considered viable.
Alternative D traversed the hilly terrain west of Willits and was similar to E3 but closer to Willits.	The PDT rejected Alternative D based on its similarity to Alternative E and due to substantial potential impacts to wetlands and riparian habitat along the north end of Little Lake Valley.
Alternative E ran through the hills near Willits cemetery. The north end connected to Alternative A after traversing the hills west of the old Louisiana Pacific mill site. Versions of Alternative E known as E1-E3 had different combinations of interchange locations.	**Alternative E3 was retained for further studies.** The PDT rejected other versions of Alternative E3 due to potential impacts to residential development and the estimated higher cost for interchanges at Wild Oat Canyon and at Oil Well Hill.
In 1989, additional scooping sessions resulted in the addition of Alternatives F through R	
Alternative F proposed relocating the Northwestern Pacific Railroad tracks through a portion of Willits and using the resulting right of way for a low speed expressway.	The PDT rejected Alternative F due to its similarity with Alternative O and due to the high cost of relocating railroad tracks.
Alternative G describes many variations of alternatives from the Project Study Report that connected with US 101 south of Oil Well Hill and north of Haehl Creek.	The PDT rejected Alternative G because there was no cohesive alternative described from the public scoping sessions. Many of the proposals loosely defined under this alternative were studied as variations of other alternatives.

Alternatives/*Timeframe*	Comments
Alternative H came out of the scoping sessions as an alignment that would relocate U.S. 101 at least 8 miles west of Willits to remove noise and air pollution from town.	The PDT rejected this alternative due to the high costs and because it was outside the scope of the study area.
Alternative I was a tunnel located roughly in the Alternative E corridor. It was suggested as a means of reducing impacts to Willits Cemetery and the other properties along the proposed D/E alignments.	With an estimated cost of $250 million to $300 million for the tunnel alone, the PDT rejected this alternative.
Alternatives J1 and J2 followed the railroad tracks after leaving existing U.S. 101 at the south end of Willits, skirted the rodeo grounds, skirted the sewage plant to the east, and headed back toward U.S. 101, conforming just north of the Willits northerly city limits.	The PDT rejected J2 because it resulted in poor service in terms of interchange locations and could have growth-inducing impacts. **The PDT retained Alternative J1 for further studies. Alternative J1 was truncated to become J1T.**
Alternatives K and "old" L were easterly wetland avoidance alternatives located in the hills to the east of Reynolds Highway. Alternative K2 followed K for about the first 1.2 miles, then continued north along the base of the hills on the east side of the valley.	With concurrence from the signatory agencies, the PDT eliminated both alternatives. Constructing facilities on the east side of the valley would result in poor service in terms of interchange locations. Studies indicated that both alternatives generated unavoidable impacts to wetlands, archaeological resources, and the destruction of millions of Baker's Meadowfoam plants, a listed species of concern and listed as rare under the California Plant Protection Act. Both alternatives required deep cuts in active landslide areas and traversed material of questionable stability.
Alternative M offered an expressway through Willits skirting the wastewater treatment plant and corporation yard and widened existing U.S. 101 at the north end of the project to four lanes.	Based on its similarity with Alternative J, and because of safety concerns and whether an expressway could meet the project's purpose and need, the PDT dropped Alternative M.
Alternative N departed from U.S. 101 near Holland's Lane, then skirted the east side of the Mormon Church property crossing Haehl Creek, passing over East Hill Road and the railroad tracks, then paralleled the tracks with a two lane roadway through Willits.	A portion of Alternative N included four lanes with turn pockets and a portion included a continuous left turn lane. The PDT rejected this alternative based on its similarity to Alternative O.
Alternative O was similar to Alternative N, paralleling the Northwestern Pacific Railroad tracts. Alternative O proposed a four-lane boulevard expressway that continued beyond the old truck scales and railroad crossing north of Willits.	The PDT rejected this alternative due to substantial potential impacts to multi-dwelling residential units and potential impacts to Section 4(f) eligible properties.

Alternatives/*Timeframe*	Comments
Alternative P was a couplet through Willits. A couplet is a pair of one-way city streets with traffic running in opposite directions usually separated by a city block.	A preliminary traffic analysis revealed that this alternative would operate poorly because of the substantial out-of-direction travel it required. Citing the failure to meet project objectives of providing a safe and efficient highway, the PDT rejected this alternative.
Alternative Q involved a concept of two-lane routes with increased railroad use.	The modal analysis indicated a need for a highway solution rather than rail and, citing failure to meet project objectives of providing a safe and efficient highway, the PDT rejected this alternative.
Alternative R was a couplet through Willits. The alignment identified Main Street as the northbound lanes and suggested southbound lanes to the west of U.S. 101.	Like Alternative P, this alternative had widely separated north/southbound legs that required out-of-direction travel. Citing the failure to meet project objectives of providing a safe and efficient highway, the PDT rejected this alternative.
In 1992, the Transportation System Management (TSM) Alternative was requested for study by members of the TAG and PDT. The same year, Willits Environmental Center requested study of a two-lane alternative to reduce environmental impacts.	
Alternative TSM was a non-freeway alternative that would parallel existing U.S. 101/Main Street within Willits.	The TSM alternative was eliminated because it did not meet the purpose and need of the project and would result in high overall adverse impacts: removal of 140 residential units; relocation of 28 commercial and industrial business (including one utility which, alone, would cost an estimated $25 million to relocate); insufficient housing in Willits for the large number of residents who would be displaced by the TSM alternative; would result in unavoidable adverse impacts to eligible historic architectural properties, including numerous structures within the Willits Historic District; increased noise, increased traffic volumes, reduction in parking supply, and reduced access in the vicinity, thus adversely impacting the existing character of the area.
Two-lane alternative	A two-lane alternative was eliminated from consideration because it would not meet the purpose and need of the project. It would not result in a considerable reduction in biological impacts, because of engineering and design requirements such as median, shoulders, merge lanes, ramps, and interchanges.
In 1993, Alternatives K2 and a "new" L were added.	

Alternatives/*Timeframe*	Comments
Alternative K2 was added in 1993 at request of USEPA.	With concurrence from the signatory agencies, the PDT eliminated Alternative K2. Constructing facilities on the east side of the valley would result in poor service in terms of interchange locations. Studies indicated that the alternative generated unavoidable impacts to wetlands, archaeological resources, and the destruction of millions of Baker's Meadowfoam plants, a listed species of concern and listed as rare under the California Plant Protection Act. .
The "new" Alternative L is a center valley alternative that avoids large wetland impacts along its northern half by conforming to the alignment of the existing highway and railroad.	**The PDT retained Alternative L for further studies. Alternative L, which continued to a point on Oil Well Hill, was later truncated to become LT.**
May 26, 1994	Signatory agencies met with Caltrans and FHWA and agreed to the project purpose and need statement, modal choice, and range of alternatives including Alternatives C1, J1, L, E3, K, K2, TSM, and No Build. Formal concurrence letters were submitted by signatory agencies in 1995 (Appendix __).
1999	Signatory agencies concurred with eliminating Alternatives K and K2 (explained above under each alternative).
2001	Signatory agencies concurred with truncating, or shortening, Alternatives C1, J1, and L to create Alternatives C1T, J1T, and LT (it was not feasible from an engineering standpoint to shorten Alternatives E3 or TSM); and they did not object to elimination of Alternative TSM.
2003	Signatory agencies expressed their positions that Alternatives C1T, L/C, and LT do not meet LEDPA criteria and that Alternative J1T could meet LEDPA criteria with modifications. The signatory agencies concurred that Alternative E3 does not meet LEDPA criteria. June 12, 2003, signatory agencies suggested developing modifications to Alternative J1T to achieve an overall reduction in environmental impacts. After additional coordination with and support from signatory agencies, local government, and other stakeholders, Caltrans began formal studies of Modified Alternative J1T.

5.2 Project Description

Seven alternatives are included in this 404 (b)(1) Alternatives Analysis, including six build alternatives and one No Build alternative. The six build alternatives are E3, C1T, J1T, Modified J1T, LT, and the hybrid L/C. All of the build alternatives involve the construction of a four-lane freeway. Under the No Build scenario no new freeway or highway construction would occur.

At the south end of the project area, all of the freeway alternatives depart from the existing four lane U.S. 101 in the Haehl Creek area. Alternatives C1T, J1T, Modified J1T, LT, and L/C cross the Little Lake Valley east of the City of Willits and are also referred to as the "center valley" alternatives in this document. Alternative E3 is located in the hills west of the City of Willits. Map 3 (Appendix A) shows the routes of Alternatives E3, C1T, J1T, and LT. Alternative L/C can be seen on this map by following the south segment of Alternative LT to the node and then following the north segment of Alternative C1T. Figure 5-1 shows the route of Modified Alternative J1T.

The No Build alternative would consist of the continued use of the existing U.S. 101, which passes through the City. The No Build alternative is discussed for the purpose of comparing the effects of the build alternatives with a future scenario in which a bypass would not be constructed.

5.2.1 Common Features of Alternatives Under Consideration

This section discusses the common features of Alternatives C1T, E3, J1T, Modified J1T, LT, and L/C. The dimensions listed in the following discussions are typical; during final design there may be some variance from them.

Alternatives C1T, E3, J1T, Modified J1T, LT, and the hybrid L/C would be constructed with four lanes; two in each direction, with full access control bypassing Willits. Each lane would be 3.6 m (12 ft) wide. A 13.8 m (45.3 ft) median would separate the northbound and southbound lanes. Inside paved shoulder width would be 1.5 m (5 ft) (nearest the median) and 3.0 m (10 ft) on the outside shoulder. Cut slopes generally would vary between a 1:1 (vertical:horizontal) (at Oil Well Hill) and a 1:2 ratio. Fill slopes generally would vary between a 1:2 and 1:4 ratio. The plans would call for slope rounding at appropriate locations. Figures 5-2 through 5-4 show Typical Cross Sections for the build alternatives.

Interchange ramps would have a single lane. Where local roads are improved or constructed, they would be two lanes or two lanes with a left-turn pocket, and would have generally 2.4 m (8 ft) shoulders. Private access roads would generally have up to two 3.6 m (12 ft) lanes and may be either paved or unpaved.

The freeway sections of the alternatives would maintain a minimum design speed of 110 kilometers per hour (kph) (68 mph), except at the end of Alternative E3 where the design speed would be 100 kph (62 mph). Each of the build alternatives would meet the purpose of providing at least LOS C. Each build alternative would carry the predicted average annual daily traffic (AADT) in 2028 at LOS C or better.

All of the valley alternatives would provide access to the Schmidbauer Ranch at the Haehl Creek Interchange to the south. At the north end of the project, Alternatives J1T, Modified J1T, and LT would provide an access road to the Niesen Ranch and other properties. Alternatives J1T and Modified J1T include an access road to the Colli Ranch. These access roads are discussed in more detail below. Minimization measures are discussed in Section 9.4.

5.2.1.1 Schmidbauer Ranch Access Road

For all of the valley alternatives, the Haehl Creek Interchange would be a diamond style interchange to allow access to the Schmidbauer Ranch from the east side of the interchange through an access controlled private road opening (Figure 5-1).

5.2.1.2 Colli Ranch Access Road

Alternatives J1T and Modified J1T would sever the existing access road to the Colli Ranch. The proposed replacement access road would begin near the ranch buildings and immediately crosses Haehl Creek (Figure 5-1). It would cut generally easterly through the oak woodlands, then turns northeast, then north skirting along the oaks. It would cross the oak woodland in a northwesterly direction through an area where few trees exist. It would run generally northerly skirting the west side of the woodland until reaching Center Valley Road at the northeast corner of the ranch where Center Valley Road makes a right angle with north and east legs. The access road would be an estimated 7.2 m (24 ft) in width and 1 km (0.6 mi) in length. Side slopes and ditches would be added as needed and would add to the footprint of this road.

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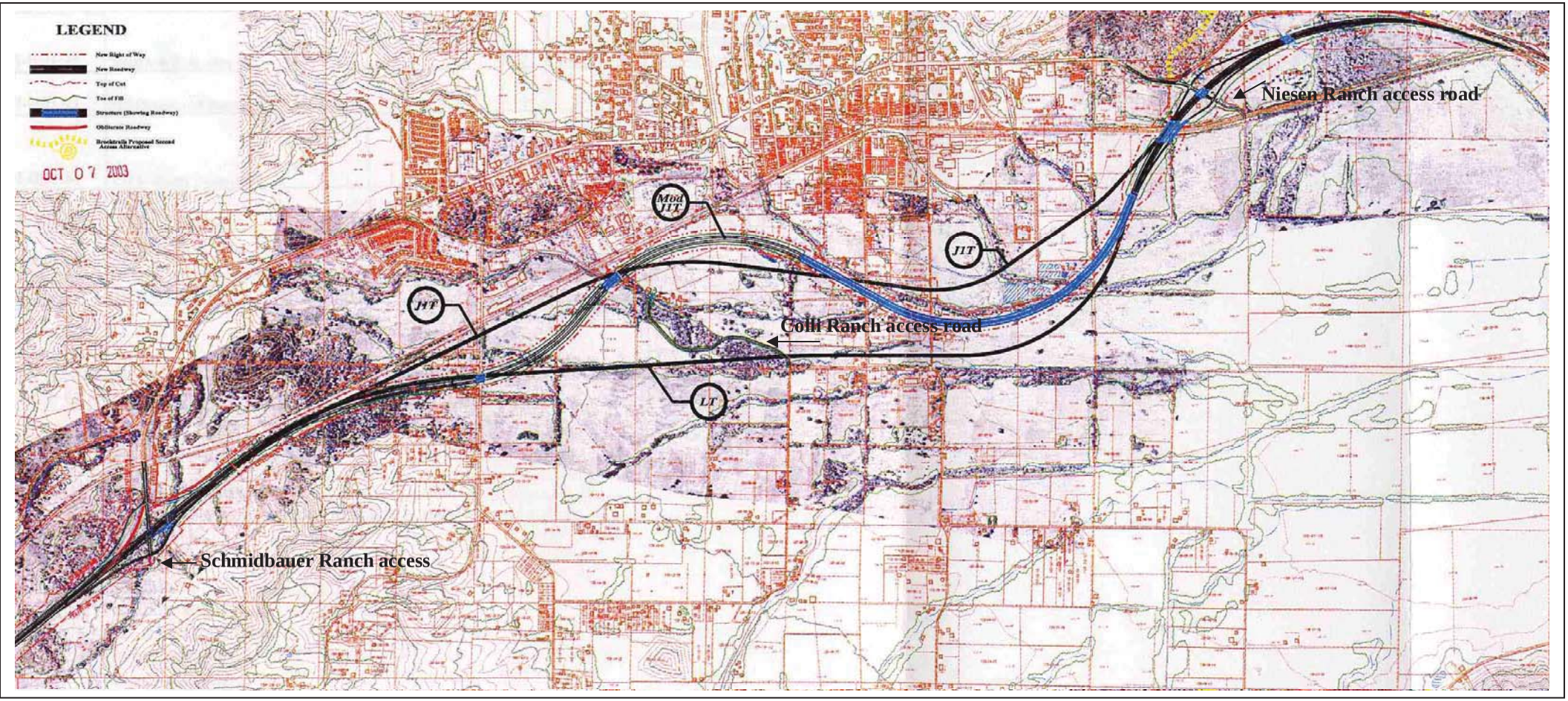


Figure 5-1. Modified Alternative J1T
(This figure also shows the centerline of Alternatives J1T and LT)

Figure 5-2. Typical Cross-Sections: Freeway Mainline

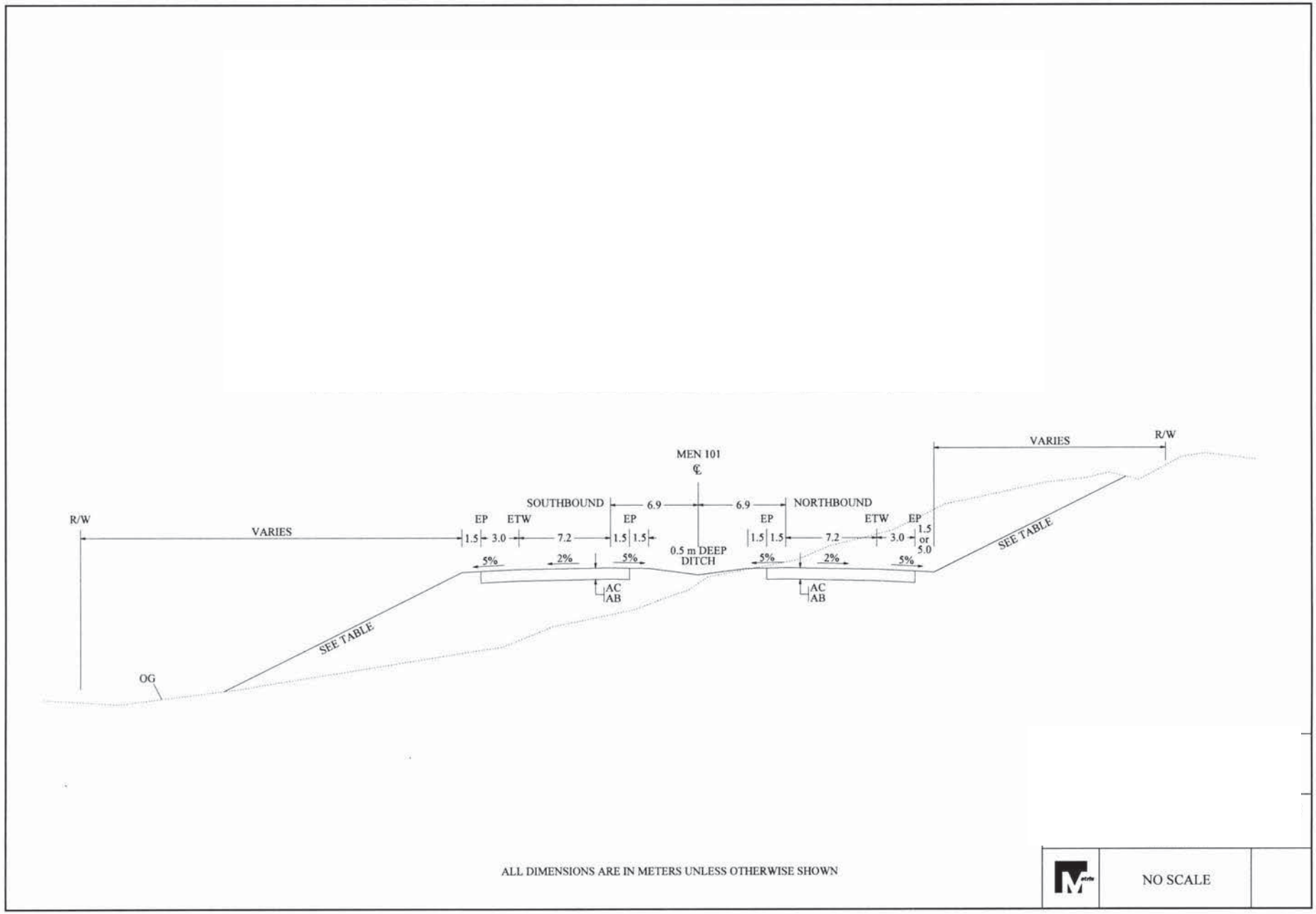


Figure 5-3. Typical Cross-Sections: Side Slopes

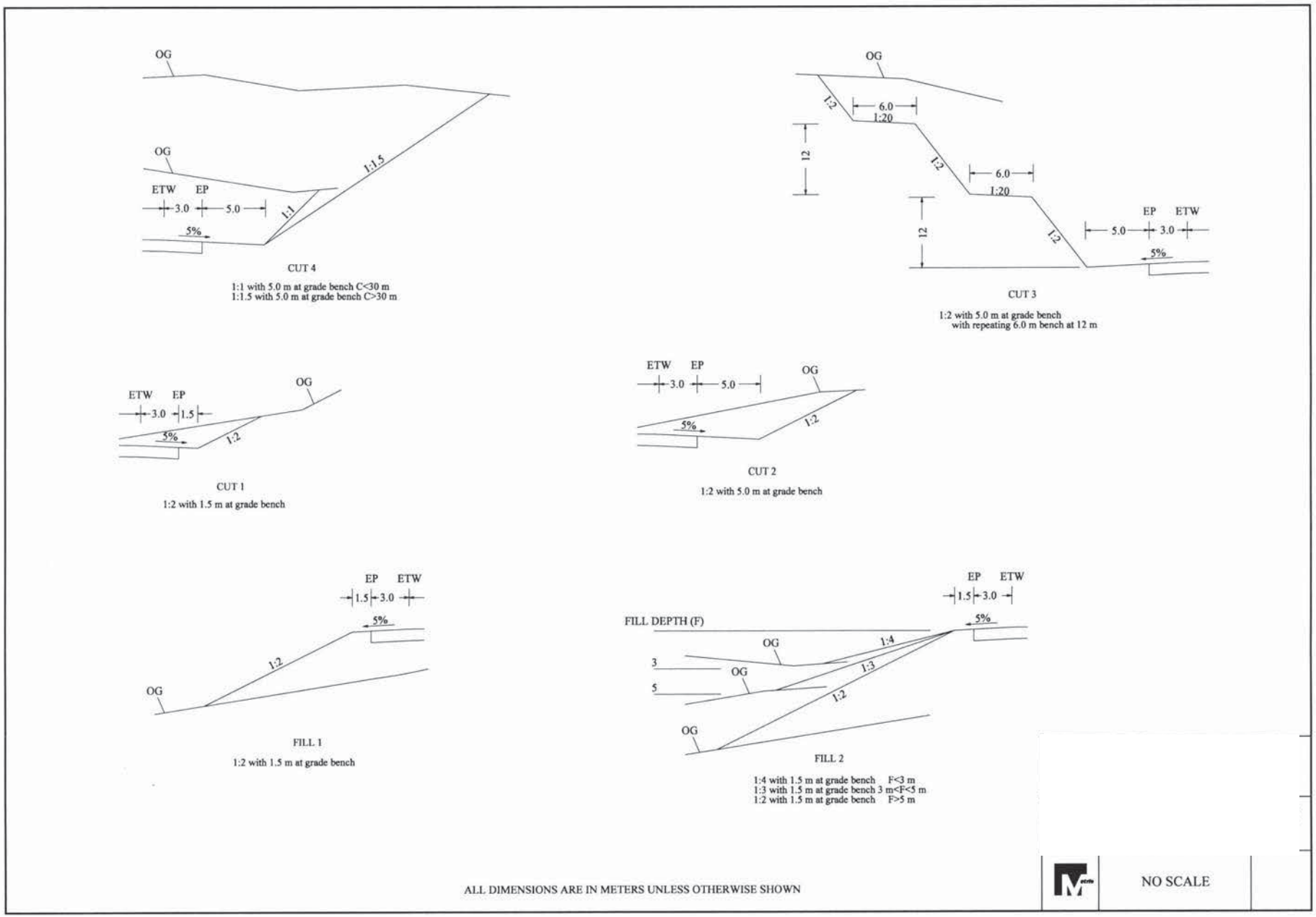
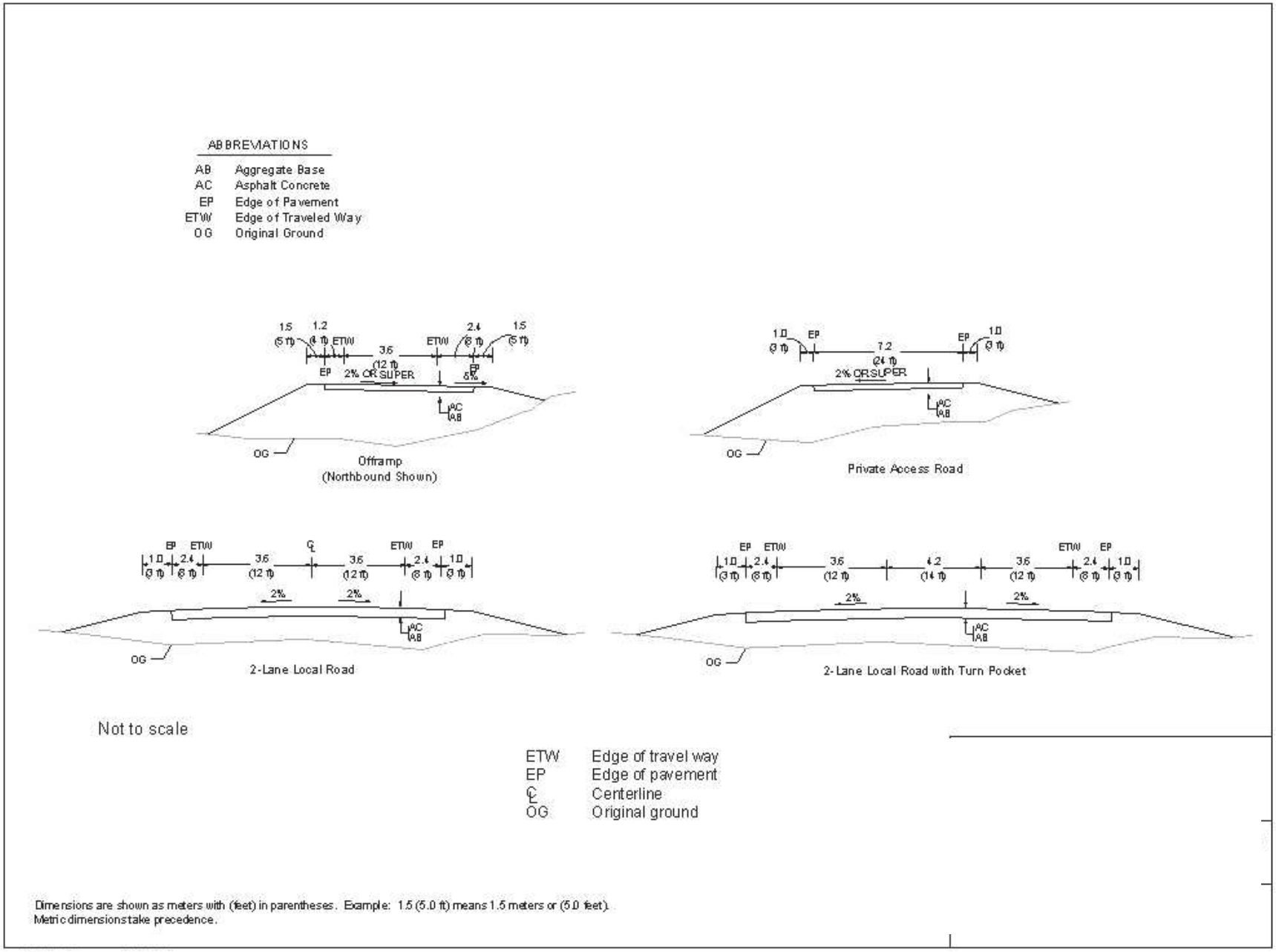


Figure 5-4. Typical Cross-Section: Ramps, Local Roads, and Private Access Roads



5.2.1.3 Niesen Ranch Access Road

For Alternatives J1T, Modified J1T, and LT, the existing access road to the Niesen Ranch and other parcels on the east side of the Northwestern Pacific Railroad would be severed by the freeway. The replacement access road would begin at the intersection of the northbound ramps and North Main Street at the Quail Meadows Interchange (Figure 5-1). The access road would be an estimated 7.2 m (24 ft) in width and 200 m (656 ft) in length. Side slopes and ditches would be added as needed and would add to the footprint of this road. A private access opening would allow the property owners to travel northeasterly from the interchange to the existing unsurfaced road. The existing crossing of the Northwestern Pacific Railroad would continue to provide access to the parcels east of the railroad.

5.2.2 Design Exceptions

5.2.2.1 Median

The median separates opposing lanes of traffic and provides a clear recovery zone for errant vehicles. The median also provides a refuge area in emergency situations and reduces headlight glare. During the early stages of the development of the alternatives, the standard minimum median width for rural freeways was 14 m (46 ft). The current Caltrans design standard for minimum median width is 18.6 m (61.0 ft). As part of its effort to lower environmental impacts of the project, Caltrans retained the old standard, which when adapted to metric units is 13.8 m (45.3 ft). Caltrans policy requires a design exception approval for the proposed median.

5.2.2.2 Single Lane Ramp Length

The ramps would exceed the advisory standard for maximum length of a single lane ramp, and a design exception would be required.

5.2.2.3 Embankment Slopes

For all alternatives, embankments have been established at 1:4 for fill heights less than 3 m, 1:3 for fill heights from 3 through 5 m, and 1:2 for fill heights greater than 5 m. Caltrans standards for embankments steeper than 1:4, which are within the clear recovery zone should be eliminated, moved, or shielded (HDM 309.1(2), 5th Edition). For the eastern valley alternatives, the embankment heights generally increase approaching structures. Flattening these slopes would increase wetland and other environmental impacts. For Alternative E3, the alternative through the hills west of Willits, many embankments are proposed on relatively steep hillsides, and it would be impractical to

flatten the slopes due to the large cuts and fills necessary to achieve 1:4 slopes on hillsides steeper than 1:4. This would significantly increase embankment volumes, construction costs, and environmental impacts. Additionally, the local community has expressed concern over the visual impacts that Alternative E3 would cause.

5.2.2.3 Ramp To Intersection Distance

The distance between the proposed Quail Meadows Interchange (Alternatives J1T, Modified J1T, and LT) south bound ramps intersection and the nearest local road intersection is approximately 60 m. Caltrans mandatory standard distance (curb return to curb return) between a ramp intersection and a local road intersection is 125 m. (HDM 504.3(3), 5th Edition). The Quail Meadows interchange design is constrained by a hillside on the west, railroad tracks and wetlands on the east, and the existing highway alignment north of the interchange. To comply with the mandatory standard, realigning the freeway mainline or the frontage road or both would be necessary. This would result in increasing the environmental footprint and impacting the steep hillside to the west.

5.2.3 Estimated Borrow Requirements

Alternative E3 would not require additional fill material but would require extensive excavation [9.1 million cubic meters (12.0 million cubic yards)]. Alternatives C1T, J1T, and LT would be constructed largely on embankment and would require material from elsewhere. The fill requirements for the valley alternatives are estimated as follows:

- Alternative C1T: 1.8 million cubic meters (2.4 million cubic yards)
- Alternative J1T: 1.9 million cubic meters (2.5 million cubic yards)
- Modified Alternative J1T: 1.9 million cubic meters (2.5 million cubic yards)
- Alternative LT: 2.4 million cubic meters (3.1 million cubic yards)
- Alternative L/C: 2.1 million cubic meters (2.7 million cubic yards)

The construction contractor would determine the specific source of material for earthwork; however, Caltrans has designated a borrow site in the project area as a possible source of material that the contractor may use for the project.

Caltrans has identified the Oil Well Hill area, located north of the junction of Reynolds Highway and U.S. 101, as the designated borrow site (Appendix A, Map 2). The material in this area is of good quality and suitable for use in embankment construction. The existing right of way for U.S. 101 at the designated borrow site is wide enough to provide

the necessary material for earthwork. The designated borrow site could be used for any of the valley alternatives, although the quantity excavated would depend on the amount needed for each alternative. In general, the area excavated would be similar for all of the valley alternatives (Figure 5-5).

Because the designated borrow site is a possible choice for obtaining material, it is included in the project's environmental review. Obtaining borrow material from Oil Well Hill may require Surface Mining and Reclamation Act (SMARA) permit, which is administered by the California Department of Conservation, Office of Mine Reclamation. Pursuant to SMARA, a permit application, a Reclamation Plan, and financial assurance are required before conducting surface mining operations. Mendocino County has the approval authority for the Reclamation Plan.

Contractors may choose to use their own selected sites when advantageous to them (e.g., savings in time or money). However, if the contractor selects an alternative borrow site(s) for this project, the site must be SMARA-approved. If not, a separate environmental review for the contractor's site(s) would be required before the contractor obtains permits and begins construction. The contractor would be responsible for performing and bearing the cost of the environmental review and of obtaining permits if the contractor chooses a different site. No disposal sites would be required for this project.

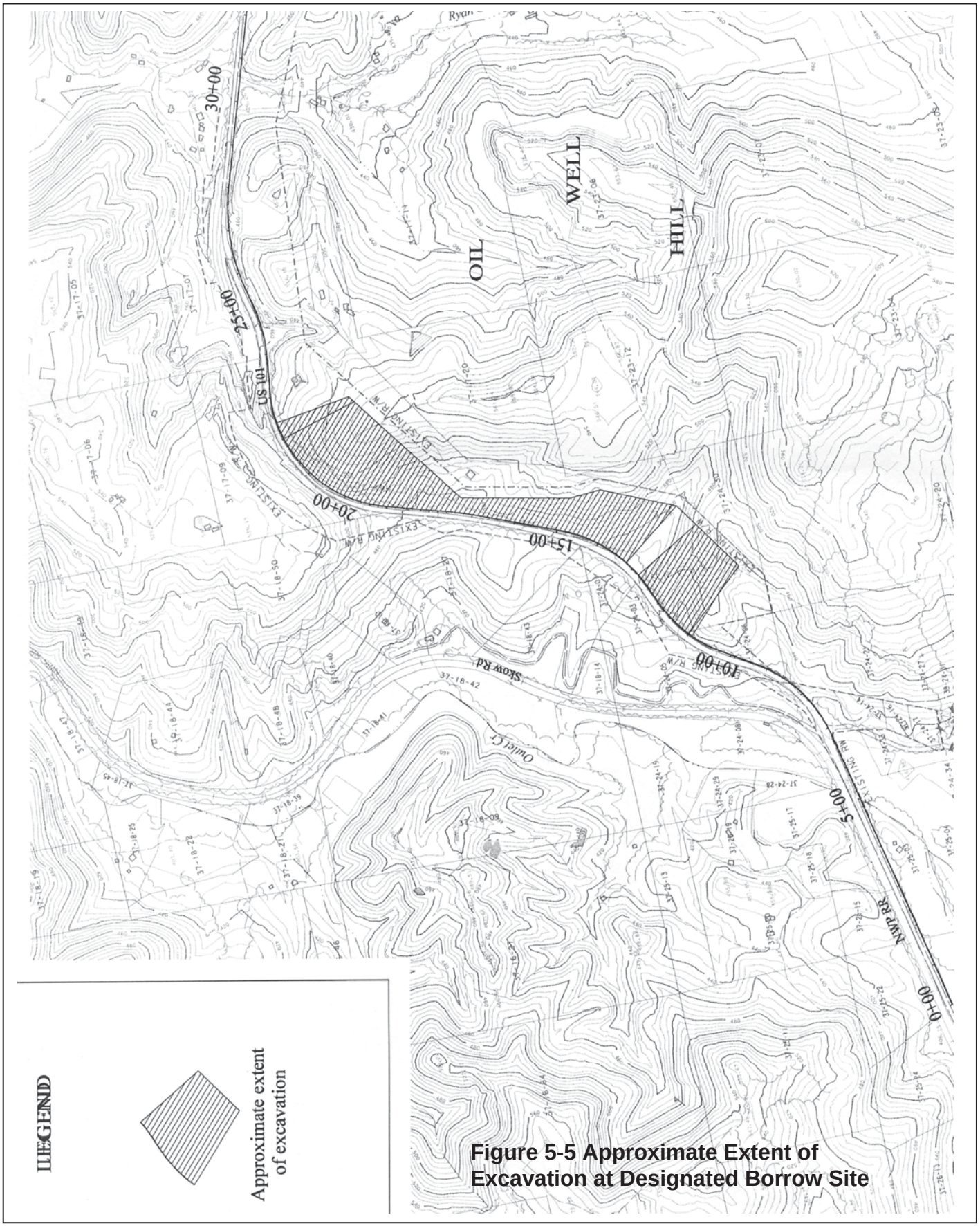


Figure 5-5 Approximate Extent of Excavation at Designated Borrow Site

5.2.4 Relinquishment of Bypassed Portions of Existing U.S. 101

According to Section 27 of the California Streets and Highway Code, the State of California shall relinquish to any county and/or city any portion of any state highway within the county or city that has been removed from the state highway system. This also applies to portions of the state highway system that have been bypassed. Relinquishments are made by a resolution of the California Transportation Commission.

After construction of the proposed project, bypassed portions of U.S. 101 would be relinquished to the City of Willits and Mendocino County. Those portions of U.S. 101 located in unincorporated portions of Mendocino County would be relinquished to Mendocino County, and those portions located in the City of Willits would be relinquished to the City of Willits. Coordination with Mendocino County and the City of Willits will result in the execution of a Freeway Agreement signed by all jurisdictions involved and would provide the basis for the relinquishment action later taken by the CTC.

Caltrans would prepare a separate Project Report and environmental document to cover the anticipated relinquishment work and estimated costs. Caltrans also would prepare a Pavement Deflection Study to determine the need for any overlay and/or other pavement rehabilitation treatment.

5.3 Description of Alternatives Under Consideration

This section describes the distinguishing features of each alternative. In the individual alternative descriptions that follow, each alternative is described in relation to existing U.S. 101, S.R. 20, and local roads.

5.3.1 Alternative C1T

Map 4, Appendix A depicts the alignment and structures for Alternative C1T.

Alignment Description: Alternative C1T would begin approximately 0.9 km (0.6 mi) south of the proposed Haehl Overhead and would end approximately 1.4 km (0.9 mi) south of Reynolds Highway. The overall length of this alternative would be approximately 10.6 km (6.6 mi). The estimated cost for Alternative C1T is $128 million (2002 dollars).

South Segment: Alternative C1T would diverge from existing U.S. 101 at the proposed Haehl Creek Interchange and head northwesterly on the existing embankment constructed with excess fill material from a previous highway project. The alignment would run along the east side of the Northwestern Pacific Railroad tracks, turning northeasterly as it passed west of Little Lake Cemetery. The alignment would cross Center Valley and Hearst-Willits Roads east of Bray Road, then turn northwesterly, skirting the Willits wastewater treatment plant. The alignment then would cross Outlet and Mill Creeks, which is the approximate location of the node that separates the north and south segments of this alternative.

North Segment: The alignment would turn north along the east side of the Northwestern Pacific Railroad tracks. Near the railroad crossing with existing U.S. 101, Alternative C1T would begin paralleling the existing highway. The proposed Truck Scales Interchange would provide an access point along a northeasterly reach of the existing highway. Just north of the interchange near the existing lumber mill, the four-lane alternative would conform to the existing two-lane section of U.S. 101.

Engineering Features: The vertical alignment of Alternative C1T would begin with a gentle downgrade and head northwesterly from the existing freeway section to approximately East Hill Road. Between East Hill Road and Outlet Creek, the profile grade would be nearly flat except at bridge approaches and departures.

Throughout the valley, Alternative C1T would cross the 100-year floodplain but the roadway elevation would remain at least 1 m (3 ft) above the estimated 100-year water surface level. Alternative C1T would provide two interchanges that direct motorists to Willits and Fort Bragg. The Haehl Creek Interchange would be located at the south terminus of the project. The northbound exit ramp would connect with existing U.S. 101, which would become S.R. 20 at this location. A second interchange called the Truck Scales Interchange would be located approximately 8.5 km (5.3 mi) north of the Haehl Creek Interchange. For the Truck Scales Interchange, the ramps would terminate at existing U.S. 101, which would become a local road in this area.

South of the Truck Scales Interchange, the existing highway would serve as a local road, providing access to Willits from the interchange to S.R. 20. The roadway would retain the existing at-grade crossing with the Northwestern Pacific Railroad.

Structures: The C1T alignment would include seven mainline structures and two ramp structures. The mainline structures include the floodway viaduct, which would span the Little Lake Valley floodway at Outlet and Mill Creeks near the city's wastewater treatment. This viaduct would be designed to convey the base flood without substantially increasing the 100-year water surface elevation. Bridges also would be constructed over Upper Haehl and Mill Creeks.

5.3.2 Alternative E3

Map 5, Appendix A depicts the alignment and structures for Alternative E3.

Alignment Description: Construction of Alternative E3 would begin approximately 0.9 km (0.6 mi) south of the Haehl Overhead and end approximately 1.6 km (1.0 mi) north of Reynolds Highway at Oil Well Hill. The overall length of this alternative would be approximately 14.8 km (9.2 mi); it would include three interchanges. The estimated cost for Alternative E3 is $301 million (2002 dollars).

South Segment: Alternative E3 would start at the end of the existing four-lane freeway section. The E3 alignment would turn to the northwest and cross the existing U.S. 101 near Hollands Lane where an interchange would be constructed. Heading into the hills west of Willits, Alternative E3 would cross Baechtel Creek and continue north on the west side of the Sherwood Valley Indian Rancheria. Alternative E3 would continue north across the California Western Railroad (Skunk Train), across Broaddus Creek, and S.R. 20 west of the Willits Cemetery. An interchange at S.R. 20 would provide access for motorists traveling to Fort Bragg or Willits. The alignment would turn to the northeast and continue through the hills, crossing over Exley Lane and under Sherwood Road. Turning north, Alternative E3 would provide a third interchange at Upp Creek. Just north of the Upp Creek Interchange is the approximate location of the node dividing the north and south segments of this alternative.

North Segment: The E3 alignment would continue north through the hills and east of the Brooktrails Community and the Willits Airport. The alignment would cross Outlet Creek, the Northwestern Pacific Railroad, and Skow Road before conforming with existing U.S. 101 north of Reynolds Highway at Oil Well Hill. The alignment would continue on the existing two-lane highway to the end of the project study area.

Engineering Features: The vertical alignment of Alternative E3 would begin with a slight downgrade, but after heading into the hills, the grades would increase. Grades

would rarely be less than 2 percent except at the vertical crests and sags of the curves. Alternative E3 would include truck climbing lanes on a large, steep hill between Baechtel Creek and the proposed S.R. 20/U.S. 101 Interchange. The northbound truck-climbing lane would begin on the west side of the Baechtel Creek Bridge and end about 1.0 km (0.6 mi.) west. The southbound climbing lane would run about 1.5 km (0.9 mi) between the top of the hill and the southbound on-ramp at the S.R. 20/U.S. 101 Interchange. The truck climbing lanes would be in addition to the four lanes as proposed for the other alternatives.

Alternative E3 would include three interchanges that act as access points. The Hollands Lane Interchange would be located near the intersection of Hollands Lane with existing U.S. 101. A rehabilitated, and somewhat realigned Hollands Lane, which would become a portion of South Main Street, would form the local road for the southerly access to the Willits area.

A second interchange approximately 4.5 km (2.8 mi) northwest of the proposed Hollands Lane Interchange, which would be known as the S.R. 20/U.S. 101 Interchange, would provide access to Willits and Fort Bragg. Here again, the mainline of U.S. 101 would cross over the local road, which is S.R. 20. The highway would continue as S.R. 20 to the west, but it would become a local road to the east. At Upp Creek, approximately 2.9 km (1.8 mi) northwest of the second interchange, a third interchange would be constructed.

Alternative E3 would cross over the Northwestern Pacific Railroad tracks at the south end of the project at Haehl Creek and again at the north end of the project near Outlet Creek. Near the S.R. 20/U.S. 101 Interchange, the alignment would cross the California Western Railroad. None of the crossings would be at-grade.

Structures: Alternative E3 includes ten structures on the mainline, six ramp structures, and two structures over local roads. Major structures include the Exley Lane Bridge, the Upp Creek Bridge, the Wild Oat Canyon Bridge, and the Outlet Creek Bridge.

5.3.3 Alternative J1T

Map 6, Appendix A depicts the alignment and structures for Alternative J1T.

Alignment Description: Alternative J1T would begin approximately 0.9 km (0.6 mi) south of the Haehl Overhead and end approximately 2.9 km (1.8 mi) south of Reynolds

Highway. The overall length of this alternative would be approximately 9.0 km (5.6 mi). The estimated cost for J1T is $151 million (2002 dollars).

South Segment: Like the other valley alternatives, Alternative J1T would diverge from existing U.S. 101 at the Haehl Creek Interchange and head northwesterly on the existing embankment constructed with excess fill material from a previous highway project. The alignment would parallel the east side of the Northwestern Pacific Railroad tracks for approximately 1.7 km (1.1 mi.), turn north to cross Center Valley and Hearst -Willits Roads just east of the Lofling Field baseball diamonds and Willits Rodeo Grounds, then turn northwesterly and skirt west of the city's wastewater treatment plant. The alignment then would cross Mill Creek, which is the approximate location of the node that separates the south and north segments of this alternative.

North Segment: After crossing the Northwestern Pacific Railroad, Alternative J1T would provide access to the north side of Willits with the Quail Meadows Interchange. The mainline would reduce from four lanes to two lanes and conform to existing U.S. 101 just north of the old truck scales and just south of the at-grade crossing of the Northwestern Pacific Railroad. The alignment would continue on the existing two-lane highway to the end of the project study area.

Engineering Features: The vertical alignment would begin with a gentle downgrade and head northwesterly from the existing freeway section to approximately East Hill Road. From this point north to the Quail Meadows Interchange, the flat valley floor would allow grades that are nearly flat except at structure approaches and departures. Throughout the valley, Alternative J1T would cross the 100-year floodplain. However, Alternative J1T would be constructed at least 1 m (3 ft) above the estimated 100-year water surface level.

Alternative J1T would include two interchanges as the access points to Willits and Fort Bragg. The Haehl Creek Interchange would be located at the south terminus of the project. The northbound exit ramp would tie directly to existing U.S. 101 and would become S.R. 20 at this location. Approximately 6.3 km (3.9 mi) northwest of the proposed Haehl Creek Interchange, the Quail Meadows Interchange would provide access to Willits and Fort Bragg via Main Street, as existing U.S. 101 would become a local road in this area. For this interchange, the ramps would terminate at a realigned Redwood Highway (existing U.S. 101) that would become a local road in this area. Between the point where existing U.S. 101 would be realigned and where Alternative J1T would connect to existing U.S. 101, the former highway (existing U.S. 101) would become an

access road for the mobile home parks and other parcels that had their direct access to U.S. 101 severed.

This alternative would conform to existing U.S. 101 approximately 1.7 km (1.1 mi) north of the Quail Meadows Interchange. The existing highway would remain in service as U.S. 101 north of this point and retain the existing at-grade crossing with the Northwestern Pacific Railroad.

Structures: The alignment would include seven mainline structures and two ramp structures. The major structure in this group would be the Floodway Viaduct that would span the Little Lake Valley floodway. This viaduct would be designed to convey the base flood without substantially increasing the 100-year water surface elevation.

5.3.4 Modified Alternative J1T

Modified Alternative J1T was developed after public circulation of the Draft EIS/EIR, as a result of input received from the public and local government regarding Alternative J1T's impacts to community resources. Caltrans, FHWA, the NEPA 404 resource agencies, and local government worked together on modifications to Alternative J1T that would reduce its impacts to community resources while minimizing impacts to wetlands and other Waters of the U.S. Figure 5-4 depicts the alignment and structures for Modified Alternative J1T.

Alignment Description: Modified Alternative J1T would begin approximately 0.9 km (0.6 mi) south of the Haehl Overhead and end approximately 2.9 km (1.8 mi) south of Reynolds Highway. The overall length of this alternative would be approximately 9.2 km (5.7 mi). The estimated cost for Modified Alternative J1T is $162 million (2002 dollars).

South Segment: Like Alternatives J1T and LT, Modified Alternative J1T would diverge from existing U.S. 101 at the proposed Haehl Creek Interchange and head northwesterly on the existing embankment constructed with excess fill material from a previous highway project. The alignment would run along the east side of the Northwestern Pacific Railroad tracks. Shortly before East Hill Road, the alignment would turn north to avoid the Sanhedrin Business Park. At East Hill Road, the alignment turns in a northwesterly direction back to the railroad tracks to avoid a large oak riparian woodland. It crosses Haehl Creek, and shortly before Baechtel Creek, the alignment curves back to the northeast to avoid the city's park recreation complex. The alignment runs along the east

side of a dense riparian corridor that lies between the park complex and the proposed alignment. The alignment turns to the northwest, crossing the wastewater treatment plant.

North Segment: After crossing the Northwestern Pacific Railroad tracks, Modified Alternative J1T would provide access to the north side of Willits with the Quail Meadows Interchange. The mainline would reduce from four lanes to two lanes and conform to existing U.S. 101 just north of the old truck scales and just south of the at-grade crossing of the Northwestern Pacific Railroad. The alignment would continue on the existing two-lane highway to the end of the project study area.

Engineering Features: The vertical alignment would begin with a gentle downgrade and head northwesterly from the existing freeway section to approximately East Hill Road. From this point north to the Quail Meadows Interchange, the flat valley floor would allow grades that are nearly flat except at structure approaches and departures. Throughout the valley, Modified Alternative J1T would cross the 100-year floodplain. However, Modified Alternative J1T would be constructed at least 1 m (3 ft) above the estimated 100-year water surface level.

Modified Alternative J1T would include two interchanges as the access points to Willits and Fort Bragg. The Haehl Creek Interchange would be located at the south terminus of the project. The northbound exit ramp would tie directly to existing U.S. 101 and would become S.R. 20 at this location. Approximately 6.3 km (3.9 mi) northwest of the proposed Haehl Creek Interchange, the Quail Meadows Interchange would provide access to Willits and Fort Bragg via Main Street, as existing U.S. 101 would become a local road in this area. For this interchange, the ramps would terminate at a realigned Redwood Highway (existing U.S. 101) that would become a local road in this area. Between the point where existing U.S. 101 would be realigned and where Modified Alternative J1T would connect to existing U.S. 101, the former highway (existing U.S. 101) would become an access road for the mobile home parks and other parcels that had their direct access to U.S. 101 severed.

This alternative would conform to existing U.S. 101 approximately 1.7 km (1.1 mi) north of the Quail Meadows Interchange. The existing highway would remain in service at U.S. 101 north of this point and retain the existing at-grade crossing with the Northwestern Pacific Railroad.

Structures: The alignment would include seven mainline structures and four ramp structures. The major structure in this group would be the Floodway Viaduct that would span the Little Lake Valley floodway. This viaduct would be designed to convey the base flood without substantially increasing the 100-year water surface elevation.

5.3.5 Alternative LT

Map 7, Appendix A depicts the alignment and structures for Alternative LT.

Alignment Description: Alternative LT would start approximately 0.9 km (0.6 mi) south of the Haehl Overhead and end 2.9 km (1.8 mi) south of Reynolds Highway. The overall length of this alternative would be approximately 9.3 km (5.8 mi). The estimated cost for Alternative LT is $130 million (2002 dollars).

South Segment: Like the other center valley alternatives, Alternative LT would diverge from existing U.S. 101 at the proposed Haehl Creek Interchange and head northwesterly on the embankment constructed with excess fill from a previous freeway project. The alignment would run along the east side of the Northwestern Pacific Railroad tracks, turn north to pass Little Lake Valley Cemetery and across East Hill Road. The alignment would lie immediately west of Bray Road as the alternative crossed Center Valley and Hearst-Willits Roads. Alternative LT then would turn westerly and continue across the valley north of the city's wastewater treatment plant. The alignment then would cross Outlet and Mill creeks. Mill Creek is just east of the node that separates the south and north segments of this alternative.

North Segment: After crossing the Northwestern Pacific Railroad, Alternative LT would provide access to the north side of Willits with the Quail Meadows Interchange. The roadway would reduce from four to two lanes and conform to existing U.S. 101 just north of the old truck scales and just south of the at-grade crossing of the Northwestern Pacific Railroad. Alternative LT would be identical to Alternative J1T after crossing the access road for the proposed Quail Meadows Interchange. The alignment would continue on the existing two-lane highway to the end of the project study area.

Engineering Features: The vertical alignment would begin with a gentle downgrade and head northwesterly from the existing freeway section to approximately East Hill Road. Between East Hill Road and the Quail Meadows Interchange, the flat valley floor would allow nearly flat grades except at bridge approaches and departures. Throughout the valley, Alternative LT would cross the 100-year floodplain. The profile of Alternative LT

mainline would remain at least 1 m (3 ft) above the estimated 100-year water surface level.

Alternative LT would include two interchanges to direct motorists to Willits and Fort Bragg. The Haehl Creek Interchange would be located at the south terminus of the project. The northbound exit ramp would tie into existing U.S. 101, which would become S.R. 20 at this location.

Approximately 6.6 km (4.1 mi) northwest of the proposed Haehl Creek Interchange, the Quail Meadows Interchange would provide access to Willits and Fort Bragg toward the north end of the project. For this interchange, the ramps would terminate at a realigned U.S. 101 that would become a local road in this area. Between the point where existing U.S. 101 would be realigned and where Alternative LT would connect to existing U.S. 101, the former highway (existing U.S. 101) would become an access road for the mobile home parks and other parcels that had direct access to U.S. 101 severed.

This alternative would conform to existing U.S. 101 approximately 1.7 km (1.1 mi) north of the Quail Meadows Interchange. The existing highway would remain in service as U.S. 101 north of this point and retain the existing at-grade crossing with the Northwestern Pacific Railroad.

Structures: Alternative LT would include seven mainline structures and four ramp structures. Its floodway viaduct would span the Little Lake Valley floodway over Outlet and Mill Creeks. This viaduct would be designed to convey the base flood without substantially increasing the 100-year water surface elevation. Smaller bridges or culverts would be constructed over other creeks in the area.

5.3.6 Alternative L/C

Each of the valley alternatives (C1T, J1T, and LT) were divided into smaller sections for evaluation purposes. This “nodal approach” allowed for combining sections of different alternatives, thus providing greater flexibility in identifying a preferred alternative. The nodal approach allowed Caltrans to study each segment of the valley alternatives separately, so that any hybrid combination would thus be included in the analysis, such as Alterantive L/C. The hybrid Alternative L/C, which is composed of the south segment of Alternative L1T and the north segment of Alternative C1T, was analyzed at the request of the City of Willits and community representatives. Atlas Maps 4 and 7 depict the alignment and structures for Alternative L/C.

Alignment Description: Alternative L/C would start approximately 0.9 km (0.6 mi) south of the Haehl Overhead and end approximately 2.9 km (1.8 mi) south of Reynolds Highway. The overall length of this alternative would be approximately 10.3 km (6.4 mi). The estimated cost for Alternative L/C is $130 million (2002 dollars).

South Segment: Like the other center valley alternatives, Alternative L/C would diverge from existing U.S. 101 at the proposed Haehl Creek Interchange and head northwesterly on the embankment constructed with excess fill from a previous freeway project. The alignment would run along the east side of the Northwestern Pacific Railroad tracks, turn north to pass Little Lake Valley Cemetery and across East Hill Road. The alignment would lie immediately west of Bray Road as the alternative crossed Center Valley and Hearst-Willits Roads. Alternative L/C then would turn westerly as it continued across the valley north of the city's wastewater treatment plant. The alignment then would cross Outlet and Mill creeks. Mill Creek is just east of the node that separates the south and north segments of this alternative.

North Segment: The alignment would turn north along the east side of the Northwestern Pacific Railroad tracks. Near the railroad crossing with existing U.S. 101, Alternative L/C would begin paralleling the existing highway. The proposed Truck Scales Interchange would provide an access point along a northeasterly reach of the existing highway. Just north of the interchange near the existing lumber mill, the four-lane alternative would conform to the existing two-lane section of U.S. 101.

Engineering Features: The vertical alignment would begin with a gentle downgrade and head northwesterly from the existing freeway section to approximately East Hill Road. Between East Hill Road and the Quail Meadows Interchange, the flat valley floor would allow nearly flat grades except at bridge approaches and departures. Throughout the valley, Alternative L/C would cross the 100-year floodplain. The profile of Alternative L/C mainline would remain at least 1 m (3 ft) above the estimated 100-year water surface level. Alternative L/C would include two interchanges to direct motorists to Willits and Fort Bragg. The Haehl Creek Interchange would be located at the south terminus of the project. The northbound exit ramp would tie into existing U.S. 101, which would become S.R. 20 at this location.

A second interchange called the Truck Scales Interchange would be located approximately 8.5 km (5.3 mi) north of the Haehl Creek Interchange. For the Truck Scales Interchange, the ramps would terminate at existing U.S. 101, which would become a local road in this

area. South of the Truck Scales Interchange, the existing highway would serve as a local road, providing access to Willits from the interchange. The roadway would retain the existing at-grade crossing with the Northwestern Pacific Railroad.

Structures: Structures for the Alternative L/C would be the same as for the south segment of Alternative LT and the north segment of C1T.

5.3.7 No-Build Alternative

Under the No-Build Alternative, conditions along U.S. 101 would remain as they currently exist. The No-Build Alternative would not cause adverse environmental impacts identified for the proposed project and no mitigation measures would be needed.

With the No-Build Alternative, no improvements would be made to the existing facilities though traffic volumes would increase. The No-Build scenario evaluates future traffic conditions with no capacity increasing improvements to the study area. Routine maintenance would continue.

If the No-Build Alternative were chosen, congestion would increase substantially in and around the Willits area. If no bypass is constructed and U.S. 101 is not improved through Willits, as assumed in the No-Build scenario, delay would increase significantly over time. Northbound traffic queues approaching the intersection of U.S.101 at S.R. 20 is expected to back up past Evergreen Village during the peak hour. Congested conditions are expected to occur beyond the peak hour and queues would back up for several hours of the day. Average northbound speeds under the No-Build scenario are expected to be less than 8 miles per hour in the peak hour in downtown Willits (Baechtel Road to Sherwood Road), which is half the speed that northbound traffic currently experiences in downtown Willits. Traffic collisions increase these delays, and at these times, emergency vehicles are delayed even further in getting assistance to victims.

With the No-Build scenario, interregional travelers will continue to travel through downtown Willits and will experience increased delay as a result of increased congestion in Willits. Traffic congestion in Willits will worsen as traffic volumes increase. Northbound traffic will continue to queue-up south to Holly Street or beyond during peak hour periods. Although traffic operation at the Holly Street intersection is expected to improve with construction of a Holly Street signal in the near future, it will not reduce overall delay. Higher traffic congestion will increase friction associated with commercial driveways, side street traffic, parking and pedestrians. Side street traffic trying to access

U.S. 101 increasingly will experience delayed access to U.S. 101, further increasing congestion on the side streets leading to Main Street.

With no capital improvements, there is no capital cost for this alternative. As with any highway, there would be continued costs associated with maintenance, periodic rehabilitation, and any safety and operational improvements to the existing facility. Although difficult to quantify, there also would be costs born by the local community related to air quality, noise, social, and economic impacts; and regional costs associated with an inefficient transportation system.

6 Section 404(b)(1) Analysis of Alternatives

6.1 Criteria

Under the Guidance Papers (1994:13), the practicable alternative that is the least environmentally damaging to aquatic resources must be selected *unless* this alternative would have *other significant environmental consequences,* for example, Section 4(f) resources.

While the alternatives analysis must consider the impact to waters of the U.S. that would result from the alternative before compensatory mitigation, the alternatives selection process evaluates reasonable and prudent alternatives based on "net harm" (after mitigation) of the alternative to other environmental resources, such as Section 4(f) resources, water quality, or community resources. Therefore, if an alternative exists where the impacts to non-aquatic resources can be practicably mitigated, this alternative should generally be selected over one that would fill waters of the U.S.

6.1.1 Wetlands and Other Waters of the U.S.

The NEPA/Section 404 process places a high priority on the *avoidance* of impacts to wetlands and other waters of the U.S. Where this resource cannot be avoided, the evaluation of practicable alternatives must consider the impact to jurisdictional wetlands and other waters of the U.S. that would result from the alternative *before compensatory mitigation is considered*. Specific factors considered in the LEDPA analysis included the amount of jurisdictional wetlands acreage lost, the functions and values affected, indirect impacts, and cumulative impacts. Quantitative measures included, for example, the number of jurisdictional areas crossed (with bridges and culverts), linear feet of impacts, and acreage of impacts.

6.1.2 Water Quality Standards/Floodplain Encroachment

The alternatives analysis must ensure that the LEDPA is consistent with the Water Quality Control Plan for the North Coast Region and that it does not have the potential for significant degradation of waters of the U.S.

6.1.3 Sensitive Species

The NEPA/Section 404 process places a high priority on the *avoidance* of impacts to associated sensitive species, including threatened and endangered species and other species of special concern. Impacts to riparian communities, special status plant, wildlife,

and fish species were evaluated and avoidance or minimization of impacts was considered in determining the LEDPA.

6.1.4 Section 4(f) Resources and Other Environmental Impacts

Public parklands and recreational resources, wildlife and waterfowl refuges, and historic properties listed on or eligible for listing on the National Register of Historic Places, are protected under the U.S. Department of Transportation Act of 1966. As with aquatic resources, avoidance (or minimization where avoidance is not feasible) is required. However, as with the Clean Water Act 404(b)(1) Guidelines, Section 4(f) allows the potential for other significant environmental impacts to override preservation of Section 4(f) resources.

As stated previously, impacts to non-aquatic resources are evaluated based on the "net harm" (after mitigation) of the alternative to Section 4(f) or other environmental resources.

6.1.5 Human Use Characteristics

Under Section 404 (b)(1) Subpart F, human use characteristics should be considered when making factual determinations and findings of compliance or non-compliance. These resources include parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves, that consist of areas designated under Federal and State laws or local ordinances to be managed for their aesthetic, educational, historical, recreational, or scientific value. The discharge of dredged or fill material into such areas may modify the aesthetic, educational, historical, recreational and/or scientific qualities thereby reducing or eliminating the uses for which such sites are set aside and managed. (Section 230.54)

6.2 Wetlands Functions and Values Assessment

A functions and values analysis was prepared to provide additional information on the wetlands affected by each of the proposed alternatives (Appendix B).

Wetlands are recognized as important features because they provide numerous beneficial services for people, and for fish and wildlife. Wetland "functions" are the physical, chemical, and biological characteristics of a wetland. The wetland functions evaluated in this analysis are based on the Wetland Evaluation Technique (WET) method, which is a relatively new method summarized in the "*National Water Summary on Wetland*

Resources: United States Geological Survey Water Supply Paper 2425" (on-line at http://water.usgs.gov). The eleven functions evaluated by the WET method for this project are: Groundwater Recharge, Groundwater Discharge, Flood-flow Alteration, Sediment Stabilization, Sediment/Toxicant Retention, Nutrient Removal/Transformation, Production Export, Wildlife Diversity/Abundance, Aquatic Diversity/Abundance, Uniqueness/Heritage, and Recreation.

Wetland "values" refer to the benefits that wetlands provide to the environment or to people, and include ecological, social or economic values. Not all wetlands perform the same functions or have the same values. Even within a given wetland type, such as Wet Meadow, the values may differ depending on their proximity to other habitats or if they support sensitive species.

Because a formal WET evaluation of wetland functions and values is a complex, technical and time-consuming process, the assessment of the functions and values of wetlands occurring within the Willits Bypass project alternatives was based on best professional judgment. The value of each function was identified as either low, moderate, or high; or as low to moderate, or moderate to high, with a numerical score given to each value category, consisting of: 1 for low, 2 for moderate, 3 for high; and 1.5 for low to moderate and 2.5 for moderate to high.

Table 6-1 Relative Value of Wetland Functions

Functions	Mixed Riparian Woodland[1]	Other Riparian Woodland[1]	Riparian Scrub[1]	Wet Meadow	Hay and Residential Meadow	Freshwater Marsh	Vernal Pools and Swales
	Relative Values[2]						
E3	152	4	0	54	6	0	3
C1T	382	365	204	1,774	115	171	37
J1T	110	147	31	551	133	120	34
LT	192	75	9	1,235	0	120	20
L/C	386	322	108	1,855	0	171	12
Mod J1T	11	63	5	830	35	150	2

1 Mixed Riparian Woodland occurs primarily along the edge streams. The Other Riparian Woodland and Riparian Scrub wetland types (Ash Riparian, Valley Oak Riparian, and Willow and Mixed Riparian Scrub habitats) occur primarily in Wet Meadow habitats, with some stands occurring along stream edges. Residential Meadow and Mixed Willow Scrub do not occur within the Modified Alternative J1T corridor.

2 The Relative Value of the wetland functions is based on the value of each function (low = 1, high = 3) multiplied by the acreage of each habitat affected (Relative Value calculations are rounded off). Relative Values are based on best professional judgment, not a formal analysis.

6.2.1 Riparian Woodland and Scrub Wetlands

Mixed riparian woodland and scrub communities consist of narrow stands along the creeks and drainages in Little Lake Valley, and as individual trees and dense to open stands in wet meadow wetlands. The riparian trees occur as mixed species stands, and as single species stands, consisting of valley oak, red alder, Oregon ash, Fremont's cottonwood, box elder, and willows.

In Little Lake Valley, the riparian woodland and scrub communities along the creeks likely provide short-term and long-term storage of peak flows by retaining or retarding overbank flows. Riparian habitats improve water quality by allowing sediments to settle on the water column, cycling nutrients, and transformation of nutrients, such as nitrogen. Riparian woodlands and scrub communities are important habitat for birds as nesting and foraging habitat, and are important to salmonids in providing shade that reduces water temperatures and cover for juvenile fish.

Overall, the functions of riparian woodland and scrub wetlands in the study corridor have a moderate to high value.

6.2.2 Wet Meadow Wetlands

Wet meadow wetlands (including Hay Meadow and Residential Meadow) are herbaceous communities dominated by mixtures of perennial grasses and forbs. Wet meadows are dominated by grass-like forbs, including rushes and sedges. These wetlands receive water from various sources, including ground water and overbank flooding. Hay meadow and residential meadow wetlands are similar to wet meadows, but receive water primarily from irrigation for livestock or horticultural purposes.

In Little Lake Valley the wet meadow wetlands likely provide ground water recharge and improve water quality by containing sediments deposited by overflow of streams. Flood control functions may be moderate. Wet meadow areas that support stands of Baker's meadowfoam, a state listed species, would have a high value. Overall, the functions of wet meadow wetlands in the study corridor have a moderate value.

6.2.3 Freshwater Marsh

Freshwater marsh habitat consists of mixed marsh and tule marshes and encompasses approximately 8.0 ha (19.94 ac) within the project corridor. Mixed marsh wetlands occur in internally drained basins and topographically low troughs, and is dominated by annual and perennial herbs and grass-like species with taller perennials scattered throughout, including aquatic knotweed, water plantain, spikerush, reed canary grass, cattail, common tule, and sedges.

Tule Marsh wetlands are associated with wet meadows and riparian woodlands, and form small to large patches within mixed marsh wetlands. Tule marsh wetlands are dominated by dense stands of one species, common tule.

In Little Lake Valley freshwater marsh wetlands probably have low flood control functions, because of the small area encompassed by marshes. However, they may provide water quality benefits by trapping sediments, cycling nutrients, and groundwater recharge. Freshwater marsh habitats provide important habitat for waterfowl and other birds, and amphibians.

Overall, the functions of freshwater marsh in the study corridor would have a moderate to high value.

6.2.4 Vernal Pools and Swales

Vernal pools in Little Lake Valley are small, internally drained basins with impermeable soils that allow these features to hold water from rainfall and surface runoff for long periods of time. Swales resemble vernal pools but are linear, generally narrow drainage features. In Little Lake Valley, vernal pools and swales are found primarily in wet meadow wetland habitats, and are dominated by annual hydrophytic forbs, including bracteate popcornflower, purslane, speedwell, downingia, and toadrush.

Vernal pools and swales are known to retard surface flows and reduce peak flows in areas where they occur. However, vernal pools and swales in the project area are not likely to contribute significantly to local flood control because of the small area and volume of the vernal pools present. The small size of the vernal pool watersheds in the project area, combined with the small surface area of the vernal pools and swales also limits their capacity to retain sediments, or cycle nutrients. However, vernal pools and swales support a unique and diverse aquatic biota, including plants and invertebrates.

Overall, the functions of vernal pools and swales in the study corridor have a relatively low to moderate value.

The complete wetland functions and values analysis is attached as Appendix B.

6.3 Wetlands Delineation Verification Update

The ACOE verified the wetlands delineation for Alternatives E3, C1T, J1T, and LT on April 6, 1998. This verification expired in April 2003.

Because the signatory agencies agreed informally that Alternatives E3, C1T, and L/C do not meet LEDPA criteria,[7] another wetlands delineation was prepared for only Alternatives J1T and LT in 2003. (However, this delineation was not verified, due to the eventual development of the Modified Alternative J1T, discussed below.) Caltrans and FHWA continued coordination with the signatory agencies on the remaining Alternatives J1T and LT to determine which of these alternatives meet LEDPA criteria.

While Alternative J1T has the least direct impacts to jurisdictional wetlands and other waters of the U.S. of the valley alternatives with 27.1 ha (67.0 ac) of direct impacts to this resource, this alternative would result in adverse impacts to the local and regional park/recreation complex (a Section 4(f) resource) and would result in removal of the city's only business park and the loss of businesses that would not or could not relocate in Willits.

Alternative LT, on the other hand, would avoid these community resources. However, it would directly impact approximately 36.2 ha (89.3 ac) of jurisdictional wetlands and other waters of the U.S., which is 9.1 ha (22.3 ac) more wetlands impacts than Alternative J1T. Additionally, Alternative LT would result in the fragmentation of the largest stand of Valley oak riparian woodland in the valley, and its alignment would extend further into Little Lake Valley, resulting in greater habitat fragmentation.

Working together, Caltrans, FHWA, and the signatory agencies developed the Modified Alternative J1T. While Modified Alternative J1T would impact approximately 3.8 ha (9.4 ac) more wetlands than Alternative J1T, it avoids human use characteristics/Section 4(f)

[7] USEPA letter dated 9/9/2002 and 1/30/04; NOAA Fisheries letter dated 8/22/2002 and 1/23/04; USFWS letter, dated 11/21/2002. Verbal informal agreement at January and April 2003 Project Development Team (PDT) meetings.

resources, and other environmental resources that would be impacted by the other alternatives. As a result of signatory agency support to study the Modified Alternative J1T, a wetlands delineation was prepared for this alternative and ACOE verification was provided on March 1, 2005.

This alternatives analysis discusses wetland impacts for Alternatives E3, C1T, J1T, LT and L/C based on the 1998 ACOE-verified wetlands delineation and for the Modified Alternative J1T based on the 2005 ACOE-verified wetlands delineation.

ACOE verification letters are included in Appendix H.

7 Section 404(b)(1) Evaluation of Alternatives

The NEPA 404 resource agencies have provided informal concurrence that Alternatives E3, C1T, L/C, LT and No Build do not meet LEDPA criteria.[8] Table ES-1 compares the impacts of the following alternatives. The factual determinations herein demonstrate that:

- Alternative E3 is not a practicable alternative because it is not feasible from a technical and economic standpoint and would create unacceptable impacts, including the greatest potential to jeopardize the continued existence of local populations of three federally listed salmonid species, the largest direct impact to foraging habitat for Northern spotted owl, the greatest potential to degrade water quality, high residential and business relocation impacts, and potential impacts to the highest number of archaeological sites.

Table 7-1. Impacts to Listed Fish Species

	Direct impacts to listed fish species habitat		Erosion & sedimentation impacts to EF&CH	# of listed salmonid species impacted
	Estimated creek crossings	Estimated realignment of creek(s) that support listed fish species (m/ft)		
E3	8	880 (2,890)	Ongoing*	3 (direct & indirect)
C1T	7	2,000 (6,560)	Minimizes*	3 (direct & indirect)
L/C	7	2,000 (6,560)	Minimizes*	3 (direct & indirect)
J1T	8	-0-	Minimizes*	3 (temporary & indirect)
Mod J1T	8	-0-	Minimizes*	3 (temporary & indirect
LT	4	-0-	Minimizes*	3 (temporary & indirect

EF&CH – Essential Fish Habitat and Critical Habitat

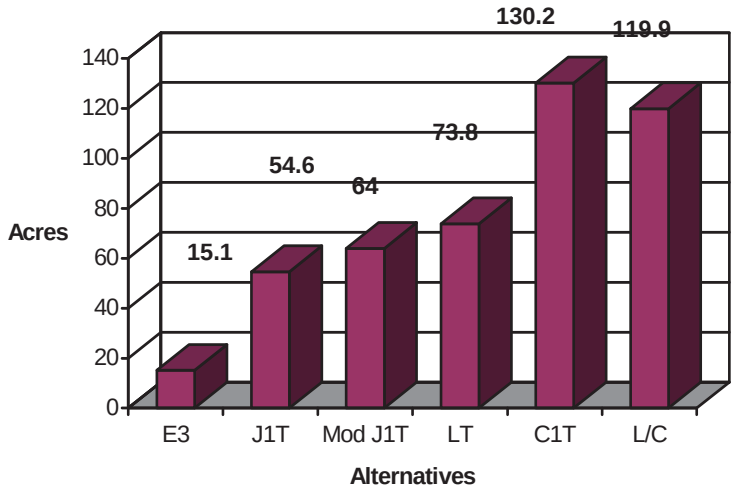
*Alternative E3 would result in "Ongoing" erosion and sedimentation due to highly unstable soils on the alignment. Each of the valley alternatives "Minimizes" erosion and sedimentation through implementation of standard BMPs during construction and operation of the facility.

- Alternatives C1T and L/C should be eliminated from consideration as LEDPA because of severe impacts to wetlands and other waters of the U.S. and to federally listed fish species. Because impacts to wetlands and salmonids at the northern section of Alternative C1T eliminate that alternative from consideration, the hybrid

[8] USEPA letter dated 9/9/2002 and 1/30/04; NOAA Fisheries letter dated 8/22/2002 and 1/23/04; USFWS letter, dated 11/21/2002. Verbal informal concurrence at January and April 2003 Project Development Team (PDT) meetings.

L/C, which consists of the northern section of Alternative C1T, also does not meet LEDPA criteria. Because of shared resource impacts, the analysis of Alternatives C1T and L/C are combined.

Figure 7-1. Impacts to Jurisdictional Wetlands and Other Waters of the U.S. (in acres)



- Alternative LT does not meet LEDPA criteria primarily for its greater impacts to wetlands as compared to Alternatives J1T and Modified J1T, and for its severe impacts to a riparian oak woodland.

- Alternative J1T does not meet LEDPA criteria because, while it has the least impacts to wetlands and other waters of the U.S. of the valley alternatives, it creates unacceptable impacts to "human use characteristics." Thus, even though it would fill fewer wetlands than Modified Alternative J1T, Alternative J1T is the more environmentally damaging of the two alternatives.

Table 7-2. Impacts to Socioeconomic and Human Use Characteristics

	Residential Relocation	Affordable Housing	Business Relocation	Business Park	Section 4(f) Resource*
E3	114	76	19	Avoids	Avoids
C1T	3	1	0	Avoids	Avoids
L/C	2	1-2	1	Avoids	Avoids
LT	7	2	5	Avoids	Avoids
J1T	13	3	20	Results in removal of City's only business park	Impacts regional park museum complex
Modified J1T	10	3	10	Avoids	Avoids

*Human use characteristic (Section 404 (b)(1) Subpart F)

- Modified Alternative J1T meets LEDPA criteria because it would result in the least overall environmental harm. Modified Alternative J1T minimizes impacts to wetlands while avoiding important community resources that would be impacted by Alternative J1T.

- The No-Project alternative is not practicable because it does not meet the purpose and need of the project.

Table 7-3 provides a side-by-side comparison of the alternatives' impacts to jurisdictional wetlands. See Table ES-1 (in the Executive Summary) for a side-by-side comparison of the alternatives' impacts to other resources, including wetlands.

Table 7-3. Direct Impacts to Jurisdictional Waters of the U.S./Wetlands
Units in hectare (acre)

	C1T*	L/C*	E3*	J1T*	Mod.J1T**	LT*	OWH
Jurisdictional Waters of the U.S./Wetlands							
Mixed riparian woodland	6.4 (15.9)	6.5 (16.1)	2.9 (7.1)	1.9 (4.5)	0.19 (0.47)	3.2 (7.9)	-
Ash riparian woodland	0.2 (0.4)	0.2 (0.4)	0.1 (0.2)	1.5 (3.7)	1.17 (2.9)	0.4 (1.1)	-
Valley oak riparian woodland	0.7 (1.8)	0.7 (1.8)	-	1.0 (2.5)	0.03 (0.08)	0.3 (0.7)	-
Valley oak-ash riparian woodland	5.2 (13.0)	4.5 (11.1)	-	0.1 (0.2)	-	0.6 (1.4)	-
Mixed willow scrub	3.1 (7.6)	1.4 (3.4)	-	-	-	-	-
Mixed riparian scrub	0.5 (1.1)	0.5 (1.1)	-	0.6 (1.4)	0.23 (0.56)	0.2 (0.4)	-
Willow riparian scrub	-	-	-	-	0.02 (0.06)	-	-
Montane riparian woodland	-	-	0.2 (0.5)	0.04 (0.1)	-	0.04 (0.1)	-
Wet meadow ***	29.9 (73.9)	31.3 (77.3)	1.3 (3.2)	9.9 (24.5)	20.7 (51.05)	22.2 (54.9)	-
Residential meadow	0.1 (0.2)	-	0.2 (0.5)	0.1 (0.2)	-	-	-
Hay meadow	2.9 (7.2)	-	-	3.4 (8.4)	-	-	-
Mixed marsh	2.4 (6.0)	2.4 (6.0)	-	1.7 (4.3)	0.4 (6.37)	1.7 (4.3)	-
Tule marsh	0.04 (0.1)	0.04 (0.1)	-	-	-	-	-
Vernal pool	0.1 (0.2)	0.2 (0.5)	0.1 (0.2)	0.4 (1.0)	0.04 (0.11)	0.2 (0.5)	-
Swale	0.8 (1.9))	0.3 (0.7)	-	0.4 (1.0)	-	0.3 (0.7)	-
Stock pond	-	-	0.4 (1.0)	0.3 (0.6)	-	0.2 (0.4)	-
Other waters	0.5 (1.3)	0.6 (1.5)	0.9 (2.2)	-	-	0.1 (0.2)	-
Open water	-	-	-	-	-	-	-
Subtotal	**52.3 (129.2)**	**48.1 (118.9)**	**6.1 (15.1)**	**21.1 (52.4)**	**24.9 (61.6)**	**29.4 (72.8)**	**-**
Access Roads						-	-
Valley oak riparian woodland				.06 (0.15)	.06 (0.15)		
Wet meadow	0.4 (1.01)	0.4 (1.01)		0.8 (2.08)	0.8 (2.08)	0.4 (1.01)	-
Access Roads Total**	0.4 (1.01)	0.4 (1.01)	-	0.9 (2.2)	0.9 (2.2)	0.4 (1.01)	-
Total	**52.7 (130.2)**	**48.5 (119.9)**	**6.1 (15.1)**	**22.0 (54.6)**	**25.9 (64.0)**	**29.9 (73.8)**	

NOTE: numbers may not add due to rounding and Metric/English conversion

*Based on wetlands delineation, verified 1998.

**Modified Alt J1T and access roads are based on 2005 ACOE-verified delineation.

7.1 Factual Determinations: Alternative E3

The following information summarizes why Alternative E3 does not meet LEDPA criteria because of its overall environmental impacts.

7.1.1 Wetlands and Other Waters of the U.S.

Alternative E3 would have the least direct impact of the build alternatives to wetland resources: 6.1 ha (15.1 acres), but Alternative E3 would have the greatest potential indirect impact to jurisdictional aquatic resources that are habitat to federally listed salmonid species, due to the potential for large amounts of erosion-related sediments to enter major salmonid streams. See Sections 7.1.2 and 7.1.3 below. Table 7-3 above shows direct impacts to jurisdictional wetlands and other waters of the U.S.

7.1.2 Water Quality

Alternative E3 traverses an area that the soil survey classifies as having highly erosive soils. Although Caltrans would use best available technology, cutting and filling in these highly erodible soils would have the greatest potential for short-term construction-related residual sedimentation, as well as long-term sedimentation from possible slip outs, slumps, and landslides that could enter the downstream waters.

Alternative E3 would create the greatest impacts to water quality due to the potential for erosion relative to other alternatives. Alternative E3 would directly impact or degrade 3.6 ha (8.9 ac) of riparian habitat, most of which is along Haehl Creek, due to channel realignment. Also, several intermittent drainages that qualify as waters of the U.S. would require culverts ranging in length from 150 m (492 ft) to 300 m (984 ft). These long culverts would potentially increase velocities and concentrate flows affecting downstream reaches.

Alternative E3 would traverse the largest extent of the surrounding foothills that are mostly classified by the soil survey as having highly erosive soils. The highly erosive soils located along Alternative E3 have a greater potential to result in unpredictable slides. Even with specialized foundation treatments, specialized cut slope and fill slope design, mechanically reinforced embankments, stabilization trenches, catchment areas, and specialized subsurface drainage techniques, the potential for landslides remains high for Alternative E3. Ongoing storm damage maintenance is expected to be a major contributor to sediment loads in downstream waters that provide high quality spawning habitat for local populations of three federally-listed fish species, discussed below.

Construction of Alternative E3 would require 12 million cubic yards of cut and fill. In contrast, the valley alternatives would require from between 2.4 to 3.4 million cubic yards of cut and fill. Although Caltrans would use the best available technology (Best Management Practices), cutting-and-filling in highly erodible soils would have the greatest potential for short-term construction related residual sedimentation, as well as long-term sedimentation from possible slip outs, slumps, and landslides that could enter the downstream waters. Alternative E3, which would traverse the wooded hills west of Willits, would require 9.1 million cubic meters (12 million cubic yards) of total earthwork. It would be a "balanced" job, meaning that the material excavated in construction of the alignment would be used as fill material along other portions of the alignment.

7.1.3 Special Status Species

Adverse impacts to federally listed and non-listed species of concern that could result from construction of Alternative E3 are discussed below.

7.1.2.1 Federally listed species

Salmonids

The greatest concern of Alternative E3 would be its impact on the water quality of the upper reaches of Haehl, Baechtel, Broaddus and Mill Creeks, which provide spawning and rearing habitat for three listed salmonids: Coho and Chinook salmon, and Steelhead trout; and critical habitat for Coho salmon.

Alternative E3 would require seven crossings over streams identified as salmon bearing streams, which consist of the upstream reaches of Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks. Alternative E3 also could potentially affect downstream reaches of these creeks from increases in sedimentation. The majority of potentially affected stream reaches is located in the foothills above Little Lake Valley and contains important habitat for salmon and steelhead.

In addition, tributaries upstream of Alternative E3's construction footprint, including Willits Creek and segments of Mill, Broaddus, and Baechtel Creeks, support salmonid populations that could be indirectly affected in the short term as a result of construction activities that inhibit spawning migration.

Alternative E3 would have the greatest impacts to federally listed salmonids resulting from potential project-related erosion, discussed above under Water Quality. The proposed alternative would directly impact or degrade 3.6 ha (8.9 ac) of riparian habitat (Table 7-1), most of which is along Haehl Creek due to channel realignment. Soil disturbance associated with the cut-and-fill slopes at the stream crossings would have the potential of soil sedimentation during storm events.

The impacts on fish habitat and the distribution and abundance of fish associated with Alternative E3 are considered extensive because a high potential for permanent impacts to fish populations and suitable salmonid habitat resulting from the proposed stream crossings, and the potential for increased erosion from project related activities.

Northern Spotted Owl

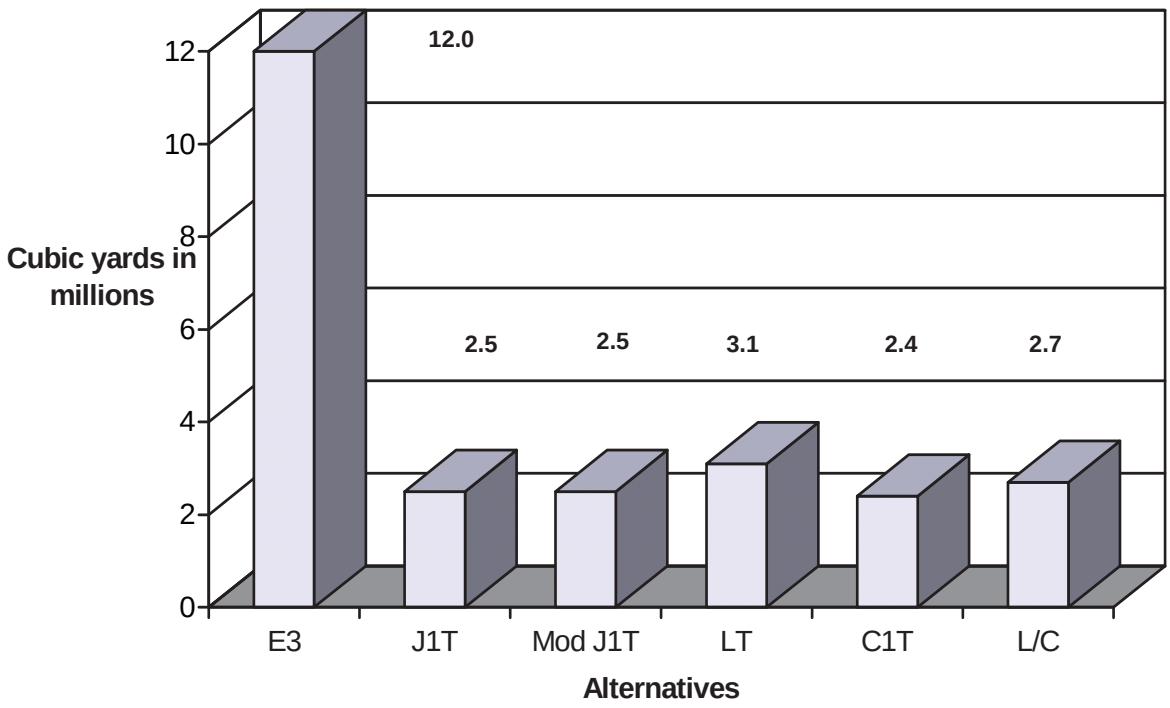
The earthwork required for Alternative E3 would result in an adverse impact on approximately 127 ha (313 ac) of forest habitat that could provide suitable foraging habitat for Northern spotted owl, particularly in the northern portion of the alternative.

Table 7-4. Comparison of Estimated Earthwork/Borrow Requirements (Potential Impacts to Northern Spotted Owl Foraging Habitat) Cubic meters (cubic yards) in millions

E3*	C1T**	L/C**	LT**	J1T**	Mod. J1T**
9.1 (12)	1.8 (2.4)	2.1 (2.7)	2.4 (3.1)	1.9 (2.5)	1.9 (2.5)

*Earthwork, both cut and fill, occurs entirely on the alignment of Alternative E3.
**The valley alternatives require borrow material. Numbers reflect the amount of excavation required at Oil Well Hill if no other borrow site is used.

Figure 7-2 Estimated Earthwork/Borrow Requirements



7.1.2.1 Federal species of concern

Wildlife

Haehl, Baechtel, Broaddus, Mill, Upp, Outlet Creeks and other streams in the project area provide habitat for foothill yellow-legged frog and Northwestern pond turtle. Construction of Alternative E3 would require bridge structures and culverts ranging in length from 150 m (492 ft) to 300 m (984 ft) in some intermittent streams, which would adversely affect foothill yellow-legged frog and Northwestern pond turtle. These long culverts would directly impact habitat and have potential indirect impacts by increasing velocities and concentrating flows, thus affecting downstream reaches.

Plant Species

Alternative E3 would not impact Baker's meadowfoam.

7.1.4 Other Environmental Factors

The impact of Alternative E3 would remain adverse after mitigation to a number of other environmental resources, which are discussed below.

7.1.4.1 Sensitive Plant Communities

Construction of Alternative E3 would result in the loss of 22.7 ha (56.1 ac) of oak woodlands. The loss of oak woodlands would be adverse because of the length of time required for oak trees to grow into stands of mature trees that could provide higher quality functions and values for nesting birds, raptors, and other wildlife such as deer.

Alternative E3 could directly or indirectly impact three small populations of Baker's navarretia, which is a California Native Plant Society (CNPS) List 1B species.

7.1.4.2 Other Wildlife

Alternative E3 would create barriers to the movement of deer and other wildlife, and would result in the fragmentation of wildlife habitats in the project area. Construction of Alternative E3 would result in more deer mortality due to vehicle collisions. Steep-cut banks along the alignment could force deer to the shoulder of the road, where they are more susceptible to collisions from vehicles.

The forest habitats occurring in Alternative E3 could provide suitable habitat for red tree vole, a State special concern species. Alternative E3 also could impact red tree vole by removing nests and killing individuals during construction.

7.1.4.3 Socioeconomic Impacts

Alternative E3 is considered infeasible due to unacceptable socioeconomic impacts. Alternative E3 would require relocation of 114 households and 19 businesses, as opposed to from 3 to 34 household and business relocations for Alternatives C1T, J1T, Modified J1T, and LT. Besides adverse impacts associated with disruption of community cohesion, relocation, and lack of suitable replacement housing, Alternative E3 would also cause disproportionately high and adverse impacts to minority or low-income populations (discussed under Section 7.1.4.4 below).

Alternative E3 would not result in the removal of the city's industrial park, however, Alternative E3 would impact two major employers along its alignment. There are not enough adequate replacement locations to reestablish these businesses within Willits.

The costs of right of way purchase and relocation have escalated the cost of this alternative (see Section 7.1.4.11 Estimated Construction Cost, below).

7.1.4.4 Environmental Justice (EO 12898)

Alternative E3 would require the disproportionate displacement of residents living in areas identified as having high proportions of low-income or minority residents. The majority (77) of the residences displaced by this alternative are low-income residents. Thus, the impact of relocation would fall disproportionately on low-income and minority residents.

7.1.4.5 Human Use Characteristics

Under Section 404(b)(1) Subpart F, human use characteristics should be considered when making factual determinations and findings of compliance or non-compliance. These resources include parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves, that consist of areas designated under Federal and State laws or local ordinances to be managed for their aesthetic, educational, historical, recreational, or scientific value. The discharge of dredged or fill material into such areas may modify the aesthetic, educational, historical, recreational and/or scientific qualities thereby reducing or eliminating the uses for which such sites are set aside and managed (CFR 230.54).

Alternative E3 does not impact human use characteristics.

7.1.4.6 Section 4(f) Resources

Alternative E3 does not impact Section 4(f) resources.

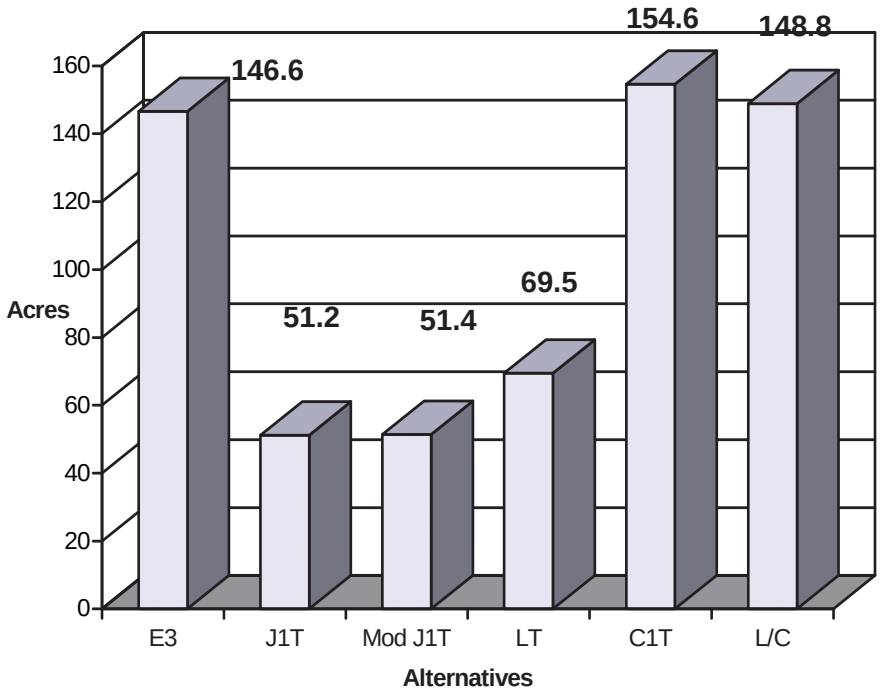
7.1.4.7 Cultural Resources

Alternative E3 has the greatest potential to affect cultural resources. Construction along this alignment could affect 18 identified archaeological sites and this is considered potentially significant (under Section 106, National Historic Preservation Act eligibility criteria) unless further and more detailed examination of the sites are made. Specifically, two historical, seven prehistoric, and five prehistoric sites with a historical component were in or adjacent to the ROW limits for Alternative E3. Alternative E3 would require an estimated expenditure of $900,000 for contracted Phase II and III archaeological studies, which is 2-1/2 times more than for the other build alternatives.

7.1.4.8 Williamson Act Contract Farmland Conversion

Alternative E3 exceeds the farmland conversion impact rating[9] by 10 points (170 points versus a 160-point threshold) and would result in a large conversion of Williamson Act Contract farmland (59.3 ha/146.6 ac) to other uses.

Figure 7-3 Land Removed from Williamson Act Contract



7.1.4.9 Growth Inducement

Alternative E3 would construct an additional interchange, which could result in growth-inducing impacts. An interchange at S.R. 20 would likely result in the construction of fuel stations, fast-food restaurants, and other interchange-compatible businesses. Impacts due to development in this area would be similar to direct impacts that would result from construction of Alternative E3, including removal of oak woodland, habitat fragmentation,

[9] Pursuant to Section 1541(a) of the Farmland Protection Policy Act (1984), the Farmland Conversion Impact Rating for Corridor-Type Projects uses a numerical indicator and a 160-point threshold to assess the extent of farmland impacts relative to federally established criteria. The assessment of the Willits Bypass alternatives was developed in consultation with the Natural Resources Conservation Service.

farmland impacts, water quality impacts to creeks due to the highly erosive soils, and indirect impacts to listed fish habitats.

7.1.4.10 Erosion and Landslide Potential

Construction of Alternative E3 would require 12 million cubic yards of earthwork. This is roughly the same excavation that was required for construction of the Redwood National Park Bypass project, the largest roadway excavation project ever completed in Northern California.

Even with specialized foundation treatments, specialized cut slope and fill slope design, mechanically reinforced embankments, stabilization trenches, catchment areas, and specialized subsurface drainage techniques, the potential for landslides remains high for Alternative E3. The highly erosive soils located along Alternative E3 alignment have a greater potential to result in unpredictable, unpreventable slides. Ongoing storm damage maintenance is expected to be a major contributor to sediment loads in downstream waters that provide high quality spawning habitat for federally listed fish species.

7.1.4.11 Construction Cost

The cost for Alternative E3 greatly exceeds the reasonable expected funds. At an estimated $301 million (2002 dollars), this alternative is approximately 2.5 times more than budgeted for the project. The total cost includes an estimated $23 million in right-of-way expenditures (in 2002 dollars), which is $10 million to $18 million more than the valley alternatives. In addition, Alternative E3 would require ongoing storm damage maintenance due to the highly unstable soils on this alignment.

7.1.5 Conclusion

Alternative E3 does not meet LEDPA criteria because of its overall environmental impacts. While Alternative E3 has the least direct impacts to jurisdictional wetlands and other waters of the U.S. (6.1 ha [15.1 ac]), it would have the greatest potential to indirectly impact jurisdictional aquatic resources that are habitat to federally listed species, due to the potential for large amounts of erosion-related sediments to enter major salmonid streams. Ongoing storm damage maintenance on this alternative is expected to be a major contributor to sediment loads in downstream waters that provide high quality spawning habitat for local populations of three federally listed fish species.

Construction of Alternative E3 would result in the following adverse environmental effects: 1) it has the greatest potential to jeopardize the continued existence of local

populations of three federally listed salmonid species; 2) it would have the largest direct impact to foraging habitat for Northern spotted owl because of this alignment's massive earthwork requirements; 3) it has the greatest potential to degrade water quality because of highly erosive soils and extensive number of stream crossings; 4) it displaces the highest number of homes and businesses (133); 5) it has the potential to affect the highest number of archaeological sites (18); 6) it converts a large amount of Williamson Act Contract farmland (59.3 ha/146.6 ac); and 7) it would impact larger areas of upland/foothill habitats than the other alternatives, including oak woodland, a habitat type that is very difficult to replace.

Further, Alternative E3 is not a practicable alternative because it cannot be accomplished "within the financial resources that could reasonably be made available and it is [not] feasible from the standpoint of technology and logistics." (Guidance Papers 1994:12). Specifically, Alternative E3 is not practicable because: 1) it requires 12 million cubic yards of roadway excavation during construction; 2) even with specialized foundation treatments, specialized cut slope and fill slope design, mechanically reinforced embankments, stabilization trenches, catchment areas, and specialized subsurface drainage techniques, the potential for unpredictable landslides on the highly erosive soils on this alignment would remain high; 3) the highly unstable soils would require ongoing maintenance; and 4) the high estimated cost ($301M in 2002 U.S. dollars) to construct Alternative E3 makes it infeasible.

7.2 Factual Determinations: Alternatives C1T and L/C

7.2.1 Wetlands and Other Waters of the U.S.

Alternatives C1T and hybrid L/C would have the largest direct impact to jurisdictional aquatic resources. Alternative C1T would impact approximately 52.7 ha (130.2 ac) and Alternative L/C would impact approximately 48.5 ha (119.9 ac) of wetlands and other waters of the U.S. These impacts are nearly twice that of Alternatives J1T and Modified J1T which would impact approximately 22 ha (54.6 ac) and 25.9 ha (64 ac), respectively, of wetlands and other waters of the U.S.

Alternatives C1T and L/C also would require the realignment of approximately 400 m (1,300 ft) of Mill Creek and a 1,600 m (5,250 ft) reach of Outlet Creek bordering the east side of the Northwest Pacific Railroad tracks, in the northern portion of Little Lake Valley. Alternatives C1T and L/C would fill large areas of wetland habitat (29.9 ha [74.9 ac] and 31.6 ha [78.3 ac], respectively, of wet meadow; and 16.1 ha [39.8 ac] and 13.8 ha [33.9 ac], respectively, of riparian woodland and scrub habitats), which has the potential

to directly and indirectly alter surface and groundwater hydrologic conditions of several flood basins in Little Lake Valley that provide habitat for several special-status species found in Little Lake Valley (see Section 7.2.3, below). Because of the magnitude of direct and indirect effects to wetlands that Alternatives C1T and L/C could cause, these would be significant adverse impacts.

7.2.2 Water Quality

The risk of degraded water quality (including soil erosion and increased stream temperatures) is high for the northern portion of Alternatives C1T and L/C due to the proposed creek realignments and removal of riparian vegetation along these creeks. The adverse affect of degraded water quality is discussed below under "Endangered Species Act Sensitive Species."

Alternative C1T would span the floodway with an 820 m (2,690 ft) viaduct; the remainder of the alignment would be built on embankment. Alternative L/C would span the floodway with an 840 m (2,755 ft) viaduct, and the remainder of the alignment would be built on embankment.

7.2.3 Special Status Species

In addition to having the greatest impacts to wetlands and other waters of the U.S., Alternatives C1T and L/C could jeopardize the continued existence of local populations of three federally listed salmonid species: coho and chinook salmon and steelhead trout. These significant adverse impacts to salmonids and other Endangered Species Act protected species are discussed below.

7.1.2.1 Federally listed species

Salmonids

The northern segment of both Alternatives C1T and L/C would require realignment of approximately 400 m (1,300 ft) of Mill Creek, and 1,600 m (5,250 ft) of Outlet Creek on the east side of the railroad tracks. These creeks are habitat for the listed Chinook salmon and steelhead trout and are designated as critical habitat for the listed coho salmon. Outlet Creek provides the only route for salmonids to move upstream to spawning habitat located in streams tributary to Outlet Creek. Channel realignments also would remove riparian vegetation and construction of the new channels would degrade water quality (increased water temperature and sedimentation), resulting in potential direct and indirect impacts to coho and chinook salmon and steelhead trout.

Northern spotted owl

Excavation in the Oil Well Hill area would impact a maximum of approximately 12 to 16 ha (30 to 40 ac) of potential foraging habitat for Northern spotted owl. Minimizing the amount of habitat removed would reduce impacts to this species.

7.1.2.1 Federal species of concern

Wildlife

The realignment of Mill Creek and Outlet Creek, discussed above, could adversely affect foothill yellow-legged frog and Northwestern pond turtle. Direct impacts could result from construction of realigned channel and indirect impacts could result from water quality degradation during construction.

Plant Species

Alternative C1T would directly impact three Baker's meadowfoam populations, one population located just south of Center Valley Road and two populations located near the northern portion of the alignment. These consist of nearly 1.3 ha (3.2 ac) of occupied habitat (1991-1992 survey data). Alternative L/C would directly impact two Baker's meadowfoam populations, consisting of nearly 1.2 ha (3.0 ac) of occupied habitat at the north segment of the alternative (1991-1992 survey data). The populations remaining in these locations, and other populations not directly affected, could be subject to potential indirect hydrologic and fragmentation effects, due to separation of flood basins from other areas. Because of the rarity of this species, this impact would be considered adverse and difficult to mitigate.

7.2.4 Other Environmental Factors

Alternative C1T has high impacts to farmland and both Alternatives C1T and L/C have high impacts to wintering waterfowl. Unlike Alternative E3, Alternatives C1T and L/C do not have adverse impacts related to socioeconomics, cultural resources, growth inducement, or cost.

7.2.4.1 Sensitive Plant Communities

In addition to impacts to the plant species discussed above, Alternative L/C would bisect the largest stand of riparian valley oak woodland, located in the southern portion of the alternative, which would result in the removal of a significant number of valley oaks. Alternative C1T would avoid this riparian valley oak woodland.

Alternatives C1T and L/C would not impact Baker's navarretia, a California Native Plant Society (CNPS) List 1B species.

7.2.4.2 Other Wildlife

Alternatives C1T and L/C would result in removal of 16.1 ha (39.8 ac) and 13.8 ha (34.0 ac), respectively, of riparian woodland and scrub habitat that provide nesting and foraging habitat for white-tailed kite (a California fully protected species) and Cooper's hawk, California yellow warbler, yellow-breasted chat (all California listed special concern species). Measures are proposed to reduce these impacts. However, the magnitude of impact to this habitat type would remain high even after mitigation. For comparison purposes, Alternative J1T impacts 5.07 ha (12.5 ac) and Modified Alternative J1T impacts 1.7 ha (4.21 ac) of riparian woodland and scrub habitat (Table 7-3).

Excavation in the Oil Well Hill area could affect red tree vole that could occur in the general vicinity of the project area. Impacts to red tree vole could include the removal of red tree vole nests and the direct injury or death of individual tree voles. Minimization measures proposed for Northern spotted owl, above, would reduce impacts to this species.

The north segment of Alternatives C1T and L/C would result in fragmentation of habitat used by wintering waterfowl.

Construction of either of these alternatives also would have the potential to block corridors used by wildlife, such as deer, that make seasonal and daily movements between the valley and hills west of the valley. Measures are proposed to reduce impacts to wildlife passage.

7.2.4.3 Socioeconomics

Alternatives C1T and L/C would require the relocation of three and two residences, respectively. Sufficient replacement housing exists within Willits to accommodate these displaced residents.

Alternative C1T would not require relocation of any business, while Alternative L/C would require relocation of one business. Thus, these alternatives would not have a negative impact on the local economy or employment patterns. Suitable replacement sites are available for the one business impacted by Alternative L/C. Alternatives C1T and L/C do not impact the city's industrial park.

7.2.4.4 Environmental Justice (EO 12898)

There are no disproportionate impacts to low-income or minority residents as a result of Alternatives C1T or L/C. Alternative C1T would require the relocation of one minority or low-income residence, which does not represent a disproportionate impact on residents living in areas identified as having high proportions of low-income or minority residents. Alternative L/C does not require the relocation of any low-income or minority residence.

7.2.4.5 Human Use Characteristics

Alternatives C1T and L/C do not impact human use characteristics.

7.2.4.6 Section 4(f) Resources

Alternatives C1T and L/C do not impact Section 4(f) resources.

7.2.4.7 Cultural Resources

Three archaeological sites are located within the proposed ROW limits of Alternatives C1T and L/C.

7.2.4.8 Williamson Act Contract Farmland

Alternative C1T would convert 62.6 ha (154.6 ac) of Williamson Act Contract farmland to other uses and Alternative L/C would convert 60.3 ha (148.8 ac) of Williamson Act Contract farmland to other uses, which is similar in magnitude to the impact of Alternative E3 to Williamson Act Contract farmland. Alternative C1T has a farmland conversion impact rating of 153 (the established threshold is 160). The farmland conversation rating for Alternative L/C would be from 153 to 155.

7.2.4.9 Growth Inducement

Alternatives C1T and L/C are not expected to be growth inducing and they do not remove barriers to growth.

The potential for commercial development at southern and northern interchanges is constrained by a number of factors. Caltrans would maintain full access control at the southern interchange and there are no driveways from adjacent parcels to the facility at this area, except to a ranch to the east. Any future requests for changes to access from the southern interchange to this property would require a decision by the California Transportation Commission.

The potential for commercial development at the northern Truck Scales interchange is limited due to geotechnical constraints to the east, wetlands and agricultural uses to the west, and existing county zoning designations (AG-Agriculture). While there may be some limited potential for commercial development at the northern interchange to the west, any large-scale commercial development would be constrained, so an impact on the City's tax revenue is not anticipated. In any event, commercial growth at this location could occur with or without construction of the bypass.

7.2.4.10 Erosion and Landslide Potential

Alternatives C1T, L/C, J1T, Modified J1T, and LT would have similar low-level geotechnical challenges. These alternatives avoid the Holocene deposits with the highest liquefaction potential and they avoid major road cuts and embankment in soils that are prone to landsliding. These alternatives do not cross the Alquist-Priolo Special Study Zone (Maacama Fault Zone).

7.2.4.11 Construction Cost

Alternative C1T: $128 million (2002 dollars); Alternative L/C: $130 million (2002 dollars)

7.2.5 Conclusion

Both Alternatives C1T and L/C are practicable because they can be accomplished "within the financial resources that could reasonably be made available and [they are] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12), however, these two alternatives do not meet LEDPA criteria because of their overall environmental impacts, including the greatest direct impact to jurisdictional wetlands and other waters of the U.S.; extensive creek realignment; adverse impacts to habitat of three federally listed fish species and critical habitat of one federally listed fish species; as well as other impacts listed below.

Alternatives C1T and L/C have the greatest direct impact to jurisdictional wetlands and other waters of the U.S. of all the build alternatives: 52.7 ha (130.2 ac) for Alternative C1T and 48.5 ha (119.9 ac) for Alternative L/C. Both alternatives would require over one-half mile of creek realignment.

Alternatives C1T and L/C would result in the following adverse environmental effects: 1) The extensive creek realignment would result in adverse impacts to habitat of three federally listed fish species and critical habitat of one federally listed fish species; 2)

direct impacts to Baker's meadowfoam, a federal species of concern (three populations / 1.3 ha (3.2 ac) on Alternative C1T and two populations / 1.2 ha (3.0 ac) on Alternative L/C); 3) habitat fragmentation would likely reduce waterfowl use, including nesting for five waterfowl species; 4) Alternative C1T would impact 62.6 ha (154.6 ac) of farmland currently enrolled in Williamson Act Contracts; 5) both alternatives extend furthest to the east into Little Lake Valley, resulting in greater habitat fragmentation than Alternatives J1T or Modified J1T.

7.3 Factual Determinations: Alternative LT

7.3.1 Wetlands and Other Waters of the U.S.

Alternative LT would impact approximately 29.9 ha (73.8 ac) of habitat that qualifies as waters of the U.S., including wetlands. This magnitude of impact is intermediate among the alternatives, but is substantial from a local and regional perspective. Most of the wetlands affected by Alternative LT consist of 22.6 ha (55.9 ac) of wet meadows. Impacts to wetlands associated with Alternative LT are summarized in Table 7-3.

7.3.2 Water Quality

Alternative LT would require crossing Haehl, Outlet, Mill, and Upp Creeks. The stream crossings would directly affect the upper reach of Haehl Creek and the lower reaches of Outlet, Mill and Upp Creeks. These streams contain habitat for federally listed salmonids and critical habitat for one federally listed fish species. The stream crossings proposed for this alignment would be located primarily in valley locations. Habitat values would be similar to those occurring in Alternative J1T. Construction of this alternative would remove or degrade approximately 4.7 ha (11.6 ac) of riparian woodland and scrub habitat along streams that could provide habitat for salmonids. Alternative LT would include construction of an estimated 840 m (2,755 ft) viaduct to span the floodway. Alternative LT would cause less erosion than Alternatives C1T, L/C, and E3 and would have similar water quality impacts as Alternatives J1T and Modified J1T. Mitigation measures are proposed to reduce these impacts.

7.3.3 Special Status Species

7.3.3.1 Federally listed species

Salmonids

Alternative LT would require crossing Haehl, Outlet, Mill, and Upp Creeks. The stream crossings would directly affect the upper reach of Haehl Creek and the lower reaches of,

Mill and Upp Creeks. These streams contain habitat for three listed salmonids, including critical habitat for one listed salmonid. The stream crossings proposed for this alignment would be located primarily in valley locations. Construction of this alternative would remove or degrade approximately 3.2 ha (7.9 acre) of mixed riparian woodland habitat along streams that could provide habitat for salmonids. Measures are proposed to reduce these impacts. Mitigation measures and Best Management Practices (BMPs) will reduce impacts to these species.

Northern spotted owl

The removal of a maximum of 12 to 16 ha (30 to 40 ac) of fill at Oil Well Hill would impact potential foraging habitat of Northern spotted owl. Minimizing the amount of habitat removed would reduce impacts to this species.

7.3.3.2 Federal species of concern

Plant Species

Alternative LT would directly impact one population of Baker's meadowfoam located in the proposed Quail Meadow Interchange area, affecting approximately 0.2 ha (0.5 ac) of habitat (1991-1992 survey data). Mitigation measures are proposed to reduce impacts to this species.

Wildlife

Alternative LT could impact foothill yellow-legged frog and Northwestern pond turtle, which occur in the streams in Little Lake Valley. Mitigation measures and Best Management Practices (BMPs) will reduce impacts to these species.

7.3.4 Other Environmental Factors

Alternative LT could result in adverse impacts to riparian oak woodland. Unlike Alternative E3, Alternative LT does not have adverse impacts related to socioeconomics, cultural resources, growth inducement, or cost. Compared to Alternatives C1T and L/C, Alternative LT does not have high impacts to Williamson Act Contract farmland.

7.3.4.1 Sensitive Plant Community

The south end of Alternative LT would impact the largest remaining stand of Valley oak woodland in Little Lake Valley and would result in habitat fragmentation with the construction of the alignment on a continuous berm through the woodland. The habitat fragmentation and the creation of a barrier to wildlife would be difficult to mitigate.

7.3.4.2 Other Wildlife

Alternative LT could block corridors used by wildlife that make seasonal and daily movements between the valley and the hills to the west. Measures are proposed to reduce impacts to wildlife passage.

The removal of large numbers of valley oaks (discussed in Section 7.3.4.1 Sensitive Plant Community, above) would reduce nesting habitat for raptors, including white-tailed kite.

Construction of this alternative would remove or degrade approximately 4.7 ha (11.6 ac) of riparian woodland and scrub habitat that benefit yellow-breasted chat, a California listed special concern species. Measures that place riparian woodland and scrub habitat will reduce impacts to these species.

Excavation in the Oil Well Hill area could affect red tree vole that could occur in the general vicinity of the project area. Impacts to red tree vole could include the removal of red tree vole nests and the direct injury or death of individual tree voles. Minimization measures proposed for Northern spotted owl, above, would reduce impacts to this species.

7.3.4.3 Socioeconomics

Alternative LT would require the relocation of seven residences. Sufficient replacement housing exists within Willits to accommodate these displaced residents. Alternative LT would require the relocation of five commercial properties, which would not have a negative impact on the local economy or employment patterns. Suitable replacement sites are available for these businesses so they would be expected to continue operating effectively. Alternative LT would not impact the city's industrial park.

7.3.4.4 Environmental Justice (EO 12898)

There are no disproportionate impacts to low-income or minority residents as a result of Alternative LT. This alternative would require the relocation of two minority or low-income residences, which does not represent a disproportionate impact to residents living in areas identified as having high proportions of low-income or minority residents.

7.3.4.5 Human Use Characteristics

Alternative LT does not impact human use characteristics.

7.3.4.6 Section 4(f) Resources

Alternative LT does not impact Section 4(f) resources.

7.3.4.7 Cultural Resources

Three archaeological sites are within the ROW limits for Alternative LT.

7.3.4.8 Williamson Act Contracts

Alternative LT would convert 28.1 ha (69.5 ac) of Williamson Act Contract farmland to other uses. Alternative LT has a farmland conversion impact rating of 155 (the established threshold is 160).

7.3.4.9 Growth Inducement

Alternative LT would not be growth inducing nor would it remove barriers to growth. The potential for commercial development at southern and northern interchanges is constrained by a number of factors. Caltrans would maintain full access control at the southern interchange and there are no driveways from adjacent parcels to the facility at this area, except to a ranch to the east. Any future requests for changes to access from the southern interchange to this property would require approval by both Mendocino County and the California Transportation Commission. The potential for commercial development at the northern Quail Meadows interchange is limited due to geotechnical constraints to the east, wetlands and agricultural uses to the west, and existing zoning designations (AG-Agriculture). A few parcels next to the southwest quadrant of the northern interchange are zoned for commercial use (C-1), and an RV park and mini-storage occupy this area. Any additional commercial use on these commercially zoned parcels could benefit the City since these parcels are located within the City limits. While there may be some potential for commercial development at the northern interchange, any large-scale commercial development would be constrained, so an impact on the City's tax revenue is not anticipated. In any event, commercial growth at these locations could occur with or without construction of the bypass.

7.3.4.10 Erosion and Landslide Potential

Alternatives C1T, L/C, J1T, Modified J1T, and LT would have similar low-level geotechnical challenges. These alternatives avoid the Holocene deposits with the highest liquefaction potential and they avoid major road cuts and embankment in soils that are prone to landsliding. These alternatives do not cross the Alquist-Priolo Special Study Zone (Maacama Fault Zone).

7.3.4.11 Construction Cost

$130 million (2002 dollars)

7.3.5 Conclusion

Alternative LT is practicable because it can be accomplished "within the financial resources that could reasonably be made available and [they are] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12), however, Alternative LT would have high overall impacts compared to the remaining build alternatives.

Alternative LT would directly impact approximately 29.9 ha (73.8 ac) of jurisdictional wetlands and other waters of the U.S.

Alternative LT also would result in the following additional adverse impacts: 1) fragmentation of the largest stand of valley oak riparian woodland in the valley; 2) extends further into the valley than Alternatives J1T and Modified J1T, resulting in habitat fragmentation. In addition, Alternative LT would require approximately 2.4 million cubic meters (3.1 million cubic yards) of borrow material; Alternatives J1T and Modified J1T, on the other hand, would require 0.5 million cu m (0.6 million cu yds) less of fill material, which would represent a reduction in loss of suitable foraging habitat for Northern spotted owl, if Oil Well Hill is the only borrow site used for the project.

7.4 Factual Determinations: Alternative J1T

7.4.1 Wetlands and Other Waters of the U.S.

Alternative J1T would impact approximately 22.0 ha (54.6 ac) of habitat that qualifies as waters of the U.S., including wetlands. This magnitude of wetland impact is intermediate among the alternatives, but is extensive from a local and regional perspective. Nearly half of the affected wetlands on this alternative consists of wet meadow habitat – 10.75 ha (26.58 ac). Impacts to wetland types associated with Alternative J1T are summarized in Table 7-3.

7.4.2 Water Quality

Alternative J1T would cross Haehl Creek, and the lower sections of Baechtel, Broaddus, Mill and Upp creeks. Like the other valley alternatives, this alternative crosses areas inundated by 100-year flood events and areas of FEMA-defined floodways. Construction of this alternative would remove or degrade approximately 5.07 ha (12.5 ac) of riparian woodland and scrub habitat along streams that could provide habitat for salmonids. This alternative would include the construction of a viaduct approximately 1,600 m (5,250 ft) long, which would limit the potential for the alteration of surface and groundwater

hydrologic conditions. The viaduct would also reduce potential indirect effects to nearby wetlands, and to plant and wildlife species dependent on these aquatic habitats. Mitigation measures are proposed to minimize water quality and temperature impacts.

7.4.3 Special Status Species

7.4.3.1 Federally listed species

Salmonids

Alternative J1T would require the crossing of Haehl, Baechtel, Broaddus, Mill, and Upp Creeks. The stream crossings would directly affect the upper reach of Haehl Creek. The crossings would affect the lower reaches of Baechtel, Broaddus, and Mill creeks. All of the affected stream channels contain habitat for three listed salmonids and critical habitat for one listed salmonid, including riparian vegetation that would be removed or trimmed at the crossing locations. However, because the crossings would be located in the valley, farther downstream from the higher quality spawning habitat located in the upper reaches of these streams, they would have less severe effects on salmonids than Alternative E3 because of the smaller amount of high-quality habitat exposed to sedimentation impacts. Also, Alternative J1T would not require the filling of over a mile of Outlet Creek, which would be required for Alternatives C1T and L/C.

Although the stream reaches affected by this alternative are located primarily in Little Lake Valley, and are characterized by lower salmonid habitat quality than reaches located upstream in the foothills, these reaches are important for fish migration and rearing and are considered to be critical habitat for one listed salmonid. Construction of this alternative would remove or degrade approximately 1.9 ha (4.5 ac) of mixed riparian woodland along streams that could provide habitat for salmonids. Mitigation measures are proposed to minimize impacts to fish species.

Northern spotted owl

Excavation in the Oil Well Hill area would impact a maximum of approximately 12 to 16 ha (30 to 40 ac) of potential foraging habitat for Northern spotted oil. Minimizing the amount of habitat removed would reduce impacts to this species.

7.4.3.2 Federal species of concern

Plant species

Alternative J1T would directly impact two populations of Baker's meadowfoam. One is located on the Colli Ranch and the other is located in the proposed Quail Meadow

Interchange area. These populations include approximately 1.6 ha (4.0 ac) of habitat (1991-1992 survey data). These two affected populations could be exposed to hydrologic and fragmentation effects. Mitigation measures are proposed to reduce impacts to this species.

Wildlife

Alternative J1T could impact foothill yellow-legged frog and western pond turtle, which occur in the streams in Little Lake Valley. Mitigation measures are proposed to reduce impacts to these species.

Excavation in the Oil Well Hill area could affect red tree vole that could occur in the general vicinity of the project area. Impacts to red tree vole could include the removal of red tree vole nests and the direct injury or death of individual tree voles. Minimization measures proposed for Northern spotted owl, above, also would reduce impacts to this species.

7.4.4 Other Environmental Factors

Alternative J1T could result in significant adverse impacts to community resources. Appropriate mitigation is not available to reduce or compensate for these impacts. Unlike Alternative E3, Alternative J1T does not have adverse impacts related to cultural resources, growth inducement, or cost, nor does it have high impacts to Williamson Act Contract farmland or sensitive species. Appendix C provides detailed information on the following issues.

7.4.4.1 Sensitive Plant Communities

Other than the sensitive plant communities discussed above, Alternative J1T would require removal of individual oaks in the large valley oak woodland (noted earlier). These oaks would be removed to construct a relatively narrow access road for the landowner (see Section 9.4.6 Width of Access Roads for description). Alternative J1T would not impact Baker's navarretia, a California Native Plant Society (CNPS) List 1B species that is located on Alternative E3.

7.4.4.2 Other Wildlife

Alternative J1T could block corridors used by wildlife that make seasonal and daily movements between the valley and the hills to the west. Measures are proposed to reduce impacts to wildlife passage.

Alternative J1T would remove approximately 5.07 ha (12.5 ac) of riparian woodland and scrub habitat along streams that provide nesting and foraging habitat for white-tailed kite, a California fully protected species, and California yellow warbler, a California listed special concern species.

7.4.4.3 Socioeconomic Impacts

Alternative J1T would require the relocation of 13 residences. Sufficient replacement housing exists within Willits to accommodate these displaced residents.

Alternative J1T would require the relocation of 20 commercial properties, which would not have a negative impact on the local economy or employment patterns. Suitable replacement sites are available for these businesses so they would be expected to continue operating effectively. Three manufacturers, however, would be impacted (discussed separately, below).

However, Alternative J1T would result in removal of the San Hedrin Circle Industrial Park, a valuable resource for local and regional efforts to retain manufacturing jobs. The industrial park was built using a state grant to keep manufacturing jobs in the City of Willits. Given local employment trends, an industrial park in Willits represents an extremely valuable resource. Options for replacing this resource are severely constrained by infrastructure limitations, a lack of suitable available land, and financial factors.

Removal of the industrial park also would impact three manufacturing businesses located there. Interviews with City staff and with owners of these businesses indicate that suitable replacement sites are not available in Willits. Relocation of these businesses out of the Willits area represents an economic loss to the city, would remove employment opportunities from Willits, and would result in disproportionate impacts to a minority group (discussed in Section 7.4.4.4 below).

7.4.4.4 Environmental Justice (EO 12898)

An Environmental Justice determination has not been made but is a potential issue on Alternative J1T. Impacts of removing the business park would fall disproportionately on the 30 Hispanic workers at MCI Transformer. MCI Transformer's Hispanic workers represent 11 percent of the total Hispanic workforce in Willits. The unemployment rate among Hispanic workers in Willits is 11 percent. If MCI Transformer's workers lost their jobs, the unemployment rate among Hispanic workers would double. Although replacement jobs would be available, the expanding job market is represented by jobs with

lower wages such as retail salespersons, maids and housekeepers, janitors, and groundskeepers. Therefore, Alternative J1T could have a disproportionate impact to low-income or minority populations.

7.4.4.5 Human Use Characteristics

Alternative J1T impacts human use characteristics (Section 404(b)(1) Subpart F).

Alternative J1T crosses City property that is the location for a regional park/recreation complex (Figure 7-4). The complex includes the Mendocino County Museum, the Roots of Motive Power/Redwood Empire Railroad History Project, a rodeo arena, baseball fields, and soccer fields. The railroad museum includes an exhibition and learning center, which includes a loop track that eventually will surround a 10-acre portion of the parcel for public exhibition of steam powered locomotives. The rodeo arena houses the longest running continuously operated rodeo in California. The City currently is rehabilitating East Commercial Street to create a continuous pedestrian- and bicycle-friendly recreational corridor that ties in with the museum/recreation complex.

Recently, the City constructed a skate park within the recreation complex, which is planned as a family facility including several picnic areas and walkways. The viaduct of Alternative J1T would tower over the skate park, casting a shadow on the facilities.

The viaduct of Alternative J1T also would pass over a planned wildlife-viewing trail that will extend through the recreation complex to the wetlands mitigation area of the City's expanded wastewater treatment facility.

Alternative J1T is not compatible with these regional recreation facilities and would impact the park-like setting and rural character of the area with the introduction of this urban element. Because the elevated freeway would be the dominant feature of the viewshed looking east from the County Museum, Roots of Motive Power demonstration track, rodeo grounds, baseball and soccer fields, and because it would pass directly over the new skate park and wildlife viewing trails, it would severely detract from the enjoyment of this recreation and cultural complex. The City has invested over a million dollars in the development of the complex, with street widening, sidewalk installation and parking lot construction, lighting and landscaping which began Summer 2003. Alternative J1T would severely impact the character and appeal of the recreation and cultural complex, which serves the City and the region and which is critical to the success of the City's tourism development plan.

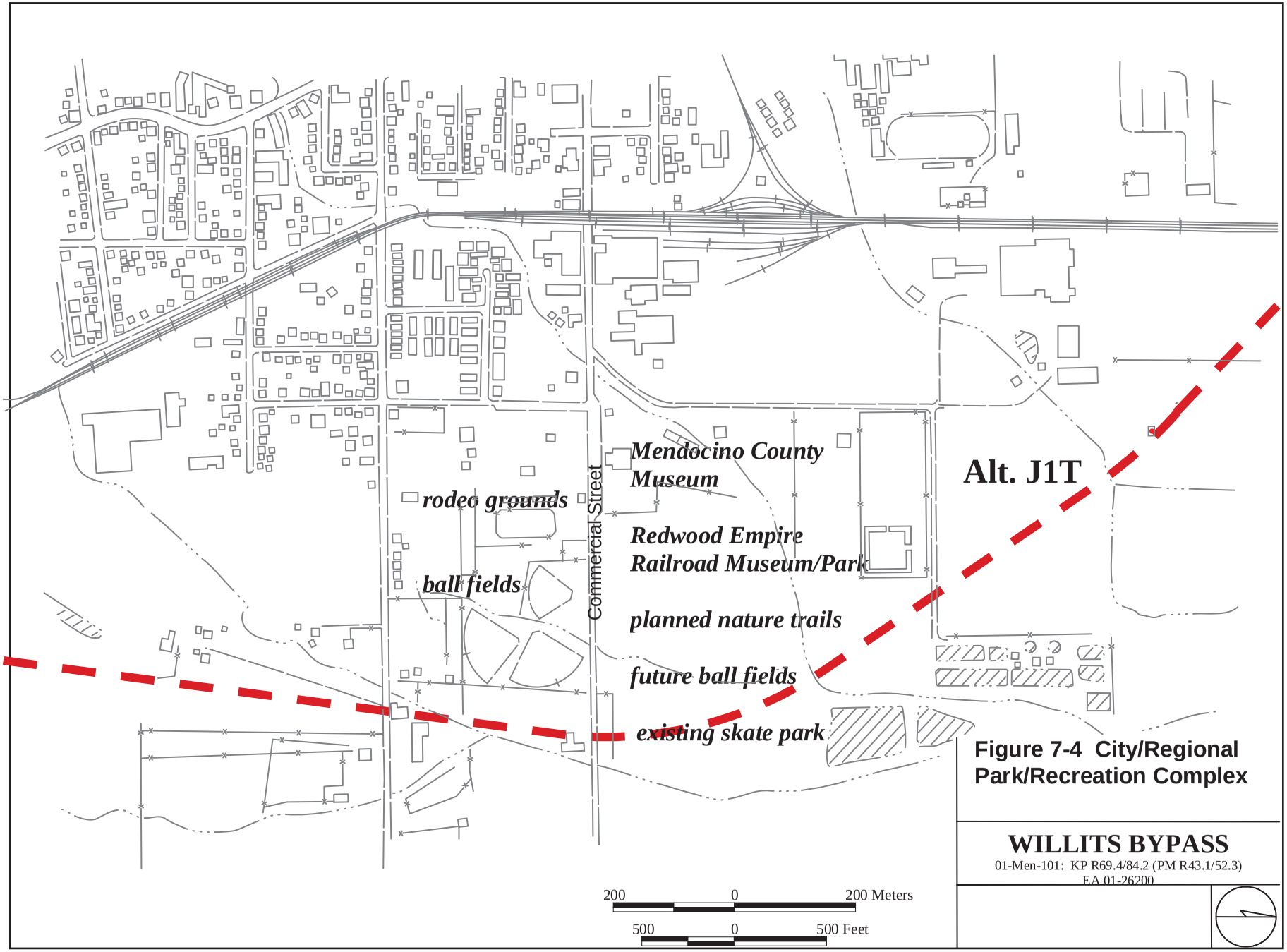


Figure 7-4 City/Regional Park/Recreation Complex

WILLITS BYPASS
01-Men-101: KP R69.4/84.2 (PM R43.1/52.3)
EA 01-26200

7.4.4.6 Section 4(f) Resource

The City of Willits informed Caltrans (letter dated April 26, 2001) that additional future facilities of the park/recreation complex discussed above would be jointly planned in conjunction with the bypass. Based on the letter indicating the City's desire to jointly plan the concurrent development of the recreational facilities and the transportation project, FHWA determined that there would not be a use of the property normally protected under 49 U. S. C. Section 303, commonly referred to as Section 4(f), and that a Section 4(f) Evaluation was not necessary. Caltrans and FHWA then continued with the required environmental studies and preparation of the DEIS/EIR.

During the circulation of the DEIS/EIR, the City of Willits informed Caltrans that the City had proceeded with plans for additional development of the northwest parcel to construct a skate park. The skate park is located in the footprint of Alternative J1T and includes picnic areas, benches, landscaping, walkways, parking and restrooms.

Based on the additional information developed during the circulation of the DEIS/EIR, FHWA determined that a Section 4(f) evaluation would be required if there were to be a use of the parklands and an avoidance alternative would have to be developed. Caltrans and the FHWA coordinated extensively with the local government and community representatives, with regular coordination meetings and the NEPA 404(b)(1) agency meetings. These meetings were instrumental in developing the Modified Alternative J1T to avoid the park. Since this modified alternative does not have a use of a protected resource, a formal Section 4(f) Evaluation will not be required.

Under the NEPA/Section 404 Integration Process Guidance Papers, the alternatives analysis should reflect the equal consideration of Section 4(f) and Section 404 concerns, and the alternative that would result in the least overall environmental harm as determined through coordination with regulatory agencies needs to be selected.

7.4.4.7 Cultural Resources

Three archaeological sites are within the ROW limits for Alternative J1T.

7.4.4.8 Williamson Act Contract

Alternative J1T would convert 20.7 ha (51.2 ac) of Williamson Act Contract farmland to other uses, which is similar in magnitude to the impact of Modified Alternative J1T to

Williamson Act Contract farmland. Alternative J1T has a farmland conversion impact rating of 158 (the established threshold is 160).

7.4.4.9 Growth Inducement

Alternative J1T would not be growth inducing nor would it remove barriers to growth. See growth inducement discussion in Section 7.3.4.9 for Alternative LT.

7.4.4.10 Erosion and Landslide Potential

Alternatives C1T, L/C, J1T, Modified J1T, and LT would have similar low-level geotechnical challenges. These alternatives avoid the Holocene deposits with the highest liquefaction potential and they avoid major road cuts and embankment in soils that are prone to landsliding. These alternatives do not cross the Alquist-Priolo Special Study Zone (Maacama Fault Zone).

7.4.4.11 Construction Cost

$162 million (2002 dollars)

Existing Condition

Proposed Condition

Figure 7-5. Visual Simulation of Alternative J1T at Park/Recreation Complex

Photosimulation within Viewshed F, Alternative J1T
At the Baseball Fields

7.4.5 Conclusion

Alternative J1T is practicable because it can be accomplished "within the financial resources that could reasonably be made available and [it is] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12), however, it would have overall adverse environmental impacts.

Alternative J1T has the least direct impacts to jurisdictional wetlands and other waters of the U.S. of the valley alternatives with 22 ha (54.6 ac) of direct impacts to this resource.

However, Alternative J1T would result in the following adverse impacts: 1) construction of Alternative J1T through the local and regional park/recreation complex would result in adverse impacts to "human use characteristics"/Section 4(f) resource and 2) construction of the alternative would result in removal of the city's only business park and the loss of businesses that would not or could not relocate in Willits.

The NEPA/Section 404 Integration Process Guidance Papers explains that when evaluating harm to non-aquatic (i.e., Section 4(f)) resources versus jurisdictional aquatic resources is that the alternatives selection process evaluates reasonable and prudent alternatives based on the "net harm" (after mitigation) of the alternative to Section 4(f) properties or other environmental resources. Feasible mitigation is not available to reduce or compensate for impacts to the Section 4(f) resource or the business park in the project area, so Caltrans and FHWA coordinated extensively with local government and community representatives and NEPA 404(b)(1) agencies to develop the Modified Alternative J1T to avoid the potential Section 4(f) resource and the business park (see Sections 7.4.4.5 and 7.4.4.6 above).

7.5 Factual Determinations: Modified Alternative J1T

7.5.1 Wetlands and Other Waters of the U.S.

Caltrans and FHWA coordinated extensively with local government, community representatives and with NEPA/404 agencies at regular coordination meetings, which were instrumental in developing the Modified Alternative J1T to avoid the city's only business park and the park/recreation complex, while minimizing impacts to wetlands and other waters of the U.S. Modified Alternative J1T would result in direct impacts to

approximately 25.9 ha (64 ac) of wetlands and other waters of the U.S. This is approximately 3.9 ha (9.4 ac) acres of wetland impacts than Alternative J1T.

7.5.2 Water Quality

Like the other valley alternatives, this alternative crosses areas inundated by 100-year flood events and areas of FEMA-defined floodways. The Modified Alternative J1T would include a slightly longer viaduct than the original Alternative J1T (approximately 1,600 m/5,250 ft). The viaduct would limit the potential for the alteration of surface and groundwater hydrologic conditions. The viaduct would also reduce potential indirect effects to nearby wetlands, and to plant and wildlife species dependent on these aquatic habitats. Construction of this alternative would remove or degrade approximately 1.7 ha (4.21 ac) of riparian woodland and scrub habitat along streams that could provide habitat for salmonids. Mitigation measures are proposed to minimize water quality and temperature impacts.

7.5.3 Special Status Species

7.5.3.1 Federally listed species

Salmonids

Modified Alternative J1T would require the crossing of Haehl, Baechtel, Broaddus, Mill, and Upp Creeks. The stream crossings would directly affect the upper reach of Haehl Creek. The crossings would also directly affect the lower reaches of Baechtel, Broaddus, and Mill creeks, which contain habitat for three listed salmonids, including critical habitat for one listed salmonid. However, they would be located farther downstream from the high quality spawning habitat located in the upper reaches of these streams, and thus would have less severe effects on salmonids because of the smaller amount of high-quality habitat exposed to sedimentation impacts.

The affected reaches under this alternative are located primarily in Little Lake Valley, and pass through residential areas of the City of Willits. Hence, they are characterized by lower habitat quality than reaches located upstream in the foothills. Nonetheless, these reaches are important for fish migration and rearing and are considered to be critical habitat for one listed salmonid. Construction and maintenance Best Management Practices and compliance with Caltrans statewide NPDES permit will reduce impacts to fish species.

Northern spotted owl

Excavation in the Oil Well Hill area would impact a maximum of approximately 12 to 16 ha (30 to 40 ac) of foraging habitat for Northern spotted owl. Minimizing the amount of habitat removed would reduce impacts to this species.

7.5.3.2 Federal species of concern

Plant species

Modified Alternative J1T would impact two populations of Baker's meadowfoam or 0.2 ha (0.5 ac). One population is on the Colli Ranch and the other population is in the proposed Quail Meadow Interchange area. However, Modified Alternative J1T would have less impact to the Colli Ranch population than Alternative J1T because most of the alignment would be west of this population (see Figure 7-6). Modified Alternative J1T would have similar hydrologic and fragmentation effects as Alternative J1T. Mitigation measures are proposed to reduce impacts to these species.

Construction of bridges over streams for Modified Alternative J1T could impact foothill yellow-legged frog and western pond turtle, which occur in the streams in Little Lake Valley. Mitigation measures that would reduce impacts to salmonids, referred to above, would reduce impacts to these species.

Excavation in the Oil Well Hill area could affect red tree vole that could occur in the general vicinity of the project area. Impacts to red tree vole could include the removal of red tree vole nests and the direct injury or death of individual tree voles. Mitigation measures are proposed to reduce these impacts.

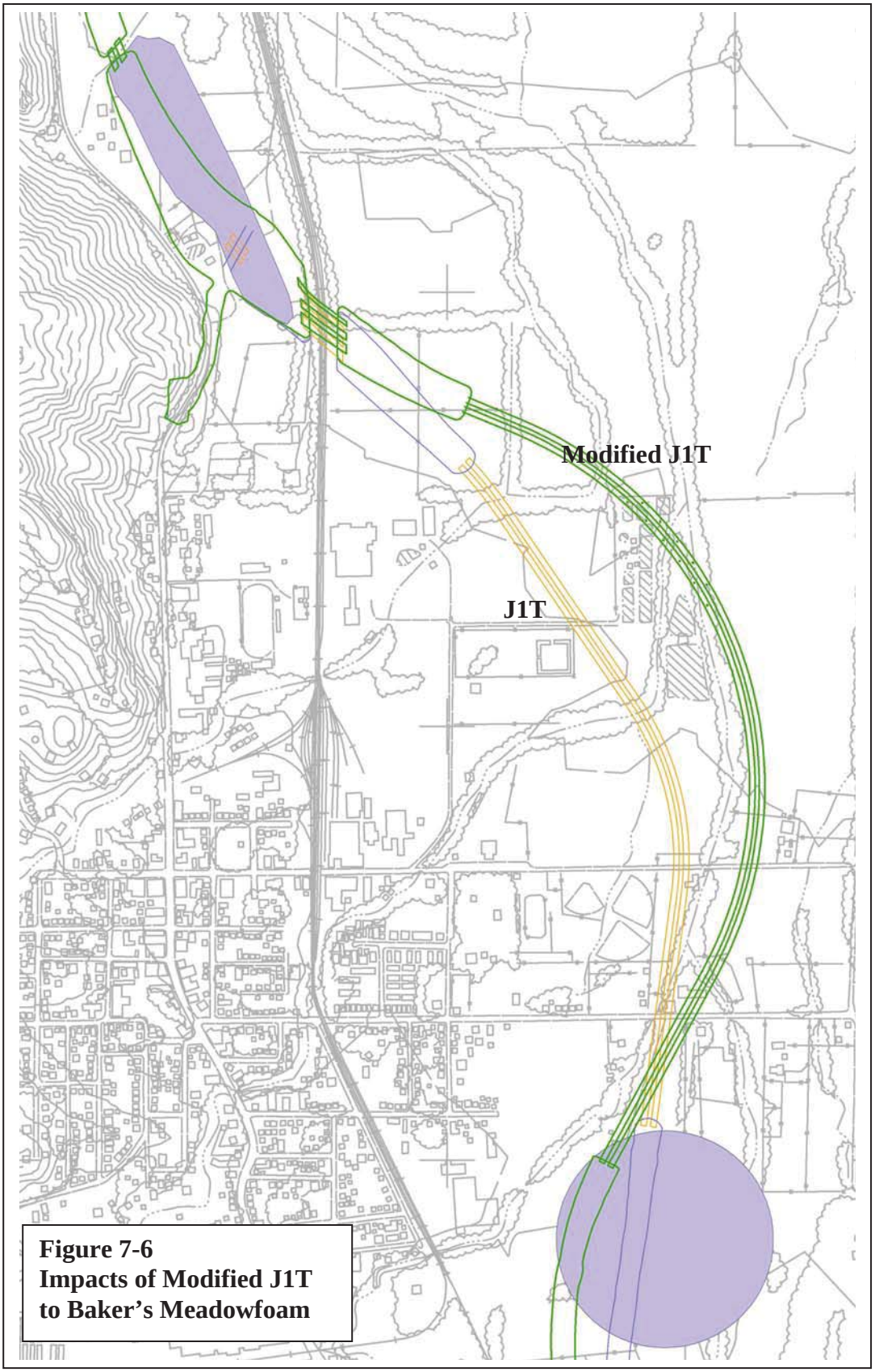


Figure 7-6
Impacts of Modified J1T to Baker's Meadowfoam

7.5.4 Other Environmental Factors

Modified Alternative J1T does not result in adverse impacts to other environmental resources, including the Sanhedrin Industrial Park and the regional park/recreation complex on Commercial Street.

7.5.4.1 Sensitive Plant Communities

The routing of Modified Alternative J1T eastward to avoid the business park on East Hill Road would require removal of valley oaks and other trees in the vicinity of an intermittent stream south of East Hill Road. While Modified Alternative J1T avoids adverse impacts to the large riparian Valley oak woodland on the Colli Ranch, the construction of an access road for the ranch will require the removal of some individual oak trees.

7.5.4.2 Other Wildlife

The south segment of Modified Alternative J1T could block corridors used by wildlife that make seasonal and daily movements between the valley and the hills to the west. Measures are proposed to reduce impacts to wildlife passage.

Modified Alternative J1T would remove approximately 1.7 ha (4.21 ac) of riparian woodland and scrub habitat along streams that provide nesting and foraging habitat for white-tailed kite, a California fully protected species, and California yellow warbler, a California listed special concern species.

7.5.4.3 Socioeconomics

Modified Alternative J1T would require the relocation of 10 residences. Sufficient replacement housing exists within Willits to accommodate these displaced residents. Modified Alternative J1T would require the relocation of 10 commercial properties, which would not have a negative impact on the local economy or employment patterns. Suitable replacement sites are available for these businesses so they would be expected to continue operating effectively. Modified Alternative J1T was designed to avoid the city's industrial park.

7.5.4.4 Environmental Justice (EO 12898)

Modified Alternative J1T was designed to avoid the city's industrial park, so there are no disproportionate impacts to low-income or minority residents as a result of this alternative. This alternative does not result in any disproportionate impacts to areas identified as having high proportions of low-income or minority residents.

7.5.4.5 Human Use Characteristics

Modified Alternative J1T was designed to avoid Human Use Characteristics, specifically the regional park/recreation complex.

7.5.4.6 Section 4(f) Resources

Modified Alternative J1T was designed to avoid Section 4(f) resources, specifically, the regional park/recreation complex.

7.5.4.7 Cultural Resources

Three archaeological sites are located within the proposed ROW limits of Modified Alternative J1T.

7.5.4.8 Williamson Act Contracts

Modified Alternative J1T would convert 20.8 ha (51.4 ac) of Williamson Act Contract farmland to other uses, which is similar in magnitude to the impact of Alternative J1T to Williamson Act Contract farmland. However, Modified Alternative J1T has a farmland conversion impact rating of 161.5, which is slightly higher than Alternative J1T (the established threshold is 160). Mitigation measures are proposed to reduce farmland impacts.

7.5.4.9 Growth Inducement

Modified Alternative J1T would not be growth inducing nor would it remove barriers to growth. See Section 7.3.4.9 Growth Inducement discussion for Alternative LT.

7.5.4.10 Erosion and Landslide Potential

Alternatives C1T, L/C, J1T, Modified J1T, and LT would have similar low-level geotechnical challenges. These alternatives avoid the Holocene deposits with the highest liquefaction potential and they avoid major road cuts and embankment in soils that are prone to landsliding. These alternatives do not cross the Alquist-Priolo Special Study Zone (Maacama Fault Zone).

7.5.4.11 Construction Cost

$162 million (2002 dollars).

7.5.5 Conclusion

Modified Alternative J1T meets LEDPA criteria because it is a practicable alternative that minimizes impacts to jurisdictional wetlands and other waters of the U.S., compared to

Alternatives E3, C1T, L/C, and LT, while minimizing impacts to sensitive species. While Modified Alternative J1T would impact approximately 3.8 ha (9.4 ac) more wetlands than Alternative J1T, it avoids human use characteristics/Section 4(f) resources, and other environmental resources that would be impacted by the other alternatives. The proposed fill activity from Modified Alternative J1T would not result in significant adverse impacts on human health and welfare, including effects on aesthetic, educational, historical, recreational, and/or scientific values. Modified Alternative J1T would not reduce or eliminate the uses of the regional park/recreation complex, including the skate park. Caltrans and FHWA coordinated extensively with local government and community representatives and NEPA 404(b)(1) agencies to develop the Modified Alternative J1T to avoid the Section 4(f) resource and industrial park that would be impacted by Alternative J1T. The proposed placement of fill will comply with the Guidelines, to the extent practicable, following implementation of appropriate mitigation and monitoring measures to minimize adverse effects on the aquatic ecosystem.

7.6 Factual Determinations: No Build Alternative

As required, the No Build alternative is included to provide an objective evaluation of all alternatives and to provide a baseline for comparison of impacts of the proposed build alternatives. The No-Build alternative does not satisfy the purpose of the project " to reduce delays, improve safety and achieve a level of service (LOS) of at least "C" for interregional traffic on U.S. 101 within the vicinity of Willits." The No Build alternative would maintain U.S. 101 at its existing location, with the current facility being used as both an interregional through route and the main street of the City of Willits. With the No-Build Alterative, congestion would continue to increase on the current facility. Existing congestion results in increased travel time for motorists and delayed response time for emergency vehicles; without the project, this condition would worsen.

7.6.1 Conclusion

Although the No Build alternative would have no impact to wetland resources, traffic on existing U.S.101/Main Street is projected to increase in the future based on regional transportation demands, which would result in increased delays and safety concerns for interregional and local traffic on U.S. 101 within the City of Willits.

Therefore, the No Build alternative is rejected as a LEDPA because it does not meet the purpose and need of the project to alleviate current and projected traffic demand and safety concerns on U.S. 101 within the project limits.

7.7 Summary and Conclusion

This Section 404(b)(1) analysis clearly demonstrates that Modified Alternative J1T meets criteria for LEDPA because it would result in the least overall environmental harm. This Section 404(b)(1) clearly demonstrates, as well, that Alternatives E3, J1T, LT, C1T, L/C and No Build do not meet LEDPA criteria.

8 Description of Fill Discharge to Occur in Jurisdictional Areas

Section 7, above, compared the overall environmental impacts of the build alternatives. Calculations were based on the bypass roadway and the entire (100 percent) viaduct as permanent impacts or fill of wetlands and other waters of the U.S.

Since the factual determination of Modified Alternative J1T concluded that it is the LEDPA (Section 7.5), additional design information has been prepared to make a preliminary estimate distinguishing between permanent and temporary impacts of this alternative to jurisdictional wetlands (Table 8-1). Permanent fill would be the roadway, access roads, and viaduct piers (which would compose an estimated 20 percent of the viaduct structure). Temporary fill/impacts would be areas under the viaduct not impacted by piers (an estimated 80 percent of the viaduct structure). Additional temporary impacts would be staging areas and haul roads.

If this formula (20 percent permanent impacts/80 percent temporary impacts with the viaduct) were applied to Alternatives C1T, L/C, LT, and J1T, their wetland impacts would show a commensurate reduction. There is no viaduct on Alternative E3.

Table 8-1 Modified Alternative J1T Permanent and Temporary Impacts (ha/ac)

Permanent Impacts			
Wetland habitat types[1]	**Roadway and viaduct piers**	**Access roads**	**Total permanent impacts**
WRS	0.02 / 0.06	0	0.02 / 0.06
MRS	0.07 / 0.18	0	0.07 / 0.18
MRW	0.19 / 0.47	0	0.19 / 0.47
ARW	1.0 / 2.49	0	1.0 / 2.49
VORW	0.03 / 0.08	0.06 / 0.15	0.09 / 0.23
VOARW	0	0	0
MM	2.17 / 5.35	0	2.17 / 5.35
TM	0	0	0
WM	14.9 / 36.9	0.8 / 2.08	15.8 / 38.98
VP	0.04 / 0.11	0	0.04 / 0.11
Pond[3]	--	--	--
Total	18.5 / 45.64	0.9 / 2.23	19.4 / 47.87
Temporary Impacts			
Wetland habitat	**Area under**	**Staging areas**	**Total temporary**

types[1]	viaduct, not impacted by Piers		impacts
WRS	0.004 / 0.01	0	0.004 / 0.01
MRS	0.15 / 0.38	0	0.15 / 0.38
MRW	0.38 / 0.93	0.0004 / 0.001	0.38 / 0.931
ARW	1.17 / 2.90	0	1.17 / 2.90
VORW	0.15 / 0.38	0.08 / 0.19	0.23 / 0.57
VOARW	0	0	0
MM[2]	3.0 / 7.40	0	3.0 / 7.40
TM	0.55 / 1.37	0	0.55 / 1.37
WM	13.87 / 34.28	5.5 / 13.66	19.4 / 47.94
VP	0.05 / 0.13	0	0.05 / 0.13
Pond[3]	--	--	--
Total	19.3 / 47.78	5.6 / 13.85	24.9 / 61.63

1 Wetland Habitat Types

WRS	Willow Riparian Scrub
MRS	Mixed Riparian Scrub
MRW	Mixed Riparian Woodland
ARW	Ash Riparian Woodland
VORW	Valley Oak Riparian Woodland
VOARW	Valley Oak-Ash Riparian Woodland
MM	Mixed Marsh
TM	Tule Marsh
WM	Wet Meadow (includes Hay Meadow)
VP	Vernal Pool
Pond[3]	Colli Pond/Niesen Pond

2 The higher acreage of MM (Mixed Marsh) is based on changes at the north end of the project where areas previously mapped as ARW (Ash Riparian Woodland) and MRW (Mixed Riparian Scrub) are now dominated primarily by MM.

3 Temporary impacts to ponds are approximately 0.37-acre; permanent impacts to ponds are approximately 0.57-acre.

A variety of fill types would be used in jurisdictional wetlands (mostly in wet meadow). The most prevalent type of fill would be earth fill. Modified Alternative J1T would place approximately 2.2 million cubic meters (2.9 million cubic yards) of fill material at the south end of the project to construct embankment. The roadway prism is approximately 50 m (165 ft) wide at the base in primarily wet meadow wetlands that are in agricultural use (grazing). Once the material is transported to its desired location, heavy equipment shapes the embankment on which the freeway would be constructed. Compaction occurs simultaneously with this process. The embankment must be constructed to a required height to elevate the road above the 100-year flood elevation; the height and slope ratio define the base width (Section 9.4.3 Slope Ratios discusses reduced slope ratios to minimize impacts to aquatic resources). When the embankment is completed, aggregate is brought in with "belly dumps" and spread as a base where the pavement will be placed.

The aggregate is then watered and compacted to its design specifications. Trucks then haul in asphalt concrete paving and it is spread with specialized paving equipment and then rolled and compacted into its specified dimensions and densities.

Culverts would be placed under the roadway in various locations to avoid impacts from storm runoff. The size and location of culverts will be determined during final design.

Stream crossings will consist of culverts, bridges, or viaducts. The bridges and viaduct structures will require placing abutments or piers in or near Haehl, Baechtel, Broaddus, and Mill creeks. It is possible that the number of structures that are placed in or near the creeks may change with future design modifications.

Each bridge is poured-in-place concrete and possibly rock-slope protection placed around the abutments that are adjacent to streams. There may also be rock slope protection placed at the outlets of roadside drainage facilities to dissipate hydraulic energy and to treat storm water as part of the National Pollution Discharge Elimination System (NPDES) requirements. The exact quantities of each type of fill will be determined during final design.

Construction of some bridges will require a temporary bridge, which will be constructed to span the creeks and not require the use of temporary culverts. This work is expected to occur above the line of ordinary high water, but may require the placement of pads in the creek channels to support piers for the temporary bridges. The pads would be in-place during the summer months, when water levels are low, and are not likely to affect water flows in the creek channels. The bridges will have separate southbound and northbound structures. When one of the bridge structures is completed, it will be used as a temporary haul road during construction of the adjacent structure. This will reduce the use of temporary bridges and associated temporary impacts.

Viaduct will be constructed at the north end of the project with piers in wetland that are primarily wet meadow. The 2,120 m (6,950 ft) viaduct will consist of separate northbound and southbound elevated structures that would reduce the amount of fill in the floodplain in comparison to earth embankment. Each of the elevated viaduct structures will be approximately 12.5 m (40 ft) wide. The viaducts will require permanent piers, approximately 1.8 m (6 ft) in diameter, in the floodplain to support them. The number of piers and the distance between the sets of piers has yet to be determined. The installation of the piers and deck construction will require a 30.5 m (100 ft) wide work area on the

east side of the viaduct, and a 17 m (55 ft) wide work area on the west side of the viaduct. Access will also be required underneath the viaduct structure. The larger work area on the east side of the viaduct is required for access by large cranes that will be used to construct the deck sections. The temporary work areas will also be used for vehicle access and for storage of equipment and materials, and will also be used for foundation, pier and false-work erection and removal. Permanent impacts to the floodplain will be limited to the total surface area encompassed by the piers (estimated to be approximately 1% of the area under the viaduct). The piers for the viaduct will either be placed via drilling or pile driving. It is likely that the northbound and southbound viaduct structures will be constructed simultaneously. When each span is completed the material and equipment will be moved to the next span.

Most of the viaduct structures and work activities, including the abutments at each end, will occur away from any creeks. Temporary impacts to the valley floor habitats affected by the access roads and area underneath the viaduct will consist primarily of soil compaction.

The structures at Haehl Creek near the Colli Ranch also would require permanent supports within the 100-year floodplain. The Haehl Creek falsework may require the placement of falsework supports below the line of ordinary high water. All work within the stream channels will comply with a work window established through consultation with NOAA Fisheries, approximately June 15 through October 15.

Construction of Modified Alternative J1T would require filling approximately 2,800 feet of Other Waters consisting of a non-fish-bearing intermittent stream south of East Hill Road.

Access roads will be constructed on compacted fill material.

Haul roads will be constructed either within the footprint of the bypass roadway fill section or within the work areas designated for the structures construction. Any material imported for constructing haul roads outside of the roadway fill section will be removed during winter months and after construction is completed.

9 Compliance with 40 CFR 230.10 (a)-(d)

9.1 Must Select the Practicable Alternative with Less Impacts to Aquatic Ecosystem, Unless the Alternative would result in Other Significant Adverse Environmental Impacts

40 CFR 230.10(a) A discharge is not allowed if there is a practicable alternative that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences

This Section 404(b)(1) Alternatives Analysis clearly demonstrates that Modified Alternative J1T is the LEDPA to the overall environment. Modified Alternative J1T minimizes impacts to the aquatic ecosystem compared to the other alternatives, while avoiding significant and adverse environmental consequences to human use characteristics/Section 4(f) resources and other environmental resources.

9.2 Must Comply with State Water Quality Standards, Toxic Effluent Standards, and Endangered Species Act

40 CFR 230.10(b)(1): The alternative must not cause or contribute to violations of any applicable State water quality standards

The following measures will be implemented to ensure that water quality standards will not be violated with the construction of Modified Alternative J1T:

- Best Management Practices (BMPs) will be required to stabilize disturbed soil, minimize erosion, and capture and remove sediment suspended in runoff before it leaves the site. Temporary sedimentation barriers, such as sandbags or siltation fencing, shall be installed to minimize the amount of silt entering creeks and ephemeral drainages. Special provisions will include the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) and other project specific Standard Special Provisions (SSPs) which reduce pollutants in storm water discharges from construction sites both during construction and after construction is completed. The SSPs will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters.

- Where vegetation is removed or severely trimmed back, Caltrans will plant replacement vegetation for shading of creeks. Caltrans will carry out pre-construction planting along certain creeks to establish shade where feasible. The

project will be constructed using the Storm Water Quality Handbook Planning and Design Staff Guide (June 2000), which provides detailed procedures for design of permanent slope stabilization controls.

- As part of standard operation and maintenance procedures, Caltrans has developed a standard Hazardous Waste and Spill Response Plan (HW&SRP) that Caltrans will ensure is implemented during the project, in the case of accidental spills.

- Any dewatering during construction or other point source discharges will be subject to waste discharge requirements imposed under the National Pollutant Discharge Elimination System (NPDES). A Section 401 Certification or Waiver will be obtained from the Regional Water Quality Control Board prior to initiating work on the project. In addition to the statewide general NPDES from the State Water Resources Control Board, a project specific NPDES permit will also be required for this project. The Plan requires that pollution sources be identified and it commits to implementing storm water pollution prevention measures to reduce pollutants in storm water discharges from construction sites both during construction and after construction has been completed.

- Pursuant to Fish and Game Code Section 1602, the project will require a Streambed Alteration Agreement from the California Department of Fish and Game for any work that may occur within the natural flow or bed, channel or bank of streams in the project area.

- The project will comply with all conditions required by state and federal permitting agencies. Caltrans will have a qualified biologist monitor construction activities in sensitive biological resource areas as necessary to ensure permit conditions and mitigation requirements are implemented and enforced.

40 CFR 230.10(b)(2): The alternative may not violate any applicable toxic effluent standard or prohibition under Section 307 of the Act.

Measures will be implemented (bulleted items above) to ensure that no toxic effluent standards or prohibitions are violated with construction of Modified Alternative J1T.

40 CFR 230.10(b)(3): The alternative must comply with the Endangered Species Act (ESA) and not jeopardize the continued existence of species listed as endangered or threatened under the 1973 ESA.

Federally Listed Species

Salmonids

Stream crossings that would be constructed for Modified Alternative J1T would affect reaches that are important for migration and rearing for local populations of three federally listed salmonid species, and are considered critical habitat for one listed salmonid. Construction and maintenance Best Management Practices and compliance with Caltrans statewide NPDES permit will reduce impacts to fish species by minimizing water quality degradation and sedimentation to the streams during construction.

Measures to avoid or minimize potential effects on listed fish species will include implementing in-stream work windows identified by NOAA Fisheries and restoration measures to compensate for habitat losses. Caltrans/FHWA will compensate for direct impacts to riparian vegetation through restoration and enhancement of existing degraded riparian habitat at a ratio agreed upon in consultation with CDFG, USFWS, NOAA Fisheries, and USEPA. See Section 9.4.2 and 9.4.9 below for minimization measures.

Northern Spotted Owl

The contractor may choose Oil Well Hill, at the north end of the project, for borrow material to construct the project. Excavation activities at Oil Will Hill would impact potential foraging habitat for Northern spotted owl. Minimization measures could include the following: all large trees that can be avoided will be protected; vegetation removal will occur between October 1 through February 1, during the non-breeding season, to minimize potential impacts to spotted owls; and vegetation will be removed incrementally, i.e., only on those portions of the site that are needed for borrow material, rather than removing all vegetation on the approximately 16 ha (40 ac) site prior to excavation. In addition, all appropriate Best Management Practices (BMPs) will be implemented to minimize impacts to spotted owls and other sensitive resources in the area. Vegetation at the site will be restored by planting trees species that occurred at the site prior to excavation.

A two-year protocol-level survey will be conducted prior to construction to determine that status of spotted owls in the vicinity of the borrow site prior to excavation. If spotted owls

are found nesting within 0.8 km (0.5-mile) of the borrow site, Caltrans will consult with the USFWS to develop a strategy for minimizing impacts to NSO.

Federal Species of Concern

Plant Species

Modified Alternative J1T would impact one population of Baker's meadowfoam located n the proposed Quail Meadows Interchange area. Modified Alternative J1T would reduce impacts to a population of Baker's meadowfoam on the Colli Ranch, compared to Alternative J1T, because the alignment of Modified Alternative J1T has been moved to the west of this population (see Figure 2). Measures are proposed to reduce impacts to these species. Environmentally Sensitive Area (ESA) fencing will be installed to avoid construction-related impacts to stands of Baker's meadowfoam adjacent to the construction areas. Caltrans will comply with Fish and Game Code Section 1900-1913 for mitigation for State listed rare plant species, and will coordinate with CDFG in identifying appropriate mitigation measures.

Wildlife

Excavation in the Oil Well Hill area could affect red tree vole that could occur in the general vicinity of the project area. Mitigation measures implemented for Northern spotted owl are expected to minimize impacts to the red tree vole.

Construction of the bridges and viaducts could affect Northwestern pond turtle and foothill yellow-legged frog that could occur in the streams within the project corridor. Mitigation measures implemented for salmonids would minimize impacts to these two species.

Documentation

A biological assessment has been prepared, and consultation with USFWS and NOAA Fisheries will be initiated under Section 7 of the Endangered Species Act. Appropriate mitigation measures will be developed under the consultation process to assure that the project does not jeopardize the continued existence of the special status species noted above.

9.3 Must Not Cause Significant Degradation of Waters of U.S.

40 CFR 230.10(c) No discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of waters of the U.S.

Alternative J1T was designed to avoid or minimize impacts to aquatic resources to the maximum extent practicable, but because of its adverse impacts to human use characteristics/Section 4(f) resource, this alternative was modified. The Modified Alternative J1T would impact approximately 3.8 ha (9.4 ac) more wetlands than Alternative J1T but will be designed to further increase its avoidance or minimization of impacts to aquatic resources to the maximum extent practicable. See discussion above under Section 9.2 for additional avoidance and minimization measures.

9.4 Must Minimize Adverse Impacts to Aquatic Ecosystem

40 CFR 230.10(d) The alternative must include appropriate and practicable steps to minimize adverse impacts on the aquatic ecosystem.

The project would result in indirect impacts to federally listed salmonid species and to critical and Essential Fish Habitat (EFH) for salmonids because of impacts to riparian vegetation and activities in the creek channels for bridge and viaduct construction. Selection of Modified Alternative J1T would minimize these impacts, requiring the least excavation (4.24 ha (10.2 ac)) compared to Alternative E3. The design will be refined with further attempts to avoid or minimize impacts to significant aquatic resources. Several steps have been taken to avoid and minimize impacts of the LEDPA to waters of the U.S. through design and construction methods. These are listed below.

9.4.1 Floodway Viaduct

Construction of the viaduct on Modified Alternative J1T would reduce impacts to wetlands by approximately 80 percent, since an estimated 20 percent of the viaduct would be piers while the remaining 80 percent would be the superstructure. Therefore, the permanent impacts of Modified Alternative J1T (discussed in Section 7 and Table 7-3) are reduced from 25.9 ha (64 ac) to 19.4 ha (47.87 ac). See Section 8 Description of Fill Discharge to Occur in Jurisdictional Areas for more information on permanent/temporary impacts of Modified Alternative J1T.

Impacts to both groundwater and surface water hydrology are minimized by constructing the planned 1.3-mile floodway viaduct, which spans the entire Little Lake Valley Floodway. The viaduct is designed to ensure flood flows are not redirected, to limit increases of the 100-year floodplain water surface elevation to less that 0.15-foot, and to prevent any increase to the floodway water surface elevation. Further, Caltrans and FHWA do not expect the construction of freeway fill to have an effect on groundwater in

the Little Lake Valley Groundwater Basin. Caltrans and FHWA have concluded that detailed groundwater modeling is not warranted on this project.

In support of these conclusions, the following data is available from the Department of Water Resources (DWR) webpage; http://www.dwr.water.ca.gov, which monitors eight groundwater wells in the Little Lake Valley Groundwater Basin semi-annually. DWR measures the groundwater surface elevation generally in spring and fall and presents this data in hydrographs of groundwater levels. Hydrographs of the eight wells in the Little Lake Valley Groundwater Basin show typical seasonal water level fluctuations with no significant long-term trends. The groundwater surface measurements demonstrate that groundwater surface fluctuates annually from 0 foot to 5 feet below the ground surface in spring to 15 feet to 30 feet below the ground surface in fall.

The eight wells in the Little Lake Valley Groundwater Basin date back to 1953 and were drilled in the following years; four were installed during the 1950s, one was installed in 1965, one was installed in 1977, and the two most recent were installed in 1986 and 1988. Little variation in the groundwater surface elevations has occurred over the past 70 years while development including road building has taken place in the Little Lake Valley. Also, because groundwater recharges to the maximum extent possible each fall, it does not appear development over the past 70 years has reduced groundwater flow capacity.

A subsurface investigation conducted at the former Remco facility, located at 934 South Main Street in Willits, and reviewed by the North Coast Regional Water Quality Control Board (Order No. R1-2003-086) describes the aquifers of the Little Lake Valley Groundwater Basin:

> There are three groundwater bearing zones at the site where permeable lenses of sand and gravel have been identified. The A-zone exists from the water table to a depth of approximately 15 to 25 feet below ground surface (bgs), the B-zone from 20 to 40 feet bgs, and the C-zone, which begins at 35 to 60 feet bgs. The A-zone is largely unconfined. However, the B- and C- zones are largely confined. The direction of groundwater flow at the site is predominately to the east-northeast, while in the lower aquifers a more north-northeasterly trend exists.

Little Lake Valley is comprised of Holocene alluvial deposits consisting of a thick sedimentary sequence of uncemented fine-textured silt and clay interlaced with sand and gravel. The thickness of the formation may be as much as 250 feet in parts of the valley and it has a large capacity to store groundwater. The annual precipitation of approximately 49 inches in the valley provides adequate surface water to fully recharge the alluvial deposits. The DWR asserts that most of the groundwater recharge occurs at the southern margin of the Little Lake Valley alluvial plain.

DWR estimates the groundwater storage capacity of the alluvial deposits in the Little Lake Valley at between 35,000 and 90,000 acre-feet. Dry season groundwater flow to Outlet Creek is estimated at 2,000 acre-feet based on creek flow measurements. Thus accounting for extraction from the basin of 2,000 acre-feet per year, 6 percent of the Little Lake Valley Groundwater Basin's storage capacity flows to Outlet Creek during the dry season.

Caltrans and FHWA review of the current literature documenting the relationship between groundwater flow and surface water hydrology indicates that current models are highly complex, dependent upon numerous simplifying assumptions and must be calibrated to site-specific data. The majority of these models focus on contaminant transport. The literature is devoid of studies evaluating groundwater flow and how it may be related to changes in surfaces water hydrology. Thus, Caltrans and FHWA conclude that detailed modeling of the Little Lake Valley Groundwater Basin will not generate additional definitive information about this relationship.

9.4.2 Stream Crossings and Culverts

Stream crossings will consist of culverts, bridges, and viaducts to minimize impacts to streams within the project corridor.

Activities in Haehl Creek, at the proposed southern interchange consist of removing the large culvert under the existing access road adjacent to the Schmidbaur property. Replacement of this culvert with a bridge will require the channel to be stabilized (typically by placing wiers) for an undetermined length upstream of the culvert, to prevent back-cutting erosion. In addition, a second existing culvert upstream of the above culvert may be replaced for the proposed new Schmidbaur access road. This culvert would be designed to prevent future channel erosion. The restoration of this Haehl Creek channel reach to its normal configuration and gradient would reduce future erosion in Haehl Creek, which would likely enhance essential fish habitat in Haehl Creek and other creeks downstream of Haehl Creek. The culvert removal and stream channel restoration at the

Haehl Creek site would occur during the summer months when this reach of Haehl Creek is normally dry.

Approximately 2,800 feet of one unnamed intermittent stream, located south of East Hill Road, will be filled. This stream will be realigned to the east of its current location.

9.4.3 Slope Ratios

The Caltrans Highway Design Manual (Fifth Edition, page 300-49, (a) Safety) suggests a side slope of 1:6 or flatter for high-speed roadways and states that side slopes of 1:10 are desireable. A side slope of 1:10 would increase the project's footprint by approximately 24 hectares (60 acres) where the alignment is built on fill. The project proposes side slopes varying between 1:2 and 1:4.

9.4.4 Truncated Alternatives

In Fall 2000, due to budget constraints, Caltrans truncated (shortened) all of the valley alternatives, which reduced impacts to natural resources. Alternative J1T which eventually became the Modified Alternative J1T was shortened by approximately 5.1 km (3.2 mi).

9.4.5 Redesign of Southern Interchange

The proposed interchange at the south end of the project has been redesigned and will no longer require the realignment of 275 m (902 feet) of Haehl Creek, which represents a significant reduction of impacts to salmonid bearing streams in the project area.

9.4.6 Width of Access Roads

Roadway width for access roads has been estimated at 7.2 m (24 ft) to allow for a two-lane roadway with no shoulders. It may be possible to reduce this width to about 5 m (16 ft), however, the design will need to conform to Caltrans right-of-way requirements to "replace in kind or better" and to be constructed adequately for the intended purpose. These access roads will need to accommodate hay trucks and other farming equipment.

9.4.7 Median Width

During the early stages of the development of the alternatives, the standard minimum median width for rural freeways was 46 feet. The current Caltrans design standard for minimum median width for rural freeways is 18.6 m (61.0 ft). As part of its effort to lower environmental impacts of the project, Caltrans retained the old standard, which

when adapted to metric units is 13.8 m (45.3 ft). Caltrans policy requires a design exception approval for the proposed median.

Further reductions in the median width would compromise the purposes of the median and reduce the safety benefits offered by the median. In addition, if a median barrier were constructed, it would exacerbate problems for emergency workers responding to incidents, restrict emergency vehicle operations, present an obstacle to animals crossing the highway, and increase difficulties in maintenance work.

For these reasons, Caltrans continues to propose the unpaved 13.8 m (45.3 ft) median for use in the Willits Bypass project.

9.4.8 Borrow/Excavation Requirements

A SMARA permit may be required if embankment material is excavated from Oil Well Hill, which has been identified as suitable foraging habitat for Northern spotted owl. The SMARA application requires preparation and implementation of a reclamation plan, which includes steps for maintaining water and air quality, minimizing flooding, erosion and damage to wildlife and aquatic habitats caused by the surface mining. The reclamation plan will include topsoil replacement and revegetation with suitable plant species. Because suitable foraging habitat for northern spotted owl would not be replaceable during the assumed life span of the proposed action, Caltrans and FHWA propose measures to minimize impacts at the Oil Well Hill borrow site.

Minimization measures for excavation at Oil Well Hill will include the following: all large trees that can be avoided will be protected; vegetation removal will occur between October 1 through February 1, during the non-breeding season, to minimize potential impacts to spotted owls; and vegetation will be removed incrementally, i.e., only on those portions of the sit that are needed for borrow material, rather than removing all vegetation on the approximately 40-acre site prior to excavation. In addition, all appropriate Best Management Practices (BMPs) will be implemented to minimize impacts to spotted owls and other sensitive resources in the area. Tree species that occurred at the site prior to excavation will be used to re-vegetate the area.

A two-year protocol-level survey will be conducted prior to construction to determine that status of spotted owls in the vicinity of the borrow site prior to excavation. If spotted owls are found nesting within 0.8 km (0.5-mile) of the borrow site, Caltrans will consult with the USFWS to develop a strategy for minimizing impacts to NSO.

Contractors may choose to use other SMARA-approved sites when advantageous to them (e.g., savings in time or money). Other commercial sources for embankment or fill material are in the project area. Use of other sources of fill material would reduce impacts at Oil Well Hill and could reduce other impacts associated with trucking fill material from Oil Well Hill to the south end of the project.

The closest permitted source of fill material to the project area is the Harris Quarry, which is located south of Willits at the Ridgewood Grade. The quarry currently is pursuing a permit for an additional 600 acres adjacent to its existing holdings. To minimize visual impacts and to meet other SMARA requirements, not all of the 600 acres would be excavated. Currently, the full capacity of the site (depth of excavation) cannot be predicted; however, if half the site (300 acres) were excavated at a depth of 5 feet, nearly 2.5 million cubic yards, or 100 percent of the fill material required for Modified Alternative J1T, would be available. The quarry expects to have its permit in place by 2007. Please note that Caltrans cannot direct the contractor to use a specific borrow site. The contractor may use the SMARA-approved borrow site of his choice.

9.4.9 Construction Activities

Potential construction-related impacts can be reduced or avoided by maintaining buffer areas and employing seasonal construction constraints (e.g., no work during active nesting periods). A Storm Water Pollution Prevention Plan will be implemented to protect aquatic resources and BMPs will be required to stabilize disturbed soil, minimize erosion, and capture and remove sediment suspended in runoff before it leaves the site. At Oil Well Hill, SWPPPs and BMPs will be implemented to minimize the potential for sediments to enter Outlet Creek.

Mitigation for riparian vegetation removed at the bridge and viaduct crossings would include minimizing the amount of vegetation removed and restoration of vegetation at each of the structures. However, taller vegetation under the structures will have to be trimmed periodically to avoid contact with the structures. A vegetation planting and monitoring plan will be developed to restore vegetation adjacent to the bridges/viaducts, and possibly in other reaches where riparian vegetation is absent. The plan will include planting fast growing species, such as willows and alders, which should reduce potential long-term effects of vegetation removal at the bridge/viaduct sites. Riparian vegetation at the stream crossings that is not affected by the project will be designated as Environmentally Sensitive Areas (ESAs) on project plans and will be fenced to prevent access during the construction phase of the project. In addition, bridge construction at

each of the crossings may take only one season to complete, which would hasten early re-establishment of riparian vegetation, which would minimize temporal losses. The viaduct would take up to four years to construct.

If stream flow is present at the time of construction, construction areas may require dewatering and fish relocation. Dewatering methods will be developed through consultation with NOAA Fisheries. If fish relocation is required, a qualified biologist who has authorization from NOAA Fisheries shall be on-site to capture and relocate salmonids trapped in dewatered areas and pools.

Caltrans/FHWA will have a qualified biologist monitor construction activities in sensitive biological resource areas, as necessary, to ensure permit conditions and mitigation requirements are implemented and enforced.

In-stream work windows for this project will be developed through consultation with NOAA Fisheries, but will likely be between June 15 and October 15 of each year. This in-stream work window could be extended on a yearly basis if the NOAA Fisheries determines that an extended work window would not adversely affect salmon and steelhead.

Implementation of these measures is expected to minimize potential impacts to aquatic ecosystems.

9.4.10 Compensatory Mitigation

Caltrans will develop a comprehensive mitigation and monitoring plan (MMP) in coordination with resource and regulatory agencies. As part of this effort, Caltrans and FHWA also propose to mitigate for any unavoidable impacts by implementing a Habitat Development Plan with wetlands mitigation measures consistent with ACOE requirements.

If Caltrans and FHWA implement compensatory mitigation at a minimum of 2:1 ratio for Modified Alternative J1T's estimated 19.4 ha (47.87 ac) of permanent wetlands impacts[10]

[10] Construction of the viaduct on Modified Alternative J1T would reduce impacts to wetlands by approximately 80 percent, since an estimated 20 percent of the viaduct would be piers while the remaining 80 percent would be the superstructure. Therefore, the permanent impacts of Modified Alternative J1T are reduced from 25.9 ha (64 ac) to 19.4 ha (47.87 ac). See Section 8 for discussion.

(as shown in Table 8-1), approximately 38.7 ha (95.7 ac) of wetland habitat at a minimum would need to be created, if suitable wetland creation sites exist in the project area.

Currently, Caltrans is preparing a feasibility study of potential wetlands mitigation locations in the Little Lake Valley. The study will determine if wetland creation and/or restoration/enhancement on the properties is feasible to satisfy wetland mitigation requirements for the project. The emphasis of the study will be the identification of feasible wetland *creation* opportunities. The information from the feasibility study will be used to narrow the range of candidate wetlands creation and/or restoration/enhancement sites to feasible sites for which a conceptual mitigation plan can be prepared.

10 Indirect And Cumulative Effects To Aquatic Resources And Sensitive Species

The indirect and cumulative effects to aquatic resources and sensitive species from construction of Alternatives E3, J1T, Modified J1T, LT, C1T, and L/C are outlined below.

10.1 Indirect Impacts

10.1.1 Construction-Related Erosion at Designated Borrow Site

The designated borrow site at Oil Well Hill consists of rocky material. The existing slope ratios along the existing highway are approximately 3/4:1 and are very stable. These cut slopes have not experienced landslides or rock slides since construction in 1936, and Caltrans and FHWA have no reason to expect instability of cut slopes created during excavation for borrow material. The proposed borrow excavation would remove material from Oil Well Hill and establish a variable cut slope no steeper than 1:1, which reduces the steepness of the existing cut slope. Sediment transport offsite would be minimal because of the rocky nature of the material, and by using standard excavation techniques and best management practices (BMPs) for erosion control. Both permanent and temporary BMPs will be employed, such as soil stabilization mulches and blankets, linear sediment controls, and drainage diversion channels to reduce surface water contact with soils.

Potential excavation activities at the designated borrow site at Oil Well Hill for fill material for Alternatives C1T, J1T, Modified J1T, LT, or L/C would not directly or indirectly affect any wetlands or other waters of the U.S.

Potential excavation activities at Oil Well Hill would not directly affect any streams that support listed salmonids. Potential indirect impacts to salmonids could include erosion of disturbed soils that could enter Outlet Creek during major storm events. However, due to the rocky nature of the substrate, and the proposed use of BMPs, indirect impacts to fisheries to Outlet Creek are expected to be minimal.

10.1.2 Construction-Related Erosion on Proposed Alignments

Soil disturbance from the cut-and-fill slopes associated with Alternative E3 would have significant potential for sediment to enter streams during storm events. This would adversely affect higher quality salmon spawning and rearing habitat.

The lower potential for erosion associated with the valley alternatives in Little Lake Valley would result in considerably lower potential impacts to salmonids than Alternative E3. The quantity of sediments that could enter the streams due to construction-related erosion and lineal extent of habitat impacts occurring in Alternatives LT, J1T and Modified J1T would be less than for Alternatives E3, C1T, and L/C. The greatest impact to fish populations and habitat quality associated with Alternatives J1T and Modified J1T would be the number of stream crossings, consisting of bridges and viaducts, and the potential for sedimentation of downstream reaches, and loss of riparian woodland and scrub habitat in the area of the bridges.

Any of the valley alternatives would impact or degrade mixed riparian woodland and shrub habitat along streams that provide critical habitat for one listed salmonid. Removal of riparian vegetation can affect stream temperature and result in sedimentation.

10.1.3 Minimization Measures

The following measures will minimize the potential for erosion and project-generated sediments from entering surface waters resulting from road construction:

- Caltrans will require the contractor to use a combination of Best Management Practices (BMPs) during construction through the contract. The purpose of the BMPs is to stabilize the disturbed soil, minimize erosion, and capture and remove sediment suspended in runoff before it leaves the site. Caltrans will include special provisions in the contract for this project requiring the contractor to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP), and other project specific Standard Special Provisions (SSPs), which reduce pollutants in storm water discharges from construction sites both during construction and after construction has been completed.

- Caltrans' Standard Special Provisions (SSPs) will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters. For example, on this project, equipment will be maintained in a clean condition during the length of activities.

- Where vegetation is removed or severely trimmed back along creek channels, Caltrans will plant replacement vegetation for shading of creeks per the requirements provided in Section 5-8, Biological Resources, Draft EIS/EIR.

- Following the construction process, Caltrans will stabilize disturbed areas through permanent re-vegetation and other measures. The Storm Water Quality Handbook Planning and Design Staff Guide (June 2000) provides detailed procedures for design of permanent slope stabilization controls. Caltrans will perform a detailed analysis of downstream channel stability during the design phase of the project. The procedures are intended to ensure that an appropriate design is developed that will allow all finished slopes to achieve stabilization, even under severe conditions.

In addition to preparing a Storm Water Pollution Prevention Plan (SWPPP), Caltrans will implement the following measures to minimize disturbances of aquatic resources:

- All construction-related materials shall be stored in designated staging areas at least 100 feet from perennial waterways and drainages.

- Refueling and vehicle maintenance shall be performed at least 100 feet from creeks and other water bodies.

- Operation of heavy equipment shall be minimized in perennial creeks (to the greatest extent possible).

- Temporary sedimentation barriers, such as sandbags or siltation fencing, shall be installed to minimize the amount of silt entering the creeks and any ephemeral drainages with water present in the channel. The location of these barriers shall be determined by the resident engineer and environmental monitor, and shall be clearly marked in the field before construction activities begin.

- Additional Best Management Practices shall be implemented to prevent runoff from adjacent lands from flowing across construction areas; slow down the runoff traveling across construction sites; remove sediment from onsite runoff before it leaves the site; and provide soil stabilization.

10.1.4 Baker's Meadowfoam

Potential indirect impacts to Baker's meadowfoam could include habitat fragmentation or habitat degradation caused by changes in drainage patterns and groundwater hydrology. Habitat degradation could result in changes in the amount and timing of standing surface water. Runoff from impermeable surfaces could increase the amount of standing water in

Baker's meadowfoam habitat located near the highway. If the project impacts groundwater levels, surface water could remain for longer or shorter periods of time. These changes could inhibit the establishment and/or viability of Baker's meadowfoam seeds.

10.2 Cumulative Impacts

The Modified Alternative J1T was examined for its possible incremental contribution to cumulative impacts to aquatic resources and sensitive species: wetlands and other waters of the U.S.; Baker's meadowfoam; salmonids, foothill yellow-legged frog, and western pond turtle; white-tailed kite, California yellow warbler; Northern spotted owl and Red tree vole; and oak woodland. This discussion concludes that Modified Alternative J1T's incremental contribution to cumulative impacts to these resources is minimal and would not contribute to the decline of these habitats or the species they support.

10.2.1 Wetlands

The watershed of Outlet Creek is the study area for the cumulative wetlands impact analysis. Wetlands may be affected not only by direct impacts to wetlands themselves, but also by changes in the flow of water in the area, which can change the degree to which water reaches traditionally "wet" areas.

The City of Willits Wastewater Treatment Plant (WWTP) expansion project would result in the loss of approximately 40 acres of seasonal wetlands (for oxidation ponds and berms). The new treatment and enhancement wetlands would represent a change in wetlands from a seasonal wetland type to a perennial wetland type. To meet ACOE requirement of "no net loss" of wetlands, the City purchased a 50 ha (125 ac) parcel north of the existing WWTP and will create approximately 16 ha (40 ac) of new seasonal wetlands to compensate for the loss of approximately 16 ha (40 ac) of wetlands due to the construction of ponds and berms. The proposed WWTP expansion and mitigation will result in an overall increase in wildlife habitat value since there is little existing perennial water habitat within the project vicinity. The WWTP expansion project EIR concludes that the proposed WWTP expansion project's treatment and enhancement wetlands would represent a net benefit in the functional value of onsite wetlands because there would be an increase in both plant and animal species diversity and increased habitat diversity.

Modified Alternative J1T would result in permanent impacts to 19.0 ha (47.9 ac) of jurisdictional wetlands. Compensatory mitigation required by ACOE, which would

require wetland replacement at a minimum 2:1 ratio would result in no net loss of wetlands in the project area. If wetland creation is not possible in the project area, then out-of-kind or off-site mitigation may be considered. The inability to replace wetlands in-kind and on site could be considered an incremental contribution to cumulative wetland losses. However, 19.0 ha (47.9 ac) of wetlands impacted by Modified Alternative J1T is a small percentage of the entire Little Lake Valley landscape, which is dominated by wetlands. Further, mitigation for Modified Alternative J1T could result in a benefit to the overall wetland ecology of Little Lake Valley if mitigation strategies include restoration to pre-agricultural wetland habitat types or restoration of dredged and channelized fish-bearing streams.

10.2.2 Baker's Meadowfoam

Because Baker's meadowfoam is a rare plant limited to Mendocino County, the cumulative impact study area includes the known populations in the Little Lake Valley, Laytonville, Hulls Valley, Summit Valley, and near Ukiah. The California Department of Fish and Game reports that a population of Baker's meadowfoam near Covelo was destroyed by development.

The proposed WWTP expansion project would result in the loss of approximately 0.18 ha (0.45 ac) of Baker's meadowfoam as a result of the construction of the treatment and enhancement wetlands. The majority of the existing Baker's meadowfoam populations on-site would be avoided and the City has set aside this area as a Baker's meadowfoam preserve. The newly created 16 ha (40 ac) of wetlands, plus the 6 ha (15 ac) of existing wetlands to be preserved will provide 22 ha (55 ac) of potential and existing habitat for Baker's meadowfoam. The City intends to establish a conservation easement or fee title transfer to CDFG to protect the mitigation areas once CDFG determines the success of the Baker's meadowfoam mitigation. The City also proposes to compensate for the loss of 0.18 ha (0.45 ac) of Baker's meadowfoam by implementing a seed collection and transplant program to re-establish, at a minimum, 0.18 ha (0.45 ac) of new meadowfoam populations within the City's 6 ha (15 ac) preserve. The City also proposes to preserve 0.5 ha (1.3 ac) of meadowfoam currently on the site so that it will not be impacted by the proposed WWTP expansion project. The City also plans to adopt an invasive plant species elimination/control plan to create new areas for the establishment of Baker's meadowfoam. The WWTP EIR concluded that the expansion project would not have an incremental contribution, after mitigation, to cumulative impacts to Baker's meadowfoam.

A search of projects for which CEQA documentation has been filed (using the California Office of Planning and Research's online CEQANet query) did not result in any projects in Hulls Valley or Summit Valley, two of the other known locations of Baker's Meadowfoam. This database search found a high school construction project in Laytonville, another known location of Baker's meadowfoam, but this project did not involve the use of this species' habitat.

The Modified Alternative J1T would impact two populations of Baker's meadowfoam or 0.2 ha (0.5 ac) of this species. A mitigation and monitoring plan developed in coordination with CDFG will includes creation and preservation. With successful implementation of a mitigation and monitoring plan for Baker's meadowfoam, the project's incremental impacts would not contribute to the decline of this species and may in fact improve conditions for the plant.

10.2.3 Northern Spotted Owl (NSO) and Red Tree Vole (RTV)

Suitable foraging and dispersal habitat for NSO is present in the study area, which is defined as a 2.6 km (1.6 mi) radius around Oil Well Hill, the designated borrow site for the proposed bypass project. No NSO nesting habitat is present in the study area. The study area could also support RTV. Two activities, besides the proposed bypass, were examined for their possible incremental contribution to habitat for these species: timber harvest plans and a proposed Brooktrails Township second access road. The California Department of Forestry and Fire Prevention (CDF) has records of six Timber Harvest Plans (THPs) within, or partially within, a 2.6 km (1.6 mi) radius of Oil Well Hill. These are 1-90-364 MEN (50 acres), 1-90-631 MEN (665 acres), 1-94-155 MEN (20 acres), 1-94-591 MEN (238 acres), 1-95-487 MEN (50 acres), and 1-99-051 MEN (11 acres). Portions of two THP's, 1-90-631 and 1-94-591, extend outside the 2.6 km (1.6-mile) radius. The majority of these logging activities involved seed tree and shelter wood cuts.

Because of the existing market, the current value of timber is low and there are no immediate future plans to harvest timber within the Oil Well Hill area. However, all of the land within the 2.6 km (1.6 mi) radius is privately owned, and logging could occur in the future if timber prices are more favorable.

At the time of preparation of the Brooktrails Specific Plan and its EIR (in 1997), NSO was not known to occur in this area. However, because DFG and the USFWS are of the opinion that this area could become habitat within 30 years of plan preparation, the

Brooktrails Specific Plan EIR includes mitigation measures to ensure that planned development would not affect NSO territory that could become established.

Three of the six routes being considered for the proposed Brooktrails Second Access Project would pass through identified NSO habitat within a 2.6 km (1.6 mi) radius of Oil Well Hill. Because no studies have been carried out on this project to date, the magnitude of this potential impact cannot be determined accurately, but would not exceed an estimated 32 ha (80 ac) of habitat loss. (Based on a worst-case assumption of 76 m (250 ft) of forest clearing along the entire length of the longest alternative under consideration.)

Given known past and proposed future projects, approximately 1,000 ha (2,480 ac) of suitable habitat would continue to be available within a 2.6 km (1.6 mi) radius of Oil Well Hill (69% of suitable habitat). This would be above the 40% minimum acreage of habitat within a 2 km (1.3 mi) radius that is required to maintain a nesting pair of NSO.

Measures are proposed for Modified Alternative J1T, to minimize harm to NSO foraging and dispersal habitat. Minimization measures include avoiding the removal of large trees when possible, incremental vegetation removal, and not removing vegetation during the breeding season. All appropriate Best Management Practices (BMPs) will be implemented and the area will be revegetated with tree species that occurred at the site prior to excavation. Also, if the contractor chooses to use other approved borrow sites, potential impacts to NSO habitat and RTV would be reduced further.

Modified Alternative J1T's incremental impact to NSO foraging and dispersal habitat and to RTV would not result in a cumulative impact or contribute to the decline of these species.

10.2.4 Salmonids

The proposed construction of a Brooktrails Township second access road could have both direct and indirect impacts to salmonids. Due to the highly erosive, unstable soils to the west of Willits, construction of a second access road could result in direct impacts to water quality and indirect impacts to aquatic resources due to sedimentation. This project is still in the planning process; no environmental studies have been completed and no permits or funding have been obtained.

Potential excavation activities at Oil Well Hill for the Modified Alternative J1T would not directly affect any streams that support listed salmonids. Potential indirect impacts to

salmonids could include erosion of disturbed soils that could enter Outlet Creek during major storm events. However, due to the rocky nature of the substrate, and the proposed use of BMPs, indirect impacts to fisheries to Outlet Creek would be minimal.

Modified Alternative J1T would require the crossing of Haehl, Baechtel, Broaddus, Mill, and Upp Creeks. The stream crossings would directly affect the upper reach of Haehl Creek. The crossings would also directly affect the lower reaches of Baechtel, Broaddus, and Mill creeks, which contain habitat for three listed salmonids, including critical habitat for one listed salmonid. However, they would be located farther downstream from the high quality spawning habitat located in the upper reaches of these streams, and thus would have less severe effects on salmonids because of the smaller amount of high-quality habitat exposed to sedimentation impacts.

The affected reaches under this alternative are located primarily in Little Lake Valley, and pass through residential areas of the City of Willits. Hence, they are characterized by lower habitat quality than reaches located upstream in the foothills. Nonetheless, these reaches are important for fish migration and rearing and are considered to be critical habitat for one listed salmonid. Construction and maintenance BMPs and compliance with Caltrans statewide NPDES permit will reduce impacts to fish species.

Also, the restoration of the Haehl Creek channel reach to its normal configuration and gradient (discussed in Section 9.4.2 above) would reduce future erosion in Haehl Creek, which would likely enhance essential fish habitat in Haehl Creek and other creeks downstream of Haehl Creek.

In addition, wetlands mitigation for Modified Alternative J1T may result in a benefit to fisheries if it includes out-of-kind strategies such as restoration of dredged and channelized fish-bearing streams.

Modified Alternative J1T would not have a direct impact on salmonids or their habitat, and its incremental contribution to indirect cumulative impacts (erosion) would be minimal. Modified Alternative J1T would not contribute to the decline of these species.

Cumulative impacts for foothill yellow-legged frog and western pond turtle would be the same for salmonids discussed above.

10.2.5 Other Sensitive Species

Modified Alternative J1T would require the removal of oak trees and of riparian vegetation. Another reasonably foreseeable project that might impact these same resources is the proposed Brooktrails Township second access road. The Brooktrails project is still in the planning process; no environmental studies have been completed and no permits or funding have been obtained. The impacts of this project have not been quantified, but avoidance, minimization, and mitigation measures for impacts to these resources would be required by resources agencies.

Modified Alternative J1T minimizes impacts to the oak riparian woodland that would have been impacted by Alternative J1T. Individual oaks that would be removed will be replaced at a ratio agreed to with CDFG.

Riparian vegetation that provides habitat for white-tailed kite and California yellow warbler would be removed or trimmed back at creek crossings for construction of Modified Alternative J1T. However, this is a temporary impact as these areas will be revegetated; further additional riparian habitat may be created if wetlands mitigation for the project includes out-of-kind strategies such as restoration of dredged and channelized fish-bearing streams.

Modified Alternative J1T's incremental contribution to cumulative impacts to these resources is minimal and would not contribute to the decline of these habitats or the species they support.

11 Conclusion

This analysis of the proposed Willits Bypass alternatives presents information that eliminates Alternatives E3, C1T, J1T, LT, L/C, and the No Project as the LEDPA. Alternatives E3, C1T, and L/C are rejected because of the magnitude of their direct and indirect impacts to aquatic resources and to their potential direct and indirect adverse impacts to federal listed species (salmonids). Alternative LT is rejected because of its high direct impacts to aquatic resources and its impact to a large oak riparian woodland and to wildlife due to greater habitat fragmentation and barrier creation. Alternative J1T is rejected for its impacts to critical community resources including the City's industrial park and the regional recreation/park complex.

Even where a practicable alternative exists, such as Alternative J1T, that would have less adverse impact on the aquatic ecosystem, the Guidelines allow it to be rejected if it would have "other significant adverse environmental consequences." 40 CFR 230.10(a). Hence, Modified Alternative J1T was developed. In applying the alternatives analysis required by the Guidelines, it is not appropriate to select an alternative where minor impacts on the aquatic environment are avoided at the cost of substantial impacts to other natural environmental and community values. While Modified Alternative J1T would impact 3.8 ha (9.4 ac) more of wetlands than Alternative J1T, it would have the least damage to the overall environment.

This analysis, therefore, identifies Modified Alternative J1T as the LEDPA. Following additional input from the resources and regulatory agencies, the public, and the Project Development Team, the final NEPA preferred alternative/Section 404 LEDPA will be identified in the Final EIS/EIR. Based on the preferred alternative/LEDPA, the final design will incorporate measures to minimize impacts further to resources within the project limits. In addition, a detailed compensatory mitigation and monitoring plan(s) will be finalized and approved by the resource agencies for all unavoidable impacts to aquatic resources based on the agreed upon preferred alternative.

Attachment 8: Names and Addresses of Adjoining Property Owners/Lessees

Adjoining Property Owners and Lessees

APN	OWNER	PROPERTY OWNER ADDRESS	CITY	STATE	ZIP	PROPERTY ADDRESS	CITY
00701002	WILLITS CITY OF			CA	00000		
00701003	WILLITS CITY OF			CA	00000		
00701004	BENBOW CHARLES 1/2	40 E BRANCH RD	GARBERVILLE	CA	95542		
00702003	BENBOW CHARLES 1/2	40 E BRANCH RD	GARBERVILLE	CA	95542	998 HEARST WILLITS RD	WI
00703204	SHUSTERS TRANSPORTATION INC	750 E VALLEY ST	WILLITS	CA	95490	750 CENTER VALLEY RD	WI
00703205	WILLITS HORSEMAN ASSOCIATION I	PO BOX 906	WILLITS	CA	95490		
00703210	JENSEN MARJORIE L C 1/9	507 W MILL ST	UKIAH	CA	95482		
00703211	HARMS GEORGE M TTEE	392 REDWOOD AVE	WILLITS	CA	95490		
00703213	HARMS GEORGE M TTEE	392 REDWOOD AVE	WILLITS	CA	95490		
00704006	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502	701 CENTER VALLEY RD	WI
00704007	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502	731 EA VALLEY ST	WI
00704008	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490	801 EA VALLEY ST	WI
00704009	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490		
00704010	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490	801 EA VALLEY ST	WI
00704014	WINDSOR MILL PROPERTIES LLC	7950 REDWOOD DR STE 4	COTATI	CA	94931		
00704017	TWEDDELL APRIL TTEE	651 E VALLEY ST	WILLITS	CA	95490	651 CENTER VALLEY RD	WI
00705002	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490		
00705007	GRIGGS MICHAEL A JR & KERRI M	511 E VALLEY ST	WILLITS	CA	95490		
00707001	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490	500 SHELL LN	WI
00710008	SEIBERLICH JEANETTE SUCCTTEE	40 ST TERESA CT	DANVILLE	CA	94526	311 SHELL LN	WI
00710009	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490		
00710011	FORD DELMAN & DONNA R TTEES	1750 HEARST RD	WILLITS	CA	95490		
00710029	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
00716017	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
00716018	HANDLEY MARGIE LEE TTEE 1/2	PO BOX 1329	WILLITS	CA	95490		
03802009	BURTON BRUCE EDWARD 1/2	220 FRANKLIN AVE	WILLITS	CA	95490	24850 NO HWY 101	WI
03802011	BROOKE CLIFFORD ALLEN & CARLA	2409 PINE KNOLL DR #1	WALNUT CREEK	CA	94595		
03802021	GARMAN BEDA H JR & SHARON A TT	389 N MAIN ST	WILLITS	CA	95490	24900 NO HWY 101	WI
03804009	BROOKE CLIFFORD A & CARLA R	2409 PINE KNOLL DR #1	WALNUT CREEK	CA	94595		
03806007	ANDERSON CHARLES & SYLVIA	PO BOX 302	WILLITS	CA	95490	24200 NO HWY 101	WI
03806008	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD #166-K	SEAL BEACH	CA	90740	24201 NO HWY 101	WI
03806010	WAGENET GORDON M & CATHARINE S	PO BOX 345	WILLITS	CA	95490		

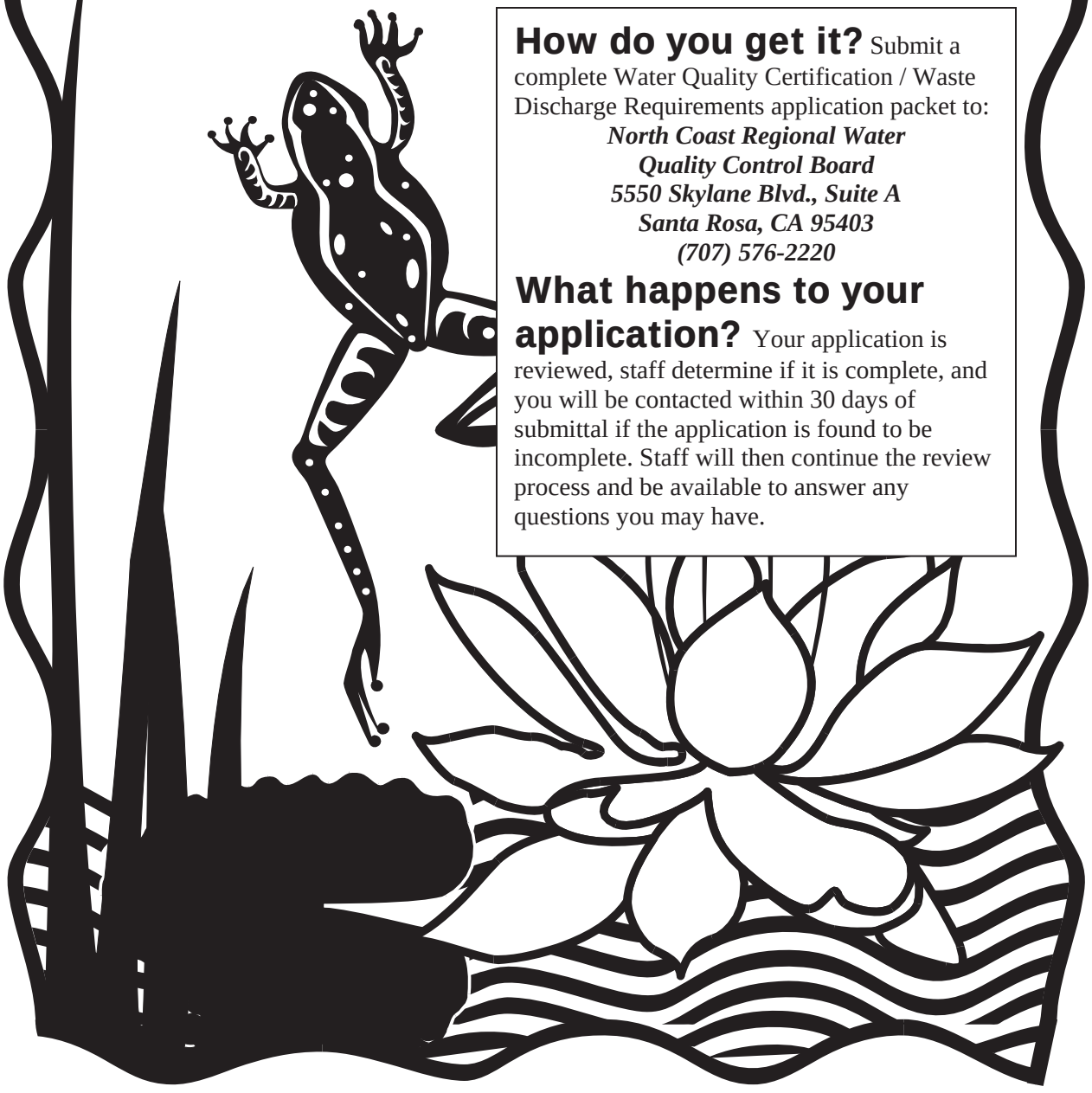
APN	OWNER	PROPERTY OWNER ADDRESS	CITY	STATE	ZIP	PROPERTY ADDRESS	CITY
03808009	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD 116-K	SEAL BEACH	CA	90740		
03808031	WAGENET GORDON M & CATHARINE S	PO BOX 345	WILLITS	CA	95490		
10315011	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10403018	MORRIS LAUREL A TTEE 1/4	801 E HILL RD	WILLITS	CA	95490	801 EAST HILL RD	WI
10403022	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10403023	HANDLEY MARGIE LEE TTEE	PO BOX 1329	WILLITS	CA	95490	701 EAST HILL RD	WI
10405010	MORRIS LAUREL A TTEE 1/4	801 E HILL RD	WILLITS	CA	95490		
10405015	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10405016	HANDLEY MARGIE LEE TTEE	PO BOX 1329	WILLITS	CA	95490		
10409004	SCHMIDBAUER EDWARD J & ERLYNE	19921 N HWY 101	WILLITS	CA	95490		
10411012	OCHOA LYNDA & MANUEL R	19873 N HWY 101	WILLITS	CA	95490	19873 NO HWY 101	WI
10412002	SCHMIDBAUER EDWARD J & ERLYNE	19921 N HWY 101	WILLITS	CA	95490		
10803003	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD 116-K	SEAL BEACH	CA	90740		
10804002	NIESEN WALTER A	24001 N HWY 101	WILLITS	CA	95490	24001 NO HWY 101	WI
10804003	CITY OF WILLITS THE	111 E COMMERCIAL	WILLITS	CA	95490	23731 NO HWY 101	WI
10804008	HUFFMAN RODNEY G 1/9	PO BOX 551	UKIAH	CA	95482	23731 NO HWY 101	WI
10804014	CITY OF WILLITS	111 E COMMERCIAL ST	WILLITS	CA	95490		

Attachment 9: Copies of Permit Applications

WATER QUALITY CERTIFICATION AND/OR WASTE DISCHARGE REQUIREMENTS (Dredge/Fill Projects)

What is it? A Clean Water Act (CWA) Section 401 Permit (Water Quality Certification) is a finding from the Regional Water Quality Control Board that the proposed project will comply with CWA Sections 301, 302, 303, 306 and 307, State laws, and will be protective of beneficial uses. At a minimum, any beneficial uses lost must be replaced by a mitigation project of at least equal function, value and area. Waste Discharge Requirements Permits are required pursuant to California Water Code Section 13260 for any persons discharging or proposing to discharge waste, including Dredge/Fill, that could affect the quality of the Waters of the State.

Who Needs It? Anyone proposing to conduct a project that requires a federal permit or may result in a discharge to U.S. surface waters and/or "Waters of the State", including wetlands (all types), year round and seasonal streams, lakes and all other surface waters.



How do you get it? Submit a complete Water Quality Certification / Waste Discharge Requirements application packet to:

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403
(707) 576-2220

What happens to your application? Your application is reviewed, staff determine if it is complete, and you will be contacted within 30 days of submittal if the application is found to be incomplete. Staff will then continue the review process and be available to answer any questions you may have.

Application for 401 Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill)

The following application must be submitted to the Regional Water Quality Control Board for dredge/fill projects that require Water Quality Certification and/or Waste Discharge Requirements. Submit this application and the appropriate documentation*, along with a check for $640.00 (Base Price) plus additional fees, if applicable, as required according to the CCR 23 Section 2200 (a)(2) Fee Schedule** to:

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403
(Make checks payable to: State Water Resources Control Board)

*Clarification of information may be requested by Regional Water Quality staff during application review.
**Additional fees may be imposed upon application review.
Fee calculator and additional information are available at
http://www.waterboards.ca.gov/northcoast/water_issues/programs/water_quality_certification.shtml

SECTION ONE – Applicant Information & Authorization

APPLICANT/PROPERTY OWNER(S) NAME Jason Meigs, California Department of Transportation (Caltrans)	AUTHORIZED AGENT NAME AND TITLE (an agent is not required)
APPLICANT/PROPERTY OWNER(S) MAILING ADDRESS Caltrans District 3 2800 Gateway Oaks Drive Sacramento, CA 95833	AUTHORIZED AGENT MAILING ADDRESS
APPLICANT/PROPERTY OWNER(S) PHONE & FAX NUMBERS (email optional) (916) 274-0564; FAX (916) 274-0602; Jason_Meigs@dot.ca.gov	AUTHORIZED AGENT PHONE & FAX NUMBERS (email optional)

STATEMENT OF AUTHORIZATION (if designating a specific agent)

I hereby authorize _____ to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

X_____ _____
APPLICANT'S SIGNATURE (not the authorized agent) DATE

SECTION TWO – Project Information

Please refer to the provided Project Plan Checklist for guidance and attach additional supporting documentation as necessary. Supplying detailed information will aid in expediting the review process. **Including an electronic copy of the required information will expedite the review process.**

<table>
<tr><td colspan="2">PROJECT NAME OR TITLE
U.S. Highway 101 Willits Bypass Project</td></tr>
<tr><td>PROJECT STREET ADDRESS (if applicable)

U.S. Highway 101</td><td>PROJECT LOCATION (Attach a topographic map and site map clearly indicating affected waters)
COUNTY CITY/TOWN

Mendocino Near Willits</td></tr>
<tr><td>CITY/STATE/ZIP

Willits, CA</td><td>LATITUDE LONGITUDE

See Attachment A (Supplemental Information)</td></tr>
<tr><td>ASSESSORS PARCEL NUMBER(S)

See Attachment B (Adjoining Property Owners)</td><td>SECTION, TOWNSHIP, RANGE, USGS QUADRANGLE MAP

Section 32, Township 18N, Range 13W, Willits & Laughlin Range USGS 7.5-minute Quadrangles</td></tr>
<tr><td colspan="2">DIRECTIONS TO THE SITE

From Santa Rosa, take U.S. Highway 101 north approximately 80 miles to Willits, California. The project site begins at the south of the Haehl Overhead and ends approximately 1.9 miles south of Reynolds Highway. The optional proposed borrow site at Oil Well Hill is located on the east side of Highway 101 approximately 0.85-mile north of the intersection of Reynolds Highway and Highway 101. Refer to See Attachment 1 (Supplemental Information) for additional location details.</td></tr>
<tr><td colspan="2">PROJECT PURPOSE (See attached checklist for guidance. Attach additional information as necessary.)

See Attachment 1 (Supplemental Information)</td></tr>
</table>

PROJECT DESCRIPTION (See attached checklist for guidance. Provide a full, technically accurate description of the entire activity and associated environmental impacts. Attach additional pages as necessary.)

See Attachment 1 (Supplemental Information)

PROPOSED START AND END DATES	**ESTIMATED DURATION**	Will the project take place during the wet season months of October 15 through May 15? X YES ☐ NO If YES, please discuss the proposed winterization strategies on Page 5, Non-compensatory Mitigation.
January 2011 – November 2015	Four full construction seasons	

FEDERAL PERMIT(S) (applied for or approved, i.e. Army Corps of Engineers 404 Permit – Individual or Nationwide)

PERMIT TITLE	FILE DATE	FILE NUMBER
USACE 404 Individual Permit	Concurrent with this application	194741N; 1991-194740N
PERMIT TITLE	FILE DATE	FILE NUMBER

STATE PERMIT(S) (applied for or approved, i.e. Streambed Alteration Agreement (1600-1608) from the California Department of Fish and Game)

PERMIT TITLE	FILE DATE	FILE NUMBER
Streambed Alteration Agreement	Concurrent with this application	Pending
PERMIT TITLE	FILE DATE	FILE NUMBER

CEQA COMPLIANCE (Submittal of completed, approved and/or signed CEQA documentation is required prior to approval of Water Quality Certification.)

TYPE OF DOCUMENT (EIR, Negative Declaration, etc.)	LEAD AGENCY INFORMATION
EIR/EIS	Caltrans/FHWA

STATE CLEARING HOUSE NUMBER	STATUS (pending, complete, etc.)	DATE COMPLETED (or expected to be complete)
1990030006	Complete	October 25, 2006

NCRWQCB Revised February 10, 2008. Questions, contact the 401 Certification Unit Supervisor at (707) 576-2220.
To download this form in Microsoft Word visit http://www.waterboards.ca.gov/northcoast/water_issues/programs/wqc_docs/060215-401-Application.doc

SECTION THREE – Affected Waters

Please refer to the provided Project Plan Checklist for guidance and attach additional supporting documentation as necessary. Supplying detailed information will aid in expediting the review process.

DREDGE AND FILL INFORMATION (The following must be completed for each action where fill or other material will be temporarily or permanently discharged to a wetland or other waterbody, and where material will be dredged from a waterway. Attach additional pages as necessary. Provide a map showing the location of all impacts. Provide all temporary and permanent impacts to waters of the U.S. and waters of the State.)

Types of Material Being Discharged and Amount of Each Type in Cubic Yards

The proposed project will affect 5.50 acres of "other waters" of the United States (streams, ditches, and ponds) by placing approximately 13,745. 79 cubic yards of fill along 10,608.45 linear feet (LF) of "other waters" of the United States " during project construction and mitigation activities. The fills include 8306.39 cubic yards of permanent fill along 8047.10 LF of other waters" of the United States and 5439.40 cubic yards of temporary fill along 2561.35 LF of other waters" of the United States. The surface area (in acres) of "other waters" of the United States are summarized in Table 2 below. Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 1, below, lists the volume (temporary and permanent) and types of fill material that will be discharged to "other waters" of the United States as a result of the proposed project. Maps depicting impacted wetlands and "other waters" of the United States" are included in Appendix a and Appendix B of this permit application.

Table 1: Willits Bypass "Other Waters" of the US - Locations of features

Map Sheet	LF Perm	LF Temp	Feature Type	Comment/Location	Fill Volume Perm	Fill Volume Temp	Fill Type	Roadway Work	Structure Work
					(cu-yards)	(cu-yards)			
B-04	400.8	0	EPH	South of haehl Interchange, parallels west side of 101	9.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), Rock Slope Protection (RSP), RSP Fabric	Roadway fill, roadside ditch, Drainage System No. 5 (STA "A" 102+43.645) & Drainage Basin No. 1 (STA "A" 102+61.854)	
B-04	155.3	0	EPH	South of haehl Interchange, on east side of 101 (across from FID 0)	14.7	0	Imported borrow (fill), concrete (DI), Alternative Pipe Culvert (APC), Alternative Flared End Section (AFES), RSP, RSP Fabric	Roadway fill & Drainage System No. 6 (STA "A" 102+67.835)	
B-06	605.5	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101	8.7	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 13 (STA "U1" 106+30.000) & 14 (STA "U1" 105+50.000)	

B-08	309.3	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101, east of FID 4	3.1	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), Concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 8 (STA "H" 97+61.686)	
B-08*	8.6	3.4	EPH	Trib To Haehl Creek from Roadway Ditch culvert, north side of hwy 101	0.2	0.1	Import borrow (fill)	Roadway fill Drainage System No. 9 (STA "H" 97+96.641)	
B-06	144.9	0	EPH	Trib To Haehl Creek, north side of hwy 101	4.1	0	Cut	Roadway excavation, Begin STA "H" 99+13.723 - End STA "H" 99+32.816 & Drainage System No. 11 ("H" 99+31.464)	
B-06	99.5	0	EPH	Trib To Haehl Creek, north side of hwy 101. extension of FID 7	3.4	0	Import borrow (fill)	Roadway fill, Begin STA "A" 106+77.199 - End STA "A" 106+97.700	
B-06	96.4	3.4	EPH	Trib To Haehl Creek, conflunecing with Haehl Cr from NE	80.5	2.8	Import borrow (fill), roadway excavation, concrete (headwall), APC, RSP, RSP Fabric	Roadway fill, roadway excavation, Drainage System No. 18 (STA "U4" 106+35.000)	
B-06	577.6	0	EPH	Trib To Haehl Creek, parallels dirt road on north side of hwy 101	71.2	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (bridge abutment), RSP, RSP Fabric, Turf Reinforcement Mat (TRM)	Roadway fill, Begin STA "A" 105+35.903 - End STA "A" 107+46.190	
B-12	1006.6	0	EPH	On NE side of J1T align, NW of haehl interchange, “Schmidbauer”	362.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 30 ("A" 110+71.840)	
B-12	12.6	12.6	EPH	On Nw side of J1T align, NW of haehl interchange	3.2	3.2	Imported borrow (fill), APC, AFES, RSP, RSP Fabric	Roadway fill & Drainage System No. 30 ("A" 110+71.840)	
B-12	0	74.5	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 13, “Schmidbauer”	0	36.7	Import borrow (fill)	Roadside ditch	

B-14	920.3	0	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 15, “Schmidbauer”	274.5	0	Imported borrow (fill), RSP, RSP Fabric	Roadside ditch & Drainage System No. 33 ("A" 114+44.741)	
B-14	77	3.4	EPH	Trib runs to the NE, to “Schmidbauer”	8.1	0.4	Cut	Median ditch	
B-34	149.2	3.4	EPH	Ditches in Log Yard	11.9	0.3	Import borrow (fill)	Roadway fill	
B-34	118.6	3.4	EPH	Ditches in Log Yard	9.4	0.3	Import borrow (fill)	Roadway fill	
B-34	71.7	3.4	EPH	Ditches in Log Yard	5.7	0.3	Import borrow (fill)	Roadway fill	
B-34	55.9	3.4	EPH	Ditches in Log Yard	4.5	0.3	Import borrow (fill)	Roadway fill	
B-34	58.7	3.4	EPH	Ditches in Log Yard	4.7	0.3	Import borrow (fill)	Roadway fill	
B-34	74.3	3.4	EPH	Ditches in Log Yard	5.9	0.3	Import borrow (fill)	Roadway fill	
B-34	41.8	3.4	EPH	Ditches in Log Yard	3.3	0.3	Import borrow (fill)	Roadway fill	

B-34	90.9	3.4	EPH	Ditches in Log Yard	7.2	0.3	Import borrow (fill)	Roadway fill	
B-34	17.2	3.4	EPH	Ditches in Log Yard	1.4	0.3	Import borrow (fill)	Roadway fill	
B-34	123.2	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	11.8	3.4	EPH	Ditches in Log Yard	0.9	0.3	Import borrow (fill)	Roadway fill	
B-34	122.6	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	153.7	3.4	EPH	Ditches in Log Yard	12.2	0.3	Import borrow (fill)	Roadway fill	
B-06	59.3	1027.1	INT	Haehl Creek (Main Fork) – Re-Align	221.3	3832.6	Import borrow (fill), Concrete (headwall & wingwall), APC, RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (9402.7 m^3) 2. Sand & Gravel (1559.3 m^3) **Above OHW:** 1. RSP(4161.5 m^3) 2. Sand & Gravel (2611.3 m^3)	**Haehl Creek Bridges: Br No.** **10-0129F, 10-0129G & 10-0129RL** 1. Potential Temp. stream crossing (1 trestle bent in channel) at bridge 10-0129RL. 2. Potential Falsework (1 falsework bent in channel) at each structure . 3. Potential stream Diversion/temporary culvert.

B-18	188.6	160.25	INT	"Schmidbauer"	53.3	47	Import borrow (fill)	Roadway fill	
B-24	401	6.8	INT	Crosses align north of east Hill road	404.7	6.9	Imported borrow (fill), roadway excavation & concrete (headwall)	Roadway fill & Drainage Basin No. 3 ("A" 127+50.000)	
B-57	433	6.8	INT	RR Ditch at RR x-ing, east side of tracks	262.2	4.1	Import borrow (fill)	Abutment fill, new ditch (to be design by Design) & temp. culvert	**Quail Meadows OH (Br No. 10-0171)** 1. Temp. dirt road across RR tracks (Temp Haul Road) 2. Temp. Culvert crossing
B-26	514.1	6.8	INT	East Fork Haehl Creek, Handley parcel, south of Shell rd.	2324.5	30.7	Imported borrow (fill), roadway excavation, APC, AFES, RSP, RSP Fabric	Roadway fill, Drainage Basin No. 4 ("A" 132+00.000), Drainage System No. 45 ("A" 132+52.219)	
B-40	65.13	26.3	INT	Heahl Creek, Near Baechtel Confluence – Under Viaduct, Just north of East valley Street	260.0 (culvert work)	105.0 (culvert work)	Trestle/falsework construction		**Haehl Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-49	7	10	INT	Broadus, Baechtel, Outlet Confluence - Under Viaduct, NE of WWTP	54.0 (footing for bents)	77.2 (falsework)	Concrete (Bent 24), RSP, RSP Fabric, Trestle/falsework construction		**Confluence of Broaddus/Baechtel Creek** 1. Footing Impact (329.9 m3) 2. Potential temp. stream crosssing (Baechtel Creek - 2 falsework bents in channel, Broaddus Creek - 1 falsework bent in channel, & Outlet Creek- 2 trestle bents in channel)

B-51	0	429.8	INT	Mill Creek - Under Viaduct	0	0 (access and veg removal only, no temp fills below OHWM)	Trestle/falsework construction		**Mill Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-37	0	403.1	INT	Baechtel Creek, south of center valley road, west side of J1T align	0	595.7		Current Design does not show any impact at this location.	
B-26	0	270.5	INT	West (Main) Fork Haehl Creek, along west side of handley parcel	0	692.6	RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (2857.9 m^3) 2. Sand & Gravel (348.1 m^3) **Above OHW:** 1. RSP(3444.9 m^3) 2. Sand & Gravel (2309.7 m^3)	**Haehl Creek (Br No. 10-0159)** 1. potential temp. stream crossing (4 trestle bents in channel). 2. potential temp. falsework (4 trestle bents in channel).
B-57	1172.6	82.4	INT	Upp Creek and RR ditch on west side of RR x-ing, and Mill Creek on the east side of RR x-ing	1817.5	127.7	Import borrow (fill), roadside ditch (RR), Concrete (bridge structures), APC, RSP (Fish Passage Design at Upp Creek)	**Upp Creek** **Below OHW:** 1. RSP (5848.5 m^3) 2. Sand & Gravel (1258.3 m^3) **Above OHW:** 1. RSP(3100.0 m^3) 2. Sand & Gravel (1325.1 m^3)	**Quail Meadows OH** **Br No. 10-0171** 1. Potential Temp. culvert crossing 2. Potential dirt road crossing over RR tracks (temp haul road) **Upp Creek Bridges** **Br No. 10-0305, 10-0174, 10-0174K & 10-0174S** 1. Potential Temp. stream crossing (1 trestle bent in channel) at Quail Meadows I.C. 2. Potential Falsework (1 falsework bent in channel) at each structure 3. Potential Stream Diversion at each structure

B-31 and B-34	139.8	3.4	POND	Rutledge Pond	2263.1	55	Class 3 Permeable Material Filter Fabric Embankment	Class 3 Permeable Material (3213 m^3) Filter Fabric (6802 m^2) Embankment (3505 m^3)	
C-86	**375.95**	288.16	EPH	Stream Entering Watson East Mitigation Parcel	29.59	0	Grading for wetland creation		
Totals:	**8860.48**	**2862.91**			**8306.39 yd^3**	**5439.40 yd^3**			

Surface Areas of Wetlands and Other Waters Filled

The proposed project will directly affect a total of 89.12 acres of wetlands and other waters of the United States, of which 56.23 acres will be permanently filled and 32.89 acres will be temporarily disturbed during project construction and mitigation activities. Fill types affecting wetlands include those listed in Table 1 for "other waters of the United States" (permanent fills consisting of roadway and structures fill, asphalt concrete, RSP, TRM and RECP, new culverts, culvert end and treatments; temporary fills consisting of temporary falsework and falsework supports, cofferdams, temporary roadway fills, stream re-alignments, and temporary access routes). Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 2 shows the surface area (acres) of the resources that will be affected by the bypass. Maps depicting impacted wetlands and "other waters" of the United States are included in Appendix A and Appendix B of this permit application.

Table 2. Summary of Project Construction Impacts on Wetlands and Other Waters of the United States

Wetland Type / Other Waters	Project Impacts on Wetlands and Other Waters (acres)			Mitigation Impacts on Wetlands and Other Waters (acres)			Total Impacts on Wetlands and Other Waters (acres)
	Temporary	Permanent	Total	Temporary	Permanent	Total	Total
Marsh	1.38	8.15	9.53	0.49	0.00	0.49	**10.02**
Riparian Scrub	0.17	0.21	0.38	0.00	0.00	0.00	**0.38**
Riparian Woodland	1.61	3.21	4.82	0.07	0.02	0.09	**4.91**
Swale	0.03	0.00	0.03	0.26	0.05	0.31	**0.34**
Vernal Pool	0.05	0.16	0.21	0.00	0.00	0.00	**0.21**
Wet Meadow	20.69	41.64	62.33	4.98	0.45	5.43	**67.76**
Subtotal Wetlands	**23.93**	**53.37**	**77.30**	**5.80**	**0.52**	**6.32**	**83.62**
Other Waters	3.10	2.25	5.35	0.06	0.09	0.15	**5.50**
Total	**27.03**	**55.62**	**82.65**	**5.86**	**0.61**	**6.47**	**89.12**

DELINEATION INFORMATION

NAME OF PERSON DELINEATING EXTENT OF WATERS OF U.S.	DATE(S) OF WETLAND DELINEATION
Jason Meigs, Caltrans; URS Corporation; IFC Jones and Stokes	See Below

TITLE and DATE OF WETLAND VERIFICATION BY U.S. ARMY CORPS

The U.S. Army Corps of Engineers (USACE) verified the U.S. Highway 101 Willits Bypass Project's (proposed project) delineation of waters of the United States on March 1, 2005 (File 194741N). This verification was for the Modified Alternative J1T Alignment study area. In January 2007 and April 2008, a request to amend the previously verified delineation was submitted to the USACE to include minor changes to the footprint of the proposed Haehl Creek interchange, the road alignment to the north, and the proposed borrow area at Oil Well Hill. The USACE confirmed the requested changes to the delineation on August 15, 2008 (File 191-19470N). In December 1, 2008, a request to verify a delineation was submitted to include the revision of the project footprint to avoid the expansion of the Willits wastewater treatment Plant (WWTP). The USACE provided a verification for this area on December 2, 2009. In addition to the delineations of waters of the United States associated with the bypass alignment, Caltrans also submitted delineations for various parcels that will be part of the project's mitigation plan. The USACE jurisdictional determinations are located in Attachment 3.

AFFILIATION	If a wetland delineation has been verified by the U.S. Army Corps, please submit the verification letter as well as a verified wetland delineation map. If the Corps did not assume jurisdiction over the wetlands present, please submit the denial letter.
Caltrans	

AVOIDANCE OF INDIRECT IMPACTS

(Describe efforts to avoid and minimize indirect impacts to waters of the State such as upland impacts which might affect water quality. See checklist for guidance. Attach additional pages as necessary.)

Please refer to Attachment 1 "Supplemental Information"

Sections: "Avoidance and Minimization of Direct and Indirect Impacts" and "Non Compensatory Mitigation"

AVOIDANCE OF DIRECT IMPACTS (Describe efforts to **avoid** and **minimize direct impacts** to waters of the State. See checklist for guidance. Attach additional pages as necessary.)

Please refer to Attachment 1 "Supplemental Information"

Sections: "Avoidance and Minimization of Direct and Indirect Impacts" and "Non Compensatory Mitigation"

COMPENSATORY MITIGATION (Required when permanent and temporal impacts to Waters of the State occur. Describe the location, size, type, functions, and values of the proposed mitigation. Describe success criteria, monitoring, long-term funding, management, and protection of the mitigation site. Attach a Mitigation Plan if needed. Attach Mitigation Bank Bills-of-Sale for purchase credits if needed. See attached checklist for guidance.)

Caltrans has developed a Mitigation and Monitoring Proposal (MMP) that proposes compensatory mitigation for effects of the bypass on jurisdictional wetlands, other waters of the United States, riparian habitat, oak woodlands, and State-listed plants. In addition to compliance with Clean Water Act (CWA) Section 401, the MMP will be used to support compliance with CWA Section 404, Section 1602 of the California Fish and Game Code, and Section 2081 of the California Endangered Species Act (CESA). The overall goal of the MMP is to successfully compensate for impacts on sensitive biological resources resulting from bypass project construction by improving ecological functions and values to habitat in Little Lake Valley through a combination of restoration, creation, enhancement, and preservation. However, beyond this compensation, the MMP aims to restore and enhance many previously lost or degraded wetland functions and values, and to help offset past damage to parts of the Outlet Creek Basin. The table below presents the total amount of jurisdictional wetlands and other waters of the U.S. and/or State that would be created, enhanced, or preserved as compensation for the proposed project's impacts on jurisdictional waters and wetlands.

Resource	Mitigation Actions (acres)				Restoration
	Creation	Enhancement	Preservation	Total Mitigation Acres	
Wetlands	33.44	1,032.90	1,122.11	**2,188.45**	5.96
Other Waters	none	17.32	24.70	**42.02**	0.06
Total	**33.44**	**1,050.22**	**1,146.81**	**2,230.47**	**6.02**

The proposed project's MMP will be provided in its entirety in a separate transmission.

ALTERNATIVES ANALYSIS

Has an Alternatives Analysis been prepared? ☑ YES ☐ NO If you marked YES, please submit the appropriate documentation.

NON-COMPENSATORY MITIGATION (Required by all construction projects and projects which impact riparian vegetation.)

PROPOSED MINIMUM EROSION CONTROL MEASURES (Describe the methods proposed for erosion control, including winterization strategies to stabilize all bare soils and re-vegetation proposals. Please submit a map indicating the approximate locations of each method.)

Temporary Construction Site BMPs to be used on Project (info from SWDR and WPC SPI Plans)

Construction of the bypass is anticipated to last 5 construction seasons total, with four rainy seasons. The North Coast Regional Water Quality Control Board (NCRWQCB) has defined the rainy season as October 15th through May 15th.

Temporary Construction BMPs will be deployed as detailed in the Contractor prepared SWPPP approved by the Resident Engineer, in accordance with Standard Special Provision (SSP) 07-345 Water Pollution Control. The SWPPP would include appropriate Caltrans Construction Site Best Management Practices (BMPs) to reduce the potential for sediments and contaminants from entering the creeks.

Temporary Bid Line Items BMP's identified and include in the Contract Items are:

- Temporary Fence (Type ESA) & (Type ESA-Floodway)
- Temporary Erosion Control Blanket
- Temporary Fiber Roll
- Temporary Gravel Bag Berm
- Temporary Construction Entrance
- Temporary Cover
- Temporary Check Dam
- Temporary Hydraulic Mulch (BFM)
- Street Sweeping
- Temporary Concrete Washout (Portable)
- Move-in/Move-out (Temporary Erosion Control)
- Temporary Drainage Inlet Protection
- Construction Site Management

The WPC Contract items and strategy are as shown in the WPC handout to be included the Supplemental Project Information handout and available for the Contractor during project Advertisement.

Temporary Impacted areas will be revegetated to their pre-construction plant community type. They will be seeded and planted with plants native to Little Lake Valley. Temporary Hydraulic Mulch (Bonded Fiber Matrix) will be applied to temporary slopes and disturbed areas where necessary and prior to placement of final Erosion Control.

Contractor's work schedule will dictate the amount of soil disturbance and work activities that may take into affect at any particular time during the construction phase of the project. Bid item Move-in/Move-out (Temporary Erosion Control) will account for allowing the multiple mobilizations of the Contractor to stabilize the work area as portions of the work is completed.

Final Erosion Control (see Erosion Control Plans):

Non structural slopes will be stabilized with revegetation and erosion control measures. Disturbed slopes will be re-vegetated in accordance with plans developed by the District Landscape Architect or otherwise stabilized.

Permanently impacted areas such as cut and fill slopes adjacent to the roadway along interchange ramps, as well as median between the inside roadway shoulders will be revegetated with native plants appropriate to Little Lake Valley. Steeper embankment slopes located at structures approaches will be protected with Rolled Erosion Control Product (Netting) blanketing materials and all final slopes will be stabilized and revegetated with Duff and Erosion Control (Bonded Fiber Matrix) (Seed Type 1). In addition, finished slopes and ditches constructed greater than 1;3 (V:H) will be stabilized with Erosion Control (Rolled Erosion Control Product (Netting). Upon completion of construction of the Floodway Viaduct structure, the entire disturbed area will be regarded to pre-construction conditions and revegetated with Erosion Control (Bonded Fiber Matrix) (Seed Type 2). Bioswales will be constructed and revegetated with final Erosion Control (Rolled Erosion Control Product (Netting), Compost, and Erosion Control (Bonded Fiber Matrix) as part of Treatment BMPs at drainage outlet areas prior to run-off off site of the project. Turf Reinforcement Mat (TRM) will be utilized to line the inlet channel of Drainage System 54 at Center Valley Rd.

The Roundabout will include hardscape features, and plantings and irrigation & sprinkler system as a center for aesthetics and as revegetation around the pedestrian walkways. Final Erosion Control includes Mulch, Imported Topsoil, Boulder Placement, and Gravel (Miscellaneous Areas).

Oil Well Hill Optional Borrow Site:

During each construction season, the Contractor will limit the removal of vegetation to those portions of Oil Well Hill site necessary to provide fill material for that season's construction needs. The excavation activities at Oil Well Hill could result in long-term erosion of disturbed soils. Upon completion of excavation activities at the site, appropriate Temporary Construction Site BMPs will be employed by the Contractor for each season's use. And upon final completion of material excavation from the site, permanent erosion control and revegetation will be required as specified by the Caltrans Landscape Architect and as shown in the SPI handout WPC and Landscape Architecture plans.

PROPOSED POST-CONSTRUCTION STORM WATER TREATMENT MEASURES (Describe the methods proposed to treat storm water runoff from the project site prior to entering the storm drainage system, wetlands, streams, etc. Please include proper design calculations to indicate that the proposed methods will treat runoff from the 85th percentile/24-hour storm event. See SUSMP Guidelines available at: http://ci.santa-rosa.ca.us/doclib/Documents/SUSUMP.pdf, or upon request.

Refer to the Storm Water Calculations and Downstream Discharges informational handouts provided by Scott Foster by e-mail to Jeremiah Puget on 11/24/09 and in person in a meeting on 11/19/09, and included as Attachments 8 and 9 of this application

PROPOSED CONSTRUCTION AND POST-CONSTRUCTION POLLUTANT SOURCE CONTROLS (Describe the methods proposed to reduce sources of pollutants, fertilizers, pesticides, sediment, etc., from entering the water system.)

All remaining water pollution control related items will be deployed under SSP 07-346 Construction Site Management bid item, which will account for the miscellaneous "housekeeping" BMPs, such as *Spill Prevention and Control Management, Material Storage and Stockpile Management, Waste Management.* and *Non-Storm Water Management),* that would be implemented during construction activities. Additionally:

Construction Pollution Source Controls:

- Construction dewatering may be required for this project for structure footings at the Floodway Viaduct, concrete-contact water, accumulated storm water, and uncontaminated groundwater. Disposal methods may consider pumping into holding tanks for site reuse and as a water source for use in construction activities in embankment construction or dust control, discharge into ground (upland) infiltration, discharge into receiving waters, or off-site disposal, as determined by the Contractor. Dewatering activities will need to comply with the North Coast RWQCB Basin Plan, 401 Certification, and Caltrans NPDES permits.
- Landslide mitigation will be required at Abutment 1 of the proposed S101-W20 Connector Bridge (Br No 10-129F) at the Haehl Creek Interchange. Caltrans Office of Geotechnical Services has recommended the existing slide area be stabilized during the construction of Abutment 1. A Stabilization Trench is to be constructed and a portion of the slide material will be removed as unsuitable material and be replaced with suitable embankment material which will include a layer of permeable material and a subsurface drain collection system
- Petroleum Contaminated Material (No SSP No) has been identified at the Shuster's Transportation Trucking facility (located adjacent to the Floodway Viaduct on East Valley Rd) in the form of soil material and/or groundwater due to existing conditions of petroleum contamination due to former underground storage tanks. The material has a potential to be encountered at the excavations of Bent 2 and 3 and a worker Health and Safety Plan on the testing, work stockpiling, dewatering, and handling plan is required, and disposition of the material will be included in the Contract. Currently, Site Remediation is in progress at the property by the property owner and monitoring and reporting compliance with the NCRWQCB.

- The new deck surface of the Floodway Viaduct structure (Br No 10-165),will be ground and the resulting Portland Cement Concrete (PCC) grooving and grinding residues will be disposed of by the Contractor in accordance with the Contract specifications [SSP 42-600 Disposal of Portland Cement Concrete (PCC) Pavement and Bridge Deck Grooving and Grinding Residues] and RWQCB requirements.

Post Construction Pollution Source Controls:

- Post construction flows will be captured, routed into earthen ditches and channels, and detained prior to entering local waterways where feasible. Channel erosion control measures, such as willow cuttings, erosion control blankets, and rock lined channels will be deployed within the project limits. Energy dissipation devices such as flared ends and Rock Slope Protection (RSP) at culvert outlets are deployed where appropriate. The transition between culvert outlets/headwalls/wingwalls and channels will be smooth to reduce turbulence and scour. Detention facilities will be deployed as feasible to reduce peak discharges
- Cut and fill slopes are to be as flat as feasible, and concentrated flow will be collected in stabilized drains and channels whenever possible. The slope and surface protection systems deployed include; slope rounding, seeding and planting, temporary erosion control, fiber rolls, Rolled Erosion Control Protection (RECP), Bonded Fiber Matrix (BFM), and Rock Slope Protection (RSP). Hard surfaces are expected to be required, particularly at the bridge abutments and roundabout. The hard surfaces that will be used are rock slope protection and slope paving. Retaining walls will have RSP placed as scour protection

- Additional information regarding ditches, berms, dikes, and swales utilized on this project is contained in the project stormwater data report and hydro-modification report (attached).

SECTION FOUR – Additional Information

POTENTIAL FOR IMPACTS TO THREATENED AND ENDANGERED SPECIES (Please attach all Biological Assessments, Surveys, Formal Consultation Determination letters, and Mitigation Proposals as necessary.)

SPECIES AND/OR HABITAT	BIOLOGICAL ASSESSMENT (Y/N)	SURVEY CONDUCTED (Y/N)	DATES OF SURVEY CONDUCTED
Chinook salmon—California Coastal ESU	Y	Y	2004 (CDFG)
Steelhead—Northern California DPS	Y	Y	2004 (CDFG)
Coho salmon—Northern California/ Southern Oregon Coasts ESU	Y	Y	2004 (CDFG)
Northern spotted owl	Y	Y	2008, 2009 (Caltrans)
White-tailed kite	Y	N	
North Coast semaphore grass	Y	Y	2008, 2009 Caltrans (URS)
Baker's meadowfoam	Y	Y	1997 (Jones & Stokes); 2007 (URS); 2009 (Caltrans)

HAS ANY PORTION OF THE WORK BEEN INITIATED? ☐ YES ☑ NO If YES, describe the initiated work, and explain why it was initiated prior to obtaining a permit. Indicate whether any enforcement action has been taken against the project.

CUMULATIVE IMPACTS (List and describe other projects implemented or planned that are related to the proposed project, or that may impact the same waterbody. Attach additional pages as necessary.)

PROJECT NAME	DESCRIPTION	DATE IMPLEMENTED/PLANNED
Willits WWTP expansion	To accommodate projected growth in Willits & Brooktrails subdivision	2006
Brooktrails subdiv. 2nd access	Near Wild Oat Canyon	Unknown
Traffic signal at Holly & Main (US 101) Street	(self-explanatory)	2003
Northwestern Pacific Railroad improvements	Includes slide restoration to open railroad north of Willits	Unknown
Willits land use & zoning changes	SE from residential (estate) to manufacturing; downtown Specific Plan	1997; 2003
Enhanced pedestrian, bicycle & hiking trails	Within city limits	Unknown
Medocino County Museum Expansion	(at Commercial St.) 3 acres wetland creation for same acreage filled	2001

Application is hereby made for a permit or permits to authorize the work described in this application. I certify, under penalty of perjury, that this application is complete and accurate to the best of my knowledge. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT (OR AGENT) DATE

PRINT NAME OF APPLICANT (OR AGENT)

NCRWQCB Revised February 10, 2008. Questions, contact the 401 Certification Unit Supervisor at (707) 576-2220.
To download this form in Microsoft Word visit http://www.waterboards.ca.gov/northcoast/water_issues/programs/wqc_docs/060215-401-Application.doc

FOR DEPARTMENT USE ONLY				
Date Received	*Amount Received*	*Amount Due*	*Date Complete*	*Notification No.*
	$	$		

STATE OF CALIFORNIA

DEPARTMENT OF FISH AND GAME

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

1. APPLICANT PROPOSING PROJECT

Name	Jason Meigs		
Business/Agency	State of California, Department of Transportation - District 3		
Street Address	2800 Gateway Oaks Drive		
City, State, Zip	Sacramento, CA 95833		
Telephone	(916) 274-0564	Fax	(916) 274-0602
Email	jason_meigs@dot.ca.gov		

2. CONTACT PERSON (*Complete only if different from applicant*)

Name			
Street Address			
City, State, Zip			
Telephone		Fax	
Email			

3. PROPERTY OWNER (*Complete only if different from applicant*)

Name	Refer to Attachment 6 "Names and Adressess of Adjoining Property Owners/Lessees"		
Street Address			
City, State, Zip			
Telephone		Fax	
Email			

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name	U.S. Highway 101 Willits Bypass Project			
B. Agreement Term Requested	☑ Regular (*5 years or less*) ☐ Long-term (*greater than 5 years)*			
C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (*year*)	Ending (*year*)	Start Date (*month/day*)	End Date (*month/day*)	
2011	2015	04/15	10/30	

5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.

A.	☑ Standard *(Most construction projects, excluding the categories listed below)*	
B.	☐ Gravel/Sand/Rock Extraction (*Attachment A*)	*Mine I.D. Number:* _____
C.	☐ Timber Harvesting (*Attachment B*)	THP *Number:* _____
D.	☐ Water Diversion/Extraction/Impoundment (*Attachment C*)	*SWRCB Number:* _____
E.	☐ Routine Maintenance (*Attachment D*)	
F.	☐ DFG Fisheries Restoration Grant Program (FRGP)	*FRGP Contract Number:* _____
G.	☐ Master	
H.	☐ Master Timber Harvesting	

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: The Department may not process this notification until the correct fee has been received.***

	A. Project	B. Project Cost	C. Project Fee
1	U.S. Highway 101 Willits Bypass (40 x-ings x $4,482.75)		$179,310.00
2			
3			
4			
5			
		D. Base Fee *(if applicable)*	
		E. TOTAL FEE ENCLOSED	$179,310.00

7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?

☐ Yes (*Provide the information below*) ☑ No

Applicant: _____ Notification Number: _____ Date: _____

B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?

☑ No ☐ Yes (*Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.*)

☐ *Continued on additional page(s)*

8. PROJECT LOCATION

A. Address or description of project location.

(*Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway*)

Refer to Attachment 1 "Supplemental Information:; Block 8A

☑ *Continued on additional page(s)*

B. River, stream, or lake affected by the project.	Refer to Attachment 1 "Supplemental Information; Block 8B.
C. What water body is the river, stream, or lake tributary to?	Eel River, Pacific Ocean
D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts?	☐ Yes ☑ No ☐ Unknown
E. County	Mendocino County

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Willits	18N	13W	23	

☐ *Continued on additional page(s)*

K. Meridian (*check one*) ☐ Humboldt ☐ Mt. Diablo ☐ San Bernardino

L. Assessor's Parcel Number(s)

efer to Attachment 6 "Nams and Addresses of Adjoining Property Owners/Lessees".

☐ *Continued on additional page(s)*

M. Coordinates (*If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes)*

Latitude/Longitude	*Latitude:* sup info block 8A	*Longitude:*	
	☐ Degrees/Minutes/Seconds	☐ Decimal Degrees	☐ Decimal Minutes
UTM	*Easting:*	*Northing:*	☑ Zone 10 ☐ Zone 11
Datum used for Latitude/Longitude or UTM	☐ NAD 27	☑ NAD 83 or WGS 84	

9. PROJECT CATEGORY AND WORK TYPE *(Check each box that applies)*

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	☑	☐	☐
Bank stabilization – rip-rap/retaining wall/gabion	☑	☑	☐
Boat dock/pier	☐	☐	☐
Boat ramp	☐	☐	☐
Bridge	☑	☐	☐
Channel clearing/vegetation management	☑	☐	☐
Culvert	☑	☐	☐
Debris basin	☐	☐	☐
Dam	☐	☐	☐
Diversion structure – weir or pump intake	☑	☐	☐
Filling of wetland, river, stream, or lake	☑	☐	☐
Geotechnical survey	☐	☐	☐
Habitat enhancement – revegetation/mitigation	☑	☐	☐
Levee	☐	☐	☐
Low water crossing	☑	☐	☐
Road/trail	☑	☐	☐
Sediment removal – pond, stream, or marina	☐	☐	☐
Storm drain outfall structure	☑	☐	☐
Temporary stream crossing	☑	☐	☐
Utility crossing : Horizontal Directional Drilling	☐	☐	☐
Jack/bore	☐	☐	☐
Open trench	☐	☐	☐
Other *(specify)*: Place fill for roadway	☑	☐	☐

10. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., “bird’s-eye view”) showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

Refer to Attachment 1 "Supplemental Information"; Block 10A

☑ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

refer to Attachment 1 "Supplemental Information"; Block 10B

☑ *Continued on additional page(s)*

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).

☑ Yes ☐ No (*Skip to box 11*)

D. Will the proposed project require work in the wetted portion of the channel?

☑ Yes (*Enclose a plan to divert water around work site*)

☐ No

11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

Refer to Attachment 1 "Supplemental Information"; Block 11A

☐ *Continued on additional page(s)*

B. Will the project affect any vegetation? ☑ Yes (*Complete the tables below*) ☐ No

Vegetation Type	Temporary Impact	Permanent Impact
Refer to Attachment 1 "Supplemental Information"; Block 11B	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____
	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____

Tree Species	Number of Trees to be Removed	Trunk Diameter (range)
"Supplemental Information"; Block 11B		

☐ *Continued on additional page(s)*

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☑ Yes *(List each species and/or describe the habitat below)* ☐ No ☐ Unknown

"Supplemental Information"; Block 11C

☑ *Continued on additional page(s)*

D. Identify the source(s) of information that supports a “yes” or “no” answer above in Box 11.C.

Natural Environment Study, Biological Assessment, Individual Take Permit Application

☑ *Continued on additional page(s)*

E. Has a biological study been completed for the project site?

☑ Yes (*Enclose the biological study*) ☐ No

Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.

F. Has a hydrological study been completed for the project or project site?

☑ Yes (*Enclose the hydrological study*) ☐ No

Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.

12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.

Refer to Attachment 1 "Supplemental Information"; Block 12A

☑ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Refer to Attachment 1 "Supplemental Information"; Block 12B

☐ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

Refer to Attachment 1 "Supplemental Information"; Block 12C

☐ *Continued on additional page(s)*

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

A. _____ ☑ Applied ☐ Issued

B. _____ ☑ Applied ☐ Issued

C. Attachment 1 "Supplemental Information"; Block 13 ☑ Applied ☐ Issued

D. Unknown whether ☐ local, ☐ state, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☑ *Continued on additional page(s)*

14. ENVIRONMENTAL REVIEW

A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)?

☑ Yes (*Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each*)

☐ No (*Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared*)

☐ Notice of Exemption	☐ Mitigated Negative Declaration	☐ NEPA document (*type*): EIS
☐ Initial Study	☑ Environmental Impact Report	☐ CESA document (*type*): 2081 and 2080.1
☐ Negative Declaration	☑ Notice of Determination *(Enclose)*	☐ ESA document (*type*): Sect 7
☐ THP/ NTMP	☑ Mitigation, Monitoring, Reporting Plan	

B. State Clearinghouse Number (*if applicable*)	1990030006		
C. Has a CEQA lead agency been determined?	☑ Yes (*Complete boxes D, E, and F*)	☐ No (*Skip to box 14.G*)	
D. CEQA Lead Agency	Caltrans		
E. Contact Person	Jason Meigs	F. Telephone Number	(916) 274-0564

G. If the project described in this notification is part of a larger project or plan, briefly describe that larger project or plan.

The proposed U.S. 101 Willits Bypass project is a single and complete project and is not part part of a larger project or plan.

☐ *Continued on additional page(s)*

H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid?

☑ Yes (*Enclose proof of payment*) ☐ No (*Briefly explain below the reason a filing fee has not been paid)*

Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.

15. SITE INSPECTION

Check one box only.

☐ In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry.

☑ I request the Department to first contact (*insert name*) Jason Meigs at (*insert telephone number*) (916) 274-0564 to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.

16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

☑ Yes (Please enclose the information via digital media with the completed notification form)

☐ No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

_____ _____

Signature of Applicant or Applicant's Authorized Representative — Date

Jason Meigs, Caltrans District 3 Associate Env. Planner - NS

Print Name

Application for Section 401 Water Quality Certification and/or Waste Discharge Requirements

California Department of Transportation U.S. Highway 101 Willits Bypass Project Mendocino County, California

Submitted to:

North Coast Regional Water Quality Control Board
5550 Skyline Boulevard, Suite A
Santa Rosa, CA 95403
Contact: Jeremiah Puget
707/576-2835

Applicant:

California Department of Transportation
District 3—Office of Environmental Management
2800 Gateway Oaks Drive
Sacramento, CA 95833
Contact: Jason Meigs
916/274-0564

November 2009

For individuals with sensory disabilities, this document is available in alternate formats. Please write to Jason Meigs, California Department of Transportation, District 3—North Region Environmental Division, 2800 Gateway Oaks Drive, Sacramento, CA 95833, or call (916) 274-0564 or use the CA Relay Service TTY number (800) 735-2929.

Contents

Application for 401 Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill)

Attachment A Supplemental Information

Attachment B Adjacent Property Owners and Lessees

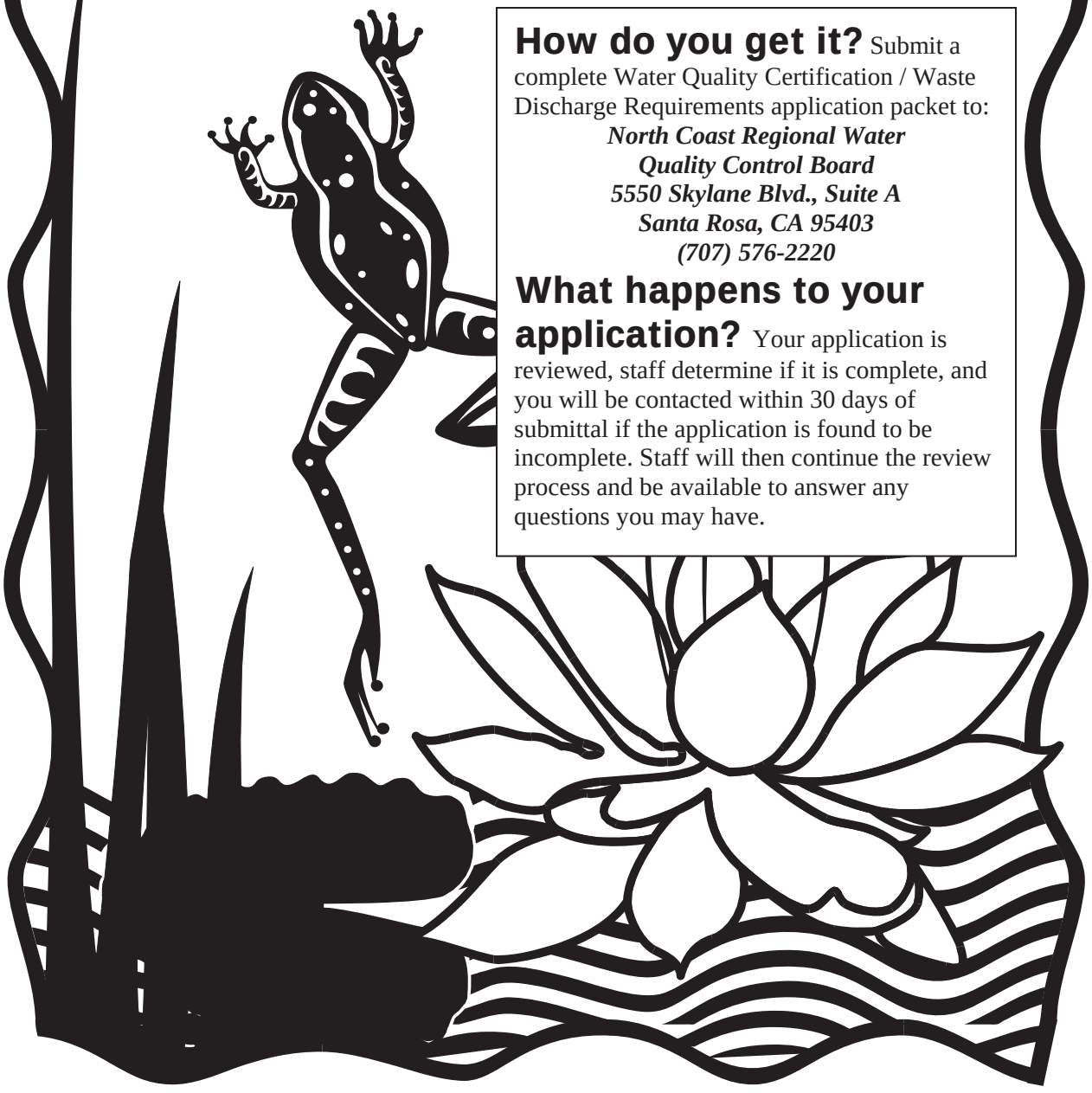
Attachment C Draft Habitat Mitigation and Monitoring Plan

Attachment D Final EIS/EIR, Record of Decision, and Notice of Determination

WATER QUALITY CERTIFICATION AND/OR WASTE DISCHARGE REQUIREMENTS (Dredge/Fill Projects)

What is it? A Clean Water Act (CWA) Section 401 Permit (Water Quality Certification) is a finding from the Regional Water Quality Control Board that the proposed project will comply with CWA Sections 301, 302, 303, 306 and 307, State laws, and will be protective of beneficial uses. At a minimum, any beneficial uses lost must be replaced by a mitigation project of at least equal function, value and area. Waste Discharge Requirements Permits are required pursuant to California Water Code Section 13260 for any persons discharging or proposing to discharge waste, including Dredge/Fill, that could affect the quality of the Waters of the State.

Who Needs It? Anyone proposing to conduct a project that requires a federal permit or may result in a discharge to U.S. surface waters and/or "Waters of the State", including wetlands (all types), year round and seasonal streams, lakes and all other surface waters.



How do you get it? Submit a complete Water Quality Certification / Waste Discharge Requirements application packet to:

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403
(707) 576-2220

What happens to your application? Your application is reviewed, staff determine if it is complete, and you will be contacted within 30 days of submittal if the application is found to be incomplete. Staff will then continue the review process and be available to answer any questions you may have.

Application for 401 Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill)

The following application must be submitted to the Regional Water Quality Control Board for dredge/fill projects that require Water Quality Certification and/or Waste Discharge Requirements. Submit this application and the appropriate documentation*, along with a check for $640.00 (Base Price) plus additional fees, if applicable, as required according to the CCR 23 Section 2200 (a)(2) Fee Schedule** to:

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403
(Make checks payable to: State Water Resources Control Board)

*Clarification of information may be requested by Regional Water Quality staff during application review.
**Additional fees may be imposed upon application review.
Fee calculator and additional information are available at
http://www.waterboards.ca.gov/northcoast/water_issues/programs/water_quality_certification.shtml

SECTION ONE – Applicant Information & Authorization

APPLICANT/PROPERTY OWNER(S) NAME Jason Meigs, California Department of Transportation (Caltrans)	AUTHORIZED AGENT NAME AND TITLE (an agent is not required)
APPLICANT/PROPERTY OWNER(S) MAILING ADDRESS Caltrans District 3 2800 Gateway Oaks Drive Sacramento, CA 95833	AUTHORIZED AGENT MAILING ADDRESS
APPLICANT/PROPERTY OWNER(S) PHONE & FAX NUMBERS (email optional) (916) 274-0564; FAX (916) 274-0602; Jason_Meigs@dot.ca.gov	AUTHORIZED AGENT PHONE & FAX NUMBERS (email optional)

STATEMENT OF AUTHORIZATION (if designating a specific agent)

I hereby authorize _____ to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

X_____ _____
APPLICANT'S SIGNATURE (not the authorized agent) DATE

SECTION TWO – Project Information

Please refer to the provided Project Plan Checklist for guidance and attach additional supporting documentation as necessary. Supplying detailed information will aid in expediting the review process. **Including an electronic copy of the required information will expedite the review process.**

PROJECT NAME OR TITLE U.S. Highway 101 Willits Bypass Project	
PROJECT STREET ADDRESS (if applicable) N/A	**PROJECT LOCATION** (Attach a topographic map and site map clearly indicating affected waters) COUNTY: Mendocino CITY/TOWN: Near Willits
CITY/STATE/ZIP Willits, CA	LATITUDE / LONGITUDE See Attachment A (Supplemental Information)
ASSESSORS PARCEL NUMBER(S) See Attachment B (Adjoining Property Owners)	SECTION, TOWNSHIP, RANGE, USGS QUADRANGLE MAP Section 32, Township 18N, Range 13W, Willits & Laughlin Range USGS 7.5-minute Quadrangles

NCRWQCB Revised February 10, 2008. Questions, contact the 401 Certification Unit Supervisor at (707) 576-2220.
To download this form in Microsoft Word visit http://www.waterboards.ca.gov/northcoast/water_issues/programs/wqc_docs/060215-401-Application.doc

DIRECTIONS TO THE SITE

From Santa Rosa, take U.S. Highway 101 north approximately 80 miles to Willits, California. The project site begins at the south of the Haehl Overhead and ends approximately 1.9 miles south of Reynolds Highway. Refer to See Attachment A (Supplemental Information) for additional location details.

PROJECT PURPOSE (See attached checklist for guidance. Attach additional information as necessary.)

See Attachment A (Supplemental Information)

PROJECT DESCRIPTION (See attached checklist for guidance. Provide a full, technically accurate description of the entire activity and associated environmental impacts. Attach additional pages as necessary.)

See Attachment A (Supplemental Information)

PROPOSED START AND END DATES	**ESTIMATED DURATION**	Will the project take place during the wet season months of October 15 through May 15? ☐ YES ☐ NO If YES, please discuss the proposed winterization strategies on Page 5, Non-compensatory Mitigation.

FEDERAL PERMIT(S) (applied for or approved, i.e. Army Corps of Engineers 404 Permit – Individual or Nationwide)

PERMIT TITLE	FILE DATE	FILE NUMBER
USACE 404 Individual Permit	Concurrent with this application	Pending
PERMIT TITLE	FILE DATE	FILE NUMBER

STATE PERMIT(S) (applied for or approved, i.e. Streambed Alteration Agreement (1600-1608) from the California Department of Fish and Game)

PERMIT TITLE	FILE DATE	FILE NUMBER
Streambed alteration agreement	Concurrent with this application	Pending
PERMIT TITLE	FILE DATE	FILE NUMBER

CEQA COMPLIANCE (Submittal of completed, approved and/or signed CEQA documentation is required prior to approval of Water Quality Certification.)

TYPE OF DOCUMENT (EIR, Negative Declaration, etc.)	LEAD AGENCY INFORMATION
EIR/EIS	Caltrans/FHWA

STATE CLEARING HOUSE NUMBER	STATUS (pending, complete, etc.)	DATE COMPLETED (or expected to be complete)
1990030006	Complete	October 25, 2006

SECTION THREE – Affected Waters

Please refer to the provided Project Plan Checklist for guidance and attach additional supporting documentation as necessary. Supplying detailed information will aid in expediting the review process.

DREDGE AND FILL INFORMATION (The following must be completed for each action where fill or other material will be temporarily or permanently discharged to a wetland or other waterbody, and where material will be dredged from a waterway. Attach additional pages as necessary. Provide a map showing the location of all impacts. Provide all temporary and permanent impacts to waters of the U.S. and waters of the State.)

TYPE OF WATERBODY (i.e. stream, wetland, ephemeral drainage)	**FILL and/or DREDGE VOLUME (CY) AND TYPE**	**FILL and/or DREDGE SURFACE AREA**	**FILL and/or DREDGE LINEAR FEET**	**TYPE OF IMPACT** (Temporary or Permanent)
Wetlands: wet meadow	?	?	?	?
Wetlands: vernal pool	?	?	?	?
Wetlands: marsh	?	?	?	?
Wetland swale	?	?	?	?
Wetlands: riparian woodland	?	?	?	?
Wetlands: riparian scrub	?	?	?	?
Total wetland impacts:	?	**16.9 acres**	?	**Temporary**
	?	**26.72 acres**	?	**Permanent**
Intermittent drainage		?	?	?
Ephemeral drainage		?	?	?
Total other waters of the U.S. impacts:		**0.32 acre**		**Temporary**
		0.6 acre		**Permanent**

DELINEATION INFORMATION	
NAME OF PERSON DELINEATING EXTENT OF WATERS OF U.S.	DATE(S) OF WETLAND DELINEATION January 2004
TITLE Modified J1T Alignment Study Area for the U.S. Highway 101 Willits Bypass Project	DATE OF WETLAND VERIFICATION BY U.S. ARMY CORPS March 1, 2005 (194741N); August 15, 2008 (1991-194740N)
AFFILIATION Caltrans consultant	If a wetland delineation has been verified by the U.S. Army Corps, please submit the verification letter as well as a verified wetland delineation map. If the Corps did not assume jurisdiction over the wetlands present, please submit the denial letter.

AVOIDANCE OF INDIRECT IMPACTS (Describe efforts to **avoid** and **minimize indirect impacts** to waters of the State such as upland impacts which might affect water quality. See checklist for guidance. Attach additional pages as necessary.)

See Attachment A (Supplemental Information)

AVOIDANCE OF DIRECT IMPACTS (Describe efforts to **avoid** and **minimize direct impacts** to waters of the State. See checklist for guidance. Attach additional pages as necessary.)

See Attachment A (Supplemental Information)

COMPENSATORY MITIGATION (Required when permanent and temporal impacts to Waters of the State occur. Describe the location, size, type, functions, and values of the proposed mitigation. Describe success criteria, monitoring, long-term funding, management, and protection of the mitigation site. Attach a Mitigation Plan if needed. Attach Mitigation Bank Bills-of-Sale for purchase credits if needed. See attached checklist for guidance.)

Caltrans developed a habitat mitigation and monitoring plan (HMMP) that proposes compensatory mitigation for effects of the bypass on jurisdictional wetlands, other waters of the United States, riparian habitat, and state-listed plants. In addition to compliance with Clean Water Act (CWA) Section 404 permitting, the HMMP would be used to support compliance with CWA Section 401 , Section 1602 of the California Fish and Game Code, and Section 2081 of the California Endangered Species Act. The overall goal of the HMMP is to successfully compensate for impacts on sensitive biological resources resulting from bypass construction by restoring some of the historical ecological functions and values to habitat in Little Lake Valley through a combination of habitat restoration, creation, enhancement, and preservation efforts. The table below presents the total amount of waters of the United States that would be created, enhanced, or preserved as compensation for the proposed project's impacts on jurisdictional waters and wetlands.

Resource (Order of Mitigation Importance)	**Mitigation Acres**		
	Creation	**Enhancement**	**Preservation**
Wetlands	48.659	907.855	1,117.857
Other Waters of the United States	–	8.694	24.625
Total	**48.659**	**916.549**	**1,142.482**

The proposed project's HMMP is provided in its entirety as Attachment C.

ALTERNATIVES ANALYSIS

Has an Alternatives Analysis been prepared? ☑ YES ☐ NO If you marked YES, please submit the appropriate documentation.

NON-COMPENSATORY MITIGATION (Required by all construction projects and projects which impact riparian vegetation.)

PROPOSED MINIMUM EROSION CONTROL MEASURES (Describe the methods proposed for erosion control, including winterization strategies to stabilize all bare soils and re-vegetation proposals. Please submit a map indicating the approximate locations of each method.)

See Attachment A (Supplemental Information)

PROPOSED POST-CONSTRUCTION STORM WATER TREATMENT MEASURES (Describe the methods proposed to treat storm water runoff from the project site prior to entering the storm drainage system, wetlands, streams, etc. Please include proper design calculations to indicate that the proposed methods will treat runoff from the 85th percentile/24-hour storm event. See SUSMP Guidelines available at: http://ci.santa-rosa.ca.us/doclib/Documents/SUSUMP.pdf, or upon request.

See Attachment A (Supplemental Information)

PROPOSED CONSTRUCTION AND POST-CONSTRUCTION POLLUTANT SOURCE CONTROLS (Describe the methods proposed to reduce sources of pollutants, fertilizers, pesticides, sediment, etc., from entering the water system.)

See Attachment A (Supplemental Information)

SECTION FOUR – Additional Information

POTENTIAL FOR IMPACTS TO THREATENED AND ENDANGERED SPECIES (Please attach all Biological Assessments, Surveys, Formal Consultation Determination letters, and Mitigation Proposals as necessary.)

SPECIES AND/OR HABITAT	BIOLOGICAL ASSESSMENT (Y/N)	SURVEY CONDUCTED (Y/N)	DATES OF SURVEY CONDUCTED
Chinook salmon—California Coastal ESU	Y	Unknown	
Steelhead—Northern California DPS	Y	Unknown	
Coho salmon—Northern California/ Southern Oregon Coasts ESU	Y	Unknown	
Northern spotted owl	Y	Unknown	
White-tailed kite	Y	Unknown	
Roderick's fritillary	Y	Unknown	
North Coast semaphore grass	Y	Unknown	
Baker's meadowfoam	Y	Unknown	

HAS ANY PORTION OF THE WORK BEEN INITIATED? ☐ YES ☑ NO If YES, describe the initiated work, and explain why it was initiated prior to obtaining a permit. Indicate whether any enforcement action has been taken against the project.

CUMULATIVE IMPACTS (List and describe other projects implemented or planned that are related to the proposed project, or that may impact the same waterbody. Attach additional pages as necessary.)

PROJECT NAME	DESCRIPTION	DATE IMPLEMENTED/PLANNED
None		

Application is hereby made for a permit or permits to authorize the work described in this application. I certify, under penalty of perjury, that this application is complete and accurate to the best of my knowledge. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT (OR AGENT) DATE

PRINT NAME OF APPLICANT (OR AGENT)

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Project Plan Checklist

A detailed project plan is required with every application. Clarification of information may be requested by Regional Water Quality Control Board (Regional Water Board) staff during application review. This checklist is provided to aid applicants in providing a thorough project plan. Not all items on the checklist apply to each and every project, rather they are to be used as general guidelines for required information to be included. In addition, there may be items not covered on this checklist that may be requested on a project by project basis.

Project Description

- ☐ Project Description
- ☐ Summary of overall project area
  - Size and description of project area; type(s) of receiving water body(ies); brief list/description of applicant's previous and future projects related to the proposed activity or that may impact the same receiving water body(ies)
- ☐ Responsible Parties
  - Names and phone numbers of anyone participating in the project
- ☐ Jurisdictional Waters to be impacted
  - Include a detailed site plan clearly indicating proposed impacts and mitigation site areas, including acreages
- ☐ Type(s) of water body, flow duration (i.e. intermittent/perennial), inundation period, functions and values
- ☐ Location and size of project area
- ☐ Include site map and regional map of project location
- ☐ Species present within project site and/or upstream/downstream
- ☐ Threatened or endangered species present in streamcourse
- ☐ Existing functions and values
  - Wetted channel width, pool/riffle ratio, mean/maximum depths, complexity, shade/cover
- ☐ Current conditions at the site (mostly natural, degraded, heavily impacted)
- ☐ Construction methods to be used
- ☐ Adverse impacts
  - Include whether the adverse impacts will be temporary or permanent, and include amount of area to be affected (acres or linear feet)
- ☐ Schedule of construction activities
  - Include start and end dates for proposed activities
- ☐ Stockpile summary
  - Include amount of stockpile and proposed areas for storage
- ☐ Best management practices
  - Practices to be implemented to reduce potential water quality impacts during and after construction activities, aside from proposed mitigation activities
- ☐ Site dewatering
- ☐ Solid waste disposal for dredged material
- ☐ Mitigation and monitoring plans (refer to Streamcourse and Wetland Mitigation Checklists)

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Streamcourse Mitigation Checklist

If it is determined that a watercourse (intermittent and/or perennial) will be affected by the proposed development, mitigation will likely be necessary to preserve the function and beneficial uses of the site. Clarification of information may be requested by Regional Water Board staff during application review. This checklist is intended to aid applicants in submitting complete and proper information regarding mitigation plans, to enable staff to effectively evaluate the project for Water Quality Certification or Waste Discharge Requirements. Not all items on the checklist apply to each and every project, rather they are to be used as general guidelines for needed information to be included. In addition, there may be items not covered on this checklist that may be requested on a project by project basis.

1) Goals of Mitigation

- ☐ Variety of habitats to be created/restored
  - Pools, rearing sites, spawning sites, riparian habitat, etc.
- ☐ Functions and values of habitat to be created
  - Wetted channel width, pool/riffle ratio, mean/maximum depths, complexity, shade/cover, large woody debris recruitment, etc.
- ☐ Other mitigation steps taken
  - Avoid, minimize, compensate
- ☐ Functions and values of the created/restored habitat
  - Wildlife habitat, streambank stabilization through riparian habitat establishment, increased water quality, etc.
- ☐ Time schedule for mitigation
- ☐ Work plan
  - Project start date; length mitigation activities will take place; specific work to be done at particular times, area of stream-channel profile receiving mitigation

2) Proposed Mitigation Site

- ☐ Location and size of mitigation area
- ☐ Include site map and regional map of mitigation project
- ☐ Existing functions and values
  - Wetted channel width , pool/riffle ratio, mean/maximum depths, complexity, shade/cover
- ☐ Current conditions at the site (mostly natural, degraded, heavily impacted)
- ☐ If the site is degraded, explain past uses leading to degradation
- ☐ Present and proposed uses of mitigation area
  - Provide habitat for flora/fauna (plants/animals), recreation, open space, etc.
- ☐ Current uses of the area
  - Agriculture, development, recreation, open space, etc.

3) Implementation Plan

- ☐ Responsible Parties
- ☐ Rationale for expecting success
- ☐ Site Preparation Plan
- ☐ Planting Plan
  - Dates of proposed plantings, native species to be planted, density of plantings, etc.
- ☐ Irrigation Plan (if applicable)

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4) Maintenance During Monitoring Period

- ☐ Responsible Parties
- ☐ Maintenance activities
- ☐ Names and phone numbers of anyone performing maintenance activities at or near the site
- ☐ Schedule

5) Monitoring Plan

- ☐ Responsible Parties
- ☐ Names and phone numbers of individuals/contractors performing monitoring duties
- ☐ Performance Criteria
  - Wetted channel width, pool/riffle ratio, mean/maximum depths, complexity, shade/cover, large woody debris recruitment, riparian establishment, flora/fauna, etc.
- ☐ How will success be judged?
  - Increase in depths, decreased erosion rates, establishment of riparian species, recruitment of flora and fauna, increased pool/riffle ratio, increased shade, decreased water temperatures, increased water quality, etc.
- ☐ Is there a reference site?
  - If a reference site is incorporated in the plan, include where it is located and what the current conditions are (see performance criteria above)
- ☐ Monitoring methods
  - Describe in detail how the site will be monitored
- ☐ Reports
  - How often will monitoring reports be published?
- ☐ Schedule
  - How often will the site be monitored? How long will the site be monitored?

6) Completion of Mitigation

- ☐ Notice of completion (i.e. agencies to be contacted)
- ☐ Regional Board confirmation

7) Final Success Criteria

- ☐ Target functions and values achieved
  - Ultimate target functions and values of the mitigation (i.e. wetted channel width, pool/riffle ratio, complexity/cover, flora/fauna recruitment, etc.)
- ☐ Target hydrologic scheme achieved
  - Wetted width, bankfull width, mean/maximum depths, flow regime, etc.
- ☐ What are the ultimate hydrologic conditions for the site?
  - Based on conditions prior to any degradation or human impacts (best case scenario)
- ☐ Target jurisdictional acreage created/restored
- ☐ Total acres restored or created through mitigation project
- ☐ Establishment of native riparian species
  - Based on monitoring, reviewed after determined number of years

Wetland Mitigation Checklist

Wetlands should not be disturbed if at all possible. If it is determined that a wetland will be affected by the proposed development, mitigation will need to be done on at least a 1:1 ratio to preserve the function and values of the wetland and its associated beneficial uses. Clarification of information may be requested by Regional Water Board staff during application review. This checklist is intended to aid applicants in submitting complete and proper information regarding mitigation plans, to enable staff to effectively evaluate the project. Not all of the items on the checklist will apply to each and every project, rather they are to be used as general guidelines for needed information to be included. In addition, there may be items not covered on this checklist that may be requested on a project by project basis.

1) Goals of Mitigation

- ☐ Variety of habitats to be created/restored
  - What type of wetland will be created/restored? (i.e. seasonal, freshwater, saltwater, swale, vernal pool, etc.)
- ☐ Functions and values of habitat to be created
  - What are the functions and values of the created/restored wetland? (i.e. wildlife habitat, native plant communities, increased water quality, etc.)
- ☐ Other mitigation steps taken: **avoid**, minimize, compensate
- ☐ Time schedule for mitigation
- ☐ Work plan
  - Project start date; length mitigation activities will take place; specific work (exotic species removal, native species plantings, etc.) to be conducted during particular times of the year

2) Proposed Mitigation Site

- ☐ Location and size of mitigation area
- ☐ Include site map and regional map of mitigation project
- ☐ Existing functions and values
  - Flora/fauna (plants/animals) habitat, flora/fauna utilizing site, mean/ maximum depths, water quality parameters
  - Include a copy of delineation report of mitigation site
- ☐ Current conditions at the site (mostly natural, degraded, heavily impacted)
- ☐ If the site is degraded explain past uses leading to degradation
- ☐ Present and proposed uses of mitigation area
  - Provide habitat for flora/fauna, recreation, open space, etc.
- ☐ Current uses of the area

3) Implementation Plan

- ☐ Responsible Parties
- ☐ Rationale for expecting success
- ☐ Site Preparation Plan
- ☐ Planting Plan
  - Dates of proposed plantings, native species to be planted, density of plantings, etc.
- ☐ Irrigation Plan (if applicable)

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4) Maintenance During Monitoring Period

- ☐ Responsible Parties
- ☐ Maintenance activities
- ☐ Names and phone numbers of anyone performing maintenance activities at or near the site
- ☐ Schedule

5) Monitoring Plan

- ☐ Responsible Parties
- ☐ Names and phone numbers of individuals/contractors performing monitoring duties
- ☐ Performance Criteria
  - Native species present, duration and season of water inundation, mean/maximum depths, water quality, etc.
- ☐ How will success be judged?
  - Establishment of native flora/fauna, ponding of water during appropriate portion of season, increased water quality, etc.
- ☐ Is there a reference site?
  - If a reference site is incorporated in the plan, include where it is located and what the current conditions are (see performance criteria above)
- ☐ Monitoring methods
  - Describe in detail how the site will be monitored
- ☐ Reports
  - How often will monitoring reports be published?
- ☐ Schedule
  - How often will the site be monitored? How long will the site be monitored?

6) Completion of Mitigation

- ☐ Notice of completion (i.e. agencies to be contacted)
- ☐ Regional Board confirmation

7) Final Success Criteria

- ☐ Target functions and values
  - Ultimate target functions and values of the mitigation (i.e. native flora/fauna recruitment, inundation of water during appropriate season)
- ☐ Target hydrologic scheme
  - Inundation period of area
- ☐ What are the ultimate hydrologic conditions for the site?
  - Based on conditions prior to any degradation or human impacts (best case scenario)
- ☐ Target jurisdictional acreage to be created/restored
- ☐ Total acres restored or created through mitigation project
- ☐ Establishment of native wetland species
  - Based on monitoring, reviewed after determined number of years

Attachment A

Supplemental Information

Project Location

The U.S. Highway 101 Willits Bypass Project would be located near the city limits of Willits in Mendocino County, California. The bypass would begin approximately 0.8 mile south the Haehl Overhead and end approximately 1.9 miles north of Reynolds Highway. The overall length of the proposed bypass would be approximately 5.8 miles with post mile limits ranging from R43.1 to R49.0 (Figure 1-1).

Bypass Alignment

The proposed bypass would diverge from existing U.S. Highway 101 (U.S. 101) at the Haehl Creek interchange and continue northwesterly on an embankment constructed with excess fill from a previous freeway project. The alignment would swing to the northeast to avoid the Sanhedrin industrial creek and border the railroad tracks north of East Hill Road to avoid the oak riparian forest on the Colli Ranch. Between Center Valley Road and the Willits Wastewater Treatment Plant (WWTP), the alignment has been placed east of a line of trees that would serve as a visual buffer between the viaduct and the City of Willits' park and recreation complex on Commercial Street. The alignment then travels back to the northwest, adjacent to the WWTP. Figures 1-2a to 1-2d illustrate the bypass alignment and locations of key project components.

Bypass Vertical Alignment

The vertical alignment of the bypass would begin with a gentle downgrade at the south end of the project and proceed northwesterly from the existing freeway section to approximately 0.5 mile of East Hill Road. From this point to the Quail Meadows interchange, the flat valley floor would allow grades that are nearly flat except at structure approaches and departures. Throughout the valley, the proposed project would cross the 100-year floodplain and would be constructed at least 3 feet above the estimated 100-year floodwater surface level.

Latitude/Longitude of Key Project Components (Approximate)

- **Haehl Creek interchange:** 39°22'28.48" N, 123°19'29.11" W
- **Quail Meadows interchange:** 39°25'31.29" N, 123°21'10.33" W
- **Viaduct structures:** 39°24'32.07" N, 123°20'21.36" W

Project Purpose

U.S. 101 is an important route for interstate and interregional travel and is considered the economic lifeline of California's North Coast. It is the principal arterial route for people and goods between the San Francisco Bay Area and the greater Eureka/Arcata area. Travel times and costs of transporting goods to and from the communities along U.S. 101 are high. Travel times and transportation costs

are exacerbated by congestion-related delays and delays caused by facility type at Willits where U.S. 101 passes through developed areas on surface streets.

Because U.S. 101 also serves as Main Street in Willits and is the only continuous north-south street traversing the city, U.S. 101 must accommodate nearly all local traffic traversing Willits as well as all interregional traffic intending to pass through. Traffic congestion has been a concern in Willits for a number of years, and it is becoming more prevalent as traffic volumes increase. The proposed project is needed to respond to a number of deficiencies that exist on the current facility.

As a solution to the above-mentioned traffic issues, the California Department of Transportation (Caltrans) and Federal Highway Administration (FHWA) propose to construct a new segment of U.S. 101 that would bypass Willits to reduce delays, improve safety, and achieve a minimum level of service (LOS) of C for interregional traffic on U.S. 101 within the project area though a 20-year design period. As a byproduct of the proposed project, the following benefits would occur:

- Improved traffic safety on Main Street in Willits.
- Reduced noise and vibration experienced by nearby homes, businesses, schools, and other community facilities in Willits due to interregional commercial truck and other through traffic. Removing the constant stream of U.S. 101 interregional truck traffic from Main Street would enhance the local community aspects of Willits.
- Improved conditions for bicyclists and pedestrians, as well as less mobile groups such as the young, disabled, and elderly. Removing interregional traffic from Willits would improve the existing conditions for bicyclists and pedestrians, provide new opportunities for non-motorized circulation improvements, and enhance the friendly small-town character of Willits.
- Improved conditions for local residents who use Main Street for routine trips to workplaces, shops, and schools. Removal of interregional traffic from Main Street would reduce congestion for local traffic.

Project Description

Caltrans, in conjunction with the (FHWA, proposes to construct a new segment of U.S. 101 that would bypass Willits in Mendocino County. The project is being proposed to reduce delays, improve safety, and achieve an LOS of “C” for interregional traffic on U.S. 101.

The FHWA is the federal lead agency under the National Environmental Policy Act (NEPA), with Caltrans acting as liaison and providing oversight for the NEPA process. Caltrans is the state lead agency under the California Environmental Quality Act (CEQA). A joint environmental impact statement/environmental impact report (EIS/EIR) has been prepared for the proposed project.

The draft EIS/EIR was published in May 2002. According to regulations set forth in 23 Code of Federal Regulations (CFR) 771.129, a written evaluation of the draft EIS/EIR is required if the final EIS/EIR has not been submitted to the FHWA within 3 years of the date of the draft EIS/EIR circulation. Because 3 years have elapsed since circulation of the draft EIS/EIR, Caltrans submitted a written evaluation to the FHWA for review in April 2006. The purpose of this written evaluation was to determine whether it was necessary to circulate a new or supplemental EIS/EIR. Based on the information provided to the FHWA, it was determined that no new or supplemental EIS/EIR would be necessary for the project.

Caltrans approved the final EIS/EIR and filed a notice of determination on December 15, 2006. The FHWA approved the final NEPA document and filed a record of decision on December 18, 2006. A hard copy of the final EIS/EIR will be provided under separate cover. It can be also be viewed and downloaded at <http://www.dot.ca.gov/dist1/d1projects/willits/reports.feir.htm>. Copies of the record of decision and notice of determination are included as Attachment D of this application.

Background and Changes Since the Final EIS/EIR

Modified Alternative J1T (proposed project or bypass) was selected as the preferred alternative and evolved as a result of the NEPA/404 integration process. It was not specifically identified as an alternative in the draft EIS/EIR. Modified Alternative J1T shares similar project design elements of the J1T and LT alternatives discussed in the draft EIS/EIR, and was proposed to further reduce community and environmental impacts.

Since publication of the final EIR/EIS in December 2006, Modified Alternative J1T has undergone several design revisions. The primary reasons for the design revisions were: 1) to avoid conflicts with the WWTP expansion project and 2) to accommodate phasing the construction of the bypass, as discussed below. Overall, the design revisions are relatively minor changes to Modified Alternative J1T as presented in the final EIR/EIS. The project remains a four-lane freeway bypass with several bridge structures spanning creeks and local roads, floodway viaduct structures spanning the regulatory floodway, and interchanges on either end of the bypass. The location and design elements of project revisions are described in more detail below.

Avoidance of the Willits Wastewater Treatment Plant Expansion Project

To avoid conflicts with the WWTP expansion project, the alignment was shifted slightly to the northeast around the WWTP using a triple compound curve instead of the single curve that was originally planned. The alignment returns nearly to the original alignment near the Northwestern Pacific Railroad (NWPRR) track crossing. The profile over the railroad has also been lowered, resulting in a significant reduction of the embankment footprint (and therefore a reduction in impacts on wetlands) between the end of the viaduct structure (Huffman/City of Willits property line) and the railroad crossing.

Phasing of Bypass Construction

Because of funding constraints, the decision was made to construct the bypass in two phases such that a functional interim two-lane facility would be constructed initially, and when adequate funding becomes available in the future, the remaining lanes would be constructed to complete the four-lane bypass. The need to phase construction of the project has had design implications, resulting in the need to modify the Quail Meadows interchange. Phasing the construction of the original Quail Meadows interchange proved geometrically complex and wasteful of resources. Therefore, the interchange was shifted approximately 1,200 feet to the north and would be a two-lane interchange in Phase 1. In addition, a roundabout has been added to the west side of the interchange to connect two ramps to the local roads. One of the additional benefits of the roundabout is that an existing box culvert at Upp Creek can now be removed. In addition, all of the crossings of Upp Creek, which were previously planned as box culverts, would now be bridges.

Although the project would be constructed in two phases, the ultimate project remains a four-lane freeway bypass. As funding allows during Phase 1, Caltrans intends to construct as much of the four-

lane roadway embankment as possible to help facilitate the construction of Phase 2. The environmental study limits encompass the full four-lane project area. Right-of-way purchased for the project would satisfy the requirements of the full four-lane project and would be access-controlled. Although only the two southbound lanes would be constructed initially in Phase 1, Caltrans would implement mitigation for the impacts of the ultimate four-lane project with implementation of Phase 1. The project description below discusses the ultimate four-lane facility.

Description of Specific Design Elements

Roadway Design

The proposed project is designed to accommodate the predicted interregional average annual daily traffic in 2028 at a LOS C or better. The bypass would be a four-lane freeway with a 45.3-foot median separating the northbound and southbound lanes. Each lane would be 12 feet wide. The inside shoulder width (nearest the median) would be 5 feet, while the outside shoulder width would be 10 feet. The freeway sections would maintain a minimum design speed of 68 miles per hour (mph) and would meet the purpose of providing at least an LOS of C. Where local roads would be improved or constructed, there would be two 12-foot lanes and shoulder width meeting local design standards.

Interchanges

There would be two interchanges constructed for the project. The Haehl Creek interchange would be located at the south end of the project near Haehl Creek and connect the existing freeway and highway into Willits with the new facility. The Quail Meadows interchange would be located near the north end of Little Lake Valley and connect the new facility to the existing two-lane conventional highway north of Willits. Interchange ramps would be single-lane.

Bridges and Structures

The bypass would traverse creeks, riparian corridors, streets, and railroad rights-of-way using 22 bridges and three retaining walls. The following structures would be constructed with this project:

- Six bridges/structures in the Haehl Creek interchange area, one for each of the following:
    - Northbound freeway lanes separation with State Route (SR) 20
    - Southbound freeway lanes separation with SR 20
    - Southbound off-ramp over Haehl Creek
    - Northbound on-ramp over Haehl Creek
    - Northbound freeway lanes over Haehl Creek
    - Southbound freeway lanes over Haehl Creek
- Two retaining walls in the Haehl Creek interchange area adjacent to Haehl Creek:
    - East side of northbound lanes
    - West side of northbound on-ramp
- Two structures to cross East Hill Road:
    - One bridge for the southbound roadway lanes (Phase 1)

  - One bridge for the northbound roadway lanes (Phase 2)
- Two bridges to cross the middle reach of Haehl Creek south of Shell Lane:
  - One bridge for the southbound roadway lanes (Phase 1)
  - One bridge for the northbound roadway lanes (Phase 2)
- One retaining wall on the west side of the southbound roadway lanes just south of Center Valley Road.
- Two viaduct structures to span the regulatory floodway:
  - Southbound (Phase 1)
  - Northbound (Phase 2)
- Two structures to cross over the NWPRR tracks in the Quail Meadows interchange area, one for each of the following:
  - Southbound roadway lanes (Phase 1)
  - Northbound roadway lanes (Phase 2)
- Two structures to cross the new connector road to existing U.S. 101 in the Quail Meadows interchange area
  - One for the southbound roadway lanes (Phase 1)
  - One for the northbound roadway lanes (Phase 2)
- Six bridges to cross Upp Creek directly north of the Quail Meadows interchange, one for each of the following:
  - Southbound roadway lanes (Phase 1)
  - Northbound roadway lanes (Phase 2)
  - Northbound on-ramp (Phase 1)
  - Northbound on-ramp (Phase 2)
  - Southbound off-ramp
  - Roundabout local intersection

  Note that the northbound on ramp bridge constructed in Phase 1 would be replaced in Phase 2 by a different bridge.

Viaducts

The proposed alignment encroaches upon the 100-year floodplain. The design includes two elevated structures, which make up the floodway viaduct. The purpose of this design feature is to span the regulatory floodway. The final floodplain evaluation report concludes that proposed project would not increase the base flood elevation of the regulatory floodway or floodplain, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q).

The proposed viaduct structures would be located in the central part of the project area and would span Center Valley Road, the lower reach of Haehl Creek just upstream of the confluence with

Baechtel Creek, Hearst-Willits Road, Baechtel and Broaddus Creeks at their confluence (beginning of the Outlet Creek designation), the WWTP, and Mill Creek.

The approximately 6,000-foot-long structures would consist of separate northbound and southbound elevated viaduct superstructures. The area of the viaducts would be 11.6 acres. Each of the viaduct structures would be approximately 42.6 feet wide. The edge-to-edge distance between the structures would be approximately 31.2 feet, and each would generally have at least a 16.5-foot minimum clearance underneath. The viaducts would require supporting columns, ranging in size from 4.5 to 7 feet in diameter.

Reinforced Concrete Box Culverts

Three large reinforced concrete box (RCB) culverts and numerous small culverts would be built as part of the proposed project. The first RCB culvert would cross Haehl Creek near the Haehl Creek interchange to provide access to a ranch isolated by the new bypass; the second and third would cross under Center Valley Road, near Shuster's Trucking, and would mitigate floodplain impacts due to roadway embankment south of Center Valley Road.

The Haehl Creek culvert for the ranch access would be a natural bottom arch culvert or a partially buried box culvert. The two culverts crossing Center Valley Road would be concrete boxes and would use turf reinforcement mats in lieu of rock slope protection (RSP) at the inlets and outlets where feasible.

Retaining Walls

Three concrete retaining walls would be constructed: two at the Haehl Creek interchange, and one just before the south end of the viaduct near Baechtel Creek. One of the Haehl Creek interchange walls would be located along the west side of the northbound on-ramp. The other would be located along the east side of the northbound lanes between the separation structure over SR 20 and the Haehl Creek bridge. The third retaining wall, near Baechtel Creek, would be built to avoid the potential for the roadway embankment to be undermined by Baechtel Creek.

Excavation (Cut), Embankment (Fill), and Imported Borrow

The estimated embankment requirement for Phase 1 of the proposed project is approximately 1.4 million cubic yards. Because all on-site excavation soil would be reused as embankment, no disposal sites would be required for the project. From just north of the Haehl Creek interchange to the south abutment of the viaduct, and from the north abutment of the viaduct to the terminus of the project, the alignment is on embankment. Cut slopes would generally vary between a 1:2 (vertical: horizontal) and 1:2.5 ratio. Fill slopes would vary between a 1:2 and 1:4 ratio. The plans would call for slope rounding at appropriate locations.

Because the bypass would be constructed largely on embankment, it would require imported borrow material from outside the project area in addition to on-site excavation material. The construction contractor would have the option to determine whether the source of material for earthwork fill would be the Caltrans-designated borrow site, a commercial borrow site, or another site.

Caltrans has designated a borrow site at Oil Well Hill, just north of Little Lake Valley, as an optional source of material that the contractor may use for the project. The material in this area is good-

quality and suitable for use in embankment construction. The right-of-way for U.S. 101 at the designated borrow site is sufficient to provide the necessary embankment material for earthwork. Potential excavation at the proposed designated borrow site at Oil Well Hill could result in the removal of up to 1.3 million cubic yards (1.0 million cubic meters) of material. The State Geology and Mining Board granted an exception to the State Mining and Reclamation Act (SMARA) permitting requirement on March 13, 2008.

The contractor may also choose to use available commercial borrow sites in the vicinity to obtain the required fill. Typically, commercial borrow sites hold pre-approved operating permits and do not require any additional environmental permitting when soil is exported. Should the contractor select an alternative, non-commercial borrow site for this project, a separate environmental review for the site would be required before the contractor begins construction.

Fish Passage

One existing culvert in the upper Haehl Creek channel, located under the proposed highway bridge (10-0129R/L), would be permanently removed. A second existing culvert in upper Haehl Creek would be replaced for improvement of the proposed new Schmidbauer Ranch access road. An existing RCB culvert located near the Quail Meadows interchange that passes under existing U.S. 101 would also be permanently removed.

Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) would consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements would comply with guidelines established by National Marine Fisheries Service (NMFS) and California Department of Fish and Game (CDFG).

An existing ranch road would be improved to provide access to the Schmidbauer Ranch. This access would be from the east side of the southern interchange. The existing culvert in upper Haehl Creek would be replaced with a natural bottom arch or box culvert. The culvert replacement would occur during summer, when this reach of Haehl Creek is normally dry. However, flows through the existing culvert have created an outfall pool that can retain water throughout the year. If water is present, a qualified fisheries biologist would survey the pool for the presence of salmonids. If present, the fish would be removed before removal and replacement of the culvert.

Landscaping

Permanently impacted areas such as the cut and fill slopes adjacent to the roadway and along interchange ramps, as well as the median between the inside roadway shoulders, would be revegetated with native plants appropriate for Little Lake Valley. For drivers' safety and in compliance with Caltrans design standards, no trees would be planted within the clear recovery zone where errant vehicles could hit them. Only soft shrubby and herbaceous native species may be planted throughout these areas to prevent abrupt slowing, redirection, or launching of stray vehicles.

Temporarily impacted areas would be revegetated to their pre-construction plant community type. They would be seeded and planted with plants native to Little Lake Valley.

Lighting

Highway lighting would be provided at both the Haehl Creek and Quail Meadows interchanges. No lighting would be provided along the viaduct.

Fencing

Fencing would be erected along the Caltrans right-of-way where appropriate.

Stream Bank Stabilization

To prevent bank erosion and damage to the bypass facilities, RSP would be required along short lengths of creek banks. The use of RSP is minimized through the substitution of turf reinforcement mats in appropriate locations.

At locations where Haehl and Upp Creeks pass through the right-of-way, the stream channel would be contoured, re-graded, and designed for fish passage following the guidelines set forth by NMFS and CDFG.

Description of Specific Construction Elements

Roadway Construction

Staging Areas

The first phase of construction is the establishment of staging areas. Three staging areas are proposed, located in the south-central, central, and northern portions of the project corridor. The south-central staging area is located on state-owned property (Assessor's Parcel Number [APN] 007-100-08). The central staging area is state-owned property (APN 007-040-09) located south of East Valley Street, east of the south abutment of the floodway viaduct, and west of Haehl Creek. The northern staging area is located on state-owned property (APN 108-040-02) east of existing U.S. 101, west of the Quail Meadows interchange, and south of the roundabout. In addition to the staging areas described, the contractor would have use of right-of-way not being actively used for highway purposes.

The staging areas would be used by the contractor to store equipment and materials, and would provide the contractor easy access to the project corridor. Access roads from the staging areas to the project corridor would be constructed where necessary. It is anticipated that work would begin at several areas at the same time. Where staging areas are located adjacent to salmon-bearing creeks, a sufficient buffer would be maintained along with appropriate best management practices (BMPs) to ensure that untreated storm runoff from these areas does not directly flow into any natural drainage. No riparian vegetation would be removed within the staging areas.

Imported Borrow

Before the construction of the embankments, all environmentally sensitive areas would be fenced to prevent encroachment from the contractor's operations.

The proposed project would be constructed largely on fill material imported to the site. The bypass requires approximately 2.5 million cubic yards of fill (1.4 million cubic yards in Phase 1). The construction contractor would determine the source of material for earthwork.

Caltrans has designated a borrow site in the project area as a possible source of material that the contractor may use for the project. The site is located at Oil Well Hill, just north of Little Lake Valley and the U.S. 101 bridge over Outlet Creek. Material from the Oil Well Hill site could be transported to the project corridor by trucks, via U.S 101. Once the haul trucks reach the project site near the Quail Meadows interchange, they would travel on a haul road constructed within the ultimate roadway prism. To reach the south end of the project, a temporary haul road would be constructed adjacent to the floodway viaduct. This haul road would be removed after construction of the viaduct is complete and the footprint of the haul road is restored to pre-construction condition.

Wick Drains

Before any of the structure abutments can be constructed, the embankment for the abutments must settle. The estimated settlement period ranges from 30 days to as long as 10 years. To facilitate the acceleration of the settlement period, the project would utilize wick drains.

Wick drains are vertical drains that provide an escape path for groundwater. The groundwater usually escapes to a subsurface permeable layer before reaching the surface, but some groundwater may reach the surface. Each drain is driven into the ground, and the surface ends of all the drains are connected with a strip drain that drains into a small catch basin. Any groundwater effluent captured in the catch basins would be pumped into holding tanks for disposal or used on the project for dust control.

Beginning with the north abutment of the floodway viaduct and continuing through the north abutments of the Upp Creek bridges, wick drains would be installed before the placement of embankment. Wick drains would be used for both the roadway embankment and the structure abutments.

Drainage

Highway drainage is classified as either on- or off-site. The on-site drainage is collected from the new impervious surfaces through the use of curbs and dikes, overside drains, drop inlets, and culverts. This runoff is routed to detention basins, then treated and discharged.

The off-site drainage consists of natural flows passing through the right-of-way that would exist before the project. These natural flows are perpetuated through the placement of cross culverts in strategic locations. Temporary cross culverts would be placed where they pass though embankments requiring settlement periods. After the settlement has been attained, the permanent culvert would be jacked and bored through the embankment.

Pavement Construction

Pavement construction for the project consists primarily of placing and compacting layers of pavement materials consisting of aggregate base (AB), hot mix asphalt (HMA), and hot mix asphalt (open graded). The pavement would be placed sometime toward the end of construction, after the structures have been completed and all embankments have settled. Aggregate for both the AB and HMA layers would most likely be obtained from a commercial rock quarry located near Ridgewood

Grade south of Willits. The contractor may choose to construct a temporary HMA batch plant on-site to minimize haul time.

Structures Construction

General Discussion

The bridge sites would be cleared of vegetation before construction for a distance of approximately 75 feet upstream and downstream of the structures. Removal of vegetation below the top of banks would be required to provide access for large equipment, but would be minimized to the extent possible to maintain bank slope stability and to provide some shade for salmonids.

Bridge construction would begin with the approach fills, where necessary, followed by construction of the abutments. The abutment work would include excavation for the footings, pile driving or drilling for the foundations, formwork for concrete placement, steel reinforcement bar placement, concrete pouring, finishing, and curing. After the concrete for the abutments has cured, the forms would be removed and construction of the superstructure falsework would begin. The temporary falsework would be constructed during the low-flow work window. Falsework supports may consist of hollow steel pipe piles, H piles, or timber pads. Installation of these supports may require pile driving. The permanent bridge superstructure forms would then be erected and the concrete poured, finished, and cured. After a suitable time to allow the concrete to set and strengthen, the falsework would be removed and other work, including bridge rail and approach work, would be completed.

The use of temporary culverts for construction of the structures crossing salmonid-bearing streams is not anticipated. If dewatering is required at any of these stream crossings, it is possible that cofferdams could be constructed in the channel. The permanent bridges would consist of separate southbound and northbound structures. Each of the permanent bridge abutments may require 20 or more H piles, which would be placed by pile drivers, at or near the top of bank. The floodway viaduct bents would require 240-inch hollow steel pipe piles, with approximately 9 piles per footing or column.

Erosion protection would be required on disturbed slopes where new crossings would be constructed. RSP could also be required where scour potential is higher, on the banks of upper Haehl Creek, at the southbound off-ramp, and the northbound on-ramp (on both banks). It would also likely be required on the south bank at the highway crossing over the middle reach of Haehl Creek, south of Shell Lane.

Floodway Viaduct

The installation of the columns and deck construction would require a 100-foot-wide work area on the east side of the viaduct, and a 55-foot-wide work area on the west side of the viaduct. Access would also be required underneath the viaduct structure. The larger work area on the east side of the viaduct is required for access by large cranes and other equipment. Constraining the work area to 55 feet on the west side of the viaduct would serve to avoid loss of riparian habitat along Baechtel Creek. The temporary work areas would be used for vehicle access and for storage of equipment and materials, and would also be used for foundation, column, and falsework erection and removal. Permanent fill in the floodplain would be limited to the total surface area encompassed by the columns (estimated to be approximately 1% of the area under the viaduct). When each frame

(consisting of multiple spans) is completed, work would begin on the next frame, where material and equipment would be located.

The viaduct construction over lower Haehl Creek would require removal of vegetation for a distance of 100 feet upstream and 55 feet downstream of the viaduct overcrossings. No piles would be located at or below the top of banks, but would likely require pile driving within 50 feet of the top of bank to install the columns.

The viaduct crossing over Baechtel and Broaddus Creeks would require the removal of vegetation for a distance of 100 feet downstream and 55 feet upstream of the viaduct structures. A single bent (two columns) would be constructed at the confluence of Baechtel and Broaddus Creeks. Dewatering would be necessary for installation. This would include the installation of a cofferdam for concrete footing construction. The top of the foundation footing would be 8 feet below the bottom of the creek. This may require RSP that would be located on both banks under the structures and for a maximum distance of 25 feet upstream and downstream of the structures. The footing of the RSP could be placed below the ordinary high water mark (OHWM).

The viaduct crossing over Mill Creek would require vegetation removal only, for a distance of 100 feet downstream and 50 feet upstream of the structure. Piles could be located within 10 to 50 feet of top of bank, and RSP is not expected to be required.

The floodway viaduct has 32 two-column supports (bents), which require the installation of two footings each. Each footing is approximately 16 by 16 feet and encapsulate eight or nine 2 foot-diameter steel pipe piles. Depending on the time of year each footing is constructed, groundwater may be encountered during the excavation of the footings.

Retaining Walls

To construct the retaining walls, some riparian vegetation would be removed and later replaced. A portion of these walls may require RSP. The RSP would be “vegetated” RSP and is included in the fish passage design. The wall foundation would require the installation of H piles by pile driving.

Concrete Batch Plant

It may be necessary to supplement the current commercial production of Portland cement concrete and minimize haul time by allowing contractors to construct a temporary plant near the project site. One possible site for a batch plant is state-owned property located south of East Valley Street, east of the south abutment of the floodway viaduct, and west of Haehl Creek (APN 007-040-09).

Temporary Bridge Construction

Approximately 10 temporary bridges may be required to access portions of the project site at the initial stages of construction. If it were necessary to use temporary bridges, the type and location of the temporary bridges would be determined by the contractor. However, each temporary bridge would likely consist of a Bailey Bridge, railroad flatcar, or similar type of structure. Information on Bailey Bridges can be found at <http://www.baileybridge.com>. These bridges would not require placing any piers in the stream channels or banks. No access into the live stream channels would be required.

Temporary bridges would be located generally where minimal removal of vegetation would be required. If riparian vegetation is present, placement of these bridges would require removal of

vegetation for a distance of 10 feet on both sides of the structure. The bridges would be installed during the low-flow season, usually June 15 through October 15. All areas of disturbed soil would be stabilized at the end of each season through implementation of BMPs in the storm water pollution prevention plan (SWPPP) and National Pollutant Discharge Elimination System (NPDES) permit.

Pile Driving

Driven piles would support the bridge abutments, columns, and retaining walls, and may be used to support the temporary falsework. Table 1 details the numbers and sizes of piles to be driven for the permanent structures under Phase 1 construction. Caltrans expects the numbers and sizes of piles in Phase 2 construction to be similar to those described here. All the bridge abutments would be located above the top of the bank. The number of columns within 50 feet of the stream channels for Phase 1 construction is shown in Table 1. Except at Bent 24 of the floodway viaduct, any piles located within the stream banks would be above the OHWM.

Table 1. Pile Driving Information

Structure	No. of Structures	Piles				Stream Name
		Type	No.	Size (Feet)	No. within 50 Feet of Stream[a]	
US 101/SR 20 Separation (10-128RL)	2	H	72	250 x 85	0	Haehl Creek (Upper)
		H	72	360 x 132	0	
Haehl Creek (Upper) (10-0129RL-F-G)	4	H	38	250 x 62	38	Haehl Creek (Upper)
		H	14	250 x 85	14	
		H	114	360 x 132	114	
		H	30	360 x 174	30	
Retaining Walls at Haehl Creek (10E0001-2)	2	H	160	250 x 85	160	Haehl Creek (Upper)
East Hill Rd UC	1	H	34	250 x 85	–	–
Haehl Creek (Middle) (10-0159)	1	H	6		6	Haehl Creek (Middle)
		Pipe	50	360 x 11.12	50	
Retaining Wall at Floodway Viaduct (10E0009)	1	H	108	250 x 62	62	Baechtel Creek
Floodway Viaduct (10-0165)	1	H	26	250 x 85	0	Baechtel Creek
		Pipe		610 x13	16	Haehl Creek
		Pipe		610 x 16	36	Mill Creek
(Bent 24 uses 18 piles)		Pipe		610 x 19	34	Baechtel, Broaddus, and Outlet Creeks

Structure	No. of Structures	Piles				Stream Name
		Type	No.	Size (Feet)	No. within 50 Feet of Stream[a]	
Quail Meadows OH	1	H	216	250 x 62	–	–
		H	118	360 x 132		
Quail Meadows UC	1	H	32	250 x 85	–	–
Upp Creek (10-0174S) (10-0174K) (10-0174)	4	H	46	250 x 62	46	Upp Creek
		H	16	250 x 85	16	
		H	22	360 x 132	22	

[a] Numbers of piles within 50 feet of the stream is approximate and measured from the footing to the stream bank.

In past projects, contractors have used pre-formed concrete pads or timber-grade beams set on the earth, or driven piles to support falsework. The contractor would be responsible for selecting the supporting system for falsework, although that must be approved by the resident engineer. Generally, when contractors use piles to support the falsework, the piles are relatively small (about 15 inches or smaller in diameter) or equivalently sized H piles.

Avoidance of Indirect and Direct Impacts

In addition to the creation, enhancement, and preservation strategies included in the HMMP, Caltrans has incorporated numerous minimization measures as part of project design. The two minimization measures incorporated into the design since the final EIS/EIR are listed below:

- Bypass re-alignment will avoid conflicts with the planned WWTP expansion project
- Design modifications to accommodate phased construction of the bypass

In addition to preparing a SWPPP, Caltrans would implement the following measures to minimize disturbances of aquatic resources:

- All construction-related materials would be stored in designated staging areas at least 100 feet from perennial waterways and drainages.
- Refueling and vehicle maintenance would be performed at least 1,000 feet from creeks and other water bodies.
- Operation of heavy equipment would be minimized in perennial creeks to the greatest extent possible.
- Temporary sedimentation barriers, such as sandbags or siltation fencing, would be installed to minimize the amount of silt entering the creeks and any ephemeral drainages with water present in the channel. The locations of these barriers would be determined by the resident engineer and environmental monitor, and would be clearly marked in the field before construction activities begin.

- Additional BMPs would be implemented to prevent runoff from adjacent lands from flowing across construction areas, slow down the runoff traveling across construction sites, remove sediment from on-site runoff before it leaves the site, and provide soil stabilization.

Non-Compensatory Mitigation

See the discussion in the above "Project Description" section under the heading "Description of Specific Construction Elements" for details regarding proposed minimum erosion control measures, post-construction stormwater treatment measures, and construction and post-construction pollutant source controls for individual project components and general project construction activities.

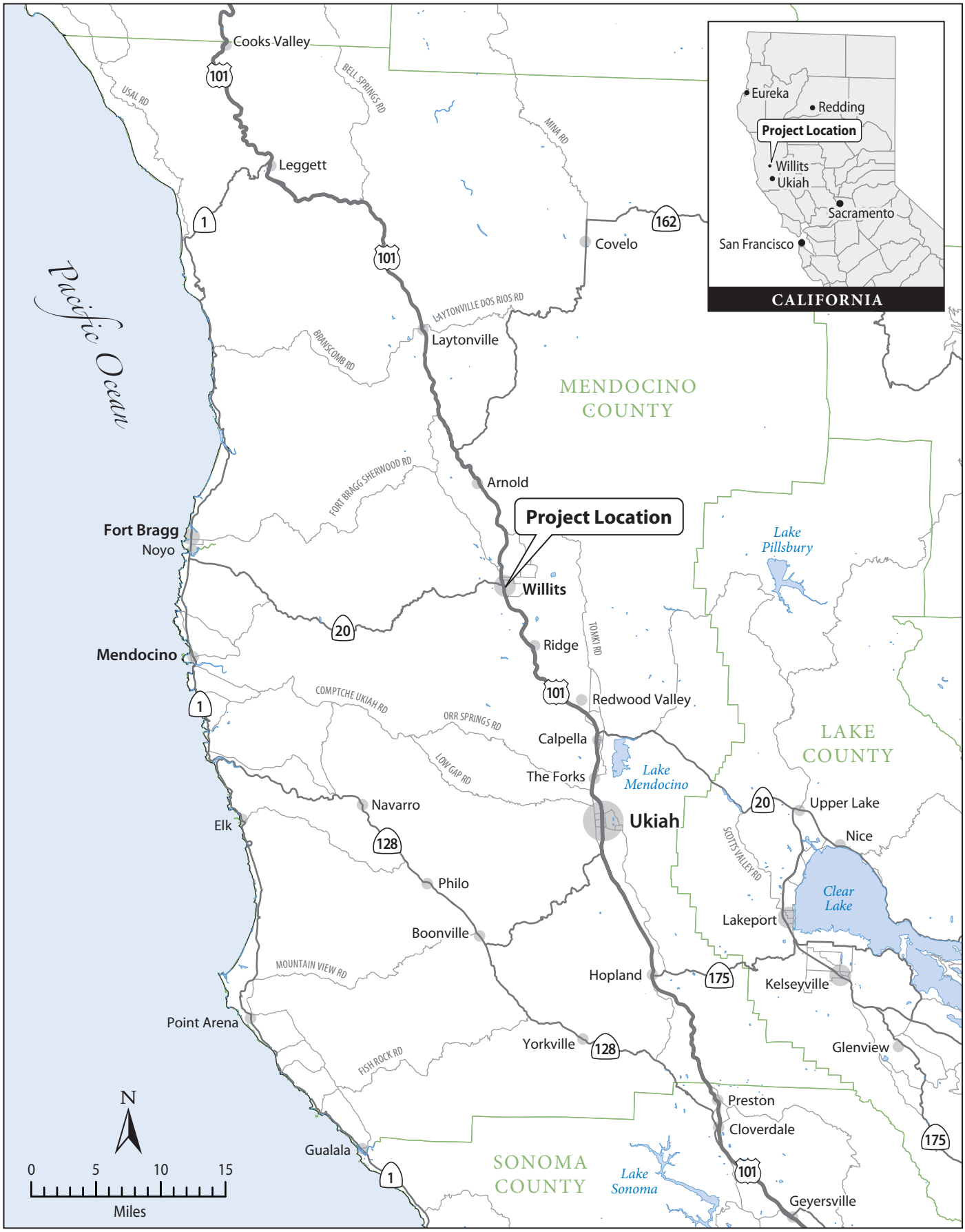

Figure 1-1
Regional Location

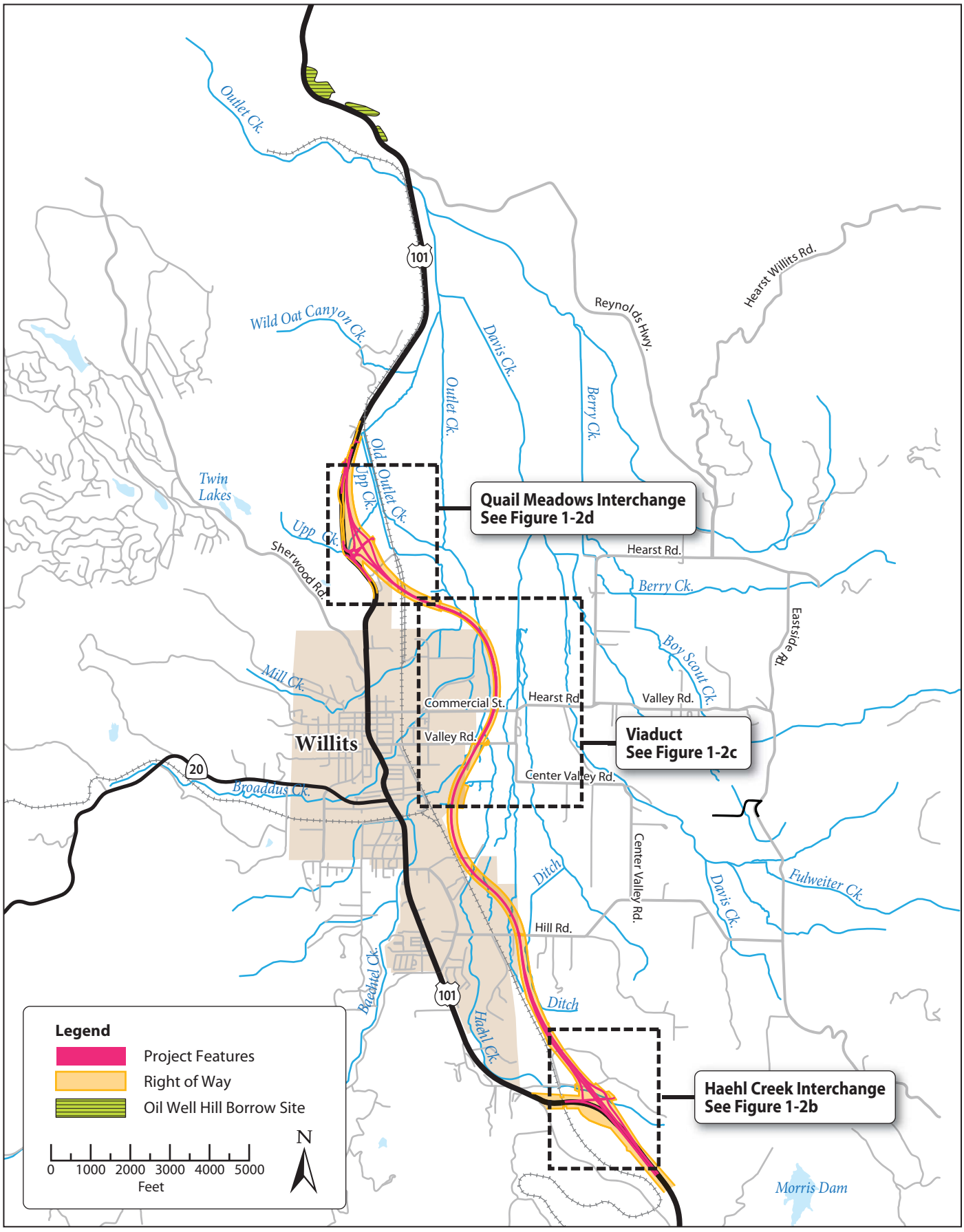

Figure 1-2a
Project Features—Overview Phase 1

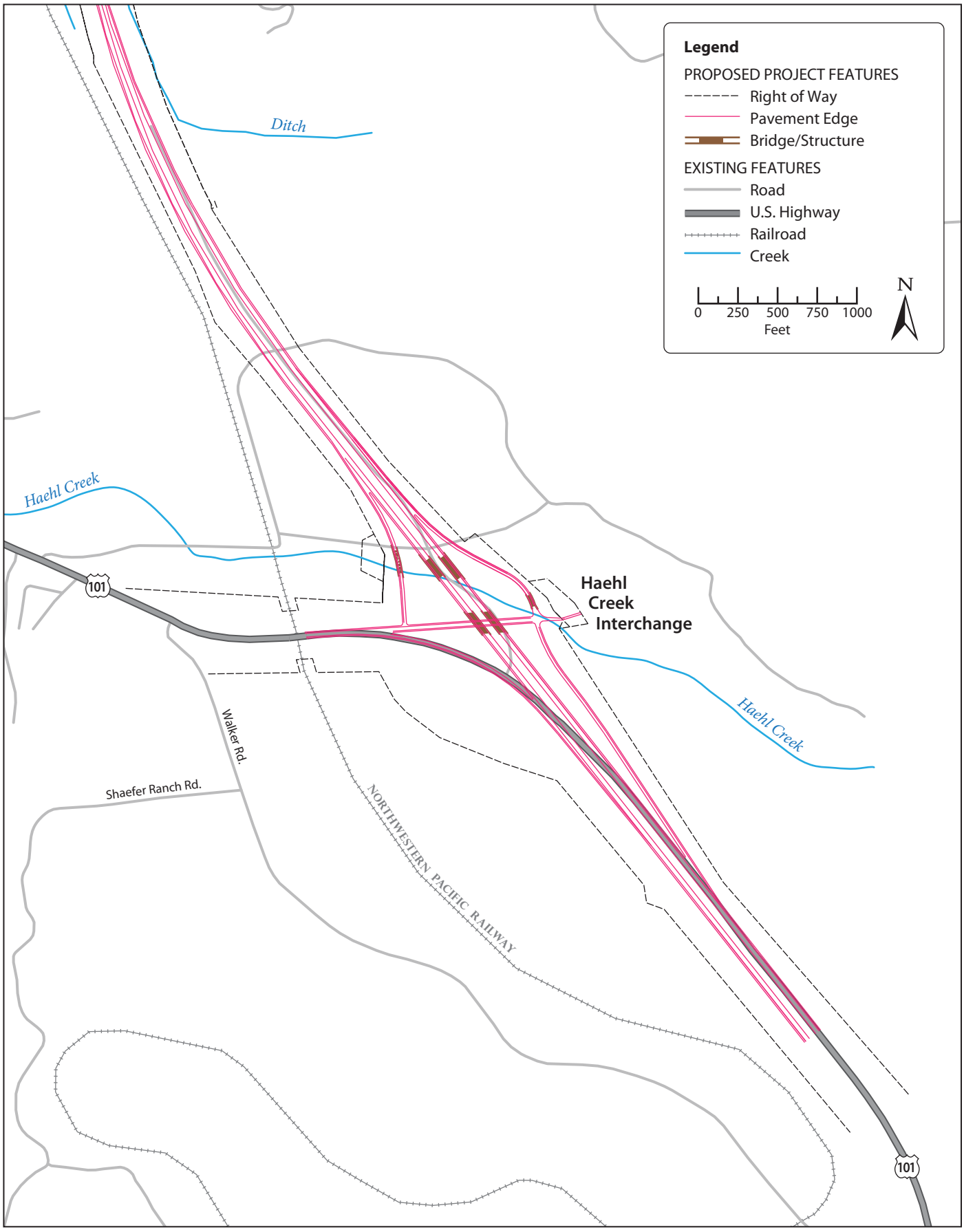

Figure 1-2b
Southern End Project Features—Haehl Creek Interchange Phase 1

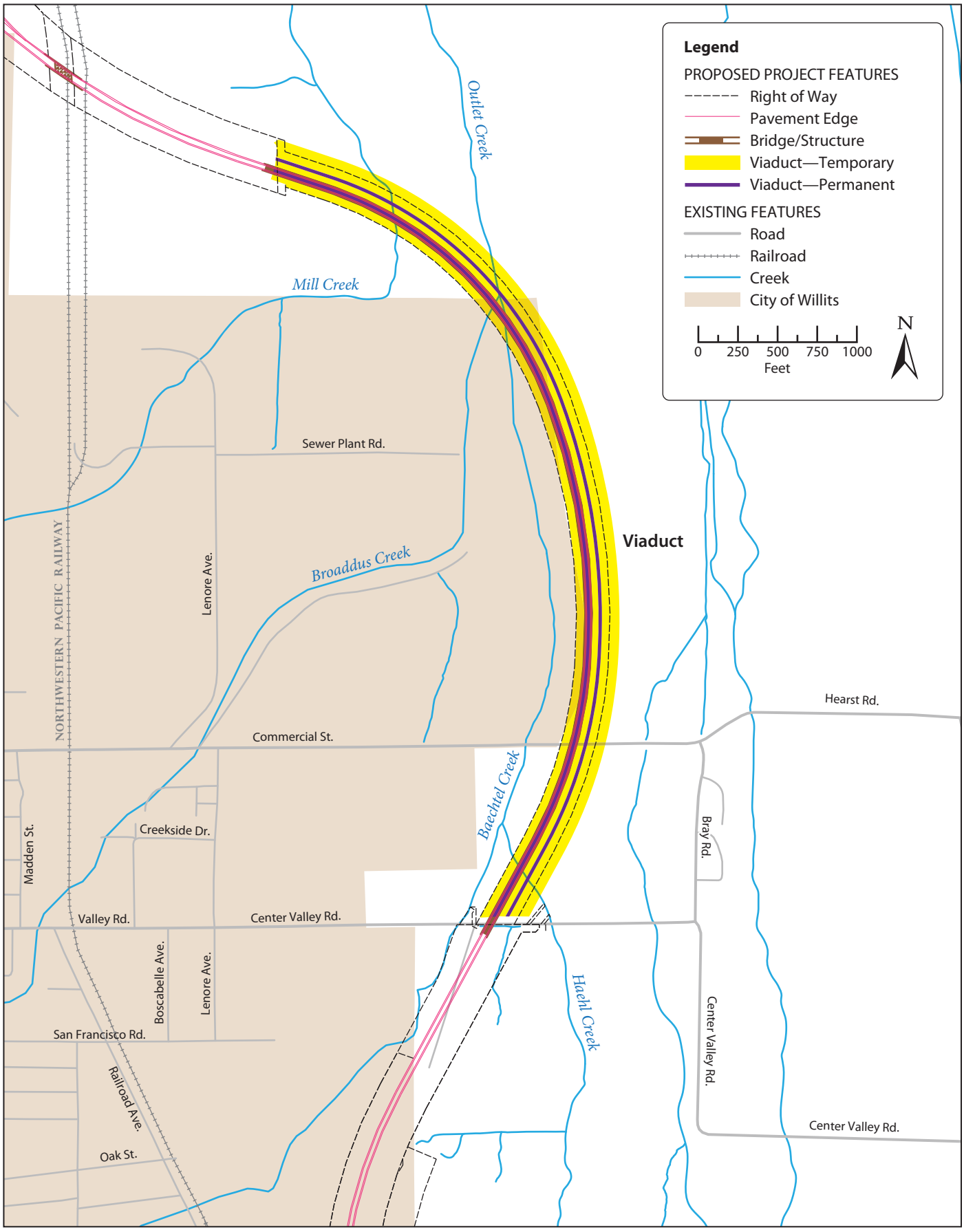

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Figure 1-2c
Middle Project Features—Viaduct Phase 1

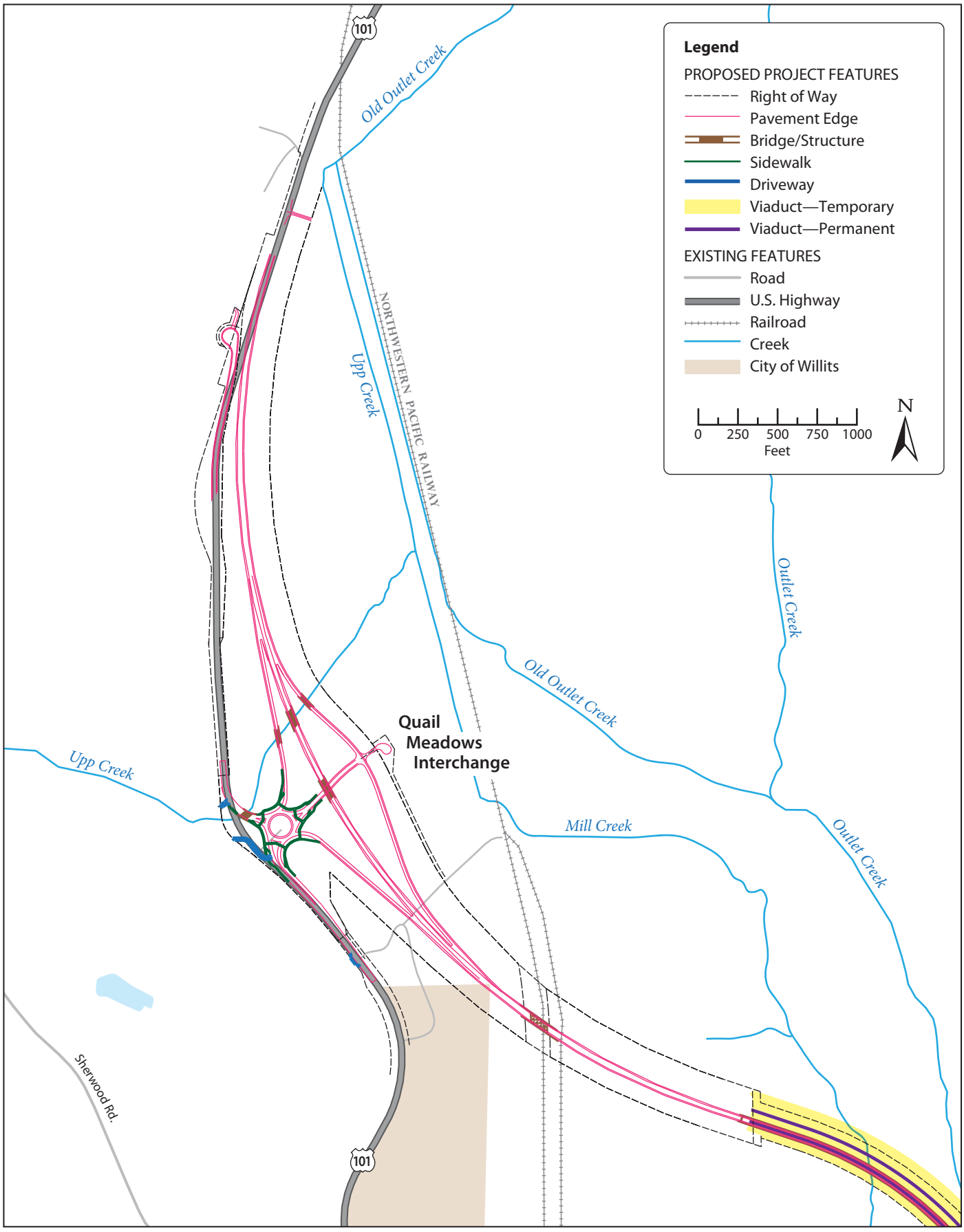

Figure 1-2d
North End Project Features—Quail Meadows Interchange Phase 1

Attachment B

Adjacent Property Owners and Lessees

Adjoining Property Owners and Lessees

APN	OWNER	PROPERTY OWNER ADDRESS	CITY	STATE	ZIP	PROPERTY ADDRESS	CITY
00701002	WILLITS CITY OF			CA	00000		
00701003	WILLITS CITY OF			CA	00000		
00701004	BENBOW CHARLES 1/2	40 E BRANCH RD	GARBERVILLE	CA	95542		
00702003	BENBOW CHARLES 1/2	40 E BRANCH RD	GARBERVILLE	CA	95542	998 HEARST WILLITS RD	WI
00703204	SHUSTERS TRANSPORTATION INC	750 E VALLEY ST	WILLITS	CA	95490	750 CENTER VALLEY RD	WI
00703205	WILLITS HORSEMAN ASSOCIATION I	PO BOX 906	WILLITS	CA	95490		
00703210	JENSEN MARJORIE L C 1/9	507 W MILL ST	UKIAH	CA	95482		
00703211	HARMS GEORGE M TTEE	392 REDWOOD AVE	WILLITS	CA	95490		
00703213	HARMS GEORGE M TTEE	392 REDWOOD AVE	WILLITS	CA	95490		
00704006	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502	701 CENTER VALLEY RD	WI
00704007	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502	731 EA VALLEY ST	WI
00704008	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490	801 EA VALLEY ST	WI
00704009	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490		
00704010	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490	801 EA VALLEY ST	WI
00704014	WINDSOR MILL PROPERTIES LLC	7950 REDWOOD DR STE 4	COTATI	CA	94931		
00704017	TWEDDELL APRIL TTEE	651 E VALLEY ST	WILLITS	CA	95490	651 CENTER VALLEY RD	WI
00705002	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490		
00705007	GRIGGS MICHAEL A JR & KERRI M	511 E VALLEY ST	WILLITS	CA	95490		
00707001	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490	500 SHELL LN	WI
00710008	SEIBERLICH JEANETTE SUCCTTEE	40 ST TERESA CT	DANVILLE	CA	94526	311 SHELL LN	WI
00710009	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490		
00710011	FORD DELMAN & DONNA R TTEES	1750 HEARST RD	WILLITS	CA	95490		
00710029	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
00716017	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
00716018	HANDLEY MARGIE LEE TTEE 1/2	PO BOX 1329	WILLITS	CA	95490		
03802009	BURTON BRUCE EDWARD 1/2	220 FRANKLIN AVE	WILLITS	CA	95490	24850 NO HWY 101	WI
03802011	BROOKE CLIFFORD ALLEN & CARLA	2409 PINE KNOLL DR #1	WALNUT CREEK	CA	94595		
03802021	GARMAN BEDA H JR & SHARON A TT	389 N MAIN ST	WILLITS	CA	95490	24900 NO HWY 101	WI
03804009	BROOKE CLIFFORD A & CARLA R	2409 PINE KNOLL DR #1	WALNUT CREEK	CA	94595		
03806007	ANDERSON CHARLES & SYLVIA	PO BOX 302	WILLITS	CA	95490	24200 NO HWY 101	WI
03806008	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD #166-K	SEAL BEACH	CA	90740	24201 NO HWY 101	WI
03806010	WAGENET GORDON M & CATHARINE S	PO BOX 345	WILLITS	CA	95490		

APN	OWNER	PROPERTY OWNER ADDRESS	CITY	STATE	ZIP	PROPERTY ADDRESS	CITY
03808009	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD 116-K	SEAL BEACH	CA	90740		
03808031	WAGENET GORDON M & CATHARINE S	PO BOX 345	WILLITS	CA	95490		
10315011	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10403018	MORRIS LAUREL A TTEE 1/4	801 E HILL RD	WILLITS	CA	95490	801 EAST HILL RD	WI
10403022	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10403023	HANDLEY MARGIE LEE TTEE	PO BOX 1329	WILLITS	CA	95490	701 EAST HILL RD	WI
10405010	MORRIS LAUREL A TTEE 1/4	801 E HILL RD	WILLITS	CA	95490		
10405015	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10405016	HANDLEY MARGIE LEE TTEE	PO BOX 1329	WILLITS	CA	95490		
10409004	SCHMIDBAUER EDWARD J & ERLYNE	19921 N HWY 101	WILLITS	CA	95490		
10411012	OCHOA LYNDA & MANUEL R	19873 N HWY 101	WILLITS	CA	95490	19873 NO HWY 101	WI
10412002	SCHMIDBAUER EDWARD J & ERLYNE	19921 N HWY 101	WILLITS	CA	95490		
10803003	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD 116-K	SEAL BEACH	CA	90740		
10804002	NIESEN WALTER A	24001 N HWY 101	WILLITS	CA	95490	24001 NO HWY 101	WI
10804003	CITY OF WILLITS THE	111 E COMMERCIAL	WILLITS	CA	95490	23731 NO HWY 101	WI
10804008	HUFFMAN RODNEY G 1/9	PO BOX 551	UKIAH	CA	95482	23731 NO HWY 101	WI
10804014	CITY OF WILLITS	111 E COMMERCIAL ST	WILLITS	CA	95490		

Attachment C

Draft Habitat Mitigation and Monitoring Plan

To be provided.

Attachment D

Final EIS/EIR, Record of Decision, and Notice of Determination

To be provided—EIS/EIR under separate cover.

Notice of Determination

TO: ☒ Office of Planning and Research

For U.S. Mail:
P.O. Box 3044
Sacramento, CA 95812-3044

Street Address:
1400 Tenth Street
Sacramento, CA 95814

FROM: Department of Fish and Game
Northern Region
601 Locust Street
Redding, CA 96001
Contact: Craig Martz
Phone: (530) 225-2281

LEAD AGENCY (if different from above):
Department of Transportation (Caltrans)
2800 Gateway Oaks Drive, #100
Sacramento, CA 95833
Contact: Jeremy Ketchum
Phone: (916) 274-0621

SUBJECT: Filing of Notice of Determination pursuant to § 21108 of the Public Resources Code

State Clearinghouse Number: 1990030006

Project Title: Lake or Streambed Alteration Agreement No. 1600-2010-0044-R1 for the Willits Bypass Project

Project Location: U.S. Highway 101 from Post Mile R43.1, approximately 2.0 miles south of Willits, to Post Mile R49.0, approximately 1.9 miles south of Reynolds Highway, Mendocino County; T18N, R13W, Mt. Diablo Base and Meridian.

Project Description: The Project proposes to construct a new four-lane freeway bypass to the east of the City of Willits, with crossings of Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks, tributary to the Eel River, Mendocino County.

This is to advise that the Department of Fish and Game (DFG), acting as ☐ **the lead agency** / ☒ **a responsible agency** approved the above-described project on the date signed below and has made the following determinations regarding the above described project:

1. The project ☐ **will** / ☒ **will not** have a significant effect on the environment. (This determination is limited to effects within DFG's jurisdiction when DFG acts as a responsible agency.)
2. ☒ **An environmental impact report** / ☐ **A negative declaration** / ☐ **A timber harvesting plan** was prepared for this project pursuant to CEQA.
3. Mitigation measures ☒ **were** / ☐ **were not** made a condition of DFG's approval of the project.
4. A Statement of Overriding Considerations ☐ **was** / ☒ **was not** adopted by DFG for this project.
5. Findings ☐ **were** / ☒ **were not** made by DFG pursuant to Public Resources Code § 21081(a). DFG did, however, adopt findings to document its compliance with CEQA.
6. Compliance with the environmental filing fee requirement at Fish and Game Code § 711.4 (check one):
   - ☐ Payment is submitted with this notice.
   - ☒ A copy of a receipt showing prior payment is on file with DFG.
   - ☐ A copy of the CEQA Filing Fee No Effect Determination Form signed by DFG is attached to this notice.

☐ Lead Agency certification: DFG, as Lead Agency, has made the final EIR with comments and responses and record of project approval, or the Negative Declaration, available to the General Public at the DFG office identified above.

☒ Responsible Agency statement: The final EIR, Negative Declaration, or THP that was prepared by the Lead Agency for this project is available to the General Public at the office location listed above for the Lead Agency. DFG's CEQA Findings are available at the DFG office identified above.

Signed: _____ Date: 6/29/10
Curt Babcock
Acting Habitat Conservation Program Manager
Northern Region

Date Received for filing at OPR:

CALIFORNIA DEPARTMENT OF FISH AND GAME
CALIFORNIA ENVIRONMENTAL QUALITY ACT FINDINGS FOR
LAKE OR STREAMBED ALTERATION AGREEMENT No. 1600-2010-0044-R1

Introduction

The California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, *et seq.*) and the State CEQA Guidelines (Guidelines) (Section 15000, *et seq.*, Title 14, California Code of Regulations) require that no public agency shall approve or carry out a project for which an Environmental Impact Report (EIR) has been completed that identifies one or more significant effects, unless the agency makes the following finding as to each significant effect:

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

As the lead agency for the project, the Department of Transportation (Caltrans) certified the EIR for the Project on **December 15, 2006**. A Supplemental EIR (SEIR) was certified by the lead agency on **May 19, 2010**. Caltrans found that the Project will not result in significant environmental effects with the mitigation measures required in, or incorporated into the Project.

The California Department of Fish and Game (DFG) is entering into Lake or Streambed Alteration Agreement (Agreement) **No. 1600-2010-0044-R1** with **Mr. Dave Kelley, representing Caltrans**. The project will affect portions of **Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks, Mendocino County, T18n, R13W, Mount Diablo Base and Meridian**.

Because DFG is issuing the Agreement, it is a Responsible Agency under CEQA for the Project. As a CEQA Responsible Agency, DFG is required by Guidelines Section 15096 to review the environmental document certified by the Lead Agency approving the projects or activities addressed in the Agreement and to make certain findings concerning a project's potential to cause significant, adverse environmental effects. However, when considering alternatives and mitigation measures approved by the Lead Agency, a Responsible Agency is more limited than the Lead Agency. When issuing the Agreement, DFG is responsible only for ensuring that the direct or indirect environmental effects of activities addressed in the Agreement are adequately mitigated or avoided. Consequently, the findings adopted or independently made by DFG with respect to an Agreement's activities are more limited than the findings of the Lead Agency funding, approving, or carrying out the project activities addressed in such Agreements.

Findings

DFG has considered the EIR and SEIR certified by Caltrans. DFG has independently concluded that the Agreement should be issued under the terms and conditions specified therein. In this regard, DFG hereby adopts any findings of Caltrans as set forth in the EIR and SEIR and record of project approval, insofar as those findings pertain to the project's impacts on biological resources.

Signed: _____ Date: 6/29/10
Curt Babcock
Acting Habitat Conservation Program Manager
Northern Region

CALIFORNIA DEPARTMENT OF FISH AND GAME
NORTHERN REGION
601 LOCUST STREET
REDDING, CA 96001

LAKE or STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2010-0044-R1
Haehl, Baechtel, Broaddus, Mill, Upp and Outlet Creeks, and
Unnamed Tributaries Thereto

CALIFORNIA DEPARTMENT OF TRANSPORTATION
WILLITS BYPASS PROJECT

This Lake or Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Game (DFG) and the California Department of Transportation (Permittee) as represented by Mr. Dave Kelley.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified DFG on March 1, 2010, that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, DFG has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement.

PROJECT LOCATION

The Willits Bypass Project (hereafter, the Project) is located near the City of Willits in Little Lake Valley, Mendocino County, California. The Project will construct a new freeway alignment to the east of Willits. The southern end of the new alignment is located at Post Mile (PM) R43.1 approximately 2.0 miles south of Willits, 39.371887, -123.321514. The northern end of the Project is located at PM R49.0, approximately 1.9 miles south of Reynolds Highway, 39.437511, -123.356766. The Project site is bounded by the City of Willits to the west and the Little Lake Valley to the east, on the Laughlin Range and Willits US Geological Survey (USGS) 7.5 minute quadrangles, Humboldt Base and Meridian.

PROJECT DESCRIPTION

The Project consists of a four-lane freeway bypass crossing the Little Lake Valley east of the City of Willits. The facility will maintain a minimum design speed of 68 miles per hour and will feature a 45.3-foot median separating the northbound and southbound lanes. Each lane will be 12 feet wide. The inside shoulder width (nearest the median) will be 5 feet, while the outside shoulder width will be 10 feet. The Project will begin approximately 2.0 miles south of Willits, where the existing four-lane freeway becomes a two-lane highway, and will continue north, rejoining the existing two-lane highway about 1.3 miles north of the Willits city limits. The overall length of the bypass will be approximately 5.8 miles, starting near PM R43.1 and ending near R49.0.

The bypass alignment will diverge from existing U.S. 101 at the new Haehl Creek interchange and continue northwesterly on an embankment constructed with excess fill from a previous freeway project. At the crossing over Center Valley Road, the roadway embankment will be replaced by a floodway viaduct, approximately 6,000 feet long. The viaduct structure will span the regulatory floodway, roughly paralleling the east bank of Baechtel Creek until it crosses the creek at the confluence with Broaddus Creek east of the Willits Waste Water Treatment Plant (WWTP). The bypass will continue on viaduct as it curves to the west and crosses Mill Creek. From a point approximately 600 feet west of the Mill Creek crossing, the facility will continue northwest on fill, bridging the Northwestern Pacific Railway (NWPRR) right-of-way before rejoining the existing alignment of U.S. 101 at the new Quail Meadows interchange.

Funding constraints require that the Project be constructed in two phases. Phase 1 consists of the two interchanges and the two southbound lanes which will be operated as a two-lane bypass (one lane in each direction). Construction of Phase 1 is expected to take four years to complete. As funding allows in Phase 1, Caltrans intends to construct as much of the four-lane embankment as possible to help facilitate the construction of Phase 2. The environmental study limits encompass the full four-lane facility and right-of-way purchased in Phase 1 will satisfy the requirements of the ultimate, four-lane, access-controlled freeway. Although only Phase 1 will be constructed at this time, Caltrans will implement mitigation for the biological resource impacts of the full four-lane facility. Funding for the second phase has not yet been identified. The additional funding necessary to construct Phase 2 will likely come from a combination of federal, state and local sources.

Construction of the Project will require excavation and placement of up to 1.4 million cubic yards of fill materiall for roadway embankment; removal of native wetland, riparian and upland vegetation; construction of temporary access roads and haul roads; construction of temporary and permanent stream crossings; removal of existing culverts on Haehl and Upp Creeks that currently impede the passage of anadromous salmonids; reconstructing the longitudinal profile of these stream reaches to provide improved fish passage; installing rock slope protection (RSP) and/or other bank stabilization measures to protect structures; dewatering of work areas in wetlands and within stream

channels for construction of permanent bridge and viaduct piers; installation of sheet piles, temporary H piles, and permanent un-filled pipe piles using vibratory and percussive hammers; and installation of wick drains to provide a stable foundation for embankment fills. In addition to erosion control and revegetation of temporary disturbance areas within the right-of-way, the Project also includes compensatory restoration, enhancement, and preservation activities on a minimum of 1,910 acres of off-site mitigation lands. An optional proposed borrow site at Oil Well Hill, located on the east side of U.S. 101 approximately 0.85-mile north of the intersection of Reynolds Highway and U.S. 101 has been designated as a source of fill material for the Project.

All work shall be in accordance with submitted plans and diagrams and any subsequent revisions approved by the DFG in writing. Specific work includes:

Interchanges

Two interchanges will be constructed for the project. The Haehl Creek interchange will be located at the south end of the project near Haehl Creek and connect the existing highway into Willits with the new facility. The Quail Meadows interchange will be located near the north end of Little Lake Valley and connect the new facility to the existing highway north of Willits. Interchange ramps will be single-lane.

Bridges and Structures

The bypass will cross creeks, riparian corridors, streets, and railroad rights-of-way using 22 bridges. Three retaining walls will be built. The following structures will be constructed with this project:

Six bridges in the Haehl Creek interchange area, one for each of the following:

- Northbound freeway lanes separation over State Route (SR) 20
- Southbound freeway lanes separation over SR 20
- Southbound off-ramp over Haehl Creek
- Northbound on-ramp over Haehl Creek
- Northbound freeway lanes over Haehl Creek
- Southbound freeway lanes over Haehl Creek

Two retaining walls in the Haehl Creek interchange area adjacent to Haehl Creek:1) East side of northbound lanes and 2) West side of northbound on-ramp

Two bridges to cross East Hill Road, including 1) one bridge for the southbound roadway lanes (Phase 1) and 2) one bridge for the northbound roadway lanes (Phase 2)

Two bridges to cross the middle reach of Haehl Creek south of Shell Lane, including one bridge for the southbound roadway lanes (Phase 1) and one bridge for the northbound roadway lanes (Phase 2).

One retaining wall on the west side of the southbound roadway lanes just south of Center Valley Road.

Two viaduct structures to span the floodway:

- Southbound (Phase 1)
- Northbound (Phase 2)

Two bridges to cross over the NWPRR tracks in the Quail Meadows interchange area, including one for the southbound roadway lanes (Phase 1) and one for the northbound roadway lanes (Phase 2).

Two bridges to cross the new connector road to existing U.S. 101 in the Quail Meadows interchange area, including one for the southbound roadway lanes (Phase 1) and one for the northbound roadway lanes (Phase 2).

Six bridges to cross Upp Creek directly north of the Quail Meadows interchange, one for each of the following:

- Southbound roadway lanes (Phase 1)
- Northbound roadway lanes (Phase 2)
- Northbound on-ramp (Phase 1)
- Northbound on-ramp (Phase 2)
- Southbound off-ramp
- Roundabout local intersection

Note that the northbound on ramp bridge constructed in Phase 1 would be replaced in Phase 2 by a different bridge.

Viaduct

Because the proposed alignment encroaches upon the 100-year floodplain, the design includes two elevated structures, which make up the floodway viaduct. The purpose of this design feature is to span the floodway. The final floodplain evaluation report concludes that project will not increase the base flood elevation of the floodway, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q).

The viaducts will be located in the central part of the project area and will span Center Valley Road, the lower reach of Haehl Creek just upstream of the confluence with Baechtel Creek, Hearst-Willits Road, Baechtel and Broaddus Creeks at their confluence (beginning of the Outlet Creek designation), the WWTP, and Mill Creek.

The approximately 6,000-foot-long structures will consist of a separate northbound and southbound elevated viaduct superstructure. The total area of both viaducts would be 11.6 acres. Each of the viaducts will be approximately 42.6 feet wide. The edge-to-edge distance between the structures will be approximately 31.2 feet, and each will have a

16.5-foot minimum clearance underneath. The viaducts will require supporting columns, ranging in size from 4.5 to 7 feet in diameter.

Reinforced Concrete Box Culverts

Two large reinforced concrete box (RCB) culverts will be built under Center Valley Road, near Shuster's Trucking to prevent floodplain impacts due to roadway embankment south of Center Valley Road. These two culverts will use turf reinforcement mats in lieu of rock slope protection (RSP) at the inlets and outlets where feasible.

Retaining Walls

Three concrete retaining walls will be constructed: two at the Haehl Creek interchange, and one just before the south end of the viaduct near Baechtel Creek. One Haehl Creek interchange wall will be located along the west side of the northbound on-ramp; the other will be located along the east side of the northbound lanes between the separation structure over SR 20 and the Haehl Creek bridge. The Baechtel Creek retaining wall will prevent floodplain elevation increases.

Excavation (Cut), Embankment (Fill), and Imported Borrow

The estimated embankment requirement for Phase 1 of the proposed project is approximately 1.4 million cubic yards. Because all soil excavated on-site will be reused as embankment, no disposal sites will be required for the project. Beginning just north of the Haehl Creek interchange to the south abutment of the viaduct, and from the north abutment of the viaduct to the terminus of the project, the alignment will be constructed largely on embankment created using excavated soil and imported fill material. Cut slopes will generally vary between a 1:2 (vertical: horizontal) and 1:2.5 ratio. Fill slopes will vary between a 1:2 and 1:4 ratio. The plans call for slope rounding at appropriate locations.

The bypass will require imported borrow material from outside the project area in addition to material excavated on-site. The construction contractor will have the option to determine whether the source of material for earthwork fill will be the Caltrans-designated borrow site at Oil Well Hill, a commercial borrow site, or another site.

An optional borrow site has been designated at Oil Well Hill, just north of Little Lake Valley, as a source of material that the contractor may use for the project. The material in this area is good-quality and suitable for use in embankment construction. The right-of-way for U.S. 101 at the designated borrow site is sufficient to provide the necessary embankment material for earthwork. Potential excavation at the proposed designated borrow site at Oil Well Hill could result in the removal of up to 1.4 million cubic yards of material. The State Geology and Mining Board granted an exception to the Surface Mining and Reclamation Act (SMARA) permitting requirement on March 13, 2008. The

contractor may also choose to use available commercial borrow sites in the vicinity to obtain the required fill. Typically, commercial borrow sites hold pre-approved operating permits and do not require any additional environmental permitting when soil is exported. Should the contractor select an alternative, non-commercial borrow site for this project, the contractor will be responsible for conducting a separate environmental review for the site.

Fish Passage

One existing culvert in the upper Haehl Creek channel, located under the proposed highway bridge 10-0129R/L, will be permanently removed and restored as a natural drainage feature. Fish passage on a second existing culvert in upper Haehl Creek will be improved by stabilizing the stream gradient to allow a backwater pool to extend throughout the length of the culvert. An existing RCB culvert in the vicinity of the proposed Quail Meadows interchange and passing under US 101 will be permanently removed and the creek contoured, re-graded, stabilized, and replanted; local traffic will cross Upp Creek on the new bridge that will be on the north leg of the roundabout.

Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) will consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements will comply with guidelines established by National Marine Fisheries Service (NMFS) and California Department of Fish and Game (DFG).

An existing culvert under the access road to the Schmidbauer Ranch will be improved. This access road will be from the east side of the southern interchange. The existing culvert in upper Haehl Creek will be backwatered by building grade control structures downstream to restore and stabilize the natural stream gradient. Stabilizing the natural stream gradient will allow the bottom of the stream bed to aggrade to the culvert elevation. Construction of grade control structures will occur during summer when this reach of Haehl Creek is normally dry. If water is present, a qualified fisheries biologist will survey the pool for the presence of salmonids. If present, the fish will be removed and relocated before removal and replacement of the culvert.

Landscaping

Disturbed upland areas such as the cut and fill slopes adjacent to the roadway and along interchange ramps, as well as the median between the inside roadway shoulders, will be revegetated with native plants sourced from the following locations, in priority order: Little Lake Valley, Outlet Creek watershed, Eel River watershed. For drivers' safety and in compliance with Caltrans design standards, no trees will be planted within the clear recovery zone where errant vehicles could hit them. Only soft shrubby and herbaceous native species may be planted throughout these areas to prevent abrupt slowing, redirection, or launching of stray vehicles. Temporarily impacted areas will be

revegetated to their pre-construction plant community type. They will be seeded and planted with native plants sourced from the following locations, in priority order: Little Lake Valley, Outlet Creek watershed, Eel River watershed.

Stream Bank Stabilization

To prevent bank erosion and damage to the bypass facilities, RSP and other bank stabilization treatments will be required along short lengths of creek banks. The use of RSP will be minimized through the substitution of "Rolled Erosion Control Product" (RECP; netting) or "Turf reinforcement Mat" (TRM) in appropriate locations.

At locations where Haehl and Upp Creeks pass through the right-of-way, the stream channel will be contoured, re-graded, and designed for fish passage following the guidelines set forth by NMFS and DFG.

Mitigation Construction

Bypass construction will result in temporary and permanent impacts on riparian and wetland habitat and permanent impacts on other waters and oak habitat. Temporary impacts on riparian and wetland habitat will be mitigated on site through the use of restoration techniques. Permanent impacts on riparian and wetland habitat will be mitigated off site through the use of creation, enhancement, and/or preservation techniques.

On site mitigation implementation will focus primarily on restoring temporarily affected riparian and wetland habitat within the bypass project footprint. In addition, on site minimization efforts related to state-listed plant species (e.g., seed collection, and topsoil harvesting and stockpiling) will be required. On site mitigation actions with the potential to result in impacts on wetlands, other waters, riparian habitat, listed plant species and/or listed fish will entail the following activities, and are summarized below (a full description of proposed mitigation actions is presented in the Final MMP):

- Site Preparation. Site preparation of on site mitigation sites will entail vegetation clearing and seed, rhizome, and topsoil salvaging. Vegetation clearing will be conducted within the bypass project footprint and will entail the use of heavy equipment to strip the existing vegetation. Prior to the beginning of ground-disturbing project construction activities, known populations of listed plant species to be affected by construction either will be salvaged for transportation to adjacent on site locations or salvaged for relocation to offsite mitigation parcels, where the harvested material will be used to topdress created wetlands.

- Grading. Temporarily affected locations will be graded as necessary to reestablish appropriate topography and site drainage. The disturbed locations will be configured to replicated preproject conditions as closely as possible. Grading will be limited to the dry season (late spring through early fall). Erosion

control seed mixes will be applied after grading is complete but prior to the onset of wet season rains to prevent loosened material/sediment from entering wetlands or waters near the bypass project footprint.

- Seeding. Temporarily affected riparian and wetland locations will be seeded with an erosion control mix or a wetland seed mix, depending on location in the bypass project footprint. The seed will be from locally collected seed or plants (i.e., sourced from the following locations, in priority order: Little Lake Valley, Outlet Creek waterhsed, Eel River watershed). All temporarily affected riparian locations and wetland locations outside the viaduct construction area will be seeded with an erosion control mix. Temporarily affected wetlands in the viaduct construction area will be seeded with a wet meadow seed mix.

- Planting. Temporarily affected riparian and wetland locations in the viaduct construction area will be restored using container stock grown from locally collected seed or cuttings (i.e., sourced from the following locations, in priority order: Little Lake Valley, Outlet Creek watershed, Eel River watershed). Container plants will be placed in a planting hole that will be hand excavated or augured.

Mitigation on individual offsite mitigation parcels may include a combination of habitat restoration, creation, enhancement, and/or preservation. Off site mitigation actions with the potential to result in impacts on wetlands, other waters, riparian habitat, listed plant species and/or listed fish will entail similar ground-disturbing activities (e.g., site preparation, grading, seeding, and planting) as those described above for on site mitigation areas. In addition, grazing management plans will be developed for each of the off site mitigation parcels. The plans will include strategies to promote the establishment and preservation of target wetland communities and associated plant species and to support and potentially increase the extent of currently occurring listed plant species. Enhancement actions for each parcel may include repairing and replacing existing fences and gates to control livestock; developing and implementing rotational grazing strategies to promote the establishment and preservation of target listed plant species and wetland communities; installing permanent and/or temporary exclusion fencing around sensitive areas; installing water troughs in each grazing management unit to spread grazing across the entire unit; and locating salt licks away from drainages and areas to be protected.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include: white-tailed kite (*Elanus leucurus*), Cooper's hawk (*Accipiter cooperii*), Red-shouldered hawk (*Buteo lineatus*), and other raptors; Southern Oregon-Northern California Coasts (SONCC) coho salmon (*Oncorhynchus kisutch*), California coastal Chinook salmon (*Oncorhynchus tshawytscha*), northern California steelhead (*O. mykiss irideus*); yellow warbler (*Dendroica petechia brewsteri*), yellow-breasted chat (*Icteria virens*), and other riparian-dependent bird species; special-status plants including Baker's meadow-foam

(*Limnanthes bakeri*) and North Coast semaphore grass (*Pleuropogon hooverianus*), as well as other non-game and game fishes, amphibians, reptiles, aquatic invertebrates, mammals, birds, and other aquatic and riparian species.

The adverse effects the project could have on the fish or wildlife resources identified above include: disruption of raptor nesting behavior and decreased reproductive success due to construction disturbance; loss of occupied passerine habitat and nests, including eggs and/or nestlings, as a result of vegetation removal; direct mortality of fish, amphibians, and other aquatic species during pile driving and construction de-watering activities; temporary and permanent impacts to aquatic species due to suspended sediment and the smothering and/or shading of egg masses and benthic invertebrate communities due to sediment deposition; direct removal of special-status plants and occupied habitat as a result of construction activities.

Implementation of the Project, including wetland creation and other mitigation activities, will result in the following permanent and temporary impacts on riparian corridors, oak woodlands, jurisdictional wetlands, and special-status plant habitats:

Table 1. Temporary and permanent resource impacts *after* removal of overlaps.

Resource	Temporary Impacts (acres)	Permanent Impacts (acres)	Total Impacts (acres)
North Coast semaphore grass	0.02	0.39	0.41
Baker's meadowfoam	36.74	33.51	70.25
Category I Riparian Corridor[1]	8.15	2.38	10.53
Jurisdictional Wetlands	12.58	26.07	38.65
Other Waters	2.04	2.03	4.07
Category II Riparian Corridor[2]	0.03	3.56	3.59
Category III Riparian Corridor[3]	0.31	0.93	1.24
Oak Woodland (tree canopy)			
Lowland	0.08	5.70	5.78
Upland	0.00	5.02	5.02
Oak Woodland (grassland)			
Lowland	2.34	26.26	28.60
Upland	0.00	7.83	7.83
Total:	**62.29**	**113.68**	**175.97**

[1] Riparian corridors adjacent to salmonid streams
[2] Riparian corridors on tributaries to salmonid streams within 1,000 feet of the confluence with a Category I stream
[3] Riparian corridors that are more than 1,000 feet upstream from the confluence with a Category I stream

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to DFG personnel, or personnel from another state, federal, or local agency upon request.

1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

1.3 Notification of Conflicting Provisions. Permittee shall notify DFG if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, DFG shall contact Permittee to resolve any conflict.

1.4 Project Site Entry. Permittee agrees that DFG personnel may enter the project site at any time after notifying the Caltrans Resident Engineer to verify compliance with the Agreement.

1.5 Permittee's notification (Notification of Lake or Streambed Alteration together with all maps, plans, photographs, drawings, and all other supporting documents submitted with notification to describe the activity) is hereby incorporated by reference into this Agreement. Permittee shall conduct project activities within the work areas and using the mitigative features described in the notification and supporting documents, unless such project activities, work areas or mitigative features are modified by the provisions of this Agreement, in which case the activities shall be conducted as described in this Agreement.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

2.1 All work within the channel or on the stream banks shall be confined to the period commencing June 15 and ending October 15, provided the stream is dry or at minimum flow. If weather conditions permit and the stream is dry or at minimum flow, the Permittee may perform work within the stream channel or on the banks

outside of the above referenced work window, provided a written request is made to DFG at least five (5) days before the proposed work period variance. Written approval from DFG for the proposed work period variance must be received by the Permittee prior to the start or the continuation of work outside of the above referenced work window.

2.2 If work is performed within the stream channel or on the banks outside of the above referenced work window, the Permittee shall do all of the following:

a. Stage erosion and sediment control materials at the work site.

b. Monitor the seventy-two (72) hour forecast from the National Weather Service.

c. When the 72-hour forecast indicates a probability of precipitation of 60% or greater, or at the onset of any precipitation, ground disturbing activities shall cease and erosion control measures shall be implemented to stabilize exposed soils and prevent the mobilization of sediment into the stream channel or adjacent wetland or riparian areas.

2.3 Notwithstanding Condition 2.1 above, removal of the above-ground portions of existing trees and shrubs shall occur after August 31 and before February 1 to avoid impacts to nesting birds. If vegetation must be removed during the nesting season (February 1 to August 31) nest surveys shall be conducted prior to vegetation clearing.

2.4 The Permittee shall instruct all persons who will be completing any ground disturbing activity at a work site to comply with the conditions set forth in this Agreement and shall inspect each work site before, during, and after completion of any ground-disturbing activity at the work site.

2.5 Permittee shall conduct an education program for all persons employed or otherwise working on the Project site prior to performing any work on-site. The program shall consist of a presentation that includes a discussion of the sensitive resources existing within and adjacent to the work area, including State and federally listed species, as well as the protective measures required in this Agreement and the Incidental Take Permit for the Project. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to their performing work on-site. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry on-site. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and be available to DFG upon request.

2.6 At least 30 days before initiating channel- ground- or vegetation-disturbing activities, Permittee shall submit to DFG in writing the name, qualifications, business address, and contact information for a biological monitor (Designated Biologist). The Designated Biologist shall be knowledgeable and experienced in the biology and natural history of the Project area, with special emphasis on special-status species and sensitive habitats. The Designated Biologist shall be responsible for monitoring Project activities and/or channel- ground- or vegetation-disturbing activities within habitats for special-status species and other sensitive areas. Permittee shall obtain DFG approval of the Designated Biologist prior to the commencement of Project-related activities that may result in disturbance to special-status species or sensitive habitats.

2.7 The Designated Biologist shall be on-site daily while Project activities including all pile installation, dewatering, channel- vegetation- or ground-disturbing activities that may affect special-status species are taking place to: (1) minimize incidental take of special-status species; (2) check for compliance with all mitigation and avoidance measures; (3) check all exclusion zones; and (4) ensure that signs, stakes, and fencing are intact, and that human activities are restricted outside of these protective zones. The Designated Representative or Designated Biologist shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections, observations of special-status species, survey results, and monitoring activities required by this Agreement. The Designated Biologist shall conduct compliance inspections a minimum of once per month during periods of inactivity and after clearing, grubbing, and grading are completed.

HABITAT AND SPECIES PROTECTION

2.8 To avoid disturbance to nesting white-tailed kites and other raptors, a qualified biologist shall conduct pre-construction field surveys during the courtship period (February) to identify nesting territories within ¼ mile of the Project alignment. If active nests are identified within ¼ mile of the alignment, a no-construction buffer will be established around the nest until the young have successfully fledged. No take of white-tailed kites or other raptors, including their nests, eggs, or young is authorized by this Agreement.

2.9 This Agreement does not authorize the take of any State or federal threatened or endangered species. Any take of listed threatened or endangered species that is incidental to Project activities shall be in full compliance with the terms and conditions of the Incidental Take Permit issued by DFG for the Project (ITP #2081-2010-007-01) and the federal Biological Opinion and Incidental Take Statement issued by National Marine Fisheries Service (NMFS) for the Project (BO #2010/01124:DW).

2.10 Prior to initiating channel- vegetation- or ground-disturbing Project activities, Permittee shall clearly delineate right-of-way and/or property boundaries of the

Project site with fencing, stakes or flags and shall similarly delineate the limits of Project activities. Permittee shall restrict all project activities to within the fenced, staked or flagged Project boundaries. Permittee shall maintain all fencing, stakes and flags until the completion of Project activities.

2.11 Wetlands, riparian areas, oak woodlands, and habitat for Baker's meadowfoam and North Coast semaphore grass within the Project limits but outside the work area shall be designated as Environmentally Sensitive Areas (ESAs) and shall be off limits to construction equipment and personnel.

2.12 ESA fencing shall consist of temporary orange construction fence or other highly visible material that clearly delineates the limits of the work area. Environmentally Sensitive Areas shall be clearly shown on the Project plans and drawings. The Permittee shall ensure that the contractor, subcontractors, and all personnel working on the Project are instructed on the purpose of the ESA fencing and understand the limits of the work area. ESA fencing shall be installed prior to the beginning of channel- ground- or vegetation-disturbing activities. The placement of ESA fencing shall be inspected and approved by DFG prior to the initiation of work.

2.13 Disturbance or removal of riparian and wetland vegetation shall not exceed the minimum necessary to complete operations. Where feasible, hand tools (chain saws, etc.) shall be used to trim woody riparian vegetation to the extent necessary to gain access to work sites. Whenever possible, root systems shall be left intact to facilitate more rapid recovery following temporary construction impacts.

2.14 Except where provided for within this agreement, the removal of riparian vegetation from the streambed or streambanks is prohibited without prior written approval from DFG. The work area shall be identified to all workers, as represented in plans.

CULVERTS AND INSTREAM STRUCTURES

2.15 All work within the channel or on the banks shall be performed when the channel is dry or at minimum flow. If water is present during construction, all work shall be performed in isolation from surface or subsurface flow.

2.16 Where water is present, a temporary stream diversion shall be constructed to isolate the work area from flow. Temporary diversions may be constructed using gravel berms, clean washed spawning gravels, sand bags, K-rail, plastic sheeting, or a combination of these materials upstream from the work area. Flows will then be diverted into a temporary culvert, pipe, or conduit and released downstream from the work area.

2.17 Dewatering shall be done in a manner that prevents the discharge of material that could be deleterious to fish, plants or other aquatic life and maintains adequate

flows to downstream reaches during all times natural flow would have supported aquatic life.

2.18 Any turbid water pumped from the work area shall be used for construction purposes (compaction, dust abatement, etc.) or properly disposed of in an upland area where it will not drain to surface waters or wetlands.

2.19 If clean washed spawning gravel (0.5" – 4") is used for diversion berms, it may be left in the channel following construction provided it is spread to a depth less than 6 inches and does not impede the movement of fish or redirect stream flows. All other temporary diversion materials shall be removed from the stream channel upon completion of work.

2.20 Temporary bridges, culverts, or other structures that will remain in the channel after October 15 shall be designed to pass the 100-year flood event. Structures and materials not designed to withstand high flows shall be removed from the floodplain prior to October 15.

2.21 Installation of permanent culverts, bridges, grade control structures, instream habitat enhancement features, and other permanent channel modifications shall not impede the passage of fish up or down stream. Permittee shall submit detailed designs for work within the stream channel to DFG for review and approval no later than August 1, 2010.

2.22 Drafting of water from surface watercourses is not authorized by this Agreement. Water for construction purposes shall be obtained from commercial municipal, industrial or groundwater sources.

INSTALLATION OF TEMPORARY AND PERMANENT PILES

2.23 All pile driving activities, including installation of sheet piles, temporary and permanent piles located within the channel or below the top of bank, shall be confined to the period June 15 through October 15. Installation of permanent bridge or viaduct piles within 50 feet of the channel shall be confined to the period June 15 through October 15. Depending on the results of hydroacoustic monitoring, the Permittee may install permanent bridge or viaduct piles within 50 feet of the channel outside this work window, provided a written request is made to DFG. Written approval from DFG for the work period variance must be received by the Permittee prior to the start or continuation of work outside the June 15 – October 15 work window.

2.24 Permanent pile driving activities within the stream channel shall be contained within coffer dams. A bubble curtain or other approved attenuation measure will be used to reduce sound exposure levels.

2.25 If surface water is present within the channel, Permittee shall conduct hydroacoustic monitoring to document peak sound pressure levels and cumulative sound exposure levels during all permanent pile driving activities in the channel or within 50 feet of the channel. Driving of temporary trestle and falsework piles below the top of bank shall also be monitored. If underwater sound pressure levels for each pile type and size do not vary to a large degree, the Permittee may request written approval from DFG to discontinue hydroacoustic monitoring. Permittee shall submit a Hydroacoustic Monitoring Plan for review and approval by DFG no later than March 15, 2011.

2.26 Prior to conducting temporary or permanent pile driving activities within the channel, or within 50 feet of the channel, Permittee shall exclude, remove and relocate fish from coffer dams and those portions of the stream where cumulative sound exposure levels ($SEL_{Cumulative}$) are predicted to exceed the interim injury criteria of 183 dB. One or more of the following NMFS-approved methods shall be used to capture coho and other salmonids: dip net, seine, throw net, or electrofishing.

2.27 If pile driving activities are expected to exceed interim $SEL_{Cumulative}$ threshold levels for more than two consecutive days, Permittee shall dewater the affected stream reach in lieu of using block nets to exclude fish. During dewatering, flows in the affected reach shall be diverted incrementally to facilitate fish capture and relocation. Flows shall be reduced over a minimum 4-hour period in the following increments: 50%, 75%, 90%, and 100%.

2.28 Pumps used to dewater cofferdams, and pipes or conduits used to dewater stream reaches, shall be screened as follows:

a. Perforated plate: screen openings shall not exceed 3/32 inches (2.38 mm) in diameter.
b. Woven wire: screen openings shall not exceed 3/32 inches (2.38 mm) measured diagonally.
c. Screen material shall provide a minimum of 27% open area.
d. Approach velocity shall not exceed 0.33 feet per second.

2.29 Fish relocation activities shall be overseen by the Designated Biologist and shall be conducted by qualified fisheries biologists that are authorized by NMFS and DFG to handle listed salmonids. Captured fish will be segregated by size to minimize predation, and maintained in cool, well-oxygenated water until released to suitable habitat outside the construction impact area.

EROSION AND SEDIMENT CONTROL

2.30 The project shall at all time feature adequate erosion and sediment control devices to prevent the degradation of water quality.

2.31 Soils exposed by project operations shall be treated to prevent sediment runoff and transport. Erosion control measures shall include the proper installation and maintenance of approved Best Management Practices (BMPs) and may include applications of seed, certified weed-free straw, compost, fiber, commercial fertilizer, stabilizing emulsion and mulch, or combinations thereof.

2.32 Erosion control measures shall be monitored and maintained during and after each storm event. Modifications, repairs, and improvements to erosion control measures shall be made following each storm event to prevent sediment from entering surface waters or wetlands.

2.33 Soils adjacent to the stream channel that are exposed by project operations shall be adequately stabilized when rainfall is reasonably expected during construction, and immediately upon completion of construction, to prevent the mobilization of such sediment into the stream channels or adjacent wetlands. National Weather Service forecasts shall be monitored by the Permittee to determine the chance of precipitation.

2.34 Following construction, all disturbed upland areas shall be stabilized and reseeded with an erosion control mix consisting of regionally appropriate, native grass and forb species. Temporarily affected wetlands shall be seeded with a wet meadow seed mix. Seed will be obtained from the following locations, in priority order: Little Lake Valley, Outlet Creek Basin, or the Eel River watershed.

EQUIPMENT ACCESS

2.35 Vehicles shall not be driven, or equipment operated, in water covered portions of a stream, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, except as otherwise provided for in the Agreement to complete authorized work.

2.36 Project-related personnel and equipment shall access the Project site using existing designated routes and shall not cross undisturbed ground outside of or in route to the Project site. Project-related vehicle traffic shall be restricted to established roads, staging, and parking areas. If Permittee determines construction of off-site routes for travel are necessary, Permittee shall contact DFG prior to carrying out such an activity. DFG may require an amendment to this Agreement if additional resource impacts may result from Project modification.

PETROLEUM, CHEMICAL AND OTHER POLLUTANTS

2.37 All construction-related materials and equipment shall be stored in designated staging areas located a minimum of 150 feet from streams or other water bodies unless approved in writing by DFG.

2.38 Refueling and vehicle maintenance shall be performed at least 150 feet from streams or other water bodies unless approved in writing by DFG.

2.39 No equipment or machinery shall be operated within any flowing stream.

2.40 Any equipment or vehicles driven and/or operated within or adjacent to the stream channel shall be checked and maintained daily to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic life, wildlife, or riparian habitat.

2.41 All equipment used during construction of this Project shall be cleaned (i.e. free of dirt and debris that may harbor noxious weed seeds and plant parts) prior to its arrival on site and before leaving the Project area.

2.42 Stationary equipment such as motors, pumps, generators, and welders that contain deleterious materials, located within or adjacent to a stream shall be positioned over drip pans.

2.43 All activities performed in or near a stream shall have absorbent materials designated for spill containment and clean up activities on-site for use in an accidental spill. The Permittee shall immediately notify the California Emergency Management Agency at 1-800-852-7550 and immediately initiate the clean up activities. DFG shall be notified by the Permittee and consulted regarding clean-up procedures.

2.44 No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, asphalt, paint or other coating material, oil or petroleum products or other organic or earthen material from any construction, or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.

3. Compensatory Measures

To compensate for adverse impacts to fish and wildlife resources identified above that cannot be avoided or minimized, Permittee shall implement each measure listed below.

3.1 Prior to initiating channel- ground- or vegetation-disturbing Project activities, and no later than December 31, 2010, the Permittee shall acquire and protect a minimum of 1,910 acres of Habitat Management Lands (HM Lands) identified in the Final Mitigation and Monitoring Proposal dated June 8, 2010. On these lands, the Permittee shall create, enhance, restore, and preserve habitats in the following amounts to offset Project impacts:

North Coast semaphore grass. Permittee shall acquire, restore, and permanently preserve four extant populations of North Coast semaphore grass totaling 5.094 acres on approximately 70 acres of HM Lands. A restoration and management plan for the HM Lands shall be prepared and submitted to DFG for approval within 18 months after the effective date of this Agreement. The plan shall specify vegetation management actions and enhancement measures designed to result in a net expansion of existing semaphore grass populations on the HM Lands.

Baker's meadowfoam. A total of 1,120.34 acres of habitat shall be acquired and preserved, including 120.38 acres of occupied habitat, 999.96 acres of potentially suitable habitat, and 9.62 acres of restored habitat.

Category I Riparian Habitat. Compensatory mitigation for riparian habitat impacts on salmonid streams shall focus on creation, enhancement, and preservation of riparian corridors along Outlet Creek and other salmonid streams. A total of 147.97 acres shall be acquired, including creation of 47.57 acres of new habitat, enhancement of 48.51 acres of habitat, and protection or preservation of 100.40 acres of existing habitat.

Jurisdictional Wetlands and Other Waters. Impacts to jurisdictional wetlands will be mitigated through creation of 24.33 acres of new wetlands, enhancement of 1,101.13 acres of existing wetlands, preservation of 53.44 acres, and restoration of 3.70 acres of existing wetlands. Mitigation for impacts to other jurisdictional waters will include enhancement of 17.58 acres through planting riparian vegetation and oaks on the banks of existing watercourses and through protecting 21.99 acres and preserving 2.16 acres of existing habitat.

Category II and III Riparian Habitat. Permanent and temporary impacts to Category II and III riparian corridors shall be mitigated by the creation, enhancement, and preservation of Category I, II, and III Riparian Corridors, with the highest priority being placed on Category I habitats. A total of 1.76 acres of new habitat will be created, 4.46 acres enhanced, and 15.63 acres protected. In addition, a total of 109.15 acres of other riparian habitat not associated with a defined watercourse will be created, enhanced, protected and preserved on the off-site HM Lands.

Lowland Oak Woodland. A total of 22.24 acres of new valley oak woodland will be planted, with an additional 2.31 acres of existing woodland preserved and restored. In addition, 201.03 acres of existing oak woodland grassland will be preserved and restored.

Upland Oak Woodland. Permanent impacts to upland oak woodland will be mitigated by preserving a minimum of 15.06 acres of existing oak canopy and 26.71 acres of oak woodland grassland at the north end of Little Lake Valley.

3.2 Prior to initiating channel- vegetation- or ground-disturbing activities, and no later than December 31, 2010, Permittee shall submit detailed mitigation plans to DFG for review and approval. The plans shall include 1) a detailed description of the baseline condition of each HM Land parcel acquired to offset impacts to the resources identified above, 2) a detailed description of the measures that will be used to restore and enhance the ecological functions of the HM Lands, including final design and planting details for habitat creation, revegetation, and enhancement actions, 3) a discussion of the parameters that will be monitored to determine changes in ecological functions, including the frequency of monitoring, methods to be used, and criteria used to determine success, 4) an adaptive management plan to be implemented in the event expected results are not achieved, and 5) a long-term plan for managing and maintaining the HM Lands after success criteria have been met.

3.3 Permittee shall provide for the permanent protection of the off-site HM Lands by transferring fee title to the properties to the Mendocino County Resource Conservation District (MCRCD) or another entity under terms approved by DFG. If fee title is held by an entity other than DFG, a conservation easement in a form approved by DFG shall be recorded on title of the HM Lands. The grantee of the conservation easement may be DFG, a DFG-approved non-profit organization qualified pursuant to California Government Code section 65965, or a public agency approved by DFG and authorized to hold conservation easements. If a DFG-approved non-profit organization or approved public agency is grantee on a conservation easement, DFG shall be named third party beneficiary;

3.4 Permittee shall conduct a Property Analysis Record (PAR) or equivalent analysis to determine the appropriate endowment amount to fund the in-perpetuity management of the required HM Lands. Permittee shall provide the required endowment to DFG after DFG reviews and approves the PAR. Monies received by DFG pursuant to this Condition shall be deposited in a special deposit account established pursuant to Fish and Game Code section 13014. DFG may pool the endowment with other endowments for the operation, management and protection of HM Lands for local populations of the Covered Species. Endowment funds provided as described above may alternatively be held by a DFG-approved non-profit organization qualified to hold endowment funds;

3.5 Permittee must complete the required acquisition, protection and transfer of all HM Lands and record the required conservation easements in favor of DFG within 18 months after the effective date of this Agreement.

3.6 In addition to the off-site HM Lands identified above, Permittee shall conduct work to improve fish passage on Ryan Creek. In consultation with DFG, Permittee shall prepare draft and final designs for a project to remediate existing barriers to fish passage at the South Fork (PM 52.25) and North Fork (PM 52.36) Ryan Creek culverts on U.S. 101. Draft plans for both crossings will be submitted to DFG for

review no later than June 30, 2011. Final plans will be prepared and submitted to DFG for approval no later than June 30, 2012.

3.7 Permittee shall complete construction of the South Fork Ryan Creek culvert remediation project no later than October 31, 2013.

3.8 Permittee shall prepare cost estimates for the passage improvement work on the North Fork Ryan Creek culvert based on the final design prepared under Condition 3.6 above and shall apply for funding to complete this work in a timely manner.

4. Reporting Measures

Permittee shall meet each reporting requirement described below.

4.1 Daily Monitoring Reports. Daily observations from the Designated Biologist during pile installation, dewatering and fish relocation, channel modification, and vegetation clearing activities shall be transmitted to DFG in electronic format on a weekly basis.

4.2 Quarterly Compliance Report: Permittee shall compile the observation and inspection records identified in Condition 4.1 above into a Quarterly Compliance Report and submit it to DFG along with a summary of Project activities, the current implementation status of each mitigation measure, and any recommended modifications in monitoring methods.

4.3 Annual Status Report: Permittee shall provide DFG with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of the Agreement and continuing until DFG accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: 1) a summary of all Quarterly Compliance Reports identified in Condition 5.4, 2) a general description of the status of the Project site and Project activities, including actual or projected completion dates, if known; 3) a summary of the annual mitigation monitoring reports and the current implementation status of each mitigation measure; and 4) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and mitigating Project impacts.

4.4 Final Mitigation Report: No later than 60 days after completion of the Project, including completion of all mitigation measures, Permittee shall provide DFG with a Final Mitigation Report. The Final Mitigation Report shall be prepared by the Designated Biologist and shall include, at a minimum: 1) a summary of all Monthly/Quarterly Compliance Reports and all ASRs, 2) copies of all mitigation monitoring reports documenting when success criteria for each of the mitigation measures were achieved; 3) all available information about Project-related incidental take of threatened or endangered species; 4) information about other Project impacts on threatened or endangered species; 5) dates of Project activities; 6) an assessment of the effectiveness of the required measures in

minimizing and mitigating Project impacts ; 7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects; and 8) any other pertinent information.

CONTACT INFORMATION

Any communication that Permittee or DFG submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or DFG specifies by written notice to the other.

To Permittee:

Mr. Dave Kelley
Department of Transportation
District 3
703 B Street, P.O. Box 911
Marysville, California 95901
Fax: (530) 741-4299
dave_kelley@dot.ca.gov

To DFG:

Department of Fish and Game
Northern Region
601 Locust Street, California 96001
Attn: Lake and Streambed Alteration Program – Craig Martz
Notification #1600-2010-0044-R1
Fax: (530) 225-0324
cmartz@dfg.ca.gov

LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute DFG's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

SUSPENSION AND REVOCATION

DFG may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees,

representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before DFG suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before DFG suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused DFG to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes DFG from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects DFG's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 et seq. (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

DFG may amend the Agreement at any time during its term if DFG determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by DFG and Permittee. To request an amendment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter DFG approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

EXTENSIONS

In accordance with FGC section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to DFG a completed DFG "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). DFG shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (Fish & G. Code, § 1605, subd. (f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of DFG's signature, which shall be: 1) after Permittee's signature; 2) after DFG complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at http://www.dfg.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire ~~on December 31, 2015,~~ 5 years from the effective date unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires. CB

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify DFG in accordance with FGC section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR DEPARTMENT OF TRANSPORTATION

Dave Kelley — 6-25-2010
Project Manager — Date

FOR DEPARTMENT OF FISH AND GAME

Curt Babcock — 6/29/10
Acting Habitat Conservation Program Manager — Date

Prepared by: Craig Martz, Staff Environmental Scientist

California Department of Fish and Game
Northern Region
601 Locust Street
Redding, California 96001

California Endangered Species Act
Incidental Take Permit No. 2081-2010-007-01

Willits Bypass Project

Authority: This California Endangered Species Act (CESA) Incidental Take Permit (ITP) is issued by the Department of Fish and Game (DFG) pursuant to Fish and Game Code section 2081, subdivisions (b) and (c), and California Code of Regulations, Title 14, section 783.0 et seq. CESA prohibits the take[1] of any species of wildlife designated by the California Fish and Game Commission as an endangered, threatened, or candidate species.[2] DFG, however, may authorize the take of such species by permit if the conditions set forth in Fish and Game Code section 2081, subdivisions (b) and (c) are met. (See also Cal. Code Regs., tit. 14, § 783.4.)

Permittee:	**California Department of Transportation (Caltrans)**
Name and title of principal officer:	**Dave Kelley, Project Manager**
Contact person:	**Jeremy Ketchum, (916) 274-0621**
Mailing address:	**2389 Gateway Oaks Dr. (MS-15)** **Sacramento, California 95833**

Effective Date and Expiration Date of the ITP:
This ITP shall be executed in duplicate original form and shall become effective once a duplicate original is acknowledged by signature of the Permittee on the last page of the ITP and returned to DFG's Habitat Conservation Planning Branch at the address listed in the Notices section of this ITP. Unless renewed by DFG, this ITP's authorization to take the Covered Species shall expire on **December 31, 2020**.

Notwithstanding the expiration date on the take authorization provided by this ITP, Permittee's obligations under this ITP do not end until DFG accepts as complete the Permittee's Final Mitigation Report required by Condition 6.6 of this ITP.

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[1]Pursuant to Fish and Game Code section 86, "'Take' means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill."

[2]"Candidate species" are species of wildlife that have not yet been placed on the list of endangered species or the list of threatened species, but which are under formal consideration for listing pursuant to Fish and Game Code section 2074.2.

Project Location:
The Willits Bypass Project (Project) is located near the City of Willits in Little Lake Valley, Mendocino County, California (See Figure 1). The Project involves construction of a new freeway alignment to the east of Willits. The southern terminus of the new alignment is located at Post Mile (PM) R43.1 about 2.0 miles south of Willits at 39.371887° north, 123.321514° west. The northern terminus of the new alignment is located at PM R49.0, approximately 1.9 miles south of Reynolds Highway at 39.437511° north, 123.356766° west. The Project site is bounded by the City of Willits to the west and the Little Lake Valley to the east.

Project Description:
The Project consists of a four-lane freeway bypass crossing the Little Lake Valley east of the City of Willits. The freeway will maintain a minimum design speed of 68 miles per hour and will feature a 45.3-foot median separating the northbound and southbound lanes. Each lane will be 12 feet wide. The inside shoulder width (nearest the median) will be 5 feet, while the outside shoulder width will be 10 feet. The Project will begin approximately 2.0 miles south of Willits, where the existing four-lane freeway becomes a two-lane highway, and will continue north, rejoining the existing two-lane highway about 1.3 miles north of the Willits city limits. The overall length of the bypass will be approximately 5.8 miles, starting near PM R43.1 and ending near R49.0 (See Figure 1-2a).

The bypass alignment will diverge from existing U.S. 101 at the new Haehl Creek interchange and continue northwesterly on an embankment constructed with excess fill from a previous freeway project. At the Center Valley Road over-crossing, the roadway embankment will be replaced by a floodway viaduct, approximately 6,000 feet long. The viaduct structure will span the regulatory floodway, roughly paralleling the east bank of Baechtel Creek until it crosses the creek at the confluence with Broaddus Creek east of the Willits Waste Water Treatment Plant (WWTP). The bypass will continue on viaduct as it curves to the west and crosses Mill Creek. From a point approximately 600 feet west of the Mill Creek crossing, the facility will continue northwest on fill, bridging the Northwestern Pacific Railway (NWPRR) right-of-way before rejoining the existing alignment of U.S. 101 at the new Quail Meadows interchange.

Funding constraints require that the Project be constructed in two phases. Phase 1 consists of the two interchanges and the two southbound lanes which will be operated as a two-lane bypass (one lane in each direction). Construction of Phase 1 is expected to take four years to complete. As funding allows in Phase 1, Permittee intends to construct as much of the four-lane embankment as possible to help facilitate the construction of Phase 2. Although only Phase 1 will be constructed at this time, Permittee will implement mitigation for the biological resource impacts of both Phase 1 and Phase 2, i.e. the full four-lane freeway. Funding for the second phase has not yet been identified. The additional funding necessary to construct Phase 2 will likely come from a combination of federal, state, and local sources. This ITP covers construction of both Phase 1 and Phase 2 of the Project until the expiration of this

ITP. After the expiration date of this ITP, Permittee will no longer have incidental take authorization via this ITP.

Construction of the Project will require excavation and placement of up to 1.4 million cubic yards of fill material for roadway embankment; removal of native wetland, riparian and upland vegetation; construction of temporary access roads and haul roads; construction of temporary and permanent stream crossings; removal of existing culverts on Haehl and Upp Creeks that currently impede the passage of anadromous salmonids; reconstructing the longitudinal profile of these stream reaches to provide improved fish passage; installing rock slope protection (RSP) and/or other bank stabilization measures to protect structures; dewatering of work areas in wetlands and within stream chanels for construction of permanent bridge and viaduct piers; installation of sheet piles, temporary H piles, and permanent cast-in-steel-shell (CISS) piles using vibratory and percussive hammers; and installation of wick drains to provide a stable foundation for embankment fills.

In addition to erosion control and revegetation of temporary disturbance areas within the right-of-way, the Project also includes compensatory restoration, enhancement, and preservation activities required by various permitting agencies on a minimum of approximately 1,910 acres of off-site mitigation lands. An optional proposed borrow site at Oil Well Hill, located on the east side of U.S. 101, approximately 0.85-mile north of the intersection of Reynolds Highway and U.S. 101, has been designated as a source of fill material for the Project.

Dewatering of work areas within salmonid-bearing (Category I) streams will require capture and relocation of fish. Installation of temporary and permanent piles within or adjacent to the stream channel for coffer dams and bridge crossings is projected to exceed interim injury criteria for cumulative sound exposure levels ($SEL_{Cumulative}$) for juvenile salmonids. These activities are likely to result in the incidental take of individual Southern Oregon-Northern California Coasts (SONCC) coho salmon, a species designated as threatened under CESA (Cal. Code Regs. tit. 14 § 670.5, subd. (b)(2)(D)). Placement of fill for roadway embankments will permanently impact 0.386 acre and temporarily impact 0. 015 acre of habitat occupied by North Coast semaphore grass, a species designated as threatened under CESA (Cal. Code Regs. tit. 14 § 670.2, subd. (b)(10)(A)).

Covered Species Subject to Take Authorization Provided by this ITP:

This ITP covers the following species:

Name	CESA Status[3]
Fish	
1. SONCC coho salmon (*Oncorhynchus kisutch*)	Threatened
Plants	
1. North Coast semaphore grass (*Pleuropogon hooverianus*)	Threatened

These species and only these species are hereinafter referred to as "Covered Species."

Impacts of the Taking on Covered Species:
The Project activities described above and their resulting impacts are expected to result in the incidental take of individuals of the Covered Species. Incidental take of juvenile SONCC coho salmon is likely to occur as a result of mortality due to construction activities within and adjacent to streams traversed by the bypass (direct impacts). In particular, juvenile SONCC coho salmon may be killed or injured due to (1) dewatering of work areas, (2) capture and handling during relocation activities, and (3) cumulative sound exposure levels produced during the driving of temporary and permanent piles for structure footings. In addition, the impacts of the taking on SONCC coho salmon include the permanent loss of 2.38 acres of riparian habitat along Category I streams and the temporary removal of an additional 8.15 acres of riparian canopy along Category I streams. These reductions in riparian shade are expected to contribute to increased water temperatures and loss of shaded riverine aquatic habitat for juvenile fish. Vegetation removal, excavation, and other ground-disturbing activities adjacent to watercourses may also result in increased sediment deposition, degrading instream habitat by filling pools and adversely affecting production of benthic invertebrates.

Placement of fill material for the freeway embankment between Mill Creek and the NWPRR right-of-way in the northern portion of the alignment will directly impact 0.401 acre of occupied habitat for North Coast semaphore grass. Direct impacts include the permanent loss of 0.386 acre (an estimated 2,798 plants) and temporary impacts on 0.015 acre (an estimated 28 plants). Seed and plant propagules (rhizomes) will be collected from areas of permanent impact prior to construction for propagation and re-introduction to remaining areas of suitable habitat at this population site. In addition to directly affecting occupied habitat, placement of fill and installation of wick drains as part of roadway construction may indirectly affect the remaining 1.1 acres of occupied habitat (an estimated 6,428 plants) at this location.

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[3]Under CESA, a species may be on the list of endangered species, the list of threatened species, or the list of candidate species. All other species are "unlisted."

Impact mechanisms associated with indirect impacts include habitat fragmentation and degradation resulting from potential changes in drainage patterns and hydrology, introduction of weedy species, and soil compaction.

Indirect impacts to the Covered Species are expected to occur in the form of temporal losses, increased habitat fragmentation and edge effects, and the Project's incremental contribution to cumulative impacts. These impacts include: continued degradation of aquatic and terrestrial habitats, increased pollution, as well as increased vulnerability to predation and competition with non-native species.

Other Species Not Subject to the Take Authorization Provided by this ITP:

Fully Protected Species. This ITP does not authorize the take of any fully protected species. (See Fish & G. Code §§ 3511, 4700, 5050, 5515.) DFG has advised Permittee of the requirement to avoid take of fully protected species and believes the Permittee can implement the Project as described in this ITP in a manner consistent with the Fish and Game Code provisions governing fully protected species. DFG's determination regarding Project consistency with Fish and Game Code provisions governing fully protected species is based, in part, on Permittee's commitment, independent of this ITP, to implement and adhere to the following general avoidance and minimization measures during Project implementation related to white-tailed kite (*Elanus leucurus*), a species documented to occur within the vicinity of the Project. Permittee shall conduct pre-construction surveys during the courtship season to identify active nests within ¼ mile of the Project alignment. If an active white-tailed kite nest is found during surveys, Permittee will employ an avian biologist who will determine and establish a no-construction buffer of sufficient distance around the nest to ensure the adults are not disturbed and the young can successfully fledge.

Incidental Take Authorization of Covered Species:
This ITP authorizes incidental take of the Covered Species and only the Covered Species. With respect to incidental take of the Covered Species, DFG authorizes the Permittee, its employees, contractors, and agents to take Covered Species incidentally in carrying out the Project, subject to the limitations described in this section and the Conditions of Approval identified below. This ITP does not authorize take of Covered Species from activities outside the scope of the Project as described above, take of Covered Species resulting from violation of this ITP, or intentional take of Covered Species except for capture and relocation of Covered Species as authorized by this ITP. In addition, as set forth above, this ITP does not authorize take of any species designated as fully protected under the Fish and Game Code.

Conditions of Approval:
Unless specified otherwise, the following measures shall pertain to all channel-, ground-, or vegetation-disturbing activities within the Project construction boundaries, including areas used for ingress and egress routes during Project activities, and staging and parking areas. DFG's issuance of this ITP and Permittee's authorization to take the Covered Species are

subject to Permittee's compliance with and implementation of the following Conditions of Approval:

1. Legal Compliance. Permittee shall comply with all applicable state, federal, and local laws in existence on the effective date of this ITP or adopted thereafter.

2. CEQA and ESA Compliance. Permittee shall implement and adhere to the mitigation measures related to the Covered Species in the Biological Resources section of the Environmental Impact Report (SCH Number: 1990030006) certified by the Permittee as lead agency for the Project under the California Environmental Quality Act (CEQA) on December 15, 2006 and the Supplemental Environmental Impact Report certified by the Permittee on May 19, 2010. In addition, Permittee shall implement and adhere to all applicable terms and conditions in the Biological Opinion and Incidental Take Statement issued for the Project by the National Marine Fisheries Service (BO # 2010/01124).

3. LSA Agreement Compliance. Permittee shall implement and adhere to measures related to the Covered Species in the Streambed Alteration Agreement (Notification number 1600-2010-0044-R1) for the Project pursuant to Fish and Game Code section 1602 et seq.

4. ITP Time Frame Compliance. Permittee shall fully implement and adhere to the conditions of this ITP within the time frames set forth below and as set forth in the Mitigation Monitoring and Reporting Program (MMRP), which is included as Attachment 1 to this ITP.

5. General Provisions:

5.1. Mitigation and Monitoring Proposal. Permittee shall implement and adhere to the mitigation measures related to the Covered Species in the Willits Bypass Project Final Mitigation and Monitoring Proposal (MMP) dated June 8, 2010, and any revisions to the MMP subsequently approved by DFG. Prior to initiating channel-, vegetation-, or ground-disturbing activities, and no later than December 31, 2010, Permittee shall submit a detailed mitigation plan to DFG for review and approval that will be incorporated into the MMP. The plan shall include (1) a detailed description of the baseline condition of each parcel of habitat mitigation (HM) Lands acquired to offset impacts to the Covered Species, (2) a detailed description of the measures that will be used to restore and enhance the ecological functions of the HM Lands, including final design and planting details for habitat creation, revegetation, and enhancement actions, (3) a discussion of the parameters that will be monitored to determine changes in ecological functions, including the frequency of monitoring, methods that will be used, and criteria used to determine success, (4) an adaptive management plan to be implemented in the event that expected results are not achieved, and (5) a

long-term plan for managing and maintaining the HM lands after success criteria have been met.

5.2. Designated Representative. Before initiating channel-, ground-, or vegetation-disturbing Project activities, Permittee shall designate a representative (Designated Representative) responsible for communications with DFG and overseeing compliance with this ITP. The Permittee shall notify DFG in writing prior to commencement of channel-, ground-, or vegetation-disturbing activities of the Designated Representative's name, business address, and contact information, and shall notify DFG in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.

5.3. Designated Biologist. At least 30 days before initiating channel-, ground-, or vegetation-disturbing activities, Permittee shall submit to DFG in writing the name, qualifications, business address, and contact information for a biological monitor (Designated Biologist). The Designated Biologist shall be knowledgeable and experienced in the biology and natural history of the Covered Species. The Designated Biologist shall be responsible for monitoring Project activities and/or channel-, ground-, or vegetation-disturbing activities in areas of Covered Species' habitat to help minimize or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain DFG approval of the Designated Biologist prior to the commencement of Project-related activities that may result in the incidental take of the Covered Species.

5.4. Designated Biologist Authority. To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist shall have authority to immediately stop any activity that is not in compliance with this ITP, and/or to order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species or fully protected species. Neither the Designated Biologist nor DFG shall be liable for any costs incurred in complying with the Conditions of Approval, including cease-work orders issued by DFG.

5.5. Education Program. Permittee shall conduct an education program for all persons employed or otherwise working on the Project site prior to performing any work on-site. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status under CESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to their performing work on-site. Copies of this ITP shall be maintained at the worksite. Permittee shall prepare and distribute wallet-sized cards or a fact

sheet handout containing this information for workers to carry on-site. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and be available to DFG upon request.

5.6. Firearms and Dogs: Permittee shall prohibit firearms and domestic dogs from the Project site and site access routes during Project activities and development of the Project, except those in the possession of authorized security personnel or local, State, or Federal law enforcement officials.

5.7. Delineation of Property Boundaries: Prior to initiating channel-, ground-, or vegetation-disturbing Project activities along each part of the route in active construction, Permittee shall clearly delineate right-of-way and/or property boundaries of the current Project work area or areas with fencing, stakes, or flags and shall similarly delineate the limits of Project activities. Permittee shall restrict all project activities to within the fenced, staked or flagged areas. Permittee shall maintain all fencing, stakes and flags until the completion of Project activities in that area.

5.8. Delineation of Habitat. Permittee shall clearly delineate habitat of the Covered Species on the Project site with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize the disturbance of Covered Species' habitat. Permittee shall designate Covered Species habitat adjacent to the work area as Environmentally Sensitive Areas (ESAs) on the construction plans and construction personnel and equipment shall not enter these areas. Permittee shall install ESA fencing prior to initiating vegetation clearing operations. The location of all ESA fencing shall be inspected and approved by DFG prior to vegetation removal.

5.9. Project Site Access. Project-related personnel shall access the Project site during Project activities using existing designated routes and shall not cross Covered Species' habitat outside of or en route to the Project site. Project-related vehicle traffic shall be restricted to established roads, staging, and parking areas. If Permittee determines construction of off-site routes for travel are necessary, Permittee shall contact DFG prior to carrying out such an activity. Construction of off-site routes for travel may require an amendment to this ITP if take of Covered Species incidental to such construction will occur. .

5.10. Staging Areas. Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project site using, to the extent possible, previously disturbed areas. Additionally, Permittee shall not use or cross Covered Species' habitat outside of the marked Project boundaries unless specifically provided for in Condition 5.9 of this ITP. Staging of construction materials and equipment shall not occur within the regulatory floodway.

5.11. Flood Events. Permittee shall design and construct temporary bridges and other structures in the channel to pass the 100-year flood event. Permittee shall remove structures and materials not designed to withstand high flows from the channel prior to October 15.

5.12. Hazardous Waste. Permittee shall immediately stop/repair and clean up any leaks or spills of fuel, lubricants, or other materials that may be deleterious to fish, plant, or wildlife during Project activities at the time of occurrence. Permittee shall confine the storage and handling of hazardous materials to designated staging and refueling areas and shall properly contain and dispose of any unused or leftover hazardous products off-site.

5.13. Vehicle Inspection. Permittee shall ensure that vehicles and equipment operated within or adjacent to the stream channel are free of oil or petroleum residues and are inspected and maintained on a daily basis to prevent leaks of materials that could be deleterious to aquatic life, wildlife, or riparian vegetation.

5.14. DFG Access. Permittee shall provide DFG staff with reasonable access to the Project site and mitigation lands under Permittee control, and shall otherwise fully cooperate with DFG efforts to verify compliance with or effectiveness of mitigation measures set forth in the ITP.

5.15. Refuse Removal. Upon completion of Project activities, Permittee shall remove from the Project site and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.

6. Monitoring, Notification and Reporting Provisions:

6.1. Notification Prior to Commencement. Permittee shall notify DFG 14 calendar days before initiating channel-, ground-, or vegetation-disturbing activities and shall document compliance with all pre-Project Conditions of Approval before initiating channel-, ground-, or vegetation-disturbing activities.

6.2. Notification of Non-compliance. Permittee shall immediately notify DFG in writing if it determines that it is not in compliance with any Condition of Approval of this ITP, including, but not limited to, any actual or anticipated failure to implement mitigation measures within the time periods indicated in this ITP and/or the MMRP. Permittee shall report any non-compliance with the ITP during Project activities to DFG within 24 hours.

6.3. Compliance Monitoring. The Designated Biologist shall be on-site daily while Project activities, including all pile installation, dewatering, channel-, vegetation-, or ground-disturbing activities, that may affect Covered Species are taking place to: (1) minimize incidental take of the Covered Species; (2) check for compliance with all mitigation and avoidance measures; (3) check all exclusion zones; and (4) ensure that signs, stakes, and fencing are intact, and that human activities are restricted outside of these protective zones. The Designated Representative or Designated Biologist shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species, survey results, and monitoring activities required by this ITP. The Designated Biologist shall conduct compliance inspections a minimum of once per month during periods of inactivity and after clearing, grubbing, and grading are completed.

6.4. Quarterly Compliance Report. Permittee shall compile the observation and inspection records identified in Condition 6.3 into a Quarterly Compliance Report and submit it to DFG along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Quarterly Compliance Reports shall be submitted to DFG's Regional Office at the address listed in the Notices section of this ITP or via e-mail to DFG's Regional Representative. At the time of this ITP's approval, the DFG Regional Representative is Staff Environmental Scientist, Craig Martz (email address: cmartz@dfg.ca.gov). DFG may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If DFG determines the reporting schedule is inadequate, DFG will notify Permittee by letter of the new reporting schedule.

6.5. Annual Status Report. Permittee shall provide DFG with an Annual Status Report (ASR) no later than January 31 of every year, beginning with issuance of the ITP and continuing until DFG accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all Quarterly Compliance Reports identified in Condition 6.4, (2) a general description of the status of the Project site and Project activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; and (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and mitigating Project impacts on the Covered Species.

6.6. Final Mitigation Report. No later than 60 days after completion of the Project, including completion of all mitigation measures, Permittee shall provide DFG with a Final Mitigation Report. The Final Mitigation Report shall be prepared by the Designated Biologist and shall include, at a minimum: (1) a summary of all Monthly/Quarterly Compliance Reports and all ASRs, (2) a copy of the table in the

MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) dates of Project activities; (6) an assessment of the effectiveness of the ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.

6.7. Notification of Species Mortality. If any SONCC coho salmon are killed by a Project-related activity, or if any SONCC coho salmon are otherwise found dead within the Project site, Permittee shall immediately notify the Designated Biologist. The Designated Biologist or Designated Representative shall provide initial notification to DFG by calling the Regional Office at (530) 225-2300. The initial notification to DFG shall include information regarding the location, species, number of animals injured or killed, and the ITP Number. Following initial notification, Permittee shall send DFG a written report within 2 calendar days. The report shall include the date and time of the finding or incident, location of the carcass, and, if possible, provide a photograph, explanation as to cause of death, and any other pertinent information.

7. Take Minimization Measures:

The following requirements are intended to ensure the minimization of incidental take of Covered Species that are discovered on the Project site, both prior to channel-, ground-, or vegetation-disturbing activities and during all Project activities. Permittee shall implement and adhere to the following conditions to minimize take of Covered Species:

7.1. Work in Streams. Permittee shall confine all construction work within the bed, channel, or banks of any stream to the period of June 15 through October 15. If the stream is dry, and advance written approval is obtained from DFG, then Permittee may conduct work outside of the June 15 through October 15 construction window.

7.2. Removal of Riparian Vegetation. Notwithstanding Condition 7.1 above, Permittee shall ensure that removal of above-ground riparian vegetation from the streambanks only occurs between September 1 and January 31 of any year to avoid impacts to migratory birds. Permittee shall remove all cleared material/vegetation from the riparian/stream zone and dispose of it properly. Permittee shall ensure that disturbance or removal of riparian vegetation does not exceed the minimum necessary to complete construction. Where feasible, hand tools (chain saws, etc.) shall be used to trim vegetation to the extent necessary to gain access to work sites. Whenever possible, root systems shall be left intact to facilitate more rapid recovery following temporary construction impacts.

7.3. Pile Driving. Permittee shall confine all pile driving activities, including installation of sheet piles, temporary and permanent piles located within the channel or below the top of bank, to the period between June 15 through October 15. Permittee shall also confine installation of permanent bridge or viaduct piles within 50 feet of the channel to the period between June 15 through October 15. Contingent on the results of hydroacoustic monitoring, the Permittee may install permanent bridge or viaduct piles within 50 feet of the channel outside this work window provided a written request is made to DFG. Written approval from DFG for the work window variance must be received by the Permittee prior to the start or continuation of work outside the June 15 through October 15 work window.

7.4. Hydroacoustic Monitoring. If surface water is present within the channel, Permittee shall conduct hydroacoustic monitoring to document peak sound pressure levels and cumulative sound exposure levels during all permanent pile driving activities in the channel or within 50 feet of the channel. Permittee shall also monitor the driving of temporary trestle and falsework piles below the top of bank. If underwater sound pressure levels for each pile type and size do not vary to a large degree, the Permittee may request written approval from DFG to discontinue hydroacoustic monitoring. Permittee shall submit a Hydroacoustic Monitoring Plan for review and approval by DFG no later than March 15, 2011.

7.5. Coffer Dams. Permittee shall contain permanent pile driving activities in the stream channel within coffer dams. A bubble curtain or other approved attenuation device shall be used to reduce sound exposure levels.

7.6. Fish Capture. Prior to conducting temporary or permanent pile driving activities within the channel, or within 50 feet of the channel, Permittee shall exclude, remove and relocate fish from coffer dams and those portions of the stream where $SEL_{Cumulative}$ are predicted to exceed the interim injury criteria of 183 dB. Permittee shall use one or more of the following NMFS-approved methods to capture SONCC coho and other salmonids: dip net, seine, throw net, or electrofishing.

7.7. Stream Dewatering. If pile driving activities are expected to exceed interim $SEL_{Cumulative}$ threshold levels for more than two consecutive days, Permittee shall dewater the affected stream reach in lieu of using block nets to exclude fish. During dewatering, Permittee shall incrementally divert flows in the affected reach to facilitate fish capture and relocation. Flows shall be reduced over a minimum 4-hour period in the following increments: 50%, 75%, 90%, and 100%.

7.8. Fish Relocation. Fish relocation activities shall be overseen by the Designated Biologist and shall be conducted by qualified fisheries biologists that are authorized by NMFS and DFG to handle listed salmonids. Captured fish shall be segregated by size to minimize predation, and maintained in cool, well-oxygenated water until released to

suitable habitat outside the construction impact area.

7.9. Fish Passage. Permittee shall ensure that installation of permanent culverts, bridges, grade control structures, instream habitat enhancement features, and other channel modifications do not impede the passage of fish up or down stream. Permittee shall submit detailed designs for work within the stream channel to DFG for review and approval no later than August 1, 2010.

7.10. Grass Population Study. Prior to initiating vegetation- or ground-disturbing activities, Permittee shall fund a two-year study of North Coast semaphore grass populations in the Little Lake Valley with the goal of characterizing ecological requirements for the species. The study shall investigate the soils, hydrology, and associated species at sites occupied by North Coast semaphore grass and at adjacent, unoccupied sites to identify potentially suitable areas for plant establishment, guide future management of HM Lands and determine the potential for expanding current populations.

7.11. Grass Seed Collection. Prior to initiating vegetation- or ground-disturbing activities, Permittee shall harvest mature North Coast semaphore grass seed from the area that will be directly impacted by construction. Seed shall be collected at the appropriate time of year by a botanist with a valid DFG scientific collecting permit that covers the species, or a MOU with DFG authorizing seed collection for the Project. If the property is being grazed during the growing season prior to collection, Permittee shall install temporary fencing to exclude cattle from the population.

7.12. Grass Curation and Propagation. Permittee shall sponsor the permanent curation of a portion of the collected seed by an organization participating in the Center for Plant Conservation's National Collection of Endangered Plants. Permittee shall contract with a qualified native plant nursery to propagate the remaining seed for outplanting as container stock within suitable, protected habitat adjacent to the impacted population.

7.13. Grass Relocation. Permittee shall salvage mature North Coast semaphore grass plants and/or rhizomes from the permanent impact area and relocate them to suitable, protected habitat adjacent to the impact area. Plants and/or rhizomes shall be transplanted by a qualified botanist in the late fall or early winter after soils have been moistened by the first seasonal rains. Permittee shall monitor the transplants, container stock, and adjacent natural plants within the population for a minimum period of 10 years following planting.

7.14. Surface Hydrology. Permittee shall maintain the existing surface hydrology of the remaining North Coast semaphore grass population within the Project right-of-way to the greatest extent possible by (1) installing two culverts to convey surface flows

through the roadway embankment and (2) capturing roadway runoff and preventing it from discharging into adjacent occupied habitat.

7.15. Grass Population Protection. Permittee shall provide for the long-term protection of the remaining population of North Coast semaphore grass within the Project right-of-way and shall add the location to the current database of Environmentally Sensitive Areas (ESAs) in Caltrans District 1. ESA paddles will be installed within the right-of-way to alert maintenance personnel and protect the population from inadvertent disturbance.

7.16. Grass Population Maintenance. In consultation with DFG and a qualified botanist, Permittee shall develop a maintenance prescription for the right-of-way that is compatible with the ecological requirements of North Coast semaphore grass. The prescription shall specify mowing schedules and restrict incompatible activities such as blading or herbicide application. Permittee shall ensure that local maintenance personnel understand and implement the management prescription for this section of right-of-way.

8. Mitigation Measures/Compensation for Take:

In order to mitigate for the taking of juvenile SONCC coho salmon and the temporary and permanent impacts of the Project on stream habitat for the species within the Outlet Creek Hydrologic Sub-Area, the Permittee shall implement a fish passage improvement project to restore access to spawning and rearing habitat on Ryan Creek. Permittee shall provide the following:

8.1. Fish Barrier Removal Plan. In consultation with DFG, Permittee shall prepare draft and final designs for a project to remediate existing barriers to fish passage at the South Fork (PM 52.25) and North Fork (PM 52.36) Ryan Creek culverts on U.S. 101. Draft plans for both crossings shall be submitted to DFG for review no later than June 30, 2011. Final plans shall be prepared and submitted to DFG for approval no later than June 30, 2012.

8.2. Fish Barrier Removal Completion. Permittee shall complete construction of the South Fork Ryan Creek culvert remediation project no later than October 31, 2013.

8.3. Fish Barrier Removal Funding. Permittee shall prepare cost estimates for the passage improvement work on the North Fork Ryan Creek culvert based on the final design prepared under Condition 8.1 above and shall apply for funding to complete this work in a timely manner.

In addition to the fish passage improvement project described above, DFG has determined that permanent protection and perpetual management of compensatory habitat is necessary and required under CESA to fully mitigate impacts of the taking on Covered

Species that will result from implementing the Project. This determination is based on factors including an assessment of the quality of the habitat at the Project site and the increased habitat value for the Covered Species that can be achieved through land management at the mitigation location.

8.4. HM Lands Acquisition and Management. Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of this ITP if security is provided pursuant to Condition 9, Permittee shall acquire and permanently preserve 1,486 acres of HM Lands for the Covered Species identified in the final MMP. Of this total, Permittee shall create 47.57 acres, enhance 48.51 acres, and preserve 100.40 acres of riparian habitat on approximately 1,416 acres of HM Lands to fully mitigate for the incidental taking of SONCC coho salmon that will occur as a result of the temporary and permanent habitat loss and mortality of individuals related to other Project activities. In addition, Permittee shall acquire, restore, and permanently preserve four extant populations of North Coast semaphore grass totaling 5.094 acres on an additional 70 acres of HM Lands to fully mitigate for the incidental taking of North Coast semaphore grass that will occur as a result of Project activities. A restoration and management plan for the HM Lands shall be prepared and submitted to DFG for approval within 18 months after the issuance of this ITP. The plan shall specify vegetation management actions and enhancement measures designed to result in a net expansion of existing North Coast semaphore grass populations on the HM Lands.

DFG estimates that acquisition of appropriate HM Lands to mitigate for impacts to Covered Species will cost approximately $7,800/acre for 1,486 acres for a total of approximately **$11,590,800.00**. As part of this condition, Permittee shall:

8.4.1. Transfer fee title to the HM Lands to the Mendocino County Resource Conservation District (MCRCD) or another entity under terms approved by DFG. If fee title is held by an entity other than DFG, a conservation easement in a form approved by DFG shall be recorded on title of the HM Lands. The grantee of the conservation easement may be DFG, a DFG-approved non-profit organization qualified pursuant to California Government Code section 65965, or a public agency approved by DFG and authorized to hold conservation easements. If a DFG-approved non-profit organization or approved public agency is grantee on a conservation easement, DFG shall be named third party beneficiary;

8.4.2. Provide a recent preliminary title report, initial hazardous materials survey report, and other necessary documents specified in Attachment 2 and/or requested by the DFG Regional Representative. The Permittee shall be responsible for all costs associated with obtaining and providing the required documents. All documents conveying the HM Lands and all conditions of title are

subject to the approval of DFG, the Wildlife Conservation Board and if applicable, the Department of General Services;

8.4.3. Provide for the initial protection and enhancement of HM Lands as described in the final MMP. DFG estimates that initial protection and enhancement will cost approximately $4,590.40/acre for 1,416 acres of HM Lands for SONCC coho salmon, for a total of $6,500,000.00. Additionally, DFG estimates that initial protection and enhancement will cost approximately $6,647.45/acre for 70 acres of HM Lands for North Coast semaphore grass, for a total of $465,321.00. Total initial protection and enhancement costs are estimated at **$6,965,321.00**.

8.4.4. Provide for the perpetual management of the HM Lands to benefit the Covered Species by doing the following:

Conduct a Property Analysis Record (PAR) or equivalent analysis for the HM Lands that have been identified to determine the appropriate endowment amount to fund the in-perpetuity management of the 1,486 acres of required HM Lands. Permittee shall provide the required endowment to DFG after DFG reviews and approves the PAR. Permittee shall demonstrate that sufficient funds have been allocated for the endowment as described in Condition 9 below.

Interest from the endowment amount shall be available for reinvestment in the principal and for the long-term operation, management, and protection of the HM Lands, including reasonable administrative overhead, biological monitoring, improvements to biological carrying capacity, law enforcement measures, and any other action designed to protect or improve the habitat values of the HM Lands. Monies received by DFG pursuant to this Condition may be deposited in a special deposit account established pursuant to Fish and Game Code section 13014. DFG may pool the endowment with other endowments for the operation, management and protection of HM Lands for local populations of the Covered Species. Endowment funds provided as described above may alternatively be held by a DFG-approved non-profit organization qualified to hold endowment funds;

8.4.5. Reimburse DFG for reasonable expenses incurred during title and documentation review, expenses incurred from other state agency reviews, and overhead related to transfer of HM Lands to DFG. DFG estimates that this Project will create an additional cost to DFG of no more than $3,000 for every fee title deed or easement processed.

9. Performance Security:

9.1. Funding Assurance. Permittee may proceed with channel-, ground-, or vegetation-

disturbing activities before completing all of the mitigation, monitoring and reporting activities required in the Conditions of Approval of this ITP only if Permittee ensures funding to complete those activities by providing to DFG, prior to commencing ground- or vegetation disturbing activities or within 30 days after the effective date of this ITP, whichever occurs first, written documentation that the Permittee has allocated sufficient funds, acceptable to and approved by DFG, in the Expenditure Authorization for the Project to ensure implementation of the Conditions of Approval of this ITP.

The written documentation shall identify and display in itemized form, at a minimum, the following estimated costs of implementing the ITP's mitigation, monitoring, and reporting requirements, which total **$34,556,121.00**. The written documentation submitted by the Permittee to satisfy this Condition shall be on official letterhead and signed by both the District Deputy Director of Project Management and the District Deputy Director of Environment, and shall include a statement that the funds identified have been allocated specifically for the purpose of fulfilling the Permittee's mitigation obligations associated with this ITP and will not be redirected for other Project purposes.

Even if the Funding Assurance is provided, Permittee must complete the required acquisition, protection, and transfer of all HM Lands and record the required conservation easements pursuant to Condition 8.4.1 within 18 months of the effective date of this ITP.

9.1.1. Project design costs for fish passage improvement at the existing U.S. 101 culverts on the North and South Forks of Ryan Creek, as well as implementation costs for the remediation work on the South Fork Ryan Creek crossing, estimated at **$4,000,000.00**;

9.1.2. Land acquisition costs for impacts to habitat, calculated at $7,800.00/acre for 1,486 acres: **$11,590,800.00**;

9.1.3. Costs of enhancing HM Lands, calculated at $4,590.40/acre for 1416 acres: $6,500,000.00; and $6,647.45/acre for 70 acres: $465,321.00 for a total enhancement cost of **$6,965,321.00;**

9.1.4. Endowment estimate, calculated at $8,075.37/acre for 1,486 acres: **$12,000,000.00**[4]**.**

9.2. Date of Acquisition of HM Lands. Permittee must complete the required acquisition, protection and transfer of all HM Lands and record the required conservation

[4] This figure represents an estimate of the total endowment principal. The actual endowment amount shall be based on a Property Analysis Record or equivalent analysis for individual HM Lands as described in Condition 7.4.4 of this ITP.

easements in favor of DFG within 18 months of the effective date of this ITP.

Amendment:
This ITP may be amended as provided by California Code of Regulations, Title 14, section 783.6, subdivision (c), and other applicable law. This ITP may also be amended without the concurrence of the Permittee as required by law, including if DFG determines that continued implementation of the Project under existing ITP conditions would jeopardize the continued existence of the Covered Species or that Project changes or changed biological conditions necessitate an ITP amendment to ensure that impacts to the Covered Species are minimized and fully mitigated.

Stop-Work Order:
DFG may issue Permittee a written stop-work order to suspend any activity covered by this ITP for an initial period of up to 25 days to prevent or remedy a violation of ITP conditions (including but not limited to failure to comply with reporting, monitoring, or habitat acquisition obligations) or to prevent the illegal take of an endangered, threatened, or candidate species. Permittee shall comply with the stop-work order immediately upon receipt thereof. DFG may extend a stop-work order under this provision for a period not to exceed 25 additional days, upon written notice to the Permittee. DFG shall commence the formal suspension process pursuant to California Code of Regulations, Title 14, section 783.7, within five working days of issuing a stop-work order.

Compliance with Other Laws:
This ITP contains DFG's requirements for the Project pursuant to CESA. This ITP does not necessarily create an entitlement to proceed with the Project. Permittee is responsible for complying with all other applicable state, federal, and local laws.

Notices:
The Permittee shall deliver the fully executed duplicate original ITP by first class mail or overnight delivery to the following address:

Habitat Conservation Planning Branch
California Department of Fish and Game
Attention: CESA Permitting Program
1416 Ninth Street, Suite 1260
Sacramento, CA 95814

Written notices, reports and other communications relating to this ITP shall be delivered to DFG by first class mail at the following addresses, or at addresses DFG may subsequently provide the Permittee. Notices, reports, and other communications shall reference the Project name, Permittee, and ITP Number (2081-2010-007-01) in a cover letter and on any other associated documents.

Original cover with attachment(s) to:

Mark C. Stopher, Acting Regional Manager
601 Locust Street
Redding, CA 96001
Telephone (530) 225-2275
Fax (530) 225-2381

Copy of cover without attachment(s) to:

Office of the General Counsel
California Department of Fish and Game
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

And:

Habitat Conservation Planning Branch
California Department of Fish and Game
1416 Ninth Street, Suite 1260
Sacramento, CA 95814

Unless Permittee is notified otherwise, DFG's Regional Representative for purposes of addressing issues that arise during implementation of the ITP is:

Craig Martz
601 Locust Street
Redding, CA 96001
Telephone (530) 225-2281
Fax (530) 225-0324

Compliance with CEQA:
DFG's issuance of the ITP is subject to the California Environmental Quality Act (CEQA). DFG is a responsible agency under CEQA with respect to the ITP because of prior environmental review of the Project by the California Department of Transportation as lead agency for the Project. (See generally Pub. Resources Code, §§ 21067, 21069.) The lead agency's prior environmental review of the Project is set forth in the October 2006 Final Environmental Impact Statement/Environmental Impact Report (SCH No. 1990030006) certified by the California Department of Transportation on December 15, 2006, and the Supplemental Environmental Impact Report certified by the California Department of Transportation on May 19, 2010. At the time the lead agency certified the EIR and Supplemental EIR and approved the Project it also adopted all mitigation measures described in the EIR and Supplemental EIR as Conditions of Project Approval.

In fulfilling its obligations as a responsible agency, DFG's obligations under CEQA are more limited than the lead agency. DFG, in particular, is responsible for considering only the effects of those activities involved in the Project which it is required by law to carry out or approve and mitigating or avoiding only the direct or indirect environmental effects of those parts of the Project which it decides to carry out, finance, or approve. (Pub. Resources Code, § 21002.1, subd. (d); CEQA Guidelines, §§ 15041, subd. (b), 15096, subds. (f)-(g).)[5] Because DFG's exercise of discretion is limited to issuance of the ITP, DFG is responsible under CEQA for considering only the environmental effects that fall within DFG's permitting authority under CESA.

This ITP, along with DFG's related CEQA findings that are available as a separate document, provide evidence of DFG's consideration of the lead agency's EIR and Supplemental EIR for the Project and the environmental effects related to issuance of the ITP. (CEQA Guidelines, § 15096, subd. (f).) DFG finds that issuance of the ITP will not result in any previously undisclosed potentially significant effects on the environment or a substantial increase in the severity of any potentially significant environmental effects previously disclosed by the lead agency. Furthermore, to the extent the potential for such effects on the Covered Species exists, DFG finds that adherence to and implementation of the conditions of Project approval adopted by the lead agency, as well as adherence to and implementation of the Conditions of Approval imposed by DFG through the issuance of this ITP, will avoid or reduce to below a level of significance any such potential effects. DFG consequently finds that issuance of the ITP will not result in any significant, adverse impacts on the environment.

Findings under CESA:
These findings are intended to document DFG's compliance with the specific findings requirements set forth in CESA and related regulations. (Fish & G. Code § 2081, subs. (b)-(c); Cal. Code Regs., tit. 14, §§ 783.4, subds, (a)-(b), 783.5, subd. (c)(2).)

DFG finds that issuance of this ITP complies and is consistent with the criteria governing the issuance of ITPs under CESA:

(1) Take of Covered Species as defined in the ITP will be incidental to the otherwise lawful activities covered under the ITP;

(2) Impacts of the taking of the Covered Species will be minimized and fully mitigated through the implementation of measures required by this ITP and as described in the MMRP. Measures include: (1) permanent habitat protection; (2) establishment of avoidance zones; (3) worker education; and (4) Monthly Compliance Reports. DFG evaluated the quality of the habitat on the Project site, the scope and extent of direct impacts, the scope and extent of indirect impacts, and other relevant information available to DFG or provided by the Permittee. Based on this evaluation, DFG

[5] The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

determined that the protection and management in perpetuity of 1,486 acres of compensatory habitat that is contiguous with other protected Covered Species habitat and/or is of higher quality than the habitat being destroyed by the Project, along with the minimization, monitoring, reporting, and funding requirements of this ITP fully mitigates the impacts of the taking caused by the Project;

(3) The take avoidance and mitigation measures required pursuant to the conditions of this ITP and its attachments are roughly proportional in extent to the impacts of the taking authorized by this ITP;

(4) The measures required by this ITP maintain Permittee's objectives to the greatest extent possible;

(5) All required measures are capable of successful implementation;

(6) The ITP is consistent with any regulations adopted pursuant to Fish and Game Code sections 2112 and 2114;

(7) Permittee has ensured adequate funding to implement the measures required by the ITP as well as for monitoring compliance with, and the effectiveness of, those measures for the Project; and

(8) Issuance of the ITP will not jeopardize the continued existence of the Covered Species based on the best scientific and other information reasonably available, and this finding includes consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (a) known population trends; (b) known threats to the species; and (c) reasonably foreseeable impacts on the species from other related projects and activities. Moreover, DFG's finding is based, in part, on DFG's express authority to amend the terms and conditions of the ITP without concurrence of the Permittee as necessary to avoid jeopardy and as required by law.

Attachments:

FIGURE 1	Project Location
FIGURE 1-2a	Overview of Project Features
ATTACHMENT 1	Mitigation Monitoring and Reporting Program
ATTACHMENT 2	Habitat Management Land Acquisition Checklist

ISSUED BY THE CALIFORNIA DEPARTMENT OF FISH AND GAME

on 7/9/2010.

Mark C. Stopher
Acting Regional Manager
NORTHERN REGION

ACKNOWLEDGMENT

The undersigned: 1) warrants that he or she is acting as a duly authorized representative of the Permittee, 2) acknowledges receipt of this ITP, and 3) agrees on behalf of the Permittee to comply with all terms and conditions of the ITP.

By: _____ Date: 7/14/2010

Printed Name: David G. Kelley Title: Project Manager

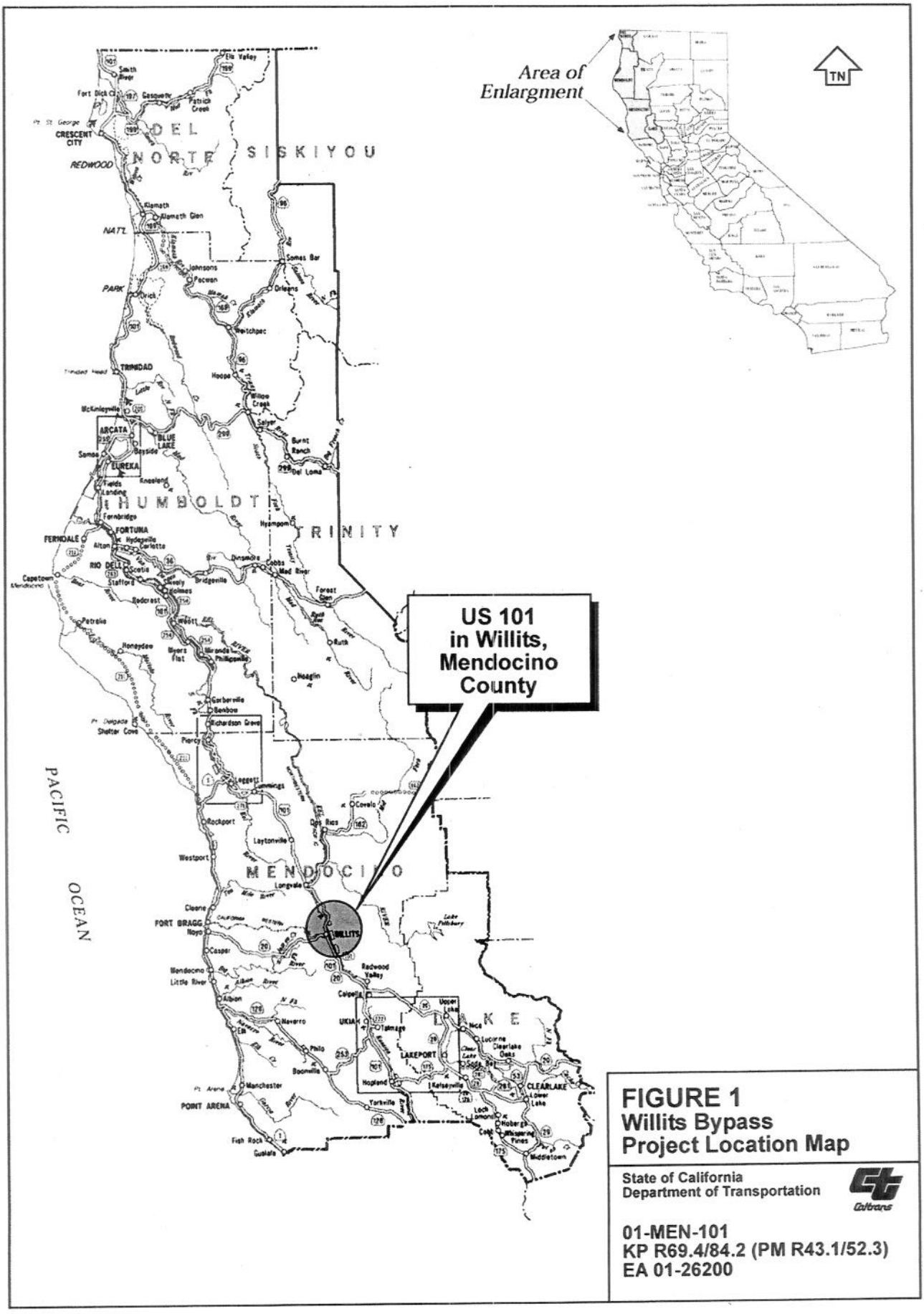

FIGURE 1
Willits Bypass Project Location Map

State of California
Department of Transportation

Caltrans

01-MEN-101
KP R69.4/84.2 (PM R43.1/52.3)
EA 01-26200

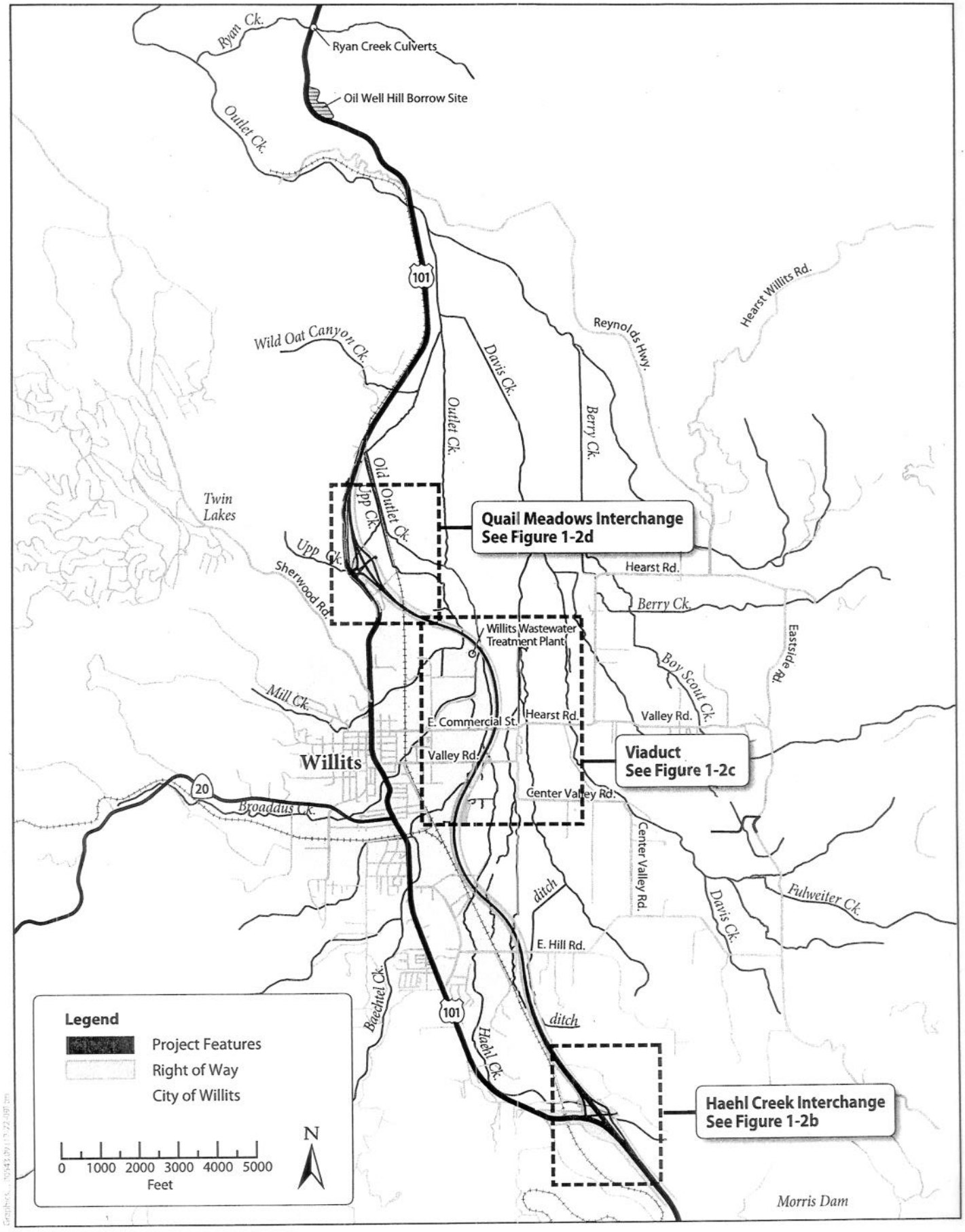

Figure 1-2a
Project Features—Overview Phase 1

Attachment 1

CALIFORNIA DEPARTMENT OF FISH AND GAME
MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)
CALIFORNIA ENDANGERED SPECIES ACT

INCIDENTAL TAKE PERMIT NO. 2081-2010-007-01

PERMITTEE: **California Department of Transportation**

PROJECT: **Willits Bypass Project**

PURPOSE OF THE MMRP

The purpose of the MMRP is to ensure that the impact minimization and mitigation measures required by the Department of Fish and Game (DFG) for the above-referenced Project are properly implemented, and thereby to ensure compliance with section 2081(b) of the Fish and Game Code and section 21081.6 of the Public Resources Code. A table summarizing the mitigation measures required by DFG is attached. This table is a tool for use in monitoring and reporting on implementation of mitigation measures, but the descriptions in the table do not supersede the mitigation measures set forth in the California Incidental Take Permit (ITP) and in attachments to the ITP, and the omission of a ITP requirement from the attached table does not relieve the Permittee of the obligation to ensure the requirement is performed.

OBLIGATIONS OF PERMITTEE

Mitigation measures must be implemented within the time periods indicated in the table that appears below. Permittee has the primary responsibility for monitoring compliance of all mitigation measures and for reporting to DFG on the progress in implementing those measures. These monitoring and reporting requirements are set forth in the ITP itself and are summarized at the front of the attached table.

VERIFICATION OF COMPLIANCE, EFFECTIVENESS

DFG may, at its sole discretion, verify compliance with any mitigation measure or independently assess the effectiveness of any mitigation measure.

TABLE OF MITIGATION MEASURES

The following items are identified for each mitigation measure: Mitigation Measure, Source, Implementation Schedule, Responsible Party, and Status/Date/Initials. The Mitigation Measure column summarizes the mitigation requirements of the ITP. The Source column identifies the ITP condition that sets forth the mitigation measure. The Implementation Schedule column shows the date or phase when each mitigation measure will be implemented. The Responsible Party column identifies the person or agency that is primarily responsible for implementing the mitigation measure. The Status/Date/Initials column shall be completed by the Permittee during preparation of each Status Report and the Final Mitigation Report, and must identify the implementation status of each mitigation measure, the date that status was determined, and the initials of the person determining the status.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
BEFORE DISTURBING SOIL OR VEGETATION					
1	Mitigation and Monitoring Proposal. Permittee shall implement and adhere to the mitigation measures related to the Covered Species in the Willits Bypass Project Final Mitigation and Monitoring Proposal (MMP) dated June 8, 2010, and any revisions to the MMP subsequently approved by DFG. Prior to initiating channel-, vegetation-, or ground-disturbing activities, and no later than December 31, 2010, Permittee shall submit a detailed mitigation plan to DFG for review and approval that will be incorporated into the MMP. The plan shall include (1) a detailed description of the baseline condition of each parcel of habitat mitigation (HM) Lands acquired to offset impacts to the Covered Species, (2) a detailed description of the measures that will be used to restore and enhance the ecological functions of the HM Lands, including final design and planting details for habitat creation, revegetation, and enhancement actions, (3) a discussion of the parameters that will be monitored to determine changes in ecological functions, including the frequency of monitoring, methods that will be used, and criteria used to determine success, (4) an adaptive management plan to be implemented in the event that expected results are not achieved, and (5) a long-term plan for managing and maintaining the HM lands after success criteria have been met.	ITP Condition #5.1	Before commencing channel- vegetation- or ground-disturbing activities and no later than December 31, 2010	Permittee	
2	Designated Representative. Before initiating channel-, ground-, or vegetation-disturbing Project activities, Permittee shall designate a representative (Designated Representative) responsible for communications with DFG and overseeing compliance with this ITP. The Permittee shall notify DFG in writing prior to commencement of channel-, ground-, or vegetation-disturbing activities of the Designated Representative's name, business address, and contact information, and shall notify DFG in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.	ITP Condition # 5.2	Before commencing channel- ground- or vegetation-disturbing activities/ Entire Project	Permittee	
3	Designated Biologist. At least 30 days before initiating channel-, ground-, or vegetation-disturbing activities, Permittee shall submit to DFG in writing the name, qualifications, business address, and contact information for a biological monitor (Designated Biologist). The Designated Biologist shall be knowledgeable and experienced in the biology and natural history of the Covered Species. The Designated Biologist shall be responsible for monitoring Project activities and/or channel-, ground-, or vegetation-disturbing activities in areas of Covered Species' habitat to help minimize or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain DFG approval of the Designated Biologist prior to the commencement of Project-related activities that may result in the incidental take of the Covered Species.	ITP Condition # 5.3	At least 30 days before commencing ground- or vegetation-disturbing activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
4	Education Program. Permittee shall conduct an education program for all persons employed or otherwise working on the Project site prior to performing any work on-site. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status under CESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to their performing work on-site. Copies of this ITP shall be maintained at the worksite. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry on-site. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and be available to DFG upon request.	ITP Condition # 5.5	Before commencing ground- or vegetation-disturbing activities / Entire Project	Permittee	
5	Firearms and Dogs: Permittee shall prohibit firearms and domestic dogs from the Project site and site access routes during Project activities and development of the Project, except those in the possession of authorized security personnel or local, State, or Federal law enforcement officials.	ITP Condition # 5.6	Before commencing ground- or vegetation-disturbing activities / Entire Project	Permittee	
6	Delineation of Property Boundaries: Prior to initiating channel-, ground-, or vegetation-disturbing Project activities along each part of the route in active construction, Permittee shall clearly delineate right-of-way and/or property boundaries of the current Project work area or areas with fencing, stakes or flags and shall similarly delineate the limits of Project activities. Permittee shall restrict all project activities to within the fenced, staked or flagged areas. Permittee shall maintain all fencing, stakes and flags until the completion of Project activities in that area.	ITP Condition # 5.7	Before commencing ground- or vegetation-disturbing activities / Entire Project	Permittee	
7	Delineation of Habitat. Permittee shall clearly delineate habitat of the Covered Species on the Project site with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize the disturbance of Covered Species' habitat. Permittee shall designate Covered Species habitat adjacent to the work area as Environmentally Sensitive Areas (ESAs) on the construction plans and construction personnel and equipment shall not enter these areas. Permittee shall install ESA fencing prior to initiating vegetation clearing operations. The location of all ESA fencing shall be inspected and approved by DFG prior to vegetation removal.	ITP Condition # 5.8	Before commencing ground- or vegetation-disturbing activities / Entire Project	Permittee	
8	Notification Prior to Commencement. Permittee shall notify DFG 14 calendar days before initiating channel-, ground-, or vegetation-disturbing activities and shall document compliance with all pre-Project Conditions of Approval before initiating channel-, ground-, or vegetation-disturbing activities.	ITP Condition # 6.1	Before commencing ground- or vegetation-disturbing activities	Permittee	
9	Grass Population Study. Prior to initiating vegetation- or ground-disturbing activities, Permittee shall fund a two-year study of North Coast semaphore grass populations in the Little Lake Valley with the goal of characterizing ecological requirements for the species. The study shall investigate the soils, hydrology, and associated species at sites occupied by North Coast semaphore grass and at adjacent, unoccupied sites to identify potentially suitable areas for plant establishment, guide future management of HM Lands and determine the potential for expanding current populations.	ITP Condition # 7.10	Before commencing ground- or vegetation-disturbing activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
10	Grass Seed Collection. Prior to initiating vegetation- or ground-disturbing activities, Permittee shall harvest mature North Coast semaphore grass seed from the area that will be directly impacted by construction. Seed shall be collected at the appropriate time of year by a botanist with a valid DFG scientific collecting permit that covers the species, or a MOU with DFG authorizing seed collection for the Project. If the property is being grazed during the growing season prior to collection, Permittee shall install temporary fencing to exclude cattle from the population.	ITP Condition # 7.11	Before commencing ground- or vegetation-disturbing activities	Permittee	
11	Grass Curation and Propagation. Permittee shall sponsor the permanent curation of a portion of the collected seed by an organization participating in the Center for Plant Conservation's National Collection of Endangered Plants. Permittee shall contract with a qualified native plant nursery to propagate the remaining seed for outplanting as container stock within suitable, protected habitat adjacent to the impacted population.	ITP Condition # 7.12	Before commencing ground- or vegetation-disturbing activities	Permittee	
12	Grass Population Maintenance. In consultation with DFG and a qualified botanist, Permittee shall develop a maintenance prescription for the right-of-way that is compatible with the ecological requirements of North Coast semaphore grass. The prescription shall specify mowing schedules and restrict incompatible activities such as blading or herbicide application. Permittee shall ensure that local maintenance personnel understand and implement the management prescription for this section of right-of-way.	ITP Condition # 7.16	Before commencing ground- or vegetation-disturbing activities	Permittee	
13	HM Lands Acquisition and Management. Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of this ITP if security is provided pursuant to Condition 9, Permittee shall acquire and permanently preserve 1,486 acres of HM Lands for the Covered Species identified in the final MMP. Of this total, Permittee shall create 47.57 acres, enhance 48.51 acres, and preserve 100.40 acres of riparian habitat on approximately 1,416 acres of HM Lands to fully mitigate for the incidental taking of SONCC coho salmon that will occur as a result of the temporary and permanent habitat loss and mortality of individuals related to other Project activities. In addition, Permittee shall acquire, restore, and permanently preserve four extant populations of North Coast semaphore grass totaling 5.094 acres on an additional 70 acres of HM Lands to fully mitigate for the incidental taking of North Coast semaphore grass that will occur as a result of Project activities. A restoration and management plan for the HM Lands shall be prepared and submitted to DFG for approval within 18 months after the issuance of this ITP. The plan shall specify vegetation management actions and enhancement measures designed to result in a net expansion of existing North Coast semaphore grass populations on the HM Lands. DFG estimates that acquisition of appropriate HM Lands to mitigate for impacts to Covered Species will cost approximately $7,800/acre for 1,486 acres for a total of approximately $11,590,800.00.	ITP Condition # 8.4	Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of the ITP	Permittee	
14	Transfer fee title to the HM Lands to the Mendocino County Resource Conservation District (MCRCD) or another entity under terms approved by DFG. If fee title is held by an entity other than DFG, a conservation easement in a form approved by DFG shall be recorded on title of the HM Lands. The grantee of the conservation easement may be DFG, a DFG-approved non-profit organization qualified pursuant to California Government Code section 65965, or a public agency approved by DFG and authorized to hold conservation easements. If a DFG-approved non-profit organization or approved public agency is grantee on a conservation easement, DFG shall be named third party beneficiary;	ITP Condition # 8.4.1	Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of the ITP	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
15	Permittee shall provide a recent preliminary title report, initial hazardous materials survey report, and other necessary documents specified in Attachment 2 and/or requested by the DFG Regional Representative. The Permittee shall be responsible for all costs associated with obtaining and providing the required documents. All documents conveying the HM Lands and all conditions of title are subject to the approval of DFG, the Wildlife Conservation Board and if applicable, the Department of General Services.	ITP Condition # 8.4.2	Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of the ITP	Permittee	
16	Permittee shall provide for the initial protection and enhancement of HM Lands as described in the final MMP. DFG estimates that initial protection and enhancement will cost approximately $4,590.40/acre for 1,416 acres of HM Lands for SONCC coho salmon, for a total of $6,500,000.00. Additionally, DFG estimates that initial protection and enhancement will cost approximately $6,647.45/acre for 70 acres of HM Lands for North Coast semaphore grass, for a total of $465,321.00. Total initial protection and enhancement costs are estimated at $6,965,321.00.	ITP Condition # 8.4.3	Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of the ITP	Permittee	
17	Permittee shall provide for the perpetual management of the HM Lands to benefit the Covered Species by doing the following: Conduct a Property Analysis Record (PAR) or equivalent analysis for the HM Lands that have been identified to determine the appropriate endowment amount to fund the in-perpetuity management of the 1,486 acres of required HM Lands. Permittee shall provide the required endowment to DFG after DFG reviews and approves the PAR. Permittee shall demonstrate that sufficient funds have been allocated for the endowment as described in Condition 9 below. Interest from the endowment amount shall be available for reinvestment in the principal and for the long term operation, management, and protection of the HM Lands, including reasonable administrative overhead, biological monitoring, improvements to biological carrying capacity, law enforcement measures, and any other action designed to protect or improve the habitat values of the HM Lands. Monies received by DFG pursuant to this Condition shall be deposited in a special deposit account established pursuant to Fish and Game Code section 13014. DFG may pool the endowment with other endowments for the operation, management and protection of HM Lands for local populations of the Covered Species. Endowment funds provided as described above may alternatively be held by a DFG-approved non-profit organization qualified to hold endowment funds;	ITP Conditions # 8.4.4	Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of the ITP	Permittee	
18	Permittee shall reimburse DFG for reasonable expenses incurred during title and documentation review, expenses incurred from other state agency reviews, and overhead related to transfer of HM Lands to DFG. DFG estimates that this Project will create an additional cost to DFG of no more than $3,000 for every fee title deed or easement processed.	ITP Condition # 8.4.5	Prior to initiating channel- ground- or vegetation-disturbing Project activities, or no later than 18 months from the effective date of the ITP	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
18	Funding Assurance. Permittee may proceed with channel-, ground-, or vegetation-disturbing activities before completing all of the mitigation, monitoring and reporting activities required in the Conditions of Approval of this ITP only if Permittee ensures funding to complete those activities by providing to DFG, prior to commencing ground- or vegetation disturbing activities or within 30 days after the effective date of this ITP, whichever occurs first, written documentation that the Permittee has allocated sufficient funds, acceptable to and approved by DFG, in the Expenditure Authorization for the Project to ensure implementation of the Conditions of Approval of this ITP. The written documentation shall identify and display in itemized form, at a minimum, the following estimated costs of implementing the ITP's mitigation, monitoring, and reporting requirements, which total $34,556,121.00. The written documentation submitted by the Permittee to satisfy this Condition shall be on official letterhead and signed by both the District Deputy Director of Project Management and the District Deputy Director of Environment, and shall include a statement that the funds identified have been allocated specifically for the purpose of fulfilling the Permittee's mitigation obligations associated with this ITP and will not be redirected for other Project purposes. Even if the Funding Assurance is provided, Permittee must complete the required acquisition, protection and transfer of all HM Lands and record the required conservation easements pursuant to Condition 8.4.1 within 18 months of the effective date of this ITP. Project design costs for fish passage improvement at the existing U.S. 101 culverts on the North and South Forks of Ryan Creek, as well as implementation costs for the remediation work on the South Fork Ryan Creek crossing, estimated at $4,000,000.00; Land acquisition costs for impacts to habitat, calculated at $7,800.00/acre for 1,486 acres: $11,590,800.00; Costs of enhancing HM Lands, calculated at $4,590.40/acre for 1416 acres: $6,500,000.00; and $6,647.45/acre for 70 acres: $465,321.00 for a total enhancement cost of $6,965,321.00; Endowment estimate, calculated at $8,075.37/acre for 1,486 acres: $12,000,000.00. Date of Acquisition of HM Lands. Permittee must complete the required acquisition, protection and transfer of all HM Lands and record the required conservation easements in favor of DFG within 18 months of the effective date of this ITP.	ITP Condition # 9.1 and # 9.2	Prior to initiating channel- ground- or vegetation-disturbing Project activities.	Permittee	
DURING CONSTRUCTION					
19	Designated Biologist Authority. To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist shall have authority to immediately stop any activity that is not in compliance with this ITP, and/or to order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species or fully protected species. Neither the Designated Biologist nor DFG shall be liable for any costs incurred in complying with the Conditions of Approval, including cease-work orders issued by DFG.	ITP Condition # 5.4	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
	Project Site Access. Project-related personnel shall access the Project site during Project activities using existing designated routes and shall not cross Covered Species' habitat outside of or en route to the Project site. Project-related vehicle traffic shall be restricted to established roads, staging, and parking areas. If Permittee determines construction of off-site routes for travel are necessary, Permittee shall contact DFG prior to carrying out such an activity. Construction of off-site routes for travel may require an amendment to this ITP if take of Covered Species incidental to such construction may occur.	ITP Condition # 5.9	Entire Project	Permittee	
	Staging Areas. Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project site using, to the extent possible, previously disturbed areas. Additionally, Permittee shall not use or cross Covered Species' habitat outside of the marked Project boundaries unless specifically provided for in Condition 5.9 of this ITP. Staging of construction materials and equipment shall not occur within the regulatory floodway.	ITP Condition # 5.10	Entire Project	Permittee	
20	Flood Events. Permittee shall design and construct temporary bridges and other structures in the channel to pass the 100-year flood event. Permittee shall remove structures and materials not designed to withstand high flows from the channel prior to October 15.	ITP Condition # 5.11	Entire Project	Permittee	
	Hazardous Waste. Permittee shall immediately stop/repair and clean up any leaks or spills of fuel, lubricants, or other materials that may be deleterious to fish, plant, or wildlife during Project activities at the time of occurrence. Permittee shall confine the storage and handling of hazardous materials to designated staging and refueling areas and shall properly contain and dispose of any unused or leftover hazardous products off-site.	ITP Condition # 5.12	Entire Project	Permittee	
21	Vehicle Inspection. Permittee shall ensure that vehicles and equipment operated within or adjacent to the stream channel are free of oil or petroleum residues and are inspected and maintained on a daily basis to prevent leaks of materials that could be deleterious to aquatic life, wildlife, or riparian vegetation.	ITP Condition # 5.13	Entire Project	Permittee	
22	DFG Access. Permittee shall provide DFG staff with reasonable access to the Project site and mitigation lands under Permittee control, and shall otherwise fully cooperate with DFG efforts to verify compliance with or effectiveness of mitigation measures set forth in the ITP.	ITP Condition # 5.14	Entire Project	Permittee	
23	Notification of Non-compliance. Permittee shall immediately notify DFG in writing if it determines that it is not in compliance with any Condition of Approval of this ITP, including, but not limited to, any actual or anticipated failure to implement mitigation measures within the time periods indicated in this ITP and/or the MMRP. Permittee shall report any non-compliance with the ITP during Project activities to DFG within 24 hours.	ITP Condition # 6.2	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
24	Compliance Monitoring. The Designated Biologist shall be on-site daily while Project activities, including all pile installation, dewatering, channel-, vegetation-, or ground-disturbing activities that may affect Covered Species are taking place to: (1) minimize incidental take of the Covered Species; (2) check for compliance with all mitigation and avoidance measures; (3) check all exclusion zones; and (4) ensure that signs, stakes, and fencing are intact, and that human activities are restricted outside of these protective zones. The Designated Representative or Designated Biologist shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species, survey results, and monitoring activities required by this ITP. The Designated Biologist shall conduct compliance inspections a minimum of once per month during periods of inactivity and after clearing, grubbing, and grading are completed.	ITP Condition # 6.3	Entire Project	Permittee	
25	Quarterly Compliance Report. Permittee shall compile the observation and inspection records identified in Condition 6.3 into a Quarterly Compliance Report and submit it to DFG along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Quarterly Compliance Reports shall be submitted to DFG's Regional Office at the address listed in the Notices section of this ITP or via e-mail to DFG's Regional Representative. At the time of this ITP's approval, the DFG Regional Representative is Staff Environmental Scientist, Craig Martz (email address: cmartz@dfg.ca.gov). DFG may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If DFG determines the reporting schedule is inadequate, DFG will notify Permittee by letter of the new reporting schedule.	ITP Condition # 6.4	Entire Project	Permittee	
26	Annual Status Report. Permittee shall provide DFG with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of the ITP and continuing until DFG accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all Quarterly Compliance Reports identified in Condition 6.4, (2) a general description of the status of the Project site and Project activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; and (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and mitigating Project impacts on the Covered Species.	ITP Condition # 6.5	Entire Project	Permittee	
27	Notification of Species Mortality. If any SONCC coho salmon are killed by a Project-related activity, or if any SONCC coho salmon are otherwise found dead within the Project site, Permittee shall immediately notify the Designated Biologist. The Designated Biologist or Designated Representative shall provide initial notification to DFG by calling the Regional Office at (530) 225-2300. The initial notification to DFG shall include information regarding the location, species, number of animals injured or killed, and the ITP Number. Following initial notification, Permittee shall send DFG a written report within 2 calendar days. The report shall include the date and time of the finding or incident, location of the carcass, and if possible provide a photograph, explanation as to cause of death, and any other pertinent information.	ITP Condition # 6.7	Entire Project	Permittee	
28	Work in Streams. Permittee shall confine all construction work within the bed, channel, or banks of any stream to the period of June 15 through October 15. If the stream is dry, and advance written approval is obtained from DFG, then Permittee may conduct work outside of the June 15 through October 15 construction window.	ITP Condition # 7.1	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
29	Removal of Riparian Vegetation. Notwithstanding Condition 7.1 above, Permittee shall ensure that removal of above-ground riparian vegetation from the stream banks only occurs between September 1 and January 31 of any year to avoid impacts to migratory birds. Permittee shall remove all cleared material/vegetation from the riparian/stream zone and dispose of it properly. Permittee shall ensure that disturbance or removal of riparian vegetation does not exceed the minimum necessary to complete construction. Where feasible, hand tools (chain saws, etc.) shall be used to trim vegetation to the extent necessary to gain access to work sites. Whenever possible, root systems shall be left intact to facilitate more rapid recovery following temporary construction impacts.	ITP Condition # 7.2	Entire Project	Permittee	
30	Pile Driving. Permittee shall confine all pile driving activities, including installation of sheet piles, temporary and permanent piles located within the channel or below the top of bank, to the period between June 15 through October 15. Permittee shall also confine installation of permanent bridge or viaduct piles within 50 feet of the channel to the period between June 15 through October 15. Contingent on the results of hydroacoustic monitoring, the Permittee may install permanent bridge or viaduct piles within 50 feet of the channel outside this work window provided a written request is made to DFG. Written approval from DFG for the work window variance must be received by the Permittee prior to the start or continuation of work outside the June 15 through October 15 work window.	ITP Condition # 7.3	Entire Project	Permittee	
31	Hydroacoustic Monitoring. If surface water is present within the channel, Permittee shall conduct hydroacoustic monitoring to document peak sound pressure levels and cumulative sound exposure levels during all permanent pile driving activities in the channel or within 50 feet of the channel. Permittee shall also monitor the driving of temporary trestle and falsework piles below the top of bank. If underwater sound pressure levels for each pile type and size do not vary to a large degree, the Permittee may request written approval from DFG to discontinue hydroacoustic monitoring. Permittee shall submit a Hydroacoustic Monitoring Plan for review and approval by DFG no later than March 15, 2011.	ITP Condition # 7.4	Entire Project	Permittee	
32	Coffer Dams. Permittee shall contain permanent pile driving activities in the stream channel within coffer dams. A bubble curtain or other approved attenuation device shall be used to reduce sound exposure levels.	ITP Condition # 7.5	Entire Project	Permittee	
33	Fish Capture. Prior to conducting temporary or permanent pile driving activities within the channel, or within 50 feet of the channel, Permittee shall exclude, remove and relocate fish from coffer dams and those portions of the stream where cumulative sound exposure levels (SELCumulative) are predicted to exceed the interim injury criteria of 183 dB. Permittee shall use one or more of the following NMFS-approved methods to capture SONCC coho and other salmonids: dip net, seine, throw net, or electrofishing.	ITP Condition # 7.6	Entire Project	Permittee	
34	Stream Dewatering. If pile driving activities are expected to exceed interim $SEL_{Cumulative}$ threshold levels for more than two consecutive days, Permittee shall dewater the affected stream reach in lieu of using block nets to exclude fish. During dewatering, Permittee shall incrementally divert flows in the affected reach to facilitate fish capture and relocation. Flows shall be reduced over a minimum 4-hour period in the following increments: 50%, 75%, 90%, and 100%.	ITP Condition # 7.7	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
35	Fish Relocation. Fish relocation activities shall be overseen by the Designated Biologist and shall be conducted by qualified fisheries biologists that are authorized by NMFS and DFG to handle listed salmonids. Captured fish shall be segregated by size to minimize predation, and maintained in cool, well-oxygenated water until released to suitable habitat outside the construction impact area.	ITP Condition # 7.8	Entire Project	Permittee	
36	Fish Passage. Permittee shall ensure that installation of permanent culverts, bridges, grade control structures, instream habitat enhancement features, and other channel modifications do not impede the passage of fish up or down stream. Permittee shall submit detailed designs for work within the stream channel to DFG for review and approval no later than August 1, 2010.	ITP Condition # 7.9	Entire Project	Permittee	
37	Grass Relocation. Permittee shall salvage mature North Coast semaphore grass plants and/or rhizomes from the permanent impact area and relocate them to suitable, protected habitat adjacent to the impact area. Plants and/or rhizomes shall be transplanted by a qualified botanist in the late fall or early winter after soils have been moistened by the first seasonal rains. Permittee shall monitor the transplants, container stock, and adjacent natural plants within the population for a minimum period of 10 years following planting.	ITP Condition # 7.13	Entire Project	Permittee	
38	Surface Hydrology. Permittee shall maintain the existing surface hydrology of the remaining North Coast semaphore grass population within the Project right-of-way to the greatest extent possible by (1) installing two culverts to convey surface flows through the roadway embankment and (2) capturing roadway runoff and preventing it from discharging into adjacent occupied habitat.	ITP Condition # 7.14	Entire Project	Permittee	
39	Grass Population Protection. Permittee shall provide for the long-term protection of the remaining population of North Coast semaphore grass within the Project right-of-way and shall add the location to the current database of Environmentally Sensitive Areas (ESAs) in Caltrans District 1. ESA paddles will be installed within the right-of-way to alert maintenance personnel and protect the population from inadvertent disturbance.	ITP Condition # 7.15	Entire Project	Permittee	
40	Fish Barrier Removal Plan. In consultation with DFG, Permittee shall prepare draft and final designs for a project to remediate existing barriers to fish passage at the South Fork (PM 52.25) and North Fork (PM 52.36) Ryan Creek culverts on U.S. 101. Draft plans for both crossings shall be submitted to DFG for review no later than June 30, 2011. Final plans shall be prepared and submitted to DFG for approval no later than June 30, 2012.	ITP Condition # 8.1	See Condition	Permittee	
42	Fish Barrier Removal Completion. Permittee shall complete construction of the South Fork Ryan Creek culvert remediation project no later than October 31, 2013.	ITP Condition # 8.2	No later than October 31, 2013	Permittee	
43	Fish Barrier Removal Funding. Permittee shall prepare cost estimates for the passage improvement work on the North Fork Ryan Creek culvert based on the final design prepared under Condition 8.1 above and shall apply for funding to complete this work in a timely manner.	ITP Condition # 8.3	No later than June 30, 2012	Permittee	
POST-CONSTRUCTION					
44	Refuse Removal. Upon completion of Project activities, Permittee shall remove from the Project site and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.	ITP Condition # 5.15	Post-construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
	Final Mitigation Report. No later than 60 days after completion of the Project, including completion of all mitigation measures, Permittee shall provide DFG with a Final Mitigation Report. The Final Mitigation Report shall be prepared by the Designated Biologist and shall include, at a minimum: (1) a summary of all Monthly/Quarterly Compliance Reports and all ASRs, (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) dates of Project activities; (6) an assessment of the effectiveness of the ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.	ITP Condition # 6.6	Post-construction	Permittee	

ATTACHMENT 2A

DEPARTMENT OF FISH AND GAME

HABITAT MANAGEMENT LAND ACQUISITION PACKAGE CHECKLIST FOR PROJECT APPLICANTS

The following checklist is provided to inform you of what documents are necessary to expedite Department processing of your Habitat Management Land acquisition proposal. Any land acquisition processing requests which are incomplete when received, will be returned. The Region contact will review and approve the document package and forward it to the Habitat Conservation Planning Branch Senior Land Agent with a request to process the land acquisition for formal acceptance.

To: _____
Regional Manager, Region Name

From: _____
Project Applicant

Phone: _____

Tracking #: _____
CDFG assigned permit or agreement #

Project Name: _____

Enclosed is the complete package for the ☐ Conservation Easement OR ☐ Grant Deed

Documents in this package include:

☐ Fully executed, approved as to form Conservation Easement Deed or Grant Deed.

Date executed: _____

☐ Proposed Lands for Acquisition Form (PLFAF)

☐ Phase I Environmental Site Assessment Report Date on report: _____
(An existing report may be used, but it must be less than two years old.)

☐ Preliminary Title Report(s) for subject property is enclosed and has been reviewed for encumbrances and other easements. The title report must be less than six months old when final processing is conducted.

Included are additional documents:

- ☐ document(s) to support title exceptions
- ☐ document(s) to explain title encumbrances
- ☐ a plot or map of easements/encumbrances on the property

☐ Policy of Title Insurance (an existing title policy is not acceptable)

☐ County Assessor Parcel Map(s) for subject property

☐ Site Location Map (Site location with property boundaries outline on a USGS 1:24,000 scale topo)

☐ Final Permit or Agreement (or other appropriate instrument)

Type of agreement: ☐ Bank Agreement ☐ Mitigation Agreement

☐ Permit _____ Other: _____
(write in type of permit)

☐ Final Management Plan (if required prior to finalizing permit or agreement or if this package is for a Grant Deed)

☐ Biological Resources Report

☐ Draft Summary of Transactions ☐ hard copy ☐ electronic copy (both are required)

PROPOSED LANDS FOR ACQUISITION FORM ("PLFAF")

Date: _____

TO: Regional Representative
_____
_____
_____
Facsimile:

FROM:_____
_____
_____
_____

Applicant proposes that the following parcel of land be considered for approval by the Department as suitable for purposes of habitat management lands to replace the adverse environmental impacts of the Project:

Section	Township	Range	Number of Acres
_____	_____	_____	_____

Current Legal Owner(s), include Parcel Number(s):
_____
_____
_____

Location of Parcel:
_____
_____
_____
_____
_____

APPROVED ___ By:_____ DATE:_____
REJECTED ___ _____
Region

Explanation:_____
_____
_____

California Regional Water Quality Control Board
North Coast Region
Geoffrey M. Hales, Chairman

www.waterboards.ca.gov/northcoast
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
Phone: (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135

Linda S. Adams
Secretary for Environmental Protection

Arnold Schwarzenegger
Governor

August 6, 2010

In the Matter of

Water Quality Certification

for the

California Department of Transportation
Highway 101 – Willits Bypass Project:
WDID No. 1B10019WNME

APPLICANT:	California Department of Transportation
RECEIVING WATER:	Wetlands and Haehl Creek, Baechtel Creek, Broaddus Creek, Mill Creek, Outlet Creek, Upp Creek, and Ryan Creek
HYDROLOGIC AREA:	Eel River Hydrologic Unit (HU) No.111.00 Outlet Creek Hydrologic Sub-Area (HSA) No. 111.61
COUNTY:	Mendocino
FILE NAME:	CDOT - Hwy 101, Willits Bypass Project

BY THE EXECUTIVE OFFICER:

1. On March 1, 2010, the North Coast Regional Water Quality Control Board (Regional Water Board) received an application and $40,000.00 fee from the California Department of Transportation (Caltrans), requesting federal Clean Water Act (CWA), section 401, Water Quality Certification for activities related to the proposed first phase of the Highway 101, Willits Bypass project (project). The proposed project will cause disturbances to waters of the United States (U.S.) and waters of the State, including wetlands and intermittent, ephemeral and perennial tributaries to Outlet Creek, which is located within the Eel River Hydrologic Unit No.111.00, the Outlet Creek Hydrologic Sub-Area (HSA) No. 111.61, and the Little Lake Valley Ground Water Basin. The Regional Water Board is proposing to

regulate this project pursuant to Section 401 of the CWA (33 USC 1341) and/or Porter-Cologne Water Quality Control Act authority.

2. The Regional Water Board provided public notice of the application pursuant to title 23, California Code of Regulations, section 3858 on April 29, 2010, and posted information describing the project on the Regional Water Board's website. Regional Water Board staff received letters from 75 individuals or groups in response to the subject notice of Water Quality Certification and Waste Discharge Requirements. Of those 75, 27 were in favor of the proposed project, while 48 raised various objections. Because many of the same comments were described in different letters, Regional Water Board staff grouped comments together where appropriate, and provided one response. The Regional Water Board has issued a response to comments concurrently with this Order, and is included as Attachment 1.

3. The proposed project is located on Highway 101, in Mendocino County, and will begin approximately 0.8 mile south of the Haehl Overhead and end approximately 1.9 miles south of the Reynolds Highway. The overall length of the bypass is approximately 5.9 miles from post mile realignment (PMR) 43.1 and ending near PMR 49.0. The purpose of the project is to upgrade the level of service to the traveling public along Highway 101 by reducing travel times and reducing the traffic congestion along Highway 101 and within the City of Willits. Beginning at the southern end of the project, the new alignment of Highway 101 would swing to the northeast and then travel back to the northwest, adjacent to the Willits Wastewater Treatment Plant (WWTP). Because of funding constraints, the decision was made to construct the bypass in two phases such that a functional interim two-lane facility would be constructed initially; when adequate funding becomes available in the future, the remaining lanes will be constructed to complete the four-lane bypass. This Water Quality Certification is for Phase I only.

Project Description

4. The proposed project will be constructed largely on fill material imported to the site. The bypass requires imported borrow material from outside the project area in addition to material excavated on-site. The area from which Caltrans proposes that the contractor will take fill material for the project is at Oil Well Hill, which is located on the east side of Highway 101, approximately 0.85 mile north of the intersection of Reynolds Highway and Highway 101. The State Geology and Mining Board granted an exception to the Surface Mining and Reclamation Act (SMARA) permitting requirement on March 13, 2008 for obtaining the fill material from Oil Well Hill. The construction contractor will have the option to determine whether the source of fill material for the project will be from the Caltrans-designated borrow site at Oil Well Hill, a commercial borrow site, or another site. If

the contractor chooses to use available commercial borrow sites in the vicinity of the project to obtain the required fill, it will likely not need to obtain any additional environmental permitting when soil is exported, because commercial borrow sites typically hold preapproved operating permits. Should the contractor select an alternative, noncommercial borrow site for this project, the contractor will be responsible for obtaining proper approvals.

5. The following structures will be constructed during the project:
   - Two interchanges will be constructed for the project. The Haehl Creek interchange will be located at the south end of the project near Haehl Creek and connect the existing highway into Willits with the new highway facility. The Quail Meadows interchange will be located near the north end of Little Lake Valley and connect the new highway facility to the existing highway north of Willits.
   - The bypass will cross multiple creeks, riparian corridors, streets, and railroad rights-of-way using 22 bridges, three retaining walls, and a one mile long viaduct that will span the regulated floodway.
   - Six bridges will be constructed in the Haehl Creek interchange area, one for each of the following:
     1. Northbound freeway lanes separation over State Route (SR) 20
     2. Southbound freeway lanes separation over SR 20
     3. Southbound off-ramp over Haehl Creek
     4. Northbound on-ramp over Haehl Creek
     5. Northbound freeway lanes over Haehl Creek
     6. Southbound freeway lanes over Haehl Creek

   - A culvert will be replaced during improvement of the proposed new Schmidbauer Ranch access road.

   - Two retaining walls will be constructed in the Haehl Creek interchange area adjacent to Haehl Creek:
     1. East side of northbound lanes
     2. West side of northbound on-ramp

   - One retaining wall will be constructed on the west side of the southbound roadway lanes, just south of Center Valley Road.

   - Two bridges will be constructed to cross East Hill Road:
     1. One bridge for the southbound roadway lanes (Phase 1)
     2. One bridge for the northbound roadway lanes (Phase 2)

- Two bridges will be constructed to cross the middle reach of Haehl Creek south of Shell Lane:
  1. One bridge for the southbound roadway lanes (Phase 1)
  2. One bridge for the northbound roadway lanes (Phase 2)

- Two viaduct structures will be constructed to span the floodway:
  1. Southbound (Phase 1)
  2. Northbound (Phase 2)

- Two bridges will be constructed to cross over the North Western Pacific Rail Road tracks in the Quail Meadows interchange area, one for each of the following:
  1. U.S. Highway 101 Willits Bypass
  2. Southbound roadway lanes (Phase 1)
  3. Northbound roadway lanes (Phase 2)

- Two bridges will be constructed to cross the new connector road to existing U.S. Highway 101 in Quail Meadows Interchange area:
  1. One for the southbound roadway lanes (Phase 1)
  2. One for the northbound roadway lanes (Phase 2)

- Six bridges will be constructed to cross Upp Creek directly north of the Quail Meadows interchange, one for each of the following:
  1. Southbound roadway lanes (Phase 1)
  2. Northbound roadway lanes (Phase 2)
  3. Northbound on-ramp (Phase 1)
  4. Northbound on-ramp (Phase 2)
  5. Southbound off-ramp
  6. Roundabout local intersection

- The proposed alignment encroaches upon the 100 year floodplain. The design includes two elevated structures, which make up the floodway viaducts. The purpose of this design feature is to span the floodway. The Willits Bypass Floodplain Evaluation Report, dated September 2006, concludes that the project will not increase the base flood elevation of the floodway, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q). The viaduct will be located in the central part of the project area and will span Center Valley Road, the lower reach of Haehl Creek just upstream of the confluence with Baechtel Creek, Hearst Willits Road, Baechtel and Broaddus Creeks at their confluence (beginning of the Outlet Creek designation), the WWTP, and Mill Creek. The approximately 6,000-foot long structures will consist of separate northbound and southbound elevated viaduct

superstructures. The total area of both viaducts would be 11.6 acres. Each of the viaducts will be approximately 42.6 feet wide. The edge to edge distance between the structures will be approximately 31.2 feet, and each will have a 16.5 foot minimum clearance underneath. The viaducts will require supporting columns, ranging in size from 4.5 to 7 feet in diameter.

Proposed Impacts to Wetlands and Surface Waters within the Regional Water Board's Jurisdiction

6. The project will result in impacts to wetlands and surface waters within the Outlet Creek HSA, including Haehl Creek, Baechtel Creek, Broaddus Creek, Mill Creek, Outlet Creek, Upp Creek, Ryan Creek and two ponds (Rutledge and Niesen). Caltrans has determined that the project would directly impact a total of 89.27 acres of waters of the U.S[1]., including 83.77 acres of impacts to wetlands and 5.5 acres (12,416 linear feet) to streams and ponds also identified as waters of the U.S. The project would temporarily impact 29.88 acres of wetlands and 3.16 acres (9,255 linear feet) of streams and ponds identified as waters of the U.S[2]. In addition, the project would result in permanent impacts to 53.89 acres of wetlands and up to 2.34 acres (3,161 linear feet) of streams and ponds that are waters of the U.S.[3]

7. Caltrans has also determined that the project would result in 10.12 acres of temporary impacts (6,693 linear feet) and 10.88 acres of permanent impacts (8,535 linear feet) to waters of the state, including riparian areas.[4] "Waters of the

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[1] Waters of the U.S. is defined in section 232.2 of title 40 of the Code of Federal Regulations and includes "all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide. All interstate waters, including interstate wetlands. All other waters including intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which would or could affect interstate or foreign commerce… and wetlands adjacent to waters (other than waters that are themselves wetlands) …"

[2] A temporary impact is the short term impact that occurs during the placement of fill within wetlands for access roads, or the removal of trees and vegetation along streams to construct false work and structures.

[3] A permanent impact is the placement of fill within areas for the purpose of a permanent structure such as the roadway embankments for the new highway, bridge footings, or culverts within streams.

[4] Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects waterbodies with their adjacent uplands. Protection of riparian areas adjacent to streams, lakes, and estuarine-marine shorelines is essential to the protection of the beneficial uses of the waterbodies. As collectively agreed to by the resource agencies with jurisdiction over this project, riparian areas are: 1) Category I Riparian Corridors, which include areas of salmonid streams and adjacent riparian areas extending 100 feet from each bank laterally from the Ordinary High Water Mark; 2) Category II Riparian Corridors, which include tributaries of Category I Riparian Corridors that are within 1,000 feet of the confluence with a Category I Stream,

State" is defined very broadly within the Water Code as "any surface water or groundwater, including saline waters, within the boundaries of the state." (Cal. Water Code, § 13050(e)). It has been interpreted to include all Waters of the U.S., in addition to areas outside of Waters of the U.S., such as isolated wetlands, headwaters, and riparian areas above the ordinary high water mark.

8. Protecting riparian areas is essential to ensuring the protection of beneficial uses identified in the Regional Water Board's Water Quality Control Plan (Basin Plan). Riparian areas support and protect surface water quality by accumulating and filtering sediment before it reaches surface waters and providing shade for the enhancement and protection of cold freshwater habitat. In addition, riparian areas have their own beneficial uses that are recognized in the Basin Plan, such as providing terrestrial habitats, vegetation, and wildlife (WILD), providing flood peak attenuation/ flood water storage (FLD), providing water quality enhancement, including filtration, purification and erosion control (WQE), and the preservation and enhancement of wetland habitat (WET).

Proposed Mitigation

9. As part of its application for the Water Quality Certification, Caltrans submitted the *Final Mitigation and Monitoring Proposal* (Final MMP), dated June 8, 2010. To mitigate impacts to wetlands, Caltrans has proposed creating 24.33 acres of wetlands. During the project planning process Caltrans assessed over 6,000 acres of land within Little Lake Valley to identify potential mitigation for the impacts of the bypass project and contacted the property owners, requesting that they consider selling land to Caltrans for mitigation. Caltrans received responses from willing sellers of 3,157 acres, of which there was little opportunity for wetland creation. At the request of the Regional Water Board, Caltrans expanded their search to approximately 11,000 acres outside Little Lake Valley. Caltrans received responses from land owners willing to sell 2,700 acres, with little opportunity for wetland creation.

10. Prior to the beginning of ground-disturbing project construction activities, known populations of wetlands plant species to be affected by construction will either be salvaged for transportation to adjacent on-site locations, or salvaged for relocation to off-site mitigation parcels, where the harvested material will be used to topdress created wetlands. Off-site mitigation actions for wetlands creation will require site preparation, including grading uplands and modifying local hydrology; seeding

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and extending 50 feet from the OHWM on each bank; and 3) Category III Riparian Corridors, which include tributaries of Category I Riparian Corridors that are more than 1,000 feet upstream of the confluence with the Category I Stream, extending 25 feet from the OHWM on each bank.

graded areas; planting wetlands species; and monitoring for successful wetland establishment.

11. After the creation of approximately 24 acres of wetlands, the project would still result in a permanent net loss of approximately 29 acres of wetlands. State of California Executive Order W-59-93 directs all state agencies to *"ensure no overall net loss and long term net gain in the quantity, quality and permanence of wetlands acreage and values in California…"* Executive Order W-59-93 also directs all state agencies "to encourage partnerships to make restoration, landowner incentive programs, and cooperative planning efforts the primary focus of wetland conservation." To compensate for the loss of the approximately 29 acres of wetlands, the United States Environmental Protection Agency (U.S. EPA), United States Fish and Wildlife Service (U.S. FWS), United States Army Corps of Engineers (U.S. ACE), National Marine Fisheries Service (NMFS), California Department of Fish and Game (CDFG), Mendocino County Resource Conservation District (MCRCD), Willits Environmental Center (WEC) and Regional Water Board collectively agreed to and developed an ecologically based watershed approach designed to ensure no net loss of ecological functions and values. The watershed approach would provide significant improvements to the ecological functions and values of wetlands off-site of the project, but still within the Little Lake Valley[5]. (The project is planned in the west-central portion of the Little Lake Valley.) The resource agencies agreed that the mitigation should be focused within Little Lake Valley because it hosts a variety of unique ecological features, including the presence of several rare, threatened, and endangered species (e.g. anadromous fish and Baker's Meadowfoam).

12. In addition, the watershed approach option was developed in collaboration with U.S. EPA and U.S. ACE to be consistent with federal Compensatory Mitigation Rule released on April 10, 2008. (40 CFR § 230, Subpart J; 33 CFR 332.). Caltrans proposed that 1,011.13 acres of existing wetlands would be enhanced and in combination with the 24.33 acres created and 53.44 acres preserved, for a total of 1,088.90 acres of wetlands secured in perpetuity. Wetland enhancement actions include: filling in man-made drainage ditches to increase the residence time of surface waters within the wetland area; implementing a grazing management plan to reduce the impacts from cattle; and removing invasive species to promote the health and natural recruitment of native wetland species. The enhancement of wetlands will be verified through a robust monitoring and reporting program (per Condition 10) that requires Caltrans to use the California

[5] During the Willits Bypass Mitigation Development Team meetings, it was collectively agreed between the U.S. EPA, U.S. ACE, U.S. FWS, CDFG, NMFS, WEC, Caltrans, and the Regional Water Board that the most appropriate use of the mitigation funds would be a watershed approach within Little Lake Valley. The resource agencies believe, that in this case, a watershed based approach will be superior to an approach relying on wetland creation/establishment ratios..

Rapid Assessment Method (CRAM) for wetlands, as well as additional hydrology, vegetation, and surface water sampling and analysis methods to verify the enhancement of wetland functions and values. The mitigation site preservation and site protection instruments would be a combination of fee title purchase, conservation easement, or other deed restriction.

13. The Eel River watershed is listed on the Clean Water Act section 303(d) list as impaired for sediment and temperature. In 2004, the U.S. EPA established sediment and temperature total maximum daily loads (TMDLs) for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury). Therefore, to fully develop a watershed approach the mitigation must include a nexus to address the temperature and sediments impairments. The nexus relates how the proposed mitigation will implement additional measures to reduce stream temperatures and excessive sediment inputs into the watershed. For sediment, Caltrans has prepared an assessment of all the erosion sites located within the off-site mitigation lands, which includes the inventory, prescription, and prioritization of restoration actions that will reduce erosion and sediment delivery within the watershed. In addition, the bypass structure has been designed to reduce erosion and sediment delivery to the maximum extent practicable (MEP). For temperature impairment, the most practical way to reduce stream temperatures is to provide riparian vegetation in all areas feasible within the project limits, including bypass alignment and off-site mitigation lands (maximum site potential shade). In addition, baseline surveys will be conducted to find all areas that benefit from riparian plantings to achieve maximum site potential shade, and percent effective shade (shade on water). Additionally, the current land management practices of stream alteration and cattle grazing have potentially negative side effects on water. Therefore, the proposed grazing management plan, which is geared towards the enhancement and protection of natural resources, will be implemented to improve the overall health of the watershed.

14. Caltrans proposes to mitigate impacts to riparian areas by planting with native riparian species along approximately 48 acres (approximately 35,000 linear feet) adjacent to waters of the U.S. and State, and monitoring to ensure successful establishment. In addition, 49 acres of riparian areas would be enhanced by the following actions: expanding riparian habitat through planting native species; increasing habitat complexity; improving hydrology; controlling invasive species; and implementing a grazing management plan. A total of 104 acres of riparian areas would be secured in perpetuity. The mitigation site protection would be a combination of fee title purchase, conservation easement, or other deed restriction.

15. To mitigate for temporary and permanent impacts to waters of the U.S. and State, Caltrans proposes to enhance approximately 17 acres of streams by improving hydrology and increasing habitat complexity. The Rutledge pond will be realigned

adjacent to the bypass, and therefore its disturbance will only be a temporary impact. Additionally, Caltrans proposes to grade and modify the Neisen pond as part its plan to create wetlands. Approximately 24 acres of streams identified as waters of the U.S. and State will be protected in perpetuity. Overall, the mitigation plan would result in the purchase and/or preservation of approximately 2,100 acres of land within Little Lake Valley.

16. Caltrans proposes to remove fish passage barriers along Upp Creek, Haehl Creek and Ryan Creek. The removal and/or upgrade of these facilities would likely reduce sediment input into the creeks as well as improve the beneficial use of the creeks for migration by anadromous fish. One existing culvert in the upper Haehl Creek channel, located under the proposed highway bridge, will be permanently removed and the stream channel will be restored as a natural drainage feature. A second existing culvert in upper Haehl Creek will be replaced and the area restored during improvement of the proposed new Schmidbauer Ranch access road. An existing box culvert in the vicinity of the proposed Quail Meadows interchange and passing under US 101 will be permanently removed and the creek contoured, re-graded, stabilized, and replanted; local traffic will cross Upp Creek on the new bridge that will be on the north leg of the roundabout. Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) will consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements will comply with guidelines established by NMFS and CDFG.

17. The project will result in an increase of approximately 38 new acres of impervious surface in the Little Lake Valley. The total area of impervious surface that will exist within the project limits will be 49 acres (including new and existing impervious surface) when the first phase of the project is completed. Caltrans will provide permanent post-construction storm water treatment for approximately 43 acres of impervious surface. Storm water runoff and modifications to the local hydrograph will be controlled primarily through the use of low impact development (LID) best management practices (BMPs) such as bio-strips, bio-swales, and shallow vegetated detention basins that rely on infiltration and dispersion. In addition, where feasible, Caltrans will install and maintain traction sand traps within drain inlets along the roadway to reduce sediment delivery to Outlet Creek HSA.

18. If Caltrans uses Oil Well Hill as a borrow site for fill material, the modifications to the roadside area will allow room for additional post-construction treatment BMPs. Therefore, additional storm water treatment would be provided by treating existing Highway 101 storm water runoff.

Project Schedule

19. The proposed activities associated with the bypass project are scheduled to begin in the fall of 2010 with the projected completion of the first phase of the project near the end of 2015. The proposed project will be conducted year round; however, work within jurisdictional streams will only occur within summer months during low flow conditions from the period of June15th to October 15th. The entire project is expected to take four to five years to complete.

Federal and State Regulatory Compliance

20. Caltrans has applied for authorization from the U.S. ACE to conduct the project under an individual Department of the Army permit pursuant to the CWA, section 404. Caltrans has applied to the CDFG for a 1602 Lake and Streambed Alteration Agreement. Additionally, Caltrans has sought formal consultation and obtained Biological Opinions from the U.S. FWS and the NMFS. On October 25, 2006, Caltrans certified a Final Environmental Impacts Statement / Environmental Impact Report (FEIS/EIR - State Clearing House No. 1990030006) for the project in order to comply with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). On December 15, 2006, Caltrans filed a Notice of Determination (NOD) for the proposed project. On December 18, 2006, Caltrans filed a Record of Decision (ROD) for the proposed project. A Supplemental Environmental Impact Report (EIR) was prepared pursuant to CEQA. The draft report was signed on November 15, 2009. Comments were received during the circulation period, which ended January 19, 2010. The Final Supplemental EIR was completed in May 2010, with potential impacts to NCSG determined to be less than significant after mitigation.

Total Maximum Daily Loads and Compliance with Water Quality Standards

21. The Eel River watershed is listed on the Clean Water Act section 303(d) list as impaired for sediment and temperature. In 2004, the U.S. EPA established sediment TMDLs for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury). Roads are a significant source of sediment in the watershed (directly, from surface erosion, and, indirectly, by triggering landslides). In addition, activities that impact the riparian zone and reduce riparian vegetation are identified as sources contributing to increased stream temperatures. A focus on measures to reduce sediment discharges to surface waters from roads in the watershed, and measures to avoid, minimize, and mitigate impacts on riparian zones is essential for achieving TMDL compliance.

22. Pursuant to Regional Water Board Resolution R1-2004-0087, *Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Receiving Waters within the North Coast Region* (Sediment TMDL Implementation Policy), the Executive Officer is directed to "rely on the use of all available authorities, including existing regulatory standards, and permitting and enforcement tools to more effectively and efficaciously pursue compliance with sediment-related standards by all dischargers of sediment waste."

23. To ensure compliance with sediment, temperature and other related Water Quality Objectives within the Basin Plan, and consistent with the U.S. EPA-established TMDLs, adequate wetland and riparian protection and stringent requirements to avoid, minimize, and mitigate the sediment and temperature impacts associated with the proposed project will be incorporated as enforceable conditions this Water Quality Certification. In addition, Caltrans will be required to conduct surface water monitoring, sampling, and analysis in accordance with the conditions of the Water Quality Certification. Additionally, storm water runoff monitoring, sampling, and analysis will be conducted as required by the State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water Discharges from the State of California, Department of Transportation (Caltrans) Properties, Facilities and Activities Order No. 99 – 06 - DWQ. The surface water data collected will be utilized to assess the adequacy of BMPs during construction as well as site specific mitigation measures proposed to minimize impacts to the environment, including sediment and temperature impacts.

24. The federal antidegradation policy requires that state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. This Order is consistent with applicable federal and State antidegradation policies, as it does not authorize the discharge of increased concentrations of pollutants or increased volumes of treated wastewater, and does not otherwise authorize degradation of the waters affected by this project.

California Environmental Quality Act

25. On October 25, 2006, Caltrans certified the FEIS/EIR (State Clearing House No. 1990030006) for the project in order to comply with the NEPA and CEQA. On December 15, 2006, Caltrans filed a NOD for the proposed project. On December 18, 2006, Caltrans filed a ROD for the proposed project. The Final Supplemental

EIR for NCSG was completed in May 2010. As a Responsible Agency, the Regional Water Board complies with CEQA by considering the FEIS/FEIR prepared by the Lead Agency (Caltrans) and by reaching its own conclusions on whether and how to approve the project involved. (Cal. Code Regs, tit. 14, § 15096.) The Regional Water Board has considered the FEIS/FEIR and any proposed changes incorporated into the project or required as a condition of approval to avoid significant effects to the environment. The Regional Water Board's conclusions on the FEIS/FEIR and findings for impacts to resources within the jurisdiction of the Regional Water Board are included in Attachment 2 to this Water Quality Certification and incorporated herein.

Receiving Waters:	Wetlands, Haehl Creek, Baechtel Creek, Broaddus Creek, Mill Creek, Outlet Creek, Upp Creek, and Ryan Creek Eel River Hydrologic Unit No.111.00 Outlet Creek Hydrologic Sub-Area No. 111.61
Filled or Excavated Areas:	Permanent - wetlands: 53.89 acres Permanent - streams and ponds: 2.34 acres Permanent - riparian areas: 10.88 acres Temporary - wetlands: 29.88 acres Temporary - streams and ponds: 3.16 acres Temporary - riparian areas: 10.12 acres
Total Linear Impacts:	Permanent - wetlands: 20,222 linear ft (2.83 miles) Permanent - streams and ponds: 3,161 linear ft (0.6 miles) Permanent - riparian areas: 8,535 linear ft (1.62 miles) Temporary - wetlands: 21,463 linear ft (4.07 miles) Temporary - streams and ponds: 9,255 linear ft (1.75 miles) Temporary - riparian areas: 6,693 linear ft (1.27 miles)
Dredge Volume :	None
Fill Volume :	Permanent - wetlands: 358,083 cubic yards Permanent - streams and ponds: 15,099 cubic yards Permanent - riparian areas: 72,846 cubic yards Temporary - wetlands: 167,682 cubic yards Temporary - streams and ponds: 20,581 cubic yards Temporary - riparian areas: 67,764 cubic yards

Latitude/Longitude:	39.3752 N/123.3249 W (Southern Interchange) 39.4392 N/123.2563 W (Northern Interchange)
Expiration:	This Water Quality Certification authorizes dredge and fill activities for ten years following the date of issuance or until the U.S. ACE CWA Section 404 permit expires. If this Water Quality Certification Expires and the project does not comply with the proposed application, findings, and conditions of this Order, the Regional Water Board may enroll the project in the appropriate regulatory tool as determined by the Executive Officer. Conditions and monitoring requirements outlined in this Order are not subject to the expiration date outlined above, and remain in full effect and are enforceable.

ACCORDINGLY, BASED ON ITS INDEPENDENT REVIEW OF THE RECORD, THE REGIONAL WATER BOARD CERTIFIES THAT THE Caltrans – Highway 101 – Willits Bypass Project, WDID No. 1B10019WNME, as described in the application will comply with sections 301, 302, 303, 306 and 307 of the Clean Water Act, and with applicable provisions of state law, provided that Caltrans complies with the requirements and conditions specified in this certification and the activity being limited and all proposed mitigation being completed in compliance with the applicant's project description, as set forth in the application and applicable documents received by the Regional Water Board from Caltrans. Discharges from these projects are also regulated under the State Water Resources Control Board Order No. 2003-0017-DWQ, "Statewide General Waste Discharge Requirements for Dredge or Fill Discharges That Have Received State Water Quality Certification," which requires compliance with all conditions of this Order.

STANDARD CONDITIONS

1. This certification action is subject to modification or revocation upon administrative or judicial review; including review and amendment pursuant to Water Code section 13330 and title 23, California Code of Regulations, section 3867.

2. This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to title 23, California Code of Regulations, section 3855, subdivision (b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3. The validity this certification is conditioned upon total payment of any fee required under title 23, California Code of Regulations, section 3833, and owed by the application.

4. Except as may be modified by any preceding conditions, all certification actions are contingent on: a) the discharge being limited, and all proposed revegetation and mitigation being completed, in strict compliance with the applicant's project description, as approved herein, and b) compliance with all applicable water quality requirements and water quality control plans including the requirements of the Basin Plan, and amendments thereto.

COMPENSATORY MITIGATION CONDITIONS

5. Caltrans shall submit plans and reports to the satisfaction of the Executive Officer of the Regional Water Board by all dates and time frames detailed in this Order, unless an exception is granted by the Executive Officer, or all bypass construction activities shall cease and desist, until the Regional Water Board authorizes operations.

6. Caltrans is ultimately responsible for the success of all mitigation performance standards, success criteria, and long term management actions.

7. Caltrans shall mitigate the project impacts by implementing the Caltrans-prepared *Final Mitigation and Monitoring Proposal (Final MMP)*, adopted June 8, 2010. At a minimum, the mitigation shall result the enhancement of approximately 1,011 acres of existing wetlands, the creation of 24 acres, the preservation of 53 acres for a total of approximately 1,088 of wetlands to be secured in perpetuity. In addition, Caltrans must mitigate impacts to riparian areas (waters of the State) by creating 47.57 acres, enhancing 48.51 acres, and securing in perpetuity 104 acres. Additionally the mitigation must enhance 27.58 acres and preserve 24.5 acres of waters of the U.S. and State.

8. At least 90 days prior to conducting any channel- ground- or vegetation-disturbing activities associated with bypass construction and no later than December 31, 2010; Caltrans shall acquire by fee title, easement, or deed restriction and permanently preserve all the mitigation lands identified in the Final MMP, dated June 8, 2010. Caltrans must maintain the properties to prohibit any owner/occupier of property to be used for mitigation from using that land, or allowing activities on the land that would interfere with the use of the property as mitigation including dredging, filling, modifying drainage patterns, or removing any vegetation within waters of the State, including riparian areas.

9. Caltrans shall submit a restoration work plan for the erosion sites identified in Appendix J of the final MMP, to the Executive Officer of the Regional Water Board for review, consideration, and concurrence by April 30, 2012. The restoration plan shall include the following locations and shall have work completed by October 15, 2012:
   - Outlet Creek (108-010-06);
   - Outlet Tributary (108-030-04;
   - Berry Creek tributaries (108-070-04); and
   - Davis Creek tributaries (108-070-13).

   The erosion site restoration work plan shall be submitted to the, U.S. ACE, CDFG, and the Executive Officer of the Regional Water Board for prior review, consideration, and concurrence. The restoration plans shall include:
   - Existing functions and conditions (wetted channel width, pool/riffle ratio, mean/maximum depths, complexity, shade/cover);
   - List and plot of native species to be planted, density of plantings;
   - Detailed design plans and cross-sections;
   - Restoration methods and materials; and
   - Water diversion plans (if necessary).

10. Caltrans must implement the monitoring and reporting program (MRP) set forth in Attachment 3. The MRP is designed to collect data and provide reports that assess the biological, chemical, physical conditions of resources within the jurisdiction of the Regional Water Board for both the bypass footprint alignment and the associated mitigation lands. The required technical reports outlined in the MRP are necessary for the Regional Water Board to appropriately determine whether or not the project will adequately comply with the Basin Plan and all applicable Water Quality Standards and provide the mitigation necessary to compensate for the impacts to jurisdictional resources. The results of the monitoring requirements outlined in the MRP shall be used to develop performance standards and success criteria for the on-site repair areas (bypass alignment) and the off-site mitigation lands. Additionally, the data will be used to demonstrate the enhancement and protection of beneficial uses and long term TMDL implementation for the receiving waters with the Outlet Creek HSA. The baseline reports are due to the Regional Water Board by January 31, 2012. In addition, the revised MMP including revised management plans shall submitted to the Executive Officer of the Regional Water Board by April 30, 2012, for review, consideration, and concurrence. Caltrans may request revisions to the MRP by submitting a plan to the Executive Officer of the Regional Water Board for review, consideration, and concurrence.

11. Subsequent to obtaining baseline information on the mitigation parcels, and no later than April 30, 2012, Caltrans shall submit a revised grazing management plan to the Executive Officer of the Regional Water Board for review, consideration, and concurrence. If it is determined by Regional Water Board staff that the grazing practices are not implemented in accordance with the approved management plan and pose a potential threat to water quality the Regional Water Board will adopt Individual Waste Discharge Requirements (WDRs) for the short term and long term grazing practices under Porter-Cologne Water Quality Control Act authority.

12. Herbicides and pesticides shall not be used on the bypass or mitigation parcels. If Caltrans or the long term manager has a compelling case as to why herbicides and pesticides should be used, they may submit a plan to the Regional Water Board for Executive Officer review, consideration, and concurrence.

13. Caltrans shall provide detailed designs and implementation schedule for the Ryan Creek Fish Passage projects. Final plans will be prepared and submitted to the Executive Officer of the Regional Water Board for review and concurrence no later than June 30, 2012. Caltrans shall complete construction of the South Fork Ryan Creek culvert project no later than October 15, 2013.

14. At least 90-days prior to initiating channel- ground- or vegetation-disturbing activities on Oil Well Hill, Caltrans shall submit the following information to the Executive Officer of the Regional Water Board for review, consideration, and concurrence:

    a) A geotechnical report on the site specific hydrology and geology of the Oil Well Hill borrow area. The report shall identify potential hazards and corrective actions in regards to slope stability, ground water interception, and the potential for mass wasting;
    b) A site specific land restoration/reclamation plan;
    c) A surface water monitoring plan to address storm water runoff discharges to and from waters of the State, and any potentially new waters of the State (springs or seeps) that may develop as a result of excavation or any activities on Oil Well Hill.
    d) A revised risk level assessment for the entire project (Oil Well Hill, bypass alignment, and mitigation sites).

    If it is determined by Regional Water Board staff that the reclamation/restoration activities are not implemented in accordance with the approved plan and pose a potential threat to water quality, the Regional Water Board will adopt individual WDRs under Porter-Cologne Water Quality Control Act authority.

15. At least 90 days prior to conducting any channel- ground- or vegetation-disturbing activities Caltrans shall:

    a) Appoint an appropriate land manager that is approved by the Executive Officer of the Regional Water Board.
    b) Obtain the land manager's concurrence with the final MMP and associated management plans.
    c) Recalculate the Property Analysis Record (PAR) and long term endowment to include all the conditions of this Order, projected changes to the short term and long term management plans for long term manager approval.

16. The land manager shall comply with all conditions within this Order and shall submit confirmation to the Regional Water Board that they approve the final MMP and any future modifications thereto, including but not limited to: associated plans; PAR; long term endowment; and acceptance of all conditions of this Order. Any revisions or modifications to the final MMP (e.g. work plan, grazing plan, long term management plan, adaptive management actions or plans, stream alteration plans or actions, and flood control plans or actions) shall cause an open review period of the PAR and endowment and shall be approved by the land manager. The open review period allows the land manager and Caltrans to revisit the PAR and endowment to ensure the revised mitigation actions are appropriately funded. In addition, any change in the PAR, endowment or final MMP shall be submitted to the U.S. ACE, CDFG, and the Executive Officer of the Regional Water Board for review, consideration, and concurrence.

17. Mitigation and monitoring requirements outlined in this Order are not subject to an expiration date, and remain in full effect and are enforceable.

GENERAL CONDITIONS

All conditions of this order apply to Caltrans (and all its employees) and all contractors (and their employees), sub-contractors (and their employees), the land manager, and any other entity or agency that performs activities or work on the project (including the off-site mitigation lands) as related to this Water Quality Certification.

18. This Water Quality Certification covers the construction of Phase I only.

19. All conditions required by this Order shall be included in the Plans and Specifications prepared by Caltrans for the Contractor. In addition, Caltrans shall require compliance with all conditions included in this Order in the bid contract for this project and the worker training program requirement per Condition 27 below.

20. Caltrans shall construct the project in accordance with the project described in the application and the findings above, and shall comply with all applicable water quality requirements and Water Quality Standards as detailed in the Basin Plan.

21. Any change in the design or implementation of the project that would have a significant or material effect on the findings, conclusions, or conditions of this Order must be submitted to the Executive Officer of the Regional Water Board for prior review, consideration, and concurrence.

22. At least 90 days before initiating channel- ground- or vegetation-disturbing activities associated with construction, Caltrans shall submit to the Regional Water Board a technical analysis of the proposed haul road(s) and demonstrate that the contractor's proposal will not impact the 100-year floodplain. All temporary bridges, culverts, haul roads, or other structures that will remain in place after October 15 shall be designed to pass the 100-year flood event. Structures and materials not designed to withstand high flows or 100-year flood shall be removed from the floodplain prior to October 1st and the associated areas shall be appropriately stabilized to prevent erosion and sediment discharges to "Waters of the State".

23. Caltrans shall provide a copy of this Order, associated attachments, and State Water Resources Control Board (SWRCB) Order No. 2003-0017-DWQ to the contractor, all subcontractors, and all utility companies conducting the work, and require that copies remain in their possession at the work site. Caltrans shall be responsible for work conducted by its employees, contractors, subcontractors, utility companies, and land manager.

24. The Regional Water Board shall be notified in writing each year at least five working days (working days are Monday – Friday) prior to the commencement of ground disturbing activities, major concrete pours, dewatering activities, or water diversion activities with details regarding the construction schedule, in order to allow Regional Water Board staff to be present on-site during installation and removal activities, and to answer any public inquiries that may arise regarding the project. Caltrans shall provide Regional Water Board staff access to the project site to document compliance with this order.

25. Caltrans shall provide monthly updates and coordinate with the City of Willits on their construction schedule of work to avoid conflicts with the WWTP during construction and to avoid potential cumulative impacts.

26. The Resident Engineer (or appropriately authorized agent) shall hold on-site water quality permit compliance meetings (similar to tailgate safety meetings) to discuss permit compliance, including instructions on how to avoid violations and

procedures for reporting violations. The meetings shall be held at least every other week, before forecasted storm events, and when a new contractor or subcontractor arrives to begin work at the site. The contractors, subcontractors and their employees, as well as any inspectors or monitors assigned to the project, shall be present at the meetings. Caltrans shall maintain dated sign-in sheets for attendees at these meetings, and shall make them available to the Regional Water Board on request.

27. Caltrans shall conduct an environmental awareness and compliance training program for all contractors, sub-contractors and Caltrans staff working on the project and shall be approved by the Executive Officer of the Regional Water Board. The training program shall present the environmental regulations and various permit conditions that Caltrans, the contractors, and land manager shall comply with and the applicable measures established for the project to minimize impacts to water quality and avoid sensitive resources, habitats, and species. The training program shall be conducted at least once annually during the construction of the bypass, and is required for all employees, contractors, sub-contractors, and other entities prior to performing any work or monitoring activities on the project. The training program must emphasize that Caltrans and the contractors are legally liable for compliance with all environmental regulations and permit conditions. In addition, the training program must emphasize a clear understanding of all applicable permits and conditions thereof. Caltrans shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry on-site. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and be available to Regional Water Board staff upon request.

28. Pursuant to its authority under Section D(2) of the Caltrans Storm Water MS4 permit, the Regional Water Board hereby requires Caltrans to conduct a risk determination in accordance with the State Water Resources Control Board (SWRCB) Construction General Permit (CGP) Order No. 2009-0009-DWQ for the entire area of the bypass and the mitigation sites. In addition, Caltrans shall submit the Storm Water Pollution Prevent Plan (SWPPP) in an electronic format using the Storm Water Multi-Application Reporting and Tracking System (SMARTS). http://smarts.waterboards.ca.gov/. Risk determination shall include the time frame (i.e. number of years) that will be required to completely construct the bypass. Caltrans shall submit the SWPPP, including the risk level determination(s) 30 days prior to initiating channel- ground- or vegetation-disturbing activities.

29. If the contractor elects to use Oil Well Hill as a borrow site, Caltrans shall recalculate the risk determination to fully include the borrow site and the entire area of the bypass, and the mitigation sites in the risk analysis. In addition, the risk

determination shall include the time frame, in years that will be required to completely construct the bypass and fully (to the satisfaction of the Regional Water Board) complete reclamation on Oil Well Hill. Additionally, if the Oil Well Hill site is used then Caltrans shall develop and install the appropriate post-construction storm water treatment measures along existing Highway 101 to the maximum extent practicable (MEP).

30. All activities and best management practices (BMPs) shall be implemented according to the submitted application and the conditions in this Order. BMPs for erosion, sediment, turbidity and pollutant control shall be implemented and in place at commencement of, during, and after any ground clearing activities, construction activities, or any other project activities that could result in erosion, sediment, or other pollutant discharges to waters of the State. The BMPs shall be implemented in accordance with the Caltrans Construction Site Best Management Practice Manual (CCSBMPM) and all contractors and subcontractors shall comply with the CCSBMPM. In addition, BMPs for erosion and sediment control shall be utilized year round, regardless of season or time of year. Caltrans shall stage erosion and sediment control materials at the work site. All BMPs shall be installed properly and in accordance with the manufacturer's specifications. If the project Resident Engineer elects to install alternative BMPs for use on the project, Caltrans shall submit a proposal to Regional Water Board staff for review and concurrence.

31. Caltrans shall prioritize the use of wildlife-friendly biodegradable (not photo-degradable) erosion control products wherever feasible. Caltrans shall not use or allow the use of erosion control products that contain synthetic netting for permanent erosion control (i.e. erosion control materials to be left in place for two years or after the completion date of the project). If Caltrans finds that erosion control netting or products have entrapped or harmed wildlife, personnel shall remove the netting or product and replace it with wildlife-friendly biodegradable products. Caltrans shall not use or allow the use of erosion control products that contain synthetic materials within waters of the United States or waters of the State at any time. Caltrans shall request approval from the Regional Water Board if an exception from this requirement is needed for a specific location.

32. Work in flowing or standing surface waters, unless otherwise proposed in the project description and approved by the Regional Water Board, is prohibited. If construction dewatering of groundwater is found to be necessary, Caltrans shall use a method of water disposal other than disposal to surface waters (such as land disposal) or Caltrans shall apply for coverage under the Low Threat Discharge Permit or an individual National Pollutant Discharge Elimination System (NPDES) Permit and receive notification of coverage to discharge to surface waters, prior to the discharge.

33. Caltrans is prohibited from discharging waste to waters of the State, unless explicitly authorized by this Order. For example, no debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or concrete washings, welding slag, oil or petroleum products, or other organic or earthen material from any construction or associated activity of whatever nature, other than that authorized by this Order, shall be allowed to enter into waters of the State. In addition, none of the materials listed above shall be placed within 150 linear feet of waters of the State or where the materials may be washed by rainfall into waters of the State.

34. Herbicides and pesticides shall not be used on the bypass. If Caltrans has a compelling case as to why herbicides and pesticides should be used, they may submit a request along with a BMP plan to the Executive Officer of the Regional Water Board for review, consideration, and concurrence.

35. Caltrans shall submit, subject to approval by the Regional Water Board staff, a dewatering and/or diversion plan that appropriately describe the dewatered or diverted areas and how those areas will be handled during construction. The diversion/dewatering plans shall be submitted no later than 30 days prior to conducting the proposed activity. Information submitted shall include the area or work to be diverted or dewatered and method of the proposed activity. All diversion or dewatering activities shall be designed to minimize the impact to waters of the State and maintain natural flows upstream and downstream. All dewatering or diversion structures shall be installed in a manner that does not cause sedimentation, siltation or erosion upstream or downstream. All dewatering or diversion structures shall be removed immediately upon completion of project activities. The in-channel work within fish-bearing streams will only be conducted between June 15th and October 15th. This Water Quality Certification does not authorize Caltrans to draft surface waters.

36. Fueling, lubrication, maintenance, storage and staging of vehicles and equipment shall be at least 150 linear feet beyond of waters of U.S. and the State with the exception of cranes and stationary equipment which shall only be refueled using a company certified by the CDFG. Proper certification and documentation of fueling (field logs) shall be provided to the Regional Water Board upon request. The Regional Water Board shall provide concurrence with each fueling location prior to fueling equipment within waters of the State. Fueling, lubrication, maintenance, storage and staging of vehicles and equipment shall not result in a discharge or a threatened discharge to any waters of the State or the U.S. At no time shall Caltrans or its contractors allow use of any vehicle or equipment, which leaks any substance that may impact water quality.

37. If, at any time, an unauthorized discharge to surface water (including wetlands, rivers or streams) occurs, or any water quality problem arises, the associated

project activities shall cease immediately until adequate BMPs are implemented. The Regional Water Board shall be notified promptly and in no case more than 24 hours after the unauthorized discharge or water quality problem arises.

38. Caltrans shall implement appropriate BMPs to prevent the discharge of equipment fluids to the stream channel. The minimum requirements will include: storing hazardous materials at least 150 linear feet outside of the stream banks; checking equipment for leaks and preventing the use of equipment with leaks; pressure washing or steam cleaning equipment to remove fluid residue on any of its surfaces prior to its entering any stream channel in a manner that does not result in a discharge to Waters of the State.

39. Spill kits are required at each fueling location and at each location that work will be conducted with streams. If the event of an unauthorized release of fuel (spill or leak) to waters of the State, Caltrans shall immediately stop work and conduct the following measures:

    a) Notify the appropriate agencies including the Regional Water Board, CDFG, and the Office of Emergency Services (OES) at 1(800) 852-7550;
    b) Utilized the appropriate spill kits for containment and clean up of the release;
    c) Collect samples within the release, 50 feet downstream, and downstream to the full extent of the release; and
    d) Analyze samples for total petroleum hydrocarbons as diesel (TPH-D), total petroleum hydrocarbons as gasoline (TPH-G), and benzene, toluene, ethlybenzene, total xylenes (BTEX).

40. The project shall have no more than 17 acres of disturbed soil area (DSA) at any time. Caltrans shall request approval from the Regional Water Board if an exception from this requirement is needed. Request for exceptions must include the locations, size of area, anticipated duration of exposure (e.g. DSA without BMPs), and a location specific rain event action plan (REAP). All disturbed soil areas and exceptions to the 17 acre limit shall be adequately documented in the site specific SWPPP.

41. Caltrans shall establish and clearly define stream setbacks that limit construction activities and prohibit ground disturbing activities within 50 linear feet of streams during the rainy season (October 15th to May 15th). If an exception from this requirement is needed for a specific location, Caltrans shall request approval from the Regional Water Board at least 5 working days in advance. At no time shall in-stream activities be conducted outside the work window of June 15th to October 15th. Exceptions may be granted by the Executive Officer of the Regional Water Board on a case by case review, only if the streams are dry or have minimal flow, and CDFG and NMFS have concurred.

42. If work is allowed within the stream channel or on the banks outside of the above referenced work window, Caltrans shall monitor the seventy-two (72) hour forecast from the National Weather Service. When forecast indicates a probability of precipitation of 50 percent or greater within the 72-hour period, or at the onset of any precipitation, ground disturbing activities shall cease and erosion and sediment control measures shall be implemented to stabilize exposed soils and prevent the mobilization of sediment into the stream channel or adjacent wetland or riparian areas. Caltrans bears full liability should the BMPs employed fail to prevent any discharge to waters of the State that exceeds applicable water quality standards or is beyond the certified area of impact. All earthwork and ground disturbing activities halted due to precipitation may resume when precipitation ceases and a 50 percent or less chance of precipitation is forecast throughout the duration of the subsequent 72-hour weather forecast.

43. Caltrans and their contractor are not authorized to discharge wastewater (e.g., water that has contacted uncured concrete or cement, or asphalt) to surface waters, ground waters, or land. Wastewater may only be disposed of to a sanitary waste water collection system/facility (with authorization from the facility's owner or operator) or a properly-licensed disposal or reuse facility. If Caltrans or their contractor proposes an alternate disposal method, Caltrans or their contractor shall apply for a permit from the Regional Water Board. Plans to reuse or recycle wastewater require written approval from Regional Water Board staff.

44. Any potentially hazardous waste(s) (solids, liquids, or slurries) derived or encountered in this project shall undergo the appropriate characterization to demonstrate compliance will all applicable waste disposal laws and regulations. If unanticipated or anticipated waste are encountered or created during the project, Caltrans shall notify the Regional Water Board immediately and at least within 24 hours. Caltrans or their contractor shall prepare applicable work plans for handling, treating, transporting, and disposing of waste. The work plans shall be prepared and signed by an engineer or geologist with the appropriate and valid California licenses.

45. Caltrans shall provide analysis and verification that placing non-hazardous waste or inert materials (which may include discarded product or recycled materials) will not result in degradation of water quality, human health, or the environment. All project-generated waste shall be handled, transported, and disposed in strict compliance with all applicable State and Federal laws and regulations. When operations are complete, any excess material or debris shall be removed from the work area and disposed of properly and in accordance with the Special Provisions for the project and/or Standard Specification 7-1.13, Disposal of Material Outside the Highway Right of Way. Caltrans shall submit to the Regional Water Board the

satisfactory evidence provided to the Caltrans Engineer by the Contractor referenced in Standard Specification 7-1.13. In accordance with State and Federal laws and regulations, Caltrans is liable and responsible for the proper disposal of waste generated by their project.

46. Wastewater from invasive species control and equipment washing must be disposed of at an appropriately permitted facility or comply with the proper NPDES requirements for discharges. Wastewater from vehicle cleaning will not be allowed for on-site use for any purposes (e.g. dust control) unless Caltrans can demonstrate to the satisfaction of the Regional Water Board that the wastewater has been adequately treated for potential pollutants and invasive species.

47. All imported fill material shall be clean and free of pollutants. All fill material shall be imported from a source that has the appropriate environmental clearances and permits. The reuse of low-level contaminated solids as fill on-site shall be performed in accordance with all State and Federal policies and established guidelines and must be submitted to the Regional Water Board for review and concurrence.

48. Only clean washed spawning gravel (0.5" – 4") with a cleanliness value of at least 85, using the Cleanness Value Test Method for California Test No. 227 will be placed in the streams. Gravel bag fabric shall be nonwoven polypropylene geotextile (or comparable polymer) and shall conform to the following requirements:
    - Mass per unit area, grams per square meter, min ASTM Designation: D 5261 – 270
    - Grab tensile strength (25-mm grip), kilonewtons, min. ASTM Designation: D4632* 0.89
    - Ultraviolet stability, percent tensile strength retained after 500 hours, ASTM Designation: D4355, xenon arc lamp method 70 or appropriate test method for specific polymer
    - Gravel bags shall be between 600 mm and 800 mm in length, and between 400 mm and 500 mm in width.
    - Yarn used in construction of the gravel bags shall be as recommended by the manufacturer or bag supplier and shall be of a contrasting color. Gravel shall be between 0.5" – 4" in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags shall be secured to prevent gravel from escaping. Gravel-filled bags shall be between 13 kg and 22 kg in mass.

If an exception from this requirement is needed for a specific location, Caltrans may request that the Executive Officer of the Regional Water Board consider and approve the exception.

49. Caltrans shall retain a dedicated Water Quality Monitor to be on-site daily and document compliance with all applicable water quality requirements. At least 30 days before initiating channel- ground- or vegetation-disturbing activities, Caltrans shall submit to the Regional Water Board in writing the name, qualifications, and contact information for the designated water quality monitor(s). The water quality monitor(s) shall be knowledgeable of and have experience with the Basin Plan, and surface water monitoring procedures, protocols, quality assurance, and quality control protocols. The water quality monitor(s) shall be responsible for monitoring Project activities and/or channel- ground- or vegetation disturbing activities that result in or have the potential to result in a discharge to waters of the State.

50. The water quality monitor shall be on-site daily while project activities including all pile installation, dewatering, channel- vegetation- or ground-disturbing activities that may affect water quality to: (1) document compliance with water quality standards and conditions of this Order; (2) record the results of all required surface water monitoring; (3) evaluate the effectiveness of BMPs, mitigation measures, and avoidance measures; (4) alert key construction staff of precipitation forecasts; and (5) make stop work recommendations for activities that results in or may result in violations of this Order. The water quality monitor(s) shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections; recommendations; monitoring and sampling results; and discharges.

51. Surface water monitoring shall be conducted whenever a project activity is conducted within waters of the State (e.g. demolition, pier construction, stream diversions). Surface water monitoring shall be conducted when any project activity has, or has the potential to, mobilize sediment and/or alter background conditions within waters of the State. In order to demonstrate compliance with receiving water limitations and applicable Water Quality Standards, field measurements shall be collected whenever a project activity may alter background conditions.

52. Caltrans in conjunction with the water quality monitor shall establish effluent, upstream (background) and downstream monitoring locations to demonstrate compliance with all applicable water quality requirements, and Water Quality Objectives as detailed in the Basin Plan. The downstream location shall be no more than 50 feet from the effluent location. Field measurements shall be taken from each location four times daily for flow, pH, temperature, dissolved oxygen, total dissolved solids, turbidity and specific conductance. In addition, visual observations shall be made four times daily and include the appearance of the

discharge including color, turbidity, floating or suspended matter or debris, appearance of the receiving water at the point of discharge (occurrence of erosion and scouring, turbidity, solids deposition, unusual aquatic growth, etc), and observations about the receiving water, such as the presence of aquatic life. Measurements shall be collected from each sampling location four times daily while work is being conducted within waters of the State. Prior to conducting any and all monitoring and sampling activities required by this Water Quality Certification, Caltrans shall develop the proper Quality Assurance Project Plan (QAPP) to ensure the data gathered is valid and will be reliable for statistical evaluation.

53. Whenever, as a result of project activities, downstream measurements exceed the following Water Quality Objectives, appropriate measurements shall be collected from all monitoring locations every hour during the period of increase, and shall continue until measurements demonstrate compliance with receiving water limitations and the water quality parameters are no longer increasing as a result of project activities.

pH	<6.5 or >8.5 (any changes >0.5 units)
temperature	>0.5^{o}F above background
dissolved oxygen	<7 milligrams per liter (mg/L)
total dissolved solids	>125 mg/L
turbidity	20% above natural background
specific conductance	>200 micromhos @ 77°F

If any measurements are beyond the water quality objectives 50 feet downstream of the source(s), all necessary steps shall be taken to install, repair, and/or modify BMPs to control the source(s). In addition, the overall distance from the source(s) to the downstream extent of the exceedance shall be measured.

Monitoring results shall be reported to appropriate Regional Water Board staff person by telephone within one hour of taking any measurements that exceed the limits detailed above (turbidity only if it is higher than 20 NTU as well). Upstream and downstream pictures within the working and/or disturbed area shall be taken and submitted to the appropriate Regional Water Board staff via e-mail or fax within 24 hours of the incident. All other monitoring data shall be reported on a monthly basis and is due to the Regional Water Board by the 15th of the following month.

54. Monthly Monitoring Reports: shall be submitted to the Executive Officer of the Regional Water Board. The monthly monitoring reports shall include at a minimum a summary of discharges, a summary of corrective actions taken (if necessary), photographs, all field sampling measurements and/or results, project status (i.e.

upcoming construction schedule and disturbed soil area updates), water quality monitor reports and field logs, water quality monitor reports and field logs, and all field monitoring equipment calibration logs. Caltrans shall develop, and Regional Water Board shall approve, a data management and reporting system to efficiently and effectively report sampling and monitoring data. Monthly monitoring reports are due to the Regional Water Board by the 15th of each month once work on the project has been initiated.

55. Rainy Day Reports: Caltrans shall take photos of all areas disturbed by project activities, including all excess materials disposal areas, after rainfall events that generate visible runoff from these areas in order to demonstrate that erosion control and revegetation measures are present and have been installed appropriately and successfully. A brief report containing these photos shall be submitted within 30 days of the rainfall event that generated runoff from the disturbed areas.

56. Slope Stability Reports: Caltrans shall provide yearly slope evaluation and erosion control monitoring reports for up to 10 years subsequent to the completion of the bypass project. Caltrans shall provide at least 80 percent coverage of established erosion control of all exposed areas along the bypass. To ensure the reduction of sediment transport into the Outlet Creek HSA, Caltrans shall conduct inspections prior to and subsequent to each rainy season up to 10 years after completion of the bypass. Reports shall include, at a minimum, the following information: name and title of personnel conducting monitoring and/or maintenance; observation dates; site photographs; maps including percent coverage of established erosion control and revegetation efforts; and an erosion evaluation. If the new bypass project has slope failures, excessive erosion, or causes other water quality degradation corrective actions will be required to mitigate the impacts. Established erosion control is vegetation growth, not applied erosion control product.

57. Annual Status Reports: Caltrans shall provide the Regional Water Board with an Annual Status Report no later than January 31 of every year beginning with issuance of this Order and continuing until the Regional Water Board accepts the Final Mitigation Report. Each annual report shall include, at a minimum: 1) a summary of all monitoring reports identified in this Order; 2) a general description of the status of the project site and project activities, including actual or projected completion dates, if known; 3) a summary of the annual mitigation monitoring reports and the current implementation status of each mitigation measure; 4) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and mitigating project impacts; 5) results and an evaluation of the data collected from the SWMRP; 6) Monthly Monitoring and Rainy Day Reports; and 7) A compliance table (spreadsheet) that presents each

condition of this certification, time frame (yearly calendar), project milestones and achievements, all reported discharges, and all violations of this Order.

58. Final Mitigation Report: No later than 90 days after completion of the project, including completion of all mitigation measures, Caltrans shall provide the Regional Water Board with a Final Mitigation Report. The Final Mitigation Report shall include, at a minimum: 1) a summary of all monthly monitoring reports and annual status reports; 2) copies of all mitigation monitoring reports documenting when success criteria for each of the mitigation measures were achieved; 3) all available information about mitigation measures, data collection for the SWMRP, and projects taken to implement the sediment and temperature TMDL; 4) each yearly compliance calendar; 5) an assessment of the effectiveness of the required measures in minimizing and mitigating project impacts; 6) any recommendations on how mitigation measures might be changed to more effectively minimize impacts to water quality and mitigate the impacts of future projects; 7) a final long term management plan; 8) revised PAR and endowment calculation approved by the long term manager; and 9) any other pertinent information.

59. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under applicable state or federal law. For the purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this Order. In response to a suspected violation of any condition of this certification, the State Water Board may require the holder of any federal permit or license subject to this Order to furnish, under penalty of perjury, any technical or monitoring reports the State Water Board deems appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In response to any violation of the conditions of this Order, the Regional Water Board may add to or modify the conditions of this Order as appropriate to ensure compliance.

60. The Regional Water Board may add to or modify the conditions of this Order, as appropriate, and to implement any new or revised Water Quality Standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act.

61. This Order is not transferable. In the event of any change in control of ownership of land presently owned or controlled by Caltrans, Caltrans shall notify the successor-in-interest of the existence of this Order by letter and shall forward a copy of the letter to the Regional Water Board. The successor-in-interest must

send to the Regional Water Board Executive Officer a written request for transfer of this Order to discharge dredged or fill material under this Order. The request must contain the following:

a. requesting entity's full legal name
b. the state of incorporation, if a corporation
c. address and phone number of contact person
d. description of any changes to the project or confirmation that the successor-in-interest intends to implement the project as described in this Order.

62. This Water Quality Certification authorizes dredge and fill activities for ten years following the date of issuance or until the U.S. ACE CWA Section 404 permit expires. If this Water Quality Certification Expires and the project does not comply with the proposed application, findings, and conditions of this Order, the Regional Water Board may enroll the project in the appropriate regulatory tool as determined by the Executive Officer. Conditions and monitoring requirements outlined in this Order are not subject to the expiration date outlined above, and remain in full effect and are enforceable.

63. Please contact our staff Environmental Specialist / Caltrans Liaison Jeremiah Puget of at (707) 576-2835 or jpuget@waterboards.ca.gov if you have any questions.

Catherine Kuhlman
Executive Officer

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Attachments:

1. Response to Public Comments
2. CEQA Findings
3. Monitoring and Reporting Program
4. State Water Resources Control Board Order No. 2003-0017 -DWQ, General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification

Original sent to: Mr. Jeremy Ketchum, Caltrans, 2800 Gateway Oaks Drive, Sacramento, CA 95833

Copies sent to:

Ms. Jane Hicks, U.S. Army Corps of Engineers, Regulatory Functions,1455 Market Street, San Francisco, CA 94103-1398

Ms. Laurie Monarres, U. S. Army Corps of Engineers, 1455 Market Street, San Francisco, CA 941003

Mr. David Wickens, U. S. Army Corps of Engineers, 1455 Market Street, San Francisco, CA 941003

Mr. Jason Brush, U.S. Environmental Protection Agency, Region 9, 75 Hawthorne Street, San Francisco, CA 94105

Ms. Melissa Scianni, U.S. Environmental Protection Agency, Region 9, 75 Hawthorne Street, San Francisco, CA 94105

Mr. Tom Daugherty, NMFS, 777 Sonoma Avenue, Room 325, Santa Rosa, CA 95404

Mr. Ray Bosch, U.S. Fish & Wildlife Service, 1655 Heindon Road, Arcata, CA 95521

Mr. Craig Martz, California Department of Fish and Game, 601 Locust Street, Redding, CA 96001

Mr. Dave Kelly, Caltrans, P.O. Box 911, Marysville, CA 95901

Mr. Jason Meigs, Caltrans, 2800 Gateway Oaks Drive, Sacramento, CA 95833

Attachment 1

Response to Comments on the Public Notice for Clean Water Act Section 401 Water Quality Certification and General Waste Discharge Requirements related to California Department of Transportation - Highway 101, Willits Bypass Project WDID No. 1B10019WNME

On April 29, 2010, the North Coast Regional Water Quality Control Board (Regional Water Board) opened a public comment period for California Department of Transportation (Caltrans) proposed Highway 101 Willits Bypass project. Regional Water Board staff received letters from 75 individuals or groups in response to the subject notice of Water Quality Certification and Waste Discharge Requirements. Of those 75, 27 were in favor of the proposed project, while 48 raised various objections. Because many of the same comments were described in different letters, Regional Water Board staff grouped comments together where appropriate, and provided one response. In order to identify where a particular comment was addressed in this response to comments, please review the attached spreadsheet.

Mitigation Plan Comment 1 (MPC-1) - *Mitigation Area vs. Adjacent Land Use*

How will the mosaic of mitigation habitats be constructed and maintained with adjacent parcels being managed for agriculture and not wetland mitigation?

Response to Mitigation Plan Comment 1 (RMPC-1)

Wetlands created pursuant to the Mitigation and Monitoring Proposal (MMP), dated June 2010, will be constructed on the offsite mitigation parcels in upland areas that are not currently jurisdictional wetlands under the Clean Water Act, Section 404. Wetland creation will be achieved through grading of high areas that are surrounded by the existing jurisdictional wetlands, as determined through Section 404 and verified by the United States Army Corps of Engineers (U.S. ACE). Additional wetland creation measures include planting native wetland plant species and monitoring for successful establishment and adequate hydrology. If these created wetlands accumulate sediment from seasonal flooding or other nonpoint source activities, such as grading, the MMP has an adaptive management component that will be triggered and actions will be taken to ensure that the wetlands achieve the success criteria set out in the MMP. Any adaptive management actions taken by Caltrans or the land managers retained to maintain the wetlands and/or mitigation parcels will be undertaken in coordination with resource agencies.

The adaptive management plan (Chapter 12) in the MMP presents a general framework and process for addressing unforeseen threats to the success of the MMP, identifying and implementing appropriate responses to those threats, and assessing the effectiveness of those responses. Adaptive management will be performed as needed by the land manager for each offsite mitigation parcel, under coordination with the stakeholder resource agencies.

In areas where development of an incompatible use adjacent to mitigation sites cannot be avoided, potential negative impacts must be evaluated and remediation steps planned and implemented. Remediation efforts may include:

- • Implementation of buffer zones within the mitigation site, where feasible, to separate sensitive biological resources on the mitigation site from adjacent development.
- • Installation of cattle barriers.
- • Installation of storm water pollution prevention measures.
- • Increase in mowing and weeding schedules.
- • Increase in irrigation or water storage capacity during plant establishment period.

Mitigation Plan Comment 2 (MPC-2) - *Natural Succession and Land Management*

How will the process of natural succession for streams and riparian areas and stream geomorphology be addressed in conjunction with the concept of highly functional habitats? How will these habitats be maintained given the ecological processes within Little Lake Valley?

Response to Mitigation Plan Comment 2 (RMPC-2)

The Regional Water Board agrees with the commenter and we raised this issue to Caltrans in our May 13, 2010, letter as a significant issue for the long term management of the mitigation lands. The Regional Water Board requested in its May 13, 2010 letter that *"Caltrans should provide information on how wetlands, streams and floodplains will interact, and have plans prepared to deal with the local hydrology and inevitable changes in stream characteristics as ecological succession occurs. Regional Water Board staff recommends conducting stream reach assessments and then utilizing them to determine the ultimate ecological / watershed goals of the proposed mitigation plan".*

For general management of the off-site mitigation parcels, a short-term maintenance plan and long-term management plan have been developed as part of the final MMP. The overall adaptive management strategy will be to evaluate and work within the constraints of the normal conditions (e.g., ongoing sedimentation due to upstream land use) and natural processes (e.g., meandering creek beds) of the mitigation sites. These normal conditions and natural processes create a dynamic environment. The mitigation parcels will be allowed to conform to the dynamic environment, responding to the normal conditions and natural processes. Adaptive management actions will avoid creating situations that require recurring intervention to redirect or compete with the Valley's normal conditions and natural processes (e.g., removal of large woody debris and gravel from streams).

Natural recruitment and succession, and changes in type of habitat will be accepted as part of this approach. For example, if a wet meadow is flooded by beaver activity downstream and changes into an emergent marsh, adaptive management to interfere with this change would not be considered prudent because such a change constitutes a landscape evolution or natural succession. In this scenario, specific actions by the land manager to reduce the flooding would not be warranted.

Similarly, if stream channel erosion is the result of lateral channel migration, adaptive management steps would not include trying to confine the channel to its original path, but may include further assessment to determine appropriate restoration options for bank stabilization, such as biotechnical bank stabilization. Another example of where adaptive management will respect the normal conditions and natural processes is where a stream begins to meander into a Baker's meadowfoam population and washes out some of the plants. The creek would not be redirected back to its previous bed and held there by artificial devices. Instead, the area of Baker's meadowfoam would be lost due to the meandering creek bed as part of the natural processes of the site.

If adaptive management becomes necessary to address unforeseen situations with this dynamic environment, adaptive management actions will avoid creating conditions that require recurring intervention to redirect or compete with Little Lake Valley's normal conditions and natural processes.

Mitigation Plan Comment 3 (MPC-3) - ***Fish Migration/Passage and Habitat Creation and Enhancement***

How do the stream passage projects increase the natural functions of the stream channels within the bypass footprint, and mitigate and provide a net benefit for listed salmonids? How do improvements to Haehl, Ryan, and Upp Creeks mitigate for impacts to Baechtel, Broaddus, and Mill Creeks?

Response to Mitigation Plan Comment 3 (RMPC-3)

Fish Migration/Passage

Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) will consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements will comply with guidelines established by the National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (CDFG). The removal of the Upp Creek culvert along existing 101 and the stabilization of stream channel at the Haehl Creek interchange would likely reduce sediment input into the creeks as well as improve the beneficial use of the creeks for migration by anadromous salmonids. Regional Water Board staff recognizes that the Upp Creek and Haehl Creek interchanges were primarily designed with the bypass

structure in mind; however, they will benefit salmonids because they were designed in accordance with NMFS and CDFG requirements to help fish passage and control sediment discharge. In addition, Caltrans worked closely with NMFS, CDFG, and Regional Water Board staff at these locations to ensure that all concerns raised by the agencies were addressed. As for the Ryan Creek passage barrier, Regional Water Board staff is satisfied that this is an appropriate mitigation for impacts to listed salmonids, especially when considered in conjunction with the cumulative benefits of additional barrier removal (located further upstream) which is being planned by Mendocino County.

Caltrans has designed the project to minimize the number of permanent structures that will be constructed in creek channels. Bent 24, which is associated with the viaduct structure at the confluence of Baechtel and Broaddus Creeks, will be the only permanent bridge piling that will be constructed in the creek channel during Phase 1. All other creek crossings will consist of clear-span bridges, precluding the need for the construction and placement of permanent bridge piers within creek channels at these crossings. During construction of both project phases, a number of temporary piles to support trestles for the temporary access road and falsework construction also will be needed during project construction; however, these will be removed following construction of each phase of the project. The permanent and temporary piles that will be placed in the creek channels during construction of Phases 1 and 2 will not affect the migration pathway for upstream and downstream migrants.

In addition to enhancement and preservation of habitat on off-site mitigation parcels, Caltrans will implement stream restoration and fish passage improvements on Haehl and Upp Creeks where they cross the project footprint. Caltrans has also committed, as part of its mitigation plan, to providing the design for the North and South Fork locations of the Ryan Creek fish passage project, as well as construct the South Fork location to mitigate impacts on salmonids and jurisdictional waters of the United States. These fish passage improvements on Ryan and Upp Creeks will improve access to upstream spawning and rearing habitat for coho and Chinook salmon and steelhead relative to current conditions. Improvements to fish passage will help offset the temporary effects associated with project construction by potentially increasing the productivity of listed salmonids in these creeks through increased spawning success.

There is general agreement among CDFG's Northern Region staff that Ryan Creek is a high priority for fish passage improvement. Ryan Creek was also identified as the Number 1 priority for passage improvement in Mendocino County in an inventory of road crossings on the State Highway system in Caltrans District 1 (Lang 2005). Ryan Creek ranked as the Number 2 priority within all of District 1. Ryan Creek is the first Outlet Creek tributary located immediately downstream from Little Lake Valley. Providing access to spawning and rearing habitat that is currently obstructed on Ryan Creek will directly benefit coho salmon populations in the Middle-Upper Eel River Recovery Unit and the Outlet Creek HSA. Identifying and treating passage barriers is

consistent with the Recovery Strategy for California Coho Salmon and is identified as a Level D task (will directly contribute to recovery of coho salmon) for the Outlet Creek HSA.

Habitat Creation and Enhancement

Fish migration habitat will be further improved by the inclusion of approximately 1,700 linear feet of riparian plantings along the east bank of Baechtel Creek between where the viaduct would cross Baechtel Creek and where East Commercial Street currently crosses the creek, and along approximately 1,400 linear feet of the north bank of Mill Creek before Mill Creek passes under the Western Pacific railroad tracks. Approximately, six miles (measured along both sides of the stream banks) of riparian habitat will be created or enhanced along Category I, II, and III streams within the offsite mitigation parcels. Long stream reaches that would benefit from riparian plantings are present along both Davis and Outlet Creeks. Consultations with Craig Martz and Scott Harris of CDFG and Tom Daugherty of NMFS on April 18, 2008, indicated a preference for Category I riparian mitigation to occur on Outlet Creek, as it supports populations of all three listed fish species (salmonid and steelhead) potentially affected by the bypass project. Therefore, Caltrans has proposed approximately 10,000 linear feet of riparian vegetation to provide shade on Outlet Creek.

Additional mitigation includes restoration to areas along Outlet Creek and Berry Creek that are undergoing bank erosions or that have large headcuts. These areas were identified in an erosion assessment conducted in May 2010. The erosion assessment consists of an inventory of sediment contributing sites within the mitigation parcels and a prioritization of those restoration efforts. The recommended treatments for these sites include bio-engineered bank stabilization efforts to reduce sediment input, reconnect the streams with their adjacent floodplains, and further improve fish habitat.

Mitigation Plan Comment 4 (MPC-4) – *Mitigation Lands Purchase*

Caltrans must provide proof that all mitigation lands have been purchased without any restrictions that prohibit the land manager from complying with the United States Environmental Protection Agency (USEPA) and USACE joint 2008 Compensatory Mitigation for Losses of Aquatic Resources (Federal Mitigation Rule).

Response to Mitigation Plan Comment 4 (RMPC-4)

The federal rule for Compensatory Mitigation for Losses of Aquatic Resources (federal mitigation rule) does not apply to the Regional Water Board. However, the Water Quality Certification is conditional upon Caltrans obtaining the necessary rights to all of the properties necessary to conduct the creation and enhancement of wetlands set forth in the MMP. The water quality certification requires that at least 90 days prior to conducting any channel- ground- or vegetation-disturbing activities, Caltrans shall

acquire by fee title or conservation easement and permanently preserve all the mitigation lands identified in the Final MMP, dated June 8, 2010. Caltrans must maintain the properties for the benefit of the natural resources and prohibit any activities on the mitigation lands (e.g., dredging, filling, or removing any vegetation within or adjacent to streams and wetlands) that would interfere with the enhancement and preservation of those natural resources used as mitigation.

Mitigation Plan Comment 5 (MPC-5) - *Mitigation Credits and Preservation*

Caltrans has double counted the mitigation credits for preservation and enhancement and has not adequately made a case for preservation in accordance with the Federal Mitigation Rule.

Response to Mitigation Plan Comment 5 (RMPC-5)

Regional Water Board staff recognizes that Caltrans double counted credits (acreages) for preservation and enhancement. However, as noted in the Regional Water Board public notice dated April 29, 2010, the mitigation would result in the purchase and/or preservation of approximately 2,100 acres of land within Little Lake Valley. For example, in the MMP Caltrans stated a total of 2,230 acres of wetland mitigation area; however, this is the combination enhancement and preservation. The Regional Water Board will not credit the double counting of these acres and considers preservation in perpetuity a mandatory component of compensatory mitigation for this project. The numbers presented in the public notice and in the Water Quality Certification do not include the double counting error. The Regional Water Board has determined that the real and true amount of land approximately 1,011 acres of wetlands, 108 acres of riparian areas, and 17 acres of streams are adequate to perform compensatory mitigation measures for the project.

Also see response RMPC-5.

Mitigation Plan Comment 6 (MPC-6) - *Long Term Management Plan*

We agree with the Regional Board's comments in their May 13, 2010 letter that the Long Range Management Plan portion of the MMP needs to contain specific vegetation, wildlife, water, and geomorphic objectives. Without specific objectives and goals, along with the current, potential and capable conditions for the mitigation lands it is impossible to determine if the entire watershed scale enhancement, preservation, restoration, or rehabilitation mitigation efforts that the Federal Mitigation Rule requires, are achieving success. Instead of proving the necessary specific science-based objectives and goals, Caltrans provides a list of Land Manager responsibilities that includes only a vague list of conceptual tasks. Without an agreement with the land manager the MMP is only a plan with no assurance of implementation.

Response to Mitigation Plan Comment 6 (RMPC-6)

Regional Water Board staff agrees that commitment by land managers to conduct activities consistent with the goals of the MMP is a key factor in successful mitigation. Condition 6 of the Water Quality Certification states that, Caltrans will be held ultimately responsible for the mitigation in both short term and long term. However, the Water Quality Certification is conditioned (Conditions 15 and 16) upon the land manager complying with all conditions within the water quality certification and shall submit confirmation to the Regional Water Board that they approve the final MMP, associated plans, PAR, long term endowment, and acceptance of all conditions. In addition, the mitigation requirements of the Water Quality Certification do not expire and remain fully enforceable.

Caltrans has revised the Long Term Management Plan (Chapter 11) for the Final MMP to include site assessments with monitoring components for hydrology, geomorphology, habitat, vegetation, water quality, and adjacent development and/or conflicting land use**.** In addition, Caltrans provides an outline for dynamic changes in the environment that may warrant adaptive management. For example, Appendix J of the Final MMP provides an inventory off sites that are likely to produce excessive sediment and a prioritization of restoration actions for these sites. Additionally, the long term management plan discussed the long term monitoring of these sites to assess their stability and potential sediment delivery to the Outlet Creek HSA. However, Caltrans recognizes that not all erosion may be negative to the ecosystem and anticipates natural succession as part of the long term restoration process. For example, meandering streams may cause bank erosion and may threaten Baker's Meadowfoam populations, but are ultimately a result of the stream finding is appropriate equilibrium with sediment supply and water discharges.

Condition 10 of the Water Quality Certification requires Caltrans to conduct baseline assessments for the purpose of developing the appropriate success criteria, grazing management plan, and long term management plan for mitigation actions. Caltrans will be conducting additional site-specific baseline surveys (water quality, geomorphology, fish habitat, and vegetation) in conjunction with the recommendations of the U.S. EPA, U.S. ACE, CDFG, and Regional Water Board. The purpose of the surveys is to further understand the potential and capable conditions for the mitigation lands. This baseline information will be used to determine the most appropriate goals and objectives for the mitigation lands, and will be utilized to show both enhancement of the mitigation lands, and potentially problematic areas within the mitigation lands, to ensure a successful long term management approach. This information will be critical for the long term managers to understand the potential and proper functioning conditions of the mitigation lands.

Mitigation Plan Comment 7 (MPC-7) - *Work Plan and Contingency Plan*

We agree with the Regional Water Board that the mitigation work plan must contain a contingency plan with clear direction for the land manager should the mitigation actions begin to fail. The MMP must be detailed in its explanation of Short Term Mitigation.

Response to Mitigation Plan Comment 7 (RMPC-7)

While Regional Water Board staff believes that it would be a good idea to have a contingency plan for the mitigation work plan, it is not necessary because the water quality certification requires compliance with the performance standards and success criteria set out in the MMP and water quality certification. If the mitigation work fails to meet the criteria, Caltrans and the land manager will be responsible for redoing the work until the mitigation is successful.

What is more critical than a contingency plan is ensuring that the land manager has ample funds to deal with problems should they arise. Funds to cover reasonably foreseeable set-backs to mitigation (e.g. plant mortality during the short-term establishment period, especially after irrigation is removed) as well as unforeseeable problems that would require remedial action have been budgeted into the endowment costs. These contingency funds will allow the land manager to respond promptly to get the mitigation back on track toward success. Conditions 15 and 16 of the Water Quality Certification ensure that the selected long term managers shall approve the MMP, property analysis record (PAR), and long term endowment prior to Caltrans initiating any ground, channel, or vegetation disturbing activities.

Mitigation Plan Comment 8 (MPC-8) – *Long Term Financial Assurances*

How can we be assured that the funds to maintain fish passage and keep the floodplain from expanding because of deposition of material will be adequate? Agreements for land manager duties are not in the MMP. Unless exact details of the transfer of lands, the amount of money provided to develop an agreement and when it would be available, the amount of money in the endowment and when that money would be available there is no way to judge whether the agreement will guarantee that the mitigation land management agency will have the resources to accomplish the goals.

Response to Mitigation Plan Comment 8 (RMPC-8)

A PAR was used to calculate the endowment amount that will cover the costs of the long-term management. To calculate the endowment amount, the PAR takes into account all of the day-to-day maintenance activities, all monitoring and reporting, and includes contingency funds. To further ensure that the amount of the endowment provided will be adequate to carry out the long-term management outlined in the MMP, Caltrans projected a low return rate of 2% to avoid under estimating the sum of the

principal to be invested. Based on the PAR calculation, the endowment sum is $15,287,504. The endowment will be transferred to CDFG and invested prior to the beginning of any management activities that it is required to fund. Also, Conditions 15 and 16 of the Water Quality Certification require that the selected long term managers shall approve the MMP, PAR, and long term endowment prior to Caltrans initiating any ground, channel, or vegetation disturbing activities.

Also see comment response RMPC-7.

Mitigation Plan Comment 9 (MPC-9) – *Establish Baseline*

The plan must establish a baseline for which preservation and enhancement can be measured. This baseline needs to be in all areas that are impacted and must include measurements taken during every season of the year. There must also need explanation of what the desired condition is.

Response to Mitigation Plan Comment 9 (RMPC-9)

Regional Water Board staff agrees with the comment and have requested additional baseline studies in a letter to Caltrans dated May 13, 2010. Within the Final MMP, Caltrans did provide reference to local watershed studies such as the *Outlet Creek Basin Assessment* (CDFG, Coastal Watershed Planning and Assessment Program, 2008) as well as several other published documents from various sources. Baseline information presented in Chapter 5 of the draft MMP was determined to be too general to fully describe the proper functioning conditions of the proposed mitigation lands. Condition 10 of the Water Quality Certification requires Caltrans to implement a robust Monitoring and Reporting Program (MRP) that will includes baseline assessments for the purpose of developing the proper success criteria for mitigation actions. Caltrans is currently continuing to gather more detailed and site specific baseline information that can be used to measure the level of enhancement achieved at the mitigation sites. Site specific baseline studies will be conducted prior to mitigation implementation for invasive plants, plant communities (species richness, diversity, and native plants), erosion potential sites, water quality, riparian shade, and benthic-macroinvertebrates (BMI).

Baseline data, the following constituents will be monitored:

- Flow rate
- pH
- Temperature
- Total Dissolved Solids (TDS)
- Turbidity
- Specific Conductance (SC)

- Total Settleable Solids (TSS)
- Total and Dissolved Metals
- Oil and grease.

Monitoring will also include visual observations of the appearance of the stream flow including color, floating or suspended matter or debris, presence of aquatic life, etc.

During baseline assessment, construction, success criteria monitoring, and post-construction monitoring data for pH, temperature, TDS, turbidity, and SC will be collected continuously and during select precipitation events. An additional parameter may be added to the constituent list if dust palliatives are used on haul roads (i.e. Methlylene Blue Activated Substances).

The following physical channel characteristics will be assessed:

- Cross sectional water depth
- Wetted channel width
- Bankfull width
- Substrate characteristics
- Canopy cover
- Gradient
- Sinuosity
- LWD.

The following biological assessments will be conducted for benthic macroinvertebrate sampling (bioassessment):

- Taxa richness
- Taxa composition
- Percent tolerant/intolerant organisms
- Functional feeding group analysis
- Abundance.

Chemical and physical habitat data will be used to assist in interpreting BMI community responses to construction (point-source) and mitigation (non-point source) activities. These data will be used to establish an index of biological integrity (IBI) that can be compared to the baseline condition (pre-project) as well as to regional index sites to monitor the success of channel restoration and enhancement efforts.

Mitigation Plan Comment 10 (MPC-10) – *TMDL*

We are very concerned about TMDL limitations on Outlet Creek and would like to see continuous monitoring for turbidity and temperature. We want to be sure there is adequate fish passage and that the fish's food sources are not adversely affected.

Response to Mitigation Plan Comment 10 (RMPC-10)

The Eel River watershed is listed on the Clean Water Act section 303(d) list as impaired for sediment and temperature. In 2004, the U.S. EPA established sediment and temperature total maximum daily loads (TMDLs) for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury). Roads are a responsible source of sediment in the watershed (directly, from surface erosion, and, indirectly, by triggering landslides). In addition, activities that impact the riparian zone and reduce riparian vegetation are identified as sources contributing to increased stream temperatures. A focus on measures to reduce sediment discharges to surface waters from roads in the watershed, and measures to avoid, minimize, and mitigate impacts on riparian zones is essential for achieving TMDLs.

Pursuant to Regional Water Board Resolution R1-2004-0087, *Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Receiving Waters within the North Coast Region* (Sediment TMDL Implementation Policy), the Executive Officer is directed to "rely on the use of all available authorities, including existing regulatory standards, and permitting and enforcement tools to more effectively and efficaciously pursue compliance with sediment-related standards by all dischargers of sediment waste."

To ensure compliance with sediment, temperature and other related water quality objectives within the Basin Plan, and consistent with the U.S. EPA-established TMDLs, adequate wetland and riparian protection and adequate measures and actions to avoid, minimize, and mitigate the sediment and temperature impacts associated with the proposed project will be incorporated as enforceable conditions of the water quality certification. In addition, Caltrans will be required to conduct surface water monitoring, sampling, and analysis in accordance with the conditions of the water quality certification. Additionally, storm water runoff monitoring, sampling, and analysis will be conducted as required by the State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water Discharges from the State of California, Department of Transportation (Caltrans) Properties, Facilities and Activities. The surface water data collected will be utilized to assess the adequacy of BMPs during construction as well as site specific mitigation measures proposed to minimize impacts to the environment, including sediment and temperature impacts.

The MRP required by Condition 10 of the Water Quality Certification requires that Caltrans used the data gathered from the baseline assessment, construction monitoring, and post-construction monitoring efforts to develop a TMDL compliance plan for the bypass alignment and the off-site mitigation lands.

To fully develop a watershed approach the mitigation must include a nexus to address the temperature and sediments impairments. The nexus relates how the proposed

mitigation will implement additional measures to reduce stream temperatures and excessive sediment inputs into the watershed. For sediment, Caltrans has prepared an assessment of all the erosion sites located within the off-site mitigation lands, which includes the inventory, prescription, and prioritization of restoration actions that will reduce erosion and sediment delivery within the watershed. In addition, the bypass structure has been designed to reduce erosion and sediment delivery to the maximum extent practicable (MEP). For temperature impairment, the most practical way to reduce stream temperatures is to provide riparian vegetation in all areas feasible within the project limits, including bypass alignment and off-site mitigation lands (maximum site potential shade). In addition, baseline surveys will be conducted to find all areas that benefit from riparian plantings to achieve maximum site potential shade, and percent effective shade (shade on water). Additionally, the current land management practices of stream alteration and cattle grazing have potentially negative side effects on water. Therefore, the proposed grazing management plan, which is geared towards the enhancement and protection of natural resources, will be implemented to improve the overall health of the watershed.

Also, see responses RMPC-3, RSWMC-1, RMPC-12.

Mitigation Plan Comment 11 (MPC-11) – *Lack of Detail*

Commenter supports the decision to reject the mitigation plan and wants the mitigation plan to include additional details prior to approval.

Response to Mitigation Plan Comment 11 (RMPC-11)

A considerable amount of detail was added to the MMP, dated June 2010. This detail includes additional success criteria, more detailed description of mitigation actions, additional requirements for baseline studies, water quality and bioassessment monitoring, a grazing plan, long-term management plan, endowment amount, and identification of the property owner, land manager, endowment holder, and CE holder/compliance monitor.

In addition, the Condition 10 of the Water Quality Certification requires the baseline studies be conducted to provide the adequate information regarding the existing conditions of the mitigation parcels. The MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands. It is necessary to establish baseline conditions of surface waters to verify the establishment and enhancement of wetlands, riparian areas, and waters of the U.S. and State within the mitigation lands.

Baseline data will be used to demonstrate that the bypass, both during and after construction, is in compliance with the Basin Plan, California's antidegradation policy in

State Water Board Resolution No. 68-16, and the U.S. EPA established sediment and TMDLs for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury).

The primary objectives of the MRP include, but are not limited to:

A. Assessing the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
B. Assessing the overall health and evaluating trends in receiving water quality;
C. Assessing the potential biological, chemical, physical impacts, both during and after construction, of the bypass alignment;
D. Determining and revising site specific performance standards and success criteria for the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
E. Evaluating the effectiveness of BMPs, mitigation measures, and avoidance measures;
F. Evaluating activities that results in or may result in violations of MRP and the Water Quality Certification that may warrant additional BMPs or stop work orders;
G. Identifying sources of pollutants;
H. Assessing compliance with water quality objectives and TMDLs;
I. Measuring and assessing the reductions or prevention in pollutant loads; and
J. Verifying and successful repair within the bypass alignment and enhancement of the mitigation lands.

The data collection and evaluation will be broken down into four separate phases for the bypass alignment and mitigation lands (with multiple tasks per phase). Data collection and evaluation may necessitate revisions to the MRP as trends and comparisons are established. This MRP requires the collection and evaluation of data to supplement the Final MMP for the short term and long term mitigation plans.

Also, see responses RMPC-1 through RMPC-10, and RMPC-12.

Mitigation Plan Comment 12 (MPC-12) – *Net Loss of Wetlands*

Wetland enhancement does not adequately mitigate the permanent net lost of wetlands.

Response to Mitigation Plan Comment 12 (RMPC-12)

During the project planning process Caltrans assessed over 6,000 acres of land within Little Lake Valley to identify potential mitigation for the impacts of the bypass project and contacted the property owners requesting that they consider selling land to Caltrans for mitigation. Caltrans received responses from willing sellers of 3,157 acres, of which only minor wetland creation was feasible. At the request of the Regional Water Board, Caltrans expanded their search to approximately 11,000 acres outside Little Lake

Valley. Caltrans received responses from land owners willing to sell 2,700 acres, with little opportunity for wetland creation. Caltrans was able to identify approximately 24 acres of wetland creation. Conditions 7 of the Water Quality Certification requires Caltrans to obtain control of all of the area necessary for the creation of the 24 acres of wetlands, as proposed in its mitigation and monitoring proposal.

Prior to the beginning of ground disturbing project construction activities, known populations of wetlands plant species to be affected by construction either will be salvaged for transportation to adjacent on-site locations or salvaged for relocation to off-site mitigation parcels, where the harvested material will be used to topdress created wetlands. Off-site mitigation actions for wetlands creation will require site preparation, including grading uplands and modifying local hydrology; seeding graded areas; planting wetlands species; and monitoring for successful wetland establishment.

After the creation of approximately 24 acres of wetlands, the project would still result in a loss of approximately 29 acres of wetlands. State of California Executive Order W-59-93 directs all state agencies to *"ensure no overall net loss and long term net gain in the quantity, quality and permanence of wetlands acreage and values in California…"* Executive Order W-59-93 also directs all state agencies "to encourage partnerships to make restoration, landowner incentive programs, and cooperative planning efforts the primary focus of wetland conservation." After several years of meetings and planning with Caltrans, the U.S. EPA, U.S. FWS, U.S. ACE, NMFS, CDFG, Mendocino County Resource Conservation District (MCRCD), Willits Environmental Center (WEC) and Regional Water Board collectively agreed to an ecologically designed watershed approach to mitigate for the permanent impact to wetlands wetlands. The watershed approach would involve providing a significant improvement to the ecological functions and values of wetlands off-site of the project, but still within the Little Lake Valley. (The project is planned in the west-central portion of the Little Lake Valley.) The resource agencies collectively agreed that the mitigation should be focused within Little Lake Valley, because it hosts a variety of unique ecological features, including the presence of several rare, threatened, and endangered species (e.g. anadromous fish and Baker's Meadowfoam).

This watershed approach mitigation strategy would combine habitat creation, restoration, enhancement, and preservation, which is consistent with the U.S. EPA and U.S. ACE new Compensatory Mitigation Rule released on April 10, 2008. Caltrans proposed enhancing approximately 1,011 acres of existing wetlands in combination with the 24 acres created, the 53 acres preserved for a total of approximately 1,088acres of wetlands secured in perpetuity. Wetland enhancement actions include: filling in man-made drainage ditches to increase the residence time of surface waters within the wetland area; implementing a grazing management plan to reduce the impacts from cattle; and removing invasive species to promote the health and natural recruitment of native wetland species. The mitigation site preservation and site protection instruments would be a combination of fee title purchase, conservation easement, or other deed

restriction. Condition 8 of the Water Quality Certification requires Caltrans to acquire by fee title, easement, or deed restriction and permanently preserve all the mitigation lands identified in the MMP, dated June 2010.

The Federal Mitigation Rule (33 CFR Part 332.3) discusses the considerations for the watershed mitigation approach which include water quality and watershed impairments. The Eel River watershed is listed on the Clean Water Act section 303(d) list as impaired for sediment and temperature. In 2004, the U.S. EPA established sediment and temperature TMDLs for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury). Therefore, to fully develop a watershed approach the mitigation must include a nexus to address the temperature and sediments impairments.

The nexus relates how the proposed mitigation will implement additional measures to reduce stream temperatures and excessive sediment inputs into the watershed. For sediment, Caltrans has prepared an assessment of all the erosion sites located within the off-site mitigation lands, which includes the inventory, prescription, and prioritization of restoration actions that will reduce erosion and sediment delivery within the watershed. In addition, the bypass structure has been designed reduce erosion and sediment delivery to the MEP. For temperature impairment, the most practical way to reduce stream temperatures is to provide riparian vegetation in all areas feasible within the project limits, including bypass alignment and off-site mitigation lands (maximum site potential shade). In addition, baseline surveys will be conducted to find all areas that benefit from riparian plantings to achieve maximum site potential shade, and percent effective shade (shade on water). Additionally, the current land management practices of stream alteration and cattle grazing have potentially negative side effects on water. Therefore, the proposed grazing management plan, which is geared towards the enhancement and protection of natural resources, will be implemented to improve the overall health of the watershed.

Legal Compliance Comment 1 (LCC-1)

There is no justification for Caltrans to avoid their legal responsibilities to meet the requirements of the Clean Water Act; Caltrans has requested permits from the resources agencies with any legal compliance based only on their promise to comply at a later date. We trust that the Regional Water Board will insist that those who propose to destroy public natural resources are required to comply with the law.

Response to Legal Compliance Comment 1 (RLCC-1) - *Clean Water Act Compliance*

It is beyond our regulatory purview to comment generally on Caltrans' legal compliance. However, with the issuance of the Water Quality Certification, we do find that the

project, including all required mitigation, will comply with state law as regards impacts to water quality.

The Water Quality Certification is conditional upon Caltrans meeting all of the requirements set forth therein, stating that no channel, ground or vegetative disturbing activities are allowed until Caltrans has: obtained all the required mitigation lands; provided specific work plan details; provided additional planting and creek restoration plans; geologic reports and reclamation plans for Oil Well Hill; the MMP approved by the land manager and recalculated the property assessment record and long term endowment; and perform an impact assessment of the contractors proposed haul road on the 100-floodplain to verify the road will have no additional impacts. In addition, the Water Quality Certification is conditional upon Caltrans revising the performance standards and success criteria, grazing plan, long term management plan, and developing a TMDL compliance plan. The Regional Water Board staff finds that the recent changes incorporated in the MMP, dated June 2010, the conditions within the Water Quality Certification, and MRP are sufficient to protect and enhance wetlands, streams, and the water quality within the bypass footprint as well as the mitigation lands.

Regulatory Evaluation Comment 1 (REC-1) - *Careful Not Rushed Regulatory Decision*

Public regulatory agencies must avoid expedited review and make careful decisions. They must not favor economic growth at the expense of poor planning, which could in turn lead to long term environmental and economic damage. The issues related to the mitigation plan must be resolved prior to issuing the permit.

Response to Regulatory Evaluation Comment 1 (REC-1)

Comment noted. See also response to RLCC-1, above.

Surface Water Monitoring Comment 1 (SWMC-1) – *Surface Water Monitoring*

There is no monitoring plan for the aquatic system as part of the MMP. Snorkel counts should be completed annually in streams and macro-invertebrate surveys should be established.

Response to Surface Water Monitoring Comment 1 (RSWMC-1)

The MMP, dated June 2010, included a Surface Water Monitoring and Reporting Program (SWMRP); however, Regional Water Board staff found the program to be incomplete in its development. Therefore, the Regional Water Board will contain a MRP that includes Bioassessement (benthic macroinvertebrate sampling), chemical, physical and biological monitoring components. Regional Water Board staff worked closely with

the U.S. EPA, U.S. ACE, and Caltrans to develop a comprehensive and complete MRP. The data collection and evaluation will be broken down into four separate phases for the bypass alignment and mitigation lands (with multiple tasks per phase).

Phase I - Baseline Evaluation and Reporting (Bypass Alignment)

Baseline Tasks

a) Collect baseline water quality data for stream reaches along the bypass alignment
b) Collect baseline bioassessment data for bypass alignment
c) Collect baseline wetland data for bypass alignment
d) Prepare and submit reports that evaluate data sets to assess the baseline biological, physical, and chemical properties
e) Incorporate data evaluation, revised success criteria, and revised management plans into MMP

Phase I - Baseline Evaluation and Reporting (Mitigation Lands)

Baseline Tasks

f) Collect baseline water quality data for mitigation lands
g) Collect baseline bioassessment data for mitigation lands
h) Collect baseline wetland data for off-site mitigation lands
i) Prepare and submit reports that evaluate data sets to assess the biological, physical, and chemical properties
j) Incorporate data evaluation, revised success criteria, and revised management plans into MMP

Phase II - Construction Compliance Monitoring and Reporting (Bypass Alignment)

Construction Compliance Tasks

a) Conduct water quality monitoring within the stream reaches along the bypass alignment
b) Submit monthly reports on construction compliance
c) Annual Report summary on construction compliance

Phase II - Construction Compliance Monitoring and Reporting (Mitigation Lands)

Construction Compliance Tasks

d) Conduct water quality monitoring within the mitigation lands
e) Annual qualitative status reports on progress of plantings, and mitigation construction compliance, and mitigation trends and progress

Phase III - Repair Success (Bypass Alignment) – Evaluating and Measuring Success

Repair Monitoring Tasks

a) Conduct water quality monitoring within the stream reaches along the bypass alignment to verify repair success

b) Collect bioassessment data within the stream reaches along the bypass alignment to verify repair success
c) Collect wetland data for bypass to verify repair success
d) Annual reporting on compliance and mitigation progress
e) Final Mitigation Report verifying success.

Phase III - Mitigation Land Enhancement (Mitigation Lands) – Evaluating and Measuring Success

Enhancement Monitoring Tasks

f) Conduct water quality monitoring within the mitigation lands to verify repair and enhancement success
g) Collect bioassessment data for the mitigation lands to verify repair and enhancement success
h) Collect wetland data for the mitigation lands to verify repair and enhancement success
i) Annual reporting on compliance and mitigation progress
j) Final Mitigation Report verifying success.

Phase IV - Long Term Total Maximum Daily Load (TMDL) compliance for the Bypass.

TMDL and Long Term Management Tasks

a) Once success has been achieved for the on-site repair areas, Caltrans shall develop TMDL Compliance Plan and Long Term Management Plan.

Phase IV - Long Term Total Maximum Daily Load (TMDL) compliance for the Mitigation Lands.

TMDL and Long Term Management Tasks

Baseline data will be collected for all mitigation sites prior to the start of soil disturbing activities. This data collection effort will include at a minimum the following information:

Water quality parameters (continuous monitoring):

- Flow (cfs)
- pH
- Temperature
- Dissolved oxygen
- Total dissolved solids
- Turbidity
- Specific conductance

Water quality parameters (precipitation event monitoring):

- Total settleable solids
- Total nitrogen

- Nitrate and nitrite
- Biochemical Oxygen Demand
- Total Kjeldahl Nitrogen (TKN)
- Total phosphorus
- Dissolved phosphorous
- Total and dissolved metals
- Hardness
- Fecal coliform
- Enterococcus
- Total organic carbon (except on-site mitigation sites).

Physical channel characteristics:

- Cross sectional water depth
- Wetted channel width
- Bankfull width
- Substrate characteristics
- Canopy cover
- Gradient
- Sinuosity
- LWD.

Benthic macroinvertebrate sampling (bioassessment):

- Taxa richness
- Taxa composition
- Percent tolerant/intolerant organisms
- Functional feeding group analysis
- Abundance.

Chemical and physical habitat data will be used to assist in interpreting benthic macroinvetebrate (BMI) community responses to construction (point-source) and mitigation (non-point source) activities. These data will be used to establish an index of biological integrity (IBI) that can be compared to the baseline condition (pre-project) as well as to regional index sites to monitor the success of channel restoration and enhancement efforts.

Although annual snorkel count surveys would provide useful information with respect to species occurrence and relative abundance in the project area over time, these surveys would not allow Caltrans or the resource agencies to determine whether any observed differences in annual monitoring results were the result of the project or environmental conditions unaffected by the project. For example, while observed differences in the abundance of young-of-the-year steelhead during annual snorkel counts could be the result of the project, they also may be a result of the timing, duration, or magnitude of

flows that occurred during the previous spawning season or a result of differences in the number of adult steelhead returning from the ocean to spawn the previous winter – the latter two being conditions that are clearly unrelated to the project. While monitors would clearly see differences in species abundances from year to year, monitors would not be able to determine what caused those differences.

As stated above, the subsequent phases of the MRP will require Caltrans to adequately verify the success of the mitigation with data collected during the baseline assessments. Once the resource agencies have determined that the mitigation actions are successful, Caltrans will be required to use the data gathered to develop and fine tune the appropriate long term management plans for the bypass alignment and off-site mitigation lands.

Surface Water Monitoring Comment 2 (SWMC-2) – *Construction Monitoring*

Given Caltrans past history of violations for discharges and lack of monitoring they should not be allowed to execute the monitoring themselves and should hire qualified third party.

Response to Surface Water Monitoring Comment 2 (RSWMC-2)

Condition 49 of the Water Quality Certification will require that Caltrans retain a qualified water quality monitor. The water quality monitor(s) shall be knowledgeable of and have experience with the Basin Plan, and surface water monitoring procedures, protocols, quality assurance, and quality control protocols. The water quality monitor(s) shall be responsible for monitoring project activities and/or channel- ground- or vegetation disturbing activities that result in or have the potential to result in a discharge to waters of the State. The water quality monitor(s) shall be approved by Regional Water Board staff shall make requests and provide recommendations to the Caltrans Resident Engineer, Construction Storm Water Coordinator, and Environmental Construction Liaison.

The water quality monitor shall be on-site daily while Project activities are occurring including all pile installation, dewatering, channel- vegetation- or ground-disturbing activities that may affect water quality to: (1) document compliance with water quality standards and this certification; (2) record the results of all required surface water monitoring; (3) evaluate the effectiveness of BMPs, mitigation measures, and avoidance measures; (4) alert key construction staff of precipitation forecasts; and (5) make stop work recommendations for activities that results in or may result in violations of this certification. The water quality monitor(s) shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections; recommendations; monitoring and sampling results; and discharges.

During construction of the Bypass water quality monitoring will be performed at 17 locations, at least, to assess the impacts and measure compliance with the Water Quality Certification.

Water quality parameters (continuous monitoring):

- Flow (cfs)
- pH
- Temperature
- Dissolved oxygen
- Total dissolved solids
- Turbidity
- Specific conductance

Water quality parameters (precipitation event monitoring):

- Total settleable solids
- Total and dissolved metals
- Hardness
- Oil and Grease

Storm Water Comment 1 (SWC-1) - *Toxics from Storm Water & Viaduct*

The bypass project will result in additional toxic substances entering the stream channels, especially from viaduct. How will the project mitigate for these toxic substances?

Response to Storm Water Comment 1 (RCWC-1)

The project will result in an increase of approximately 38 new acres of impervious surface in the Little Lake Valley. The total area of impervious surface that will exist within the project limits will be 49 acres (including new and existing impervious surface) when the project is completed. Caltrans will provide permanent post-construction storm water treatment for approximately 43 acres of impervious surface, which is more than the amount of impervious area being added. In accordance with the National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water Discharges from the State of California, Department of Transportation Properties, Facilities, and Activities [Caltrans Storm Water Permit (Order No. 99 – 06 – DWQ)], the project has been designed to reduce discharges of storm water to the Maximum Extent Practicable (MEP). Storm water runoff and modifications to the local hydrograph will be controlled primarily through the use of low impact development (LID) best management practices (BMPs) such as bio-strips, bio-swales, and shallow vegetated detention basins that rely on infiltration and dispersion. In addition, where feasible, Caltrans will install and maintain traction sand traps within drain inlets along the roadway to reduce sediment delivery to Outlet Creek HSA.

For safety reasons, storm water drainage from the viaduct structure will be routed to deck drains and/or scupper drains. There is no treatment prior to these drainage appurtenances draining directly below. This represents a relatively small volume of storm water. Although they do not discharge directly to receiving waters, they will be discharging into the wetlands. Impacts to these wetlands are being addressed by the mitigation strategy set forth in the MMP for the creation, enhancement and preservation of wetlands.

During construction of the viaduct, temporary erosion control measures will be taken to prevent storm water discharges into the wetlands and surface waters, including the installation of Temporary Hydraulic Mulch (Bonded Fiber Matrix). Also, temporary BMPs will be used during the Construction phase. The BMPs are to be implemented in order to minimize the potential for sediments and pollutants from entering any water bodies. Caltrans will be required to implement a MRP as part of the project implementation. The MRP will establish baseline water quality conditions prior to the beginning of construction. The MRP will continue during construction and extend to one year after construction. Data will be analyzed to determine any potential impacts to water quality and proposed additional BMPs, if necessary, to improve water quality.

Although the project will create approximately 38 new acres of additional impervious surface, it will result in the treatment of storm water from approximately 43 acres. Approximately five acres will remain untreated. Because storm water from approximately eleven acres of impervious surface previously went untreated, and now this amount is lessened to five acres, this project arguably results in a net benefit to water quality because of the improved storm water treatment that it provides.

Project Impact Comments 1 (PIC-1) - *Haul Roads and Staging Areas, Water Sources / Disposal, "Wicking" and Compacting, and Concrete Batch Plant*

Water quality impacts have not been described or mitigated. These include those related to: Haul Roads and Staging Areas; Water Quality, Quantity, Source and Disposal, "Wicking" and compaction; Concrete Batch Plant; Oil Well Hill; and Upp Creek and Haehl Creek Culvert Repairs.

Response to Project Impact Comments 1 (RPIC-1)

Haul Roads and Staging Areas

The proposed haul roads and staging area locations have been identified in the Final EIS/EIR and in the application for water quality certification. For several years resource agency staffs (including Regional Water Board staff) have discussed the haul road scenarios with Caltrans. The impacts to waters of the State associated with the haul roads and staging areas will be mitigated on-site by restoring the areas subsequent to

the completion of the bypass. The restoration actions include revegetation and monitoring for successful plant establishment and surface hydrology.

During construction, the haul roads and staging areas will be stabilized to minimize temporary impacts. The contract between Caltrans and its contractor will contain provisions that specifically require that BMPs be implemented to address water quality impacts by requiring Caltrans to include all conditions of this order in the Plans and Specifications prepared for the Contractor. In addition, Caltrans shall require compliance with all conditions included in this Order in the bid contract for this project.

In addition, the Water Quality Certification requires Caltrans to:

- Submit a technical floodplain analysis that demonstrates the proposed haul road will not impact the 100-floodplain;
- Implement BMPs to the MEP with Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or eliminate pollutants in storm water runoff in accordance with the Caltrans Storm Water Permit (Order No. 99 – 06 – DWQ), and the SWRCB NPDES General Permit and Waste Discharge Requirements for Discharges of Storm Water Runoff Associate with Construction and Land Disturbance Activities (Construction General Permit or CGP, Order No. 2009-0009 DWQ); and
- Comply with all applicable conditions within the water quality certification that requires surface water motoring and sampling and strict compliance with the water quality standards within the Basin Plan.

Additionally, Caltrans will implement a Surface Water Monitoring and Reporting Program that will collect water quality data prior to construction, during construction, and after construction. Collected water quality data will be analyzed to assess and improve BMP performance and re-vegetation efforts after construction.

Water Quantity

Caltrans will not be allowed to draft surface waters for this project. Water would have to come from other sources, including municipalities, groundwater or other private sources. Issues of water supply are outside of the Regional Water Board's jurisdiction.

Construction Dewatering and Water Disposal

Construction dewatering may be required at several locations within the project limits, including construction of Bent 24 at the confluence of Baechtel and Broaddus Creek. Currently, construction dewatering with discharges directly to receiving waters is not permitted. That would change if the Low Threat Discharge basin plan amendment approved by the Regional Water Board last year is approved by the State Board and the Office of Administrative Law. That amendment and the permit adopted to implement

that permit, Order No. R1-2009-0045, General NPDES Permit No CA0024901, Waste Discharge Requirements for Low Threat Discharges to Surface Waters in the North Coast Region, would allow discharges of water from the dewatering of construction sites where sediment and naturally occurring parameters (e.g. naturally occurring metals or salts, temperature, pH, etc.) in area groundwater are the only pollutants of concern and do not exceed water quality objectives in the Basin Plan or California Toxics Rule (CTR). A groundwater characterization study is required as part of Permit coverage. Note the Permit states: "The discharge duration, flow rate, and volume must be disclosed and evaluated in relation to the receiving flow rate and characteristics in order for the Regional Water Board to determine if the discharge will have a low threat to water quality"

"Wicking" and Compacting

There will be wick drains placed under the abutments and roadway fills north of the viaduct to accelerate settlement. The wick drains will be placed to a depth of eighty feet. The areas where the wick drains are being placed and areas south of the viaduct where there will be no wick drains will have additional weight on the subsurface soils. That additional weight will not create a barrier to water movement. The subsurface water table will maintain equilibrium and remain stable on both sides of the embankment in all areas of the project.

On-Site Concrete Batch Plant

No discharges would be allowed from on-site concrete batch plants. Any batch plant would be required to comply with either the Caltrans Storm Water Permit or the State Water Board Construction General Permit. Either would require best management practices to ensure that storm water discharges from the site were not contaminated by pollutants from the batch plant. A concrete batch plant may also require compliance with additional regulatory requirements, such as a permit from the local Air Quality Management District.

Project Impact Comments 2 (PIC-2) - *Oil Well Hill*

Water quality impacts have not been described or mitigated related to the borrow site at Oil Well Hill.

Response to Project Impact Comments 2 (RPIC-2)

The location of the potential borrow site is within the impact footprint of the project, and thus incorporated in the impact and mitigation discussions in Sections 1.10.4, 2.3.5.,2.4.2., 3.7., 3.15., and 3.17. of the FEIS/EIR and permit applications. Oil Well Hill is within the Outlet Creek HSA and Caltrans has limited the potential material extraction areas to avoid dredging or filling waters of the State. A Geotechnical Design Report for

Oil Well Hill was done by a Licensed Professional Geologist dated, December 23, 2009, and a Seismic Investigation at Oil Well Hill by a Professional Certified Engineering Geologist was performed as well, dated April 20, 2007.

Caltrans has determined that additional permanent treatment BMPs could be implemented at this location during and after borrow source activities are complete. If Oil Well Hill is used as a borrow site the Contractor will be required to install temporary and permanent treatment BMPs to treat storm water runoff from the existing roadway adjacent to the borrow site. The contractor prepared SWPPP must designate construction BMPs to be implemented at the Oil Well Hill proposed borrow site. The Regional Water Board must approve the SWPPP prior to the beginning of project construction. In addition, storm water monitoring will be required by the Construction General Permit for both visible and non-visible pollutants.

Although Caltrans obtained an exemption from the Surface Mining and Reclamation Act, the Water Quality Certification will have conditions requiring Caltrans to submit a Reclamation Plan and conduct storm water and surface water monitoring to ensure the protection of Waters of the State and compliance with the Basin Plan.

Project Impact Comments 3 (PIC-3) – *Floodplain Analysis, Cumulative Impacts*

Caltrans must recalculate the cumulative impacts to the Federal Emergency Management Agency (FEMA) 100-year floodplain to include the final designs of the bypass footprint, haul roads, Willits Wastewater Treatment Plant (WWTP) and recent local development.

Response to Project Impact Comments 3 (RPIC-3)

The proposed project encroaches upon the 100-year floodplain. The design includes two elevated structures, which make up the floodway viaduct. The purpose of this design feature is to span the floodway. The Willits Bypass Floodplain Evaluation Report, dated September 2006, indicates that project will not increase the base flood elevation of the floodway, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q).

Section 3.19.7 of the FEIS/FEIR considered cumulative impacts from the entire bypass project, planned improvements to the WWTP, and recent local developments. The FEIS/FEIR explained that WWTP improvements would include constructing ponds within the Little Lake Valley floodplain that would require mitigation to avoid impacts to the floodplain. The FEIS/FEIR further stated that although construction of the bypass within the floodplain would have minimal impacts related to additional impervious surface area or to beneficial floodplain values because of the relatively small areas involved, "*[t]he City of Willits and Caltrans are coordinating and sharing information to ensure that our hydraulic analyses use the same base conditions and that the projects*

do not cumulatively increase the floodplain elevations in the Little Lake Valley. If the WWWTP project precedes construction of the Willits Bypass, the baseline conditions for the bypass will be modified and the effects reassessed". This language essentially reflects the existing legal requirement, pursuant to the California Environmental Quality Act (CEQA), that supplemental or subsequent analysis may be required should changes to the proposed project or the surrounding circumstances, i.e., the baseline condition(s) of the floodplain substantially changes. (Pub. Resources Code, § 21166; Cal. Code Regs., tit. 14, § 15162).

Once a CEQA document has been fully approved by a lead agency, as has occurred here with Caltrans acting as lead agency, a responsible agency such as the Regional Board is bound by the document even where the responsible agency has misgivings about the adequacy of the document. (Discussion following Cal. Code Regs., tit. 14, § 15052.) A responsible agency may only step into the lead agency role and/or prepare a supplemental environmental document in the following limited circumstances: (1) subsequent changes to the project require substantial revisions to the environmental document due to new or increased environmental impacts; (2) there is new information that renders the environmental document inadequate; (3) changes to the surrounding circumstances require substantial revisions to the environmental document due to new or increased environmental impacts. (Cal. Code Regs, tit. 14, §§ 15052, 15162.) None of these circumstances currently exist with respect to this project and the associated FEIR/FEIS.

First, since the FEIR/FEIS was approved by the lead agency, the Regional Board has been presented with no information that changes have occurred to the project which requires substantial revisions to the environmental document. Second, the Regional Board has been presented with no new information that requires substantial revisions to the FEIR/FEIS. Third, although section 3.19.7 of the FEIR/FEIS contemplates the need for additional analyses should the environmental baseline of the floodplain change in the future, the floodplain has yet to be modified as part of the proposed WWTP and the baseline conditions of the floodplain remain the exactly same as they were when the FEIR/FEIS was adopted. A memorandum produced by Caltrans, dated August 2, 2010, confirms that the 2006 analysis is still adequate since baseline conditions have not changed. Accordingly, without an actual change to the baseline conditions, it would be premature to require additional analysis at this time and would violate CEQA's clear guidance on the preparation of a supplemental or subsequent environmental document by a responsible agency.

In addition, the Water Quality Certification for the WWTP includes compensatory mitigation that includes wetland creation through floodplain modifications. It has been concluded that the mitigation included as part of the WWTP will actually reduce the floodplain, which should further reduce impacts on floodplain from viaduct. Additionally, the August 2, 2010 memo from Caltrans confirms that the Little Lake Valley Floodplain Hydrology and Hydraulic Assessment for the City of Willits Wastewater Treatment Plant,

dated August, 2008, will reduce the base floodplain elevation and not results in a cumulative impact to the floodplain.

Project Impact Comments 4 (PIC-4) – *Wastewater Disposal*

Caltrans proposed to use drive through water washes on-site for invasive species control. How will wastewater from invasive species control be handled?

Response to Project Impact Comments 4 (RPIC-4)

The water quality certification will require that wastewater from invasive species control and equipment washing must be disposed of at an appropriately permitted facility or comply with the proper NPDES requirements for discharges. Wastewater from vehicle cleaning will not be allowed for on-site use for any purposes (e.g. dust control) unless Caltrans can demonstrate to the satisfaction of the Regional Water Board that the wastewater has been adequately treated for potential pollutants and invasive species.

Project Impact Comments 5 (PIC-5) – *Cumulative Impacts to the WWTP and Outlet Creek*

Will the bypass footprint and mitigation have cumulative impacts on the WWTP and will the viaduct interfere with the biological process of the City of Willits created wetlands? Will dewatering the confluence of Baechtel and Broaddus Creeks interfere with the City's ability to meet their effluent stream flow ratio? What are the cumulative impacts to Outlet Creek as the first rains wash create runoff from the viaduct and the WWTP is preparing to discharge?

Response to Project Impact Comments 5 (RPIC-5)

The proposed project encroaches upon the 100-year floodplain. The design includes two elevated structures, which make up the floodway viaduct. The purpose of this design feature is to span the floodway. A floodplain evaluation report concludes that project will not increase the base flood elevation of the floodway, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q). CEQA requires that previously approved land use documents, including, but not limited to, general plans, specific plans, and local coastal plans, may be used in cumulative impact analysis.

Last year, the City of Willits also received permits from the U.S. ACE and the Regional Water Board for dredge and fill activities associated with construction of a wastewater treatment wetland at the WWTP which is within the floodplain. To mitigate potential impacts to the floodplain, the City of Willits created additional floodplain area by creating approximately 24 acres of seasonal wetlands. These seasonal wetlands will be created by removing and maintaining riparian berms, planting native wetland plant species and

allowing floodwaters to that were once confined to the channel by the riparian berms to overtop inundate the newly created seasonal wetland area. Therefore, this project will not have any impact on the floodplain. Accordingly, construction of the WWTP will not cumulatively contribute to any additional impacts associated with the project. See RPIC-3, above.

Furthermore, because this is a regulated floodplain, development in this area is restricted, and it is not likely that there would be any further development within this area that would cumulatively contribute to a significant effect on the floodplain. Based on the size of the cities wetland creation sites, the height of the viaduct and the seasonal aspect of the sun, it is not likely that the viaduct will affect the wetland creation sites enough to prevent the City of Willits from meeting compliance with their proposal. In addition, only a portion of the viaduct that is over the newly created wetlands will discharge directly to the wetlands below. The City's wetland creation proposal includes an adaptive management element, and should any problems arise with the proposed creation site they will be managed accordingly. Additionally, the Regional Water Board and U.S.ACE are the regulatory agencies that will verify compliance with the proposed mitigation and evaluate the mitigation reports to verify whether success is be achieved or is being hindered by the bypass or other constraints.

The Water Quality Certification for the bypass will require that the construction of the haul road must meet a set of guidelines that will involve addressing seasonal conditions and meeting all permit requirements. The Contractor will be required to submit a floodplain analysis that models the haul road in the existing floodplain demonstrating the haul road will not affect the 100-year floodplain.

Caltrans will only be allowed to work at the confluence of Baechtel and Broaddus Creeks between June 15th and October 15th. The Water Quality Certification will condition that Caltrans provide the City of Willits with their schedule for work in this area to avoid conflicts and potential cumulative impacts to the area during construction. In addition, the WWTP is prohibited by the basin plan to discharge to Outlet Creek from May 15th to September 30th, and typically does not discharge until later in the fall (depending on flows). Therefore, the construction of the viaduct should not interfere with the ability of the WWTP to meet the requirements under their individual NPDES permit.

Currently, the WWTP can discharge 3.0 million gallons per day (a per month average). The upgraded WWTP will be authorized to discharge up to 4.0 million gallons per day (a per month average) or 10% of the flow within Outlet Creek and a weekly average of 500 lbs/day of Total Suspended Solids. Storm water discharges associated with the viaduct represent a fraction of both the existing and future point source discharges to Outlet Creek. The estimated water quality volume discharged by the viaduct structure for a design storm of 2 years is 121,487 gallons. This represents 0.015% of discharges to Outlet Creek during the 2 year design storm. The estimated water quality volume

discharged by the viaduct structure for a design storm of 2 years is 121,487 gallons. This represents 0.015% of discharges to Outlet Creek during the 2 year design storm.

Also see response RSWC-1.

Project Impact Comments 6 (PIC-6) – *Excessive Fill*

Fill will be placed for the second phase of the bypass. Reasons provided for the need to place this fill are inadequate.

Response to Project Impact Comments 6 (RPIC-6)

The Willits Bypass project is a four-lane grade separated freeway project to improve interregional traffic operation, improve safety, and provide a level of service rating of C or better. The project is being phased due to financial constraints. The Final EIS/EIR and Project Report discuss the possibility of phasing the project due to funding. Section 2.2 of the FEIS/R states, "Upon environmental approval and appropriation of funding, Caltrans could design and construct all or part of the proposed project depending on funding availability. In an effort to balance potential funding limitations and the need for the project, the Willits bypass could be constructed in phases, whereby a functional interim facility would be constructed initially, and completion of the full facility would occur at a later date when additional funding is available."

Phase I consists of a four-lane interchange at the south end of the project conforming to an interim two-lane freeway before crossing East Hill Road. The interim two-lane freeway will utilize the southbound lanes of the ultimate four-lane freeway. The northern terminus of the project contains a two-lane grade separated interchange configured to allow the full four-lane ultimate interchange to use the existing roadway and structures.

Caltrans has evaluated the construction scenarios for completing Phase I of the project with the reduced amount of fill necessary for Phase I, as compared to the current proposal which includes the amount of fill necessary to construct Phase II. The evaluation indicated that additional project impacts to wetlands, streams, and riparian areas would result within and beyond the current bypasses alignment and possibly to the potential borrow site of Oil Well Hill. With the four-lane fill in place, design criteria for the Phase I structures will simplify Phase II design and minimize impacts in Phase II construction.

Project Impact Comments 7 (PIC-7) – *Temporary Impacts to Wetlands*

Wherever fill material is ultimately transported to the area below the viaduct which is sensitive wetland will be dewatered, significantly disturbed and severely compacted. Because there is no plan for returning the texture of the soil to pre-construction state, the construction areas identified under the viaduct will be permanently compacted. This

is a cumulative impact to the floodway and there will be impacts to water quality from the time restriction made to the floodplain.

Response to Project Impact Comments 7 (RPIC-7)

Caltrans is required by the U.S. ACE, Regional Water Board, and CDFG to successfully restore all temporary impacts to wetlands in accordance with the requirements presented in the final MMP. The restoration efforts will include re vegetation of native wetland species as well as monitoring of the surface hydrology and inundation period. In addition, the Water Quality Certification will require the success criteria for: wetland creation, restoration and enhancement success to include:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition]
- Nutrient removal/transformation
- Sediment/toxicant retention
- Absolute percent coverage of wetland plants
- Absolute percent cover of native plant species
- Species richness
- Absolute percent coverage of invasive species
- California Rapid Assessment Method (CRAM) score.

Therefore, the interaction of surface waters and ground water and soil saturation will be assessed. Restored or created wetlands will be monitored annually for at least 5 years. If success criteria are not met then additional actions or mitigation measures will be required by the resource agencies.

For cumulative impacts to the floodplain see responses RPIC-3 and RPIC-5.

Project Impact Comments 8 (PIC-8) – *Shortened Viaduct*

Before 2007 funding constraints were imposed the viaduct (Alternative J1T) was to begin about ¼ mile south of Center Valley Road. Doesn't the LEDPA need to be reexamined? A supplemental environmental document should be required for impacts to water quality and the floodplain.

Response to Project Impact Comments 8 (RPIC-8)

The structure commonly called the "viaduct" is a bridge spanning the floodway/floodplain. It was determined during the LEDPA analysis that the viaduct was not needed south of Center Valley Road and was eliminated before the Final EIS/EIR was finalized. The viaduct is as long as the longest viaduct discussed in the Draft

EIS/EIR alternatives. Accordingly, no supplemental environmental document pursuant to CEQA needs to be drafted.

For impacts to the floodplain, see responses RPIC-3 and RPIC-5.

Project Impact Comments 9 (PIC-9) – *Prevent Excessive Violations*

Add mechanism to SWPPP to prevent another project that fails to comply with water quality conditions and requirements, like the 150 Confusion Hill violations. All contractors should be required to attend water quality training class. Contractors should be notified that they will be held liable for violations. Biological/water quality monitor should have stop-work authority (Water Agency wants to meet monitor).

Response to Project Impact Comments 9 (RPIC-9)

The bypass project will at all times be required to feature adequate erosion and sediment control devices to prevent the degradation of water quality. Soils exposed by project operations will be treated to prevent sediment runoff and transport. Erosion control measures will include the proper installation and maintenance of BMPs pursuant to the Caltrans Storm Water Permit, and the Construction General Permit. In addition, Caltrans must comply with all applicable conditions within the Water Quality Certification that requires surface water motoring and sampling and strict compliance with the water quality standards within Basin Plan. Additional conditions of the certification will require that:

- Caltrans retain a water quality monitor dedicated to the project (also see response RSWMC-2);
- The Resident Engineer shall hold on-site water quality permit compliance meetings (similar to tailgate safety meetings) to discuss permit compliance, including instructions on how to avoid violations and procedures for reporting violations. The meetings shall be held at least every other week, and particularly before forecasted storm events and when a new contractor or subcontractor arrives to begin work at the site.
- Caltrans shall conduct an environmental awareness and compliance training program for all contractors, sub-contractors and Caltrans staff working on the project. The training program shall present the environmental regulations and various permit conditions that Caltrans and the contractors shall comply with and the applicable measures established for the project to minimize impacts to water quality and avoid sensitive resources, habitats, and species.

Regional Water Board staff is pleased to know that the Mendocino County Water Agency would like to take a proactive and supportive role in this and other such projects. Cooperation with environmental compliance awareness, water quality

sampling, trainings, and construction inspections could all be coordinated between the State and County agencies throughout this and other projects within the region.

Project Impact Comments 10 (PIC-10) – Downsize the Bypass

Scaling down the bypass would accomplish the main goals without so much damage.

Response to Project Impact Comments 10 (PIC-10)

Alternatives resulting in less than a four-lane freeway have been considered during the development of the project. General Response 1.10 in Volume 2 of the Final EIS/EIR addresses the suggestion of a two-lane bypass. Transportation System Management (TSM) alternatives were also considered and discussed in Section 3.6.1 of the Draft EIS/EIR. TSM alternatives seek ways to use the existing facilities in lieu of an entirely new route. As elaborated upon in the environmental documents, the purpose and need would not be met with either the two lane or TSM alternatives. Numerous additional alternatives were considered during the scoping of the project. None of the alternatives reviewed would result in fewer environmental impacts than the identified LEDPA Modified J1T while still meeting the purpose and need.

Project Impact Comment 11 (PIC-11) – *Construction Impacts*

Construction activities and heavy equipment will threaten wetlands and salmonid streams.

Response to Project Impact Comment 11 (RPIC-11)

During construction, water quality effects will be minimized through provisions in the construction contract. Contractors will be required to prepare and implement a program to effectively control water pollution during the construction of the bypass project, in compliance with Caltrans Standard Specifications Section 7-1.01G—Water Pollution and Contract Special Provisions. This program will consist of the development of a SWPPP, which requires that the bypass project meet standards and objectives to minimize water quality impacts during construction. The SWPPP will be submitted to Regional Water Board before any construction activities begin. The SWPPP will include appropriate Caltrans construction BMPs to reduce the potential for sediment and contaminants from entering creeks. Potential BMPs for inclusion in the project's SWPPP are listed below with detailed descriptions available online at http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm (additional BMPs could be implemented as necessary to minimize potential effects on water quality).

- preservation of existing vegetation
- hydroseeding
- silt fencing

- gravelbag barriers
- stabilized construction entrance/exit
- stabilized construction roadway
- dewatering operations
- paving and grinding operations
- temporary stream crossings
- clear water diversion
- material delivery and storage
- stockpile management
- spill prevention and control
- solid waste management
- hazardous waste management
- concrete waste management
- sanitary/septic waste management
- liquid waste management.

The contractor will be required to implement appropriate BMPs to prevent the discharge of equipment fluids to the stream channel. The minimum requirements will include: storing hazardous materials outside of the stream banks; checking equipment for leaks and preventing the use of equipment with leaks; pressure washing equipment to remove fluid residue on any of its surfaces prior to its entering the live channel (if equipment is needed in the channel to establish a flow diversion); maintaining spill response material and suitably trained personnel at the project site; responding immediately to any fluid releases and applying containment booms and absorbent materials as appropriate; and notifying the Regional Water Board of releases and discharges. For minor accidental releases of equipment fluid to the dewatered channel, the contractor will be required to remove and properly dispose of contaminated material.

In addition, Caltrans shall submit the SWPPP in an electronic format using the Storm Water Multi-Application Reporting and Tracking System (SMARTS). http://smarts.waterboards.ca.gov/. The SWPPP, updates to the SWPPP, and monitoring reports regarding the regulation or storm water will be available to the public via this website. In addition, the public may view inspections reports and facility information related to the Section 401 Water Quality Certification at the California Intergraded Water Quality System (CWIQS) at http://www.waterboards.ca.gov/water_issues/programs/ciwqs/

All disturbed soil areas, including non structural slopes, will be stabilized with revegetation and erosion control measures. Disturbed slopes will be re-vegetated in accordance with plans developed by the Caltrans District Landscape Architect and the Revegetation Specialist or otherwise stabilized. Permanently impacted areas such as cut and fill slopes adjacent to the roadway along interchange ramps, as well as median between the inside roadway shoulders will be re-vegetated with native plants

appropriate to Little Lake Valley. Steeper embankment slopes located at structures approaches will be protected with RECP (Netting) blanketing materials and all final slopes will be stabilized and re-vegetated with local topsoil and native grass seed which is included in the Erosion Control (Bonded Fiber Matrix) application. In addition, finished slopes and ditches constructed greater than 1:3 (V:H) will be stabilized with Rolled Erosion Control Product (Netting). Upon completion of construction of the Floodway Viaduct structure, the entire disturbed area will be regarded to pre-construction conditions and re-vegetated with Erosion Control (Bonded Fiber Matrix). Prior to the application of Erosion Control (Bonded Fiber Matrix), Local Topsoil will be collected/harvested and stockpiled prior to construction and placed back on all areas to receive permanent erosion control measures such as Erosion Control (Bonded Fiber matrix) in the re-vegetation effort, once the project has been completed. Bio-swales will be constructed and re-vegetated as part of Treatment BMPs at drainage outlet areas prior to run-off off site of the project. Turf Reinforcement Mat (TRM) along with Erosion Control (Bonded Fiber Matrix) will be utilized to line the inlet channel at Center Valley Rd.

Also, see responses RSWMC-1 and RSWMC-2.

Project Impact Comment 12 (PIC-12) – Permanent Fill Area

All re-vegetation must have an 80% success rate. Efforts must continue until success is achieved with no time limitation.

Response to Project Impact Comment 12 (RPIC-12)

The comment was made with respect to the permanent fill area. For areas along the bypass that need to be re/vegetated with erosion control to stabilize fill slopes Caltrans typically requires 70 percent coverage of applied erosion control products. Condition 56 of the Water Quality Certification requires Caltrans to provide yearly slope evaluation and erosion control monitoring reports for up to 10 years subsequent to the completion of the bypass project. Caltrans shall provide at least 80 percent coverage of established erosion control of all exposed areas along the bypass. If the new bypass project has slope failures, excessive erosion, or causes other water quality degradation corrective actions will be required to mitigate the impacts. To clarify, established erosion control is vegetation growth, not applied erosion control product.

Temporary impact areas will be repaired once construction of the Willits Bypass is complete. The yearly performance standards and final success criteria are set up to acknowledge that plant mortality is a normal and expected occurrence in any re-planting effort. The final success criteria for riparian areas are expected to be met by year 10, however, if the criteria are not met by year 10 this does not absolve Caltrans of the obligation to meet the criteria. If the yearly performance standards do not show a trend toward meeting the final success criteria in year 10, adaptive management actions will

have already been implemented to get the mitigation back on track to meet success criteria. Monitoring and adaptive management will continue until final success criteria are met regardless of the year. The same approach applies to wetland areas.

General Opposition Comments 1 (GOC-1) – *No to the Project*

Commenter's who oppose the bypass in general.

Response to General Opposition Comments 1 (RGOC-1)

Comments noted. Areas commented on that are outside of the Regional Water Board's regulatory jurisdiction include: general opposition; noise; impacts to bees and local pollinators; sink holes; traffic; farmland; and former Highway 101 relinquishment.

Requests for an Additional Public Comment Period 1 (PCPC-1) – *Public Comment Period and Meeting*

Commenter's request that the Regional Water Board open an additional public comment after the application is deemed complete and hold a public meeting. Several commenters' raised concerns that the mitigation approach was not fully disclosed to the public.

Response to Requests for an Additional Public Comment Period 1 (PCPC-1)

As required by the California Code of Regulations title 23, chapter 28, section 3858 the Executive Officer is required to provide a public notice for at least 21 days, unless the Federal Agency or Application has provided an adequate notice period. On March 16, 2010, the U.S. ACE provided a 30 day public comment period, which adequately covers the responsibilities of the Regional Water Board. However, on April 29, 2010, the Regional Water Board issued a public notice for the project as well. In addition, based on a public request the Regional Water Board extended the comment period by six days, and has considered all comments received up to June 16, 2010.

Economic Comments 1 (EC-1)

In California's current financial crisis is this project the best use of limited funds? This project should be redesigned to something with a more practical price tag.

Response to Economic Comments 1 (REC-1)

Comment noted. This issue is outside of the Regional Water Board regulatory jurisdiction.

Project Planning Comments 1 (PPC-1) – Antiquated Design

Decade old plans and ideas are not being looked at from a 2010 perspective. Peak oil, climate change and economic cataclysm were not in the picture when these plans were originally made.

Response to Project Planning Comments 1 (RPPC-1)

Comment noted.

Project Planning Comments 2 (PPC-2) – Tight Diamond Interchanges

Caltrans should be required to actually design "tight diamond" interchanges as they promised in the Final EIS/EIR.

Response to Project Planning Comments 2 (RPPC-2)

The DEIS/EIR dated May 2002 states in section 5.6.4 Mitigation Measures, subsection FP-4 the project will consist of tight diamond interchanges rather than the larger spread diamond interchanges. The current vernacular for the two types of diamond interchanges are now compact diamond and spread diamond interchanges. The compact diamond interchange replaces the tight diamond. The current Modified J1T Alignment uses compact diamond interchanges, the same intersection design as the tight diamond interchanges.

Public Access Comment (PAC-1) – Unannounced Public Inspections

Please require and allow public access for periodic unannounced site inspections.

Response to Public Access Comment (PAC-2)

For safety and liability reasons only authorized personnel will be allowed to enter the construction sites. Authorized resource agency personnel may enter the project site at any time to verify compliance with permit conditions and regulations. Regional Water Board staff frequently performs unannounced inspections of sites and facilities to verify compliance. In accordance with CalOSHA regulations everyone on the project site must be wearing the required personal protection equipment and it is State policy that these inspectors are maintain yearly HAZWOPER (health and safety) training. For the safety of everyone, all visitors must contact the Resident Engineer's office to make arrangements to read the Code of Safe Practices and receive a briefing on the current operations before entering the project. Construction zones can be very dangerous if one does not know how to properly maneuver around the sites and heavy equipment.

Potential Wetland Enhancement 1 (PEC-1)

Commenter suggested specific areas in the watershed that have potential wetland enhancement opportunities.

Response to Potential Wetland Enhancement 1 (PEC-1)

Comment noted. These areas may provide potential wetland mitigation opportunities and would require further evaluation. These locations may provide useful mitigation for future projects.

Also see response RMPC-11.

Traffic Volume Comments 1 (TVC-1) – *Traffic and LEDPA*

Decisions on the LEDPA utilized numbers from the mid 90's. Traffic projections have not borne out. Caltrans website shows that traffic numbers have decreased since 1992. The decision to use Level C as the criteria for accepting alternatives is unnecessary and precludes any two lane options or in town at grade solutions. A two-lane alternative would remove the slow-down currently experienced by through traffic in Willits. The traffic problem is not as bad as Caltrans has described and this project does not meet LEDPA.

Response to Traffic Volume Comments 1 (TVC-1)

Comment noted. The Regional Water Board is not a signatory agency to LEDPA. Modified Alternative J1T was determined by Caltrans, FHWA, U.S. EPA and the U.S. ACE to be the LEDPA/Preferred Alternative because it would have the least overall impact to the natural and community resources, while still meeting the purpose and need for the project. A Record of Decision was issued for the proposed project based upon the purpose and need on December 18, 2009 by the Federal Highway Administration.

Traffic Volume Comments 2 (TVC-2) – *Trucks in Town*

There have never been any assurances that truck traffic associated with construction of the bypass will not go through town.

Response to Traffic Volume Comments 2 (TVC-2)

Comment noted. This issue is outside of the Regional Water Board regulatory jurisdiction.

Contractor Comments 1 (CC-1) – *Bar Problem Contractors*

Contractors with poor track records of environmental compliance should be barred from the project.

Response Contractor Comments 1 (CC-1)

Comment noted. As the permit applicant and holder Caltrans has the ultimate responsibility on projects and is subject to liability for actions taken by its contractors.

Semaphore Grass Comment 1 (SGC-1)

The commenter discussed the impacts to North Coast Semaphore Grass (NCSG) related to the project and the lack of appropriate mitigation pursuant to the California Endangered Species Act (CESA).

Response to Semaphore Grass Comment 1 (RSGC-1)

A Supplemental Environmental Impact Report was prepared pursuant to the California Environmental Quality Act. The draft report was signed on November 15, 2009. Comments were received during the circulation period, which ended January 19, 2010. The Final Supplemental EIR was completed in May 2010, with potential impacts to NCSG determined to be less than significant after mitigation. The mitigation proposal will protect and manage over 1,900 acres of habitat and include preservation of North Coast semaphore grass.

Measures will be taken to minimize and fully mitigate project impacts. As part of avoidance and minimization measures, North Coast semaphore grass seed and rhizomes will be salvaged from the impact area prior to project construction and transplanted within the bypass alignment to an unaffected area. In addition, Caltrans is coordinating with CDFG and USFWS on a 2-year study to characterize hydrology (i.e., groundwater), soils (i.e., moisture and temperature), and cultural (i.e., land use) conditions at Arkelian, Frost, Goss, Lusher, and MGC Plasma North offsite mitigation parcels and the Huffman impact parcel for use in determining the potential to actively expand these occurrences. Data collected relating to the soil dry down curve at the occurrence sites will be of particular interest. Based on qualitative observations made during March 2010 abundance surveys, expansion at the occurrences seem possible as there appears to be unoccupied habitat available at the boundaries of the occurrences that could accommodate expansion. Land management practices, such as low intensity livestock grazing and limited mowing, also may allow expansion of North Coast semaphore grass.

As part of mitigation efforts, five existing North Coast semaphore grass populations in Little Lake Valley that occur at the Arkelian, Frost, Goss, Lusher, and MGC Plasma North offsite mitigation parcels will be placed in preserves as part of project mitigation. A total of 5.094 acres of occupied habitat has been identified at these preserves. The soil and hydrologic conditions favored by north coast semaphore grass are currently being evaluated to better understand the groundwater, soil moisture, soil temperature, soil profile, and soil density conditions under which NCSG grows. The evaluation is also intended to provide an understanding of the characteristics of areas adjacent to NCSG populations that may be used for implementing minimization measures (e.g., transplantation and seeding) for NCSG impacts at and for determining expansion potential at existing NCSG populations that will be preserved. Caltrans has developed a work plan in coordination with the CDFG and U.S. USFWS)to provide supplemental data for NCSG. During March 11—26, 2010, NCSG populations were identified, mapped, stratified (into stands), and surveyed for abundance. Simultaneously, 69 shallow soil pits were excavated within and adjacent to NCSG stands at five separate occurrences in Little Lake Valley as part of general habitat characterization efforts. Soil, hydrologic, and other site characteristics were documented at each of the pit sites. These data have been used to develop monitoring methods to collect more detailed soils and hydrology data. In addition to the soil and hydrologic data collected during general habitat characterization surveys, data were also collected on NCSG rooting depth. Knowledge of the root zone will help define the depth at which soil moisture and soil temperature monitoring sensors will be installed. The results of the detailed soil and hydrologic monitoring will be presented in annual monitoring reports to be submitted to the resource agencies for review in September 2010 and September 2011.

General Support Comments 1 (GSC-1) – *In Support of Conditional Permit*

Commenter's who support the Regional Water Board issuing a conditional permit for the bypass. Commenter's also support the ecologically designed mitigation approach and restoration efforts for the benefit of salmonids. Commenter's who urge the Regional Water Board to give this project as much attention as possible in order to get it approved.

Response to General Support Comments 1 (RGSC-1)

Comment noted. Collectively the State and Federal resource agencies have spent an incalculable amount of staff time on the Caltrans-proposed Highway 101 Willits Bypass Project over past decades. The purpose of the resource agencies' involvement in the process is to aid Caltrans in appropriately avoiding, minimizing and mitigating significant impacts to the environment associated with the proposed Project. In addition, over the past several months Regional Water Board staff (Caltrans liaison) has been dedicated full time to this project to expedite meetings with State and Federal agencies, conduct document reviews, and provide additional planning efforts to assist Caltrans in meeting

their goal. Subsequent to the incomplete letters issued by the U.S.EPA and U.S. ACE, the Regional Water Board also issued an incomplete letter reiterating the issues identified by the Federal agencies. However, Regional Water Board staff also provided additional suggestions on how to improve the project what type of information would be useful for the permitting agencies to receive in order to approve the project.

100806_JJP_CDOT_Hwy101WillitsBypass_CommentsResponse

Commenter Key

Comment Type	Comment Catergory
Contractor Comments	CC-1
Contractor Comments	CC-1
Economic Comments	EC-1
Economic Comments	EC-1
Economic Comments	EC-1
Economic Comments	EC-1
Economic Comments	EC-1
Economic Comments	EC-1
Economic Comments	EC-1
No to the Project	GOC-1
No to the Project	GOC-1
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Comment Type	Comment Catergory
No to the Project	GOC-1
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In Support of the Project	GSC-1
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Comment Type	Comment Catergory
In Support of the Project	GSC-1
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In Support of the Project	GSC-1
Compiance with Clean Water Act	LCC-1
Compiance with Clean Water Act	LCC-1
Mtigation vs. Adjacent Land Use	MPC-1
Mtigation vs. Adjacent Land Use	MPC-1
Mtigation vs. Adjacent Land Use	MPC-1
Mtigation vs. Adjacent Land Use	MPC-1
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Mtigation vs. Adjacent Land Use	MPC-1

Comment Type	Comment Catergory
Mtigation vs. Adjacent Land Use	MPC-1
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Mtigation vs. Adjacent Land Use	MPC-1
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TMDL	MPC-10
TMDL	MPC-10
TMDL	MPC-10
TMDL	MPC-10
Lack of Detail	MPC-11
Lack of Detail	MPC-11
Lack of Detail	MPC-11
Lack of Detail	MPC-11
Lack of Detail	MPC-11
Lack of Detail	MPC-11
Lack of Detail	MPC-11
Lack of Detail	MPC-11
Lack of Detail	MPC-11
Net Loss of Wetland	MPC-12
Net Loss of Wetland	MPC-12

Comment Type	Comment Catergory
Net Loss of Wetland	MPC-12
Net Loss of Wetland	MPC-12
Net Loss of Wetland	MPC-12
Net Loss of Wetland	MPC-12
Net Loss of Wetland	MPC-12
Succession & Land Management	MPC-2
Succession & Land Management	MPC-2
Succession & Land Management	MPC-2
Succession & Land Management	MPC-2
Succession & Land Management	MPC-2
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Comment Type	Comment Catergory
Succession & Land Management	MPC-2
Succession & Land Management	MPC-2
Succession & Land Management	MPC-2
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Fish Mitigation and Habitat Enhancement	MPC-3
Fish Mitigation and Habitat Enhancement	MPC-3
Fish Mitigation and Habitat Enhancement	MPC-3
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Fish Mitigation and Habitat Enhancement	MPC-3
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Comment Type	Comment Catergory
Fish Mitigation and Habitat Enhancement	MPC-3
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Mtigiation Credits & Preservation	MPC-5
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Comment Type	Comment Catergory
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Public Comment Period & Meeting	PCPC-1
Public Comment Period & Meeting	PCPC-1
Public Comment Period & Meeting	PCPC-1
Public Comment Period & Meeting	PCPC-1
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Comment Type	Comment Catergory
Public Comment Period & Meeting	PCPC-1
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Public Comment Period & Meeting	PCPC-1
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Comment Type	Comment Catergory
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Floodplain Analysis, Cumulative Impacts	PIC-3

Comment Type	Comment Catergory
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Comment Type	Comment Catergory
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Comment Type	Comment Catergory
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Shortened Viaduct	PIC-8
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Comment Type	Comment Catergory
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Antiquated Design	PPC-1
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Antiquated Design	PPC-1

Comment Type	Comment Catergory
Tight Diamond Intechanges	PPC-2
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Careful Not Rushed Regulatory Decision	REC-1
Careful Not Rushed Regulatory Decision	REC-1
Careful Not Rushed Regulatory Decision	REC-1
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Careful Not Rushed Regulatory Decision	REC-1
Careful Not Rushed Regulatory Decision	REC-1
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Semaphore Grass	SGC-1
Semaphore Grass	SGC-1
Semaphore Grass	SGC-1
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Toxics from Storm Water & Viaduct	SWC-1
Toxics from Storm Water & Viaduct	SWC-1
Toxics from Storm Water & Viaduct	SWC-1
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Comment Type	Comment Catergory
Toxics from Storm Water & Viaduct	SWC-1
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Toxics from Storm Water & Viaduct	SWC-1
Surface Water Monitoring	SWMC-1
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Comment Type	Comment Catergory
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Construction Monitoring	SWMC-2
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Comment Type	Comment Catergory
Construction Monitoring	SWMC-2
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Construction Monitoring	SWMC-2
Traffic and LEDPA	TVC-1
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Traffic and LEDPA	TVC-1
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Comment Type	Comment Catergory
Trucks in Town	TVC-2
Trucks in Town	TVC-2

Attachment 2

California Environmental Quality Act Findings for Potentially Significant Impacts to Water Quality related to California Department of Transportation Highway 101, Willits Bypass Project WDID No. 1B10019WNME

As a Responsible Agency, the Regional Water Quality Control Board, North Coast Region (Regional Water Board), complies with the California Environmental Quality Act (CEQA) by considering the Environmental Impact Report (EIR) prepared by the Lead Agency (California Department of Transportation) and making its own findings regarding significant impacts within its regulatory purview and jurisdiction. (Cal. Code Regs, tit. 14, §§15091, 15096.) These findings are set forth below.

The Final Environmental Impacts Statement / Environmental Impact Report for the Willits Bypass project (FEIS/EIR - State Clearing House No. 1990030006), certified by the California Department of Transportation (Caltrans) on October 25, 2006 and Supplemental Environmental Impact Report certified by Caltrans on May 19, 2010 (SEIR State Clearing House No. 1990030006), identifies the following potentially significant impacts to water quality from the project:

1. Increases in Water Temperature (FEIS/EIR, § 3.5.1)
2. Impacts to Sensitive Plant Communities and Habitats (FEIS/EIR, § 3.7.1, SEIR, § 4.1.)
3. Direct and Indirect Impacts to Special-Status Plants (FEIS/EIR, §§ 3.7.3, 3.17.2)
4. Direct and Indirect Impacts to Special-Status Fish (FEIS/EIR, §§ 3.7.7, 3.17.1)
5. Direct and Indirect Impacts to Wetlands and Waters of the U.S. (FEIS/EIR, §§ 3.7.4, 3.17.3)
6. Impacts to Special Status Wildlife (FEIS/EIR, § 3.7.5)

Based on its own independent review of the FEIS/EIR and SEIR, the Regional Water Board finds that with the implementation of the mitigation measures identified in the FEIS/EIR and SEIR and conditions of the Water Quality Certification, all potentially significant impacts to water quality will be reduced to levels which are less than significant. This conclusion is supported by the findings below.

Potentially Significant Impact to Water Quality – Increases in Stream Temperature (FEIS/EIR, § 3.5.1):

Impact Description:

The proposed project would span the following surface waters: Haehl Creek, Baechtel Creek, Broaddus Creek, Mill Creek, and Upp Creek, all of which are tributaries to Outlet Creek. Construction of the bypass at these stream crossings would result in the removal of riparian habitat in order to accommodate the construction of bridges, culverts, and the viaduct structure. This would result in 10.12 acres of temporary impacts (6,693 linear feet) and 10.88 acres of permanent impacts (8,535 linear feet) of

riparian areas.[1] The removal of this vegetation and loss of canopy cover could affect water quality by elevating stream water temperatures at these locations. The FEIS/EIR has identified this as a potentially significant impact.

Finding:

Pursuant to Public Resources Code Section 21081(a) and CEQA Guidelines Section 15091(a), the Regional Water Board finds that changes or alterations have been required in, or incorporated into, the project that would avoid or substantially lessen the significant environmental effect to a less than significant level. The Regional Water Board finds that mitigation measures and conditions listed below are feasible to offset the impact to stream temperature and are, therefore, incorporated as conditions of the Water Quality Certification and associated Monitoring and Reporting Program (MRP).

Facts that Support the Finding:

FEIS/FEIR Mitigation Measures:

WQ-3: Revegetation: Where vegetation is removed or severely trimmed back, Caltrans will plant replacement vegetation for shading of creeks to reduce temperature related impacts to water quality. Local native plant species would be used for the revegetation of impacted riparian areas along salmonid streams, within the project limits as well as off-site mitigation areas. Mitigation would be in-kind and plant propagules would be collected in Little Lake Valley. Planting methods would include the installation of stem (pole) cuttings from plants such as willows, cottonwood, thimbleberry, coyote bush, or other species capable of easy rooting from cuttings. Pole cuttings would also be used to revegetate areas where Rock Slope Protection (RSP) is required on the stream banks. In mitigation areas where some riparian vegetation is already present, additional vegetation would be planted. Revegetation of unvegetated stream banks would be considered creation.

BIO-9: Riparian Woodland: Caltrans/Federal Highway Administration (FHWA) will mitigate for impacts to riparian forest habitat through creation and restoration or

[1] Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects waterbodies with their adjacent uplands, and are considered "waters of the State." Protection of riparian areas adjacent to streams, lakes, and estuarine-marine shorelines is essential to the protection of the beneficial uses of the waterbodies. As collectively agreed to by the resource agencies with jurisdiction over this project, riparian areas are: 1) Category I Riparian Corridors, which include areas of salmonid streams and adjacent riparian areas extending 100 feet from each bank laterally from the Ordinary High Water Mark; 2) Category II Riparian Corridors, which include tributaries of Category I Riparian Corridors that are within 1,000 feet of the confluence with a Category I Stream, and extending 50 feet from the OHWM on each bank; and 3) Category III Riparian Corridors, which include tributaries of Category I Riparian Corridors that are more than 1,000 feet upstream of the confluence with the Category I Stream, extending 25 feet from the OHWM on each bank.

enhancement (including expansion) of existing degraded riparian habitat at a ratio agreed upon in consultation with California Department of Fish and Game (CDFG), United States Fish and Wildlife Services (USFWS), National Marine Fisheries Service (NMFS), and United States Environmental Protection Agency (USEPA). Caltrans/FHWA will protect riparian forest mitigation areas in perpetuity through conservation easements, deed restrictions or other equivalent measures. The primary goal of the Mitigation and Monitoring Plan for riparian communities will be to ensure that no permanent loss of habitat values occurs as a result of the project and that the temporal loss of habitat is adequately mitigated.

Additional Conditions:

Revegetation: Where removal of vegetation is required, protection of riparian woodland, and riparian creation and enhancement are proposed to offset potential impacts related to loss of canopy and elevated stream temperature. Where riparian woodland vegetation must be removed, mitigation for all affected riparian woodlands would be implemented through creation/restoration, enhancement, and preservation within Little Lake Valley as required by the Monitoring and Reporting Program (MRP) and MMP. Section 3.0. of the MRP requires the conversion of baseline information into site-specific performance standards that will measure success and ensure that long-term impacts resulting from the loss of canopy and the corresponding potential increases in stream water temperature are reduced to a less than significant level or avoided.

Protection of Riparian Woodland: Potential impacts to riparian woodlands would first be minimized. Minimization measures during construction shall include: removing the minimum amount of vegetation necessary; installing environmental sensitive area (ESA) fencing and enforcing protection of riparian vegetation located within established protected areas; implementation of appropriate Best Management Practices (BMPs); and pre-construction training sessions to inform contractors and construction workers of the status of sensitive habitats and special-status species and the requirements for avoidance of protected areas.

Riparian Creation and Enhancement: In addition to minimizing impacts and mitigating all removed riparian vegetation, the project will also revegetate unvegetated stream banks (which would be considered creation) and provide additional vegetation along some sparsely vegetated areas (which would be considered enhancement). Approximately 1,700 linear feet of riparian plantings will be placed along the east bank of Baechtel Creek between where the viaduct will cross Baechtel Creek and where East Commercial Street presently crosses the creek, and along approximately 1,400 linear feet of the north bank of Mill Creek before Mill Creek passes under the Western Pacific railroad tracks, which will further improve surface water temperatures within the watershed. Approximately, six miles (measured along both sides of the stream banks) of riparian habitat will be created or enhanced along Category I, II, and III streams within the offsite mitigation parcels. Long stream reaches that would benefit from riparian

plantings are present along both Davis and Outlet Creeks, and will be required as a condition of the Water Quality Certification and MRP.

Monitoring and Reporting Program: As stated in Section 1.0. of the MRP, Caltrans is required to conduct bioassessment (benthic macroinvertebrate sampling) as well as chemical, physical, and biological monitoring components. Chemical monitoring includes parameters such as dissolved oxygen, temperature, turbidity, total dissolved solids, oil and grease, and several other constituents. Physical monitoring includes hydrology, geomorphic conditions (i.e., cross sectional water depth, wetted channel width, bankfull width, substrate characteristics, canopy cover, gradient, sinuosity, large woody debris) and other parameters. Biological monitoring includes wetland plant coverage, invasive species coverage, riparian canopy coverage, benthic macro-invertebrates surveys, as well as other parameters. Regional Water Board staff worked closely with the USEPA, United States Army Corps of Engineers (USACE), and Caltrans to develop the MRP and to ensure that impacts to stream temperatures are fully mitigated.

Section 3.0. of the MRP details the schedule (including the frequency of monitoring), the locations, and the evaluation of data to adequate develop the short term work plans, grazing management plan, and mitigation success criteria. The requirements for baseline assessments, monitoring during construction, procedures for enhancement verification, and long term monitoring requirements as also detailed in Section 3.0.

Section 4.0. of the MRP requires that Caltrans monitor impacts to stream temperatures associated with the construction of the bypass and Section 5.0. requires Caltrans to measure the success of the mitigation measures (revegetation) and ensure the project does not result in a significant increase in stream temperatures in the long term. Additionally, the Water Quality Certification and MRP require Caltrans to plant riparian vegetation in all areas within the bypass alignment and mitigation lands to provide the maximum site potential shade to streams within the project area. Section 3.0 of the MRP also require Caltrans to include additional and robust success criteria within the Mitigation and Monitoring Proposal (MMP) for measuring effectiveness of riparian mitigation measures that incorporate percent canopy cover and percent effective shade requirements which measure the effectiveness of riparian creation and enhancement actions for mitigating impacts to streams.

Potentially Significant Impact - Impacts to Sensitive Plant Communities and Habitats (FEIS/EIR, § 3.7.1; SEIR, § 4.1.)

Impact Description:

Baker's meadowfoam is a federal species of concern, a state-listed rare species, and a California Native Plant Society (CNPS) List 1B species. Modified Alternative J1T would permanently impact approximately 33.5 acres of potentially suitable Baker's meadowfoam habitat. Additionally, the project may impact North Coast Semaphore

Grass, as discussed in the SEIR. North Coast semaphore grass (*Pleuropogon hooverianus*) is listed by the State of California as a threatened species and is a federal species of concern. It is also a CNPS List 1B.1 species (Plants Rare, Threatened, or Endangered in California or Elsewhere). An essential element of the Regional Water Board's Water Quality Control Plan (Basin Plan) is to adopt and ensure the protection of beneficial uses. While rare, threatened, and endangered species (RARE) is an existing beneficial use which the Regional Water Board is designated to protect, the primary mitigation authorities for special status plants are CDFG and USFWS. The FEIS/EIR and SEIR have identified these impacts as potentially significant.

Finding:

Pursuant to Public Resources Code Section 21081(a) and CEQA Guidelines Section 15091(a), the Regional Water Board finds that changes or alterations have been required in, or incorporated into the project such that it would avoid or substantially lessen the significant environmental effect to a less than significant level. The Regional Water Board further finds that mitigation measures and conditions listed below (including those pertaining to impacts to wetlands and waters of the U.S.) are feasible to offset the impacts and are, therefore, incorporated as conditions of the Water Quality Certification and associated MRP.

Facts that Support the Finding:

FEIS/EIR Mitigation Measures:

BIO-11: Special Status Plants: Impacts to Baker's meadowfoam would be mitigated by off-site preservation of existing populations and habitat, as well as by creation/enhancement of new habitat for populations occurring on upland sites and on wetland sites. Portions of temporarily impacted Baker's meadowfoam habitat could be restored where feasible. Baker's meadowfoam habitats occurring within jurisdictional wetlands would be mitigated by a combination of creation/restoration at the same ratios as jurisdictional wetlands, and preservation. Baker's meadowfoam creation/restoration parameters would be based on specific hydrologic and soil conditions specified and described for the species in a formerly prepared study titled "Hydrologic and Soil-Geomorphic Conditions Associated with Baker's Meadowfoam in Little Lake Valley, Mendocino County, California" (Balance Hydrologics, Inc. 1993). The mitigation strategy allows for the creation, restoration, enhancement, protection and preservation of approximately 1,157 acres of potential Baker's meadowfoam habitat. The Baker's meadowfoam preserves would be maintained in perpetuity within Little Lake Valley.

SEIR Mitigation Measures:

Impacts to NCSG will be mitigated, as with Baker's meadowfoam, primarily through off-site preservation and enhancement of existing populations and habitat population and to protect and restore the remaining portions of the population within the right-of-way.

However, measures will also be taken to minimize direct and indirect impacts to the affected. Mitigation measures will be taken to minimize and fully mitigate project impacts. As part of avoidance and minimization measures, North Coast semaphore grass seed and rhizomes will be salvaged from the impact area prior to project construction and transplanted within the bypass alignment to an unaffected area. In addition, Caltrans is coordinating with CDFG and USFWS on a 2-year study to characterize hydrology (i.e., groundwater), soils (i.e., moisture and temperature), and cultural (i.e., land use) conditions at Arkelian, Frost, Goss, Lusher, and MGC Plasma North offsite mitigation parcels and the Huffman impact parcel for use in determining the potential to actively expand these occurrences. Data collected relating to the soil dry down curve at the occurrence sites will be of particular interest. Based on qualitative observations made during March 2010 abundance surveys, expansion at the occurrences seem possible as there appears to be unoccupied habitat available at the boundaries of the occurrences that could accommodate expansion. Land management practices, such as low intensity livestock grazing and limited mowing, also may allow expansion of North Coast semaphore grass.

As part of mitigation efforts, five existing North Coast semaphore grass populations in Little Lake Valley that occur at the Arkelian, Frost, Goss, Lusher, and MGC Plasma North offsite mitigation parcels will be placed in preserves as part of project mitigation. A total of 5.094 acres of occupied habitat has been identified at these preserves. The soil and hydrologic conditions favored by north coast semaphore grass are currently being evaluated to better understand the groundwater, soil moisture, soil temperature, soil profile, and soil density conditions under which NCSG grows. The evaluation is also intended to provide an understanding of the characteristics of areas adjacent to NCSG populations that may be used for implementing minimization measures (e.g., transplantation and seeding) for NCSG impacts at and for determining expansion potential at existing NCSG populations that will be preserved. Caltrans has developed a work plan in coordination with the CDFG and USFWS)to provide supplemental data for NCSG. During March 11—26, 2010, NCSG populations were identified, mapped, stratified (into stands), and surveyed for abundance. Simultaneously, 69 shallow soil pits were excavated within and adjacent to NCSG stands at five separate occurrences in Little Lake Valley as part of general habitat characterization efforts. Soil, hydrologic, and other site characteristics were documented at each of the pit sites. These data have been used to develop monitoring methods to collect more detailed soils and hydrology data. In addition to the soil and hydrologic data collected during general habitat characterization surveys, data were also collected on NCSG rooting depth. Knowledge of the root zone will help define the depth at which soil moisture and soil temperature monitoring sensors will be installed. The results of the detailed soil and hydrologic monitoring will be presented in annual monitoring reports to be submitted to the resource agencies for review in September 2010 and September 2011.

Potentially Significant Impact - Direct and Indirect Impacts to Special-Status Plants (FEIS/EIR, §§ 3.7.3, 3.17.2)

Impact Description:

The project study area for the Modified Alternative J1T alignment, as well as the designated borrow site at Oil Well Hill, together comprise 270 acres of land. Within the project study limits, permanent impacts to sensitive plant communities and habitats are estimated at approximately 108 acres, and temporary impacts are estimated at 28 acres. In considering the impacts and mitigation to various biological resources, it was recognized that some resources occur together as components of the same habitat or community (e.g., Baker's meadowfoam occurs within jurisdictional wetlands, oak trees occur within riparian zones, etc.).

The FEIS/EIR identifies these impacts as potentially significant.

Finding:

Pursuant to Public Resources Code Section 21081(a) and CEQA Guidelines Section 15091(a), the Regional Water Board finds that changes or alterations have either been required in or incorporated into the project such that it would avoid or substantially lessen the significant environmental effect to a less than significant level. The Regional Water Board further finds that mitigation measures and conditions identified below are feasible to offset the impact and are, therefore, incorporated as conditions of the Water Quality Certification and associated MRP.

Facts that Support the Finding:

FEIS/EIR Mitigation Measures:

BIO-11: Special Status Plants: Modified Alternative J1T would temporarily and permanently affect two populations of Baker's meadowfoam, one in the central portion of the project (in the area of the Colli Ranch) and one in the northern portion of the project, in the vicinity of the Quail Meadows Interchange. The project would avoid most of the central population of Baker's meadowfoam, but would impact the majority of the northern population.

Impacts to Baker's meadowfoam plants would be mitigated by off-site preservation of existing populations and habitat, as well as by creation/enhancement of new habitat for populations occurring on upland sites and on wetland sites. Portions of temporarily impacted Baker's meadowfoam habitat could be restored where feasible. Baker's meadowfoam habitats occurring within jurisdictional wetlands would be mitigated by a combination of creation/restoration at the same ratios as jurisdictional wetlands, and preservation. Baker's meadowfoam creation/restoration parameters would be based on specific hydrologic and soil conditions specified and described for the species in a

formerly prepared study titled “Hydrologic and Soil-Geomorphic Conditions Associated with Baker’s Meadowfoam in Little Lake Valley, Mendocino County, California” (Balance Hydrologics, Inc. 1993). Baker’s meadowfoam preservation sites would be acquired within Little Lake Valley. Additionally, funds would be necessary in order to set up a long-term management and maintenance program. The Baker’s meadowfoam preserves would be maintained in perpetuity and their management could be transferred to CDFG or a mitigation bank (refer to the Conceptual Mitigation Plan, Appendix L).

Other Conditions:

Condition 10 of the Water Quality Certification requires Caltrans to adhere to the MRP issued by the Regional Water Board. The MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands. The baseline assessment of wetlands within the bypass alignment and the off-site mitigation parcels includes:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition]
- Absolute percent coverage of wetland plants
- Absolute percent cover of native plant species
- Species richness
- Absolute percent coverage of invasive species
- CRAM score.

Additionally, the mitigation measures identified above for impacts to wetlands are applicable to Baker’s Meadowfoam habitat which occurs within wetlands.
The information gathered above will provide Caltrans with data on the presence of Baker’s Meadowfoam and which locations it appears to be flourishing in.

Potentially Significant Impact – Direct and Indirect Impacts to Special Status Fish (FEIS/EIR, §§ 3.7.3, 3.17.2):

Impact Description:

Impacts to special status fish could result from sedimentation in streams, temperature increases due to loss of canopy, and/or potential noise affects related to pile driving activities near streams. The Modified Alternative J1T would require stream crossings that would directly affect the upper, middle, and lower reaches of Haehl Creek, as well as the lower reaches of Baechtel, Broaddus, Mill, and Upp creeks, which contain habitat for three listed salmonids (Northern California steelhead, Southern Oregon/Northern California coho salmon, and California Coastal chinook salmon). An essential element of the Regional Water Board’s Basin Plan is to adopt and ensure the protection of

beneficial uses. While rare, threatened, and endangered species (RARE) is an existing beneficial use which the Regional Water Board is designated to protect, the primary mitigation authorities for special status fish are CDFG and NMFS. The FEIS/EIR identifies these impacts as potentially significant.

Finding:

Pursuant to Public Resources Code Section 21081(a) and CEQA Guidelines Section 15091(a), the Regional Water Board finds that changes or alterations have either been required in or incorporated into the project such that it would avoid or substantially lessen the significant environmental effect to a less than significant level. The Regional Water Board further finds that mitigation measures and conditions identified below are feasible to offset the impact and are, therefore, incorporated as conditions of the Water Quality Certification and associated MRP.

Facts that Support the Finding:

FEIS/EIR Mitigation Measures:

BIO-1: Mitigation and monitoring. The Modified Alternative J1T project will comply with terms and conditions provided by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), in their Biological Opinions. Caltrans will also comply with conditions of the permits issued by all of the resources agencies, and will implement mitigation and monitoring measures provided in the Final MMP, dated June 2010, includes measures that would compensate for impacts to wetlands and other waters; riparian woodlands, oak woodlands, listed salmonids; northern spotted owl and Pacific fisher; Baker's meadowfoam and non-listed special-status species.

BIO-2: Compensatory mitigation. Compensatory mitigation would include the creation, restoration, enhancement, and/or preservation of sensitive habitats affected by the project. The U.S. EPA, U.S. FWS, U.S. ACE, NMFS, CDFG, Mendocino County Resource Conservation District (MCRCD), Willits Environmental Center (WEC) and Regional Water Board collectively agreed to and developed an ecologically based watershed approach designed to ensure no net loss of ecological functions and values. The watershed approach would provide significant improvements to the ecological functions and values of wetlands off-site of the project, but still within the Little Lake Valley[2]. (The project is planned in the west-central portion of the Little Lake Valley.) The resource agencies agreed that the mitigation should be focused within Little Lake Valley because it hosts a variety of unique ecological features, including the presence of several rare, threatened, and endangered species (e.g. anadromous fish and Baker's

[2] During the Willits Bypass Mitigation Development Team meetings, it was collectively agreed between the U.S. EPA, U.S. ACE, U.S. FWS, CDFG, NMFS, WEC, Caltrans, and the Regional Water Board that the most appropriate use of the mitigation funds would be a watershed approach within Little Lake Valley. The resource agencies believe, that in this case, a watershed based approach will be superior to an approach relying on wetland creation/establishment ratios..

Meadowfoam). Caltrans proposed that 1,011.13 acres of existing wetlands would be enhanced and in combination with the 24.33 acres created and 53.44 acres preserved, for a total of 1,088.90 acres of wetlands secured in perpetuity. In addition, an off-site fish passage project at Ryan Creek will be implanted to provide salmonids with access to previously blocked habitat.

BIO-3: Avoidance and Minimization: During the final design phase of the Modified Alternative J1T project, Caltrans biologists, Caltrans design engineers, and the resource agencies have worked together on construction scenarios, BMPs, work windows and project monitoring strategy that will avoid and/or minimize impacts to sensitive biological resources.

BIO-4: Environmentally Sensitive Areas: Caltrans will establish and delineate Environmentally Sensitive Areas (ESAs) on project plans and specifications to protect sensitive biological resources adjacent to the construction corridor by prohibiting construction activities in those areas.

BIO-5: Training: Caltrans will develop and implement an environmental awareness and training program that informs the contractor and construction workers of the environmental regulations that Caltrans is committed to comply with, and measures established for the project to minimize and avoid sensitive habitats and species.

BIO-6: Monitoring: Qualified biologists would monitor construction activities in sensitive biological resource areas to ensure permit conditions and mitigation requirements are adhered to.

BIO-7: Construction in Streams: Caltrans will avoid working in live stream channels. Construction associated with stream crossings (bridges, viaduct and culvert) will conform to the work window of June 15 though October 15 of each year for work associated with bridge, viaduct, and culvert construction over salmonid bearing streams.

BIO-9: Riparian Woodland: Riparian woodlands within the project corridor are divided into three categories (Final MMP). Category I riparian woodlands are associated with salmonid bearing streams, and Category II and III riparian woodlands are other riparian woodlands that are not associated with salmonid streams.
Minimization measures that would occur during construction would include: removing the minimum amount of vegetation necessary; installing ESA fencing and enforcing protection of riparian vegetation located within established protected areas; implementation of appropriate BMP's; and pre-construction training sessions to inform contractors and construction workers of the status of sensitive habitats and special-status species and the requirements for avoidance of protected areas.

BIO-13: Wetlands and Other Waters: The goal is not net loss of wetland habitat functions and values. Mitigation would consist of a combination of measures, including the creation of wetlands and other waters, and the restoration, enhancement and

preservation of existing wetlands and other waters in Little Lake Valley. Wetland enhancement actions include: filling in man-made drainage ditches to increase the residence time of surface waters within the wetland area; implementing a grazing management plan to reduce the impacts from cattle; and removing invasive species to promote the health and natural recruitment of native wetland species. The enhancement of wetlands will be verified through a robust monitoring and reporting program (per Condition 10) that requires Caltrans to use the California Rapid Assessment Method (CRAM) for wetlands, as well as additional hydrology, vegetation, and surface water sampling and analysis methods to verify the enhancement of wetland functions and values. The mitigation site preservation and site protection instruments would be a combination of fee title purchase, conservation easement, or other deed restriction.

BIO-22: Aquatic Resources: In addition to requiring the contractor to prepare a Storm Water Pollution Prevention Plan (SWPPP), Caltrans will implement the following measures to minimize disturbances to aquatic resources. In addition, mitigation measures WQ-1 through WQ-3 and WQ-6 through WQ-8 will also reduce impacts to aquatic resources.

- All construction-related materials shall be stored in designated staging areas at least 150 feet from perennial waterways and drainages.

- Refueling and vehicle maintenance shall be performed at least 150 feet from creeks and other water bodies.

- Operation of heavy equipment shall be minimized in perennial creeks (to the greatest extent possible). If equipment must access perennial creeks, this will occur during the late summer months when the stream flows are low, or when no water is in the channels. If water is flowing, the channels will be appropriately dewatered.

- Temporary sedimentation barriers, such as gravel bags or siltation fencing, shall be installed to minimize the amount of silt entering the creeks and any ephemeral drainages with water present in the channel. The location of these barriers shall be determined by the resident engineer and environmental monitor, and shall be clearly marked in the field before construction activities begin.

- All imported fill material shall be clean and free of pollutants and shall be imported from a source that has the appropriate environmental clearances and permits. The reuse of low level contaminated solids as fill on-site shall be performed in accordance with all State and Federal policies and established guidelines and must be submitted to the Regional Water Board for review and concurrence.

- Only clean washed spawning gravel (0.5” – 4”) with a cleanliness value of at least 85, using the Cleanness Value Test Method for California Test No. 227 will be placed in the streams. Gravel bag fabric shall be nonwoven polypropylene geotextile (or comparable polymer) and shall conform to the following requirements: Mass per unit area, grams per square meter, min ASTM Designation: D 5261 – 270; Grab tensile strength (25-mm grip), kilonewtons, min. ASTM Designation: D4632* 0.89; Ultraviolet stability, percent tensile strength retained after 500 hours, ASTM Designation: D4355, xenon arc lamp method 70 or appropriate test method for specific polymer; Gravel bags shall be between 600 mm and 800 mm in length, and between 400 mm and 500 mm in width. Yarn used in construction of the gravel bags shall be as recommended by the manufacturer or bag supplier and shall be of a contrasting color. Gravel shall be between 10 mm and 20 mm in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags shall be secured to prevent gravel from escaping. Gravel-filled bags shall be between 13 kg and 22 kg in mass.

- Caltrans shall submit to the Regional Water Board in writing the name, qualifications, and contact information for the designated water quality monitor(s). The water quality monitor(s) shall be knowledgeable of and have experience with the Regional Water Board’s Basin Plan, which includes beneficial uses and water quality objectives, and surface water monitoring procedures, protocols, quality assurance, and quality control protocols. The water quality monitor(s) shall be responsible for monitoring project activities and/or channel- ground- or vegetation disturbing activities that result in or have the potential to result in a discharge to waters of the state. The water quality monitor shall make requests and provide recommendations to the Caltrans Resident Engineer, Construction Storm Water Coordinator, and Environmental Construction Liaison.

- Caltrans, in conjunction with the water quality monitor(s), shall establish effluent, upstream (background) and downstream monitoring locations to demonstrate compliance with all applicable water quality objectives as detailed in the Basin Plan. The downstream location shall be no more than 50 feet from the effluent location. Field measurements shall be taken from each location four times daily for flow, pH, temperature, dissolved oxygen, total dissolved solids, turbidity and specific conductance. In addition, visual observations shall be made four times daily and include the appearance of the discharge including color, turbidity, floating or suspended matter or debris, appearance of the receiving water at the point of discharge (occurrence of erosion and scouring, turbidity, solids deposition, unusual aquatic growth, etc), and observations about the receiving water, such as the presence of aquatic life. Measurements shall be collected from each sampling location four times daily while work is being conducted within waters of the state.

- Caltrans shall submit, subject to approval by the Regional Water Board staff, a dewatering and/or diversion plan that appropriately describe the dewatered or diverted areas and how those areas will be handled during construction. The diversion/dewatering plans shall be submitted no later than 30 days prior to conducting the proposed activity. Information submitted shall include the area or work to be diverted or dewatered and method of the proposed activity. All diversion or dewatering activities shall be designed as to minimize the impact to waters of the state and maintain natural flows upstream and downstream. All dewatering or diversion structures shall be installed in a manner that does not cause sedimentation, siltation or erosion upstream or downstream. All dewatering or diversion structures shall be removed immediately upon completion of project activities. The in-channel work within fish bearing streams will only be conducted between June 15th and October 15th. This project is not authorized to draft surface waters.

WQ-1: Soil Stabilization, Sediment Control, and Storm Water Pollution Prevention. To address potential water quality impacts during construction, Caltrans will require the contractor to use a combination of BMPs to control potential erosion and sedimentation from the project site. Caltrans has developed a suite of construction site BMPs that will be implemented on the proposed project. The construction site BMP manual can be downloaded at: http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm
The Plans, Specifications and Estimates (PS&E) developed for the project will require the contractor to prepare and implement SWPPP, and other project specific construction BMPs, which will effectively reduce potential pollutants of concern in storm water discharges. The SWPPP will be reviewed and approved by the Caltrans Resident Engineer to ensure all the necessary BMPs are incorporated. The SWPPP will also include a final Revegetation Plan to be implemented at the end of construction activities.

WQ-2: Oil, Grease, and Chemical Control: Caltrans SSPs will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters. For example, on this project, equipment operating in water bodies will be required to be steam cleaned prior to arrival on site, and be maintained in a clean condition during the length of activities.

WQ-3: Revegetation. Where vegetation along streams is removed or severely trimmed back, Caltrans will plant replacement vegetation for shading of creeks to reduce temperature related impacts to water quality. Mitigation measure BIO-9 will also reduce impacts associated with vegetation removal along riparian corridors.

WQ-6: Revegetation and Soil/Slope Stabilization. Following the construction process, the contractor will stabilize disturbed soil areas through permanent re-vegetation or other means. The Storm Water Quality Handbook, Project Planning and Design Guide (revised July 2005), provides detailed procedures for design of permanent slope stabilization controls, design pollution prevention, and permanent treatment BMPs. The procedures are intended to ensure that an appropriate design is developed that will

allow all finished slopes to achieve stabilization, even under severe conditions, and also provide erosion control BMPs at all point source discharges of storm water runoff. Treatment BMPs, such as biofiltration, will be incorporated where feasible.

WQ-8: Hazardous Waste Spill Control. As part of standard operation and maintenance procedures, Caltrans has developed a standard Hazardous Waste and Spill Response Plan (HW&SRP), which Caltrans will ensure is implemented during the project. These BMPs address water quality issues associated with accidental spills.

Other Conditions:

NMFS' Biological Opinion: The Biological Opinion issued by NMFS states that the project is not likely to jeopardize the continued existence of Northern California steelhead, Southern Oregon/Northern California coho salmon, and California Coastal Chinook salmon. Mitigation measures to reduce impacts to Special Status fish such as fish migration/fish passage and habitat creation and repair, as well as minimization measures for protecting aquatic resources are presented in Appendix A of the FIES/EIR and in Chapter 6 of the MMP. Construction and maintenance BMPs and compliance with the Caltrans statewide NPDES permit (Order No. 99 – 06 – DWQ) would also reduce impacts to fish species. Caltrans will implement the terms and conditions of the NMFS Biological Opinion, as well as mitigation measures and conditions listed above and below to minimize impacts to salmonids.

Fish Migration/Passage: Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) will consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements will comply with guidelines established by the NMFS and the CDFG. The removal of the Upcreek culvert along existing 101 and the stabilization of stream channel at the Haehl Creek interchange would likely reduce sediment input into the creeks as well as improve the beneficial use of the creeks for migration by anadromous salmonids. Regional Water Board staff recognizes that the Upp Creek and Haehl Creek interchanges were primarily designed with the bypass structure in mind; however, they will benefit salmonids because they were designed in accordance with NMFS and CDFG requirements and help fish passage and control sediment discharge. In addition, Caltrans worked closely with NMFS, CDFG, and Regional Water Board staff at these locations to ensure that all concerns raised by the agencies were addressed. As for the Ryan Creek passage barrier, Regional Water Board staff is satisfied that this is an appropriate mitigation for impacts to listed salmonids, especially when considered in conjunction with the cumulative benefits of additional barrier removal (located further upstream) which is being planned by Mendocino County.

Caltrans has designed the project to minimize the number of permanent structures that will be constructed in creek channels. Bent 24, which is associated with the viaduct structure at the confluence of Baechtel and Broaddus Creeks, will be the only

permanent bridge piling that will be constructed in the creek channel during Phase 1. All other creek crossings will consist of clear-span bridges, precluding the need for the construction and placement of permanent bridge piers within creek channels at these crossings. During construction of both project phases, a number of temporary piles to support trestles for the temporary access road and falsework construction also will be needed during project construction; however, these will be removed following construction of each phase of the project. The permanent and temporary piles that will be placed in the creek channels during construction of Phases 1 and 2 will not affect the migration pathway for upstream and downstream migrants.

In addition to enhancement and preservation of habitat on off-site mitigation parcels, Caltrans will implement stream restoration and fish passage improvements on Haehl and Upp Creeks where they cross the project footprint. Caltrans has also committed as part of its mitigation plan to providing the design for the North and South Fork locations of the Ryan Creek fish passage project, as well as constructing the South Fork location to mitigate impacts on salmonids and jurisdictional waters of the United States. These fish passage improvements on Ryan and Upp Creeks will improve access to upstream spawning and rearing habitat for coho and Chinook salmon and steelhead relative to current conditions. Improvements to fish passage will help offset the temporary effects associated with project construction by potentially increasing the productivity of listed salmonids in these creeks through increased spawning success.

There is general agreement among CDFG's Northern Region staff that Ryan Creek is a high priority for fish passage improvement. Ryan Creek was also identified as the Number 1 priority for passage improvement in Mendocino County in an inventory of road crossings on the State Highway system in Caltrans District 1 (Lang 2005). Ryan Creek ranked as the Number 2 priority within all of District 1. Ryan Creek is the first Outlet Creek tributary located immediately downstream from Little Lake Valley. Providing access to spawning and rearing habitat that is currently obstructed on Ryan Creek will directly benefit coho salmon populations in the Middle-Upper Eel River Recovery Unit and the Outlet Creek HSA. Identifying and treating passage barriers is consistent with the Recovery Strategy for California Coho Salmon and is identified as a Level D task (will directly contribute to recovery of coho salmon) for the Outlet Creek HSA.

Habitat Creation and Enhancement: Fish migration habitat will be further improved by the inclusion of approximately 1,700 linear feet of riparian plantings along the east bank of Baechtel Creek between where the viaduct would cross Baechtel Creek and where East Commercial Street currently crosses the creek, and along approximately 1,400 linear feet of the north bank of Mill Creek before Mill Creek passes under the Western Pacific railroad tracks. Approximately, six miles (measured along both sides of the stream banks) of riparian habitat will be created or enhanced along Category I, II, and III streams within the offsite mitigation parcels. There are long stream reaches along both Davis and Outlet Creeks that would benefit from riparian plantings. Consultations with Craig Martz and Scott Harris of CDFG and Tom Daugherty of NMFS on April 18, 2008,

indicated a preference for Category I riparian mitigation to occur on Outlet Creek, as it supports populations of all three listed fish species (salmonid and steelhead) potentially affected by the bypass project. Therefore, Caltrans has proposed approximately 10,000 linear feet of riparian vegetation to provide shade on Outlet Creek.

Additional mitigation includes restoration to areas along Outlet Creek and Berry that are undergoing bank erosion or that have large headcuts. These areas were identified in an erosion assessment conducted in May 2010. The erosion assessment consists of an inventory of sediment contributing sites within the mitigation parcels and a prioritization of those restoration efforts. The recommended treatments for these sites include bio-engineered bank stabilization efforts to reduce sediment input, reconnect the streams with their adjacent floodplains, and further improve fish habitat.

Monitoring of Pile Driving Noise near Streams*:* During pile driving activities below the top-of-bank and within 15 m (50 feet) of salmonid bearing streams, Caltrans will dewater the stream (including relocating fish), and a qualified fisheries biologist will monitor underwater noise levels both upstream and downstream of the dewatered area. If noise levels exceed 187 dB (sound exposure levels (SEL) or 208 dB peak, Caltrans will cease pile driving at this location and immediately contact NMFS to discuss further reasonable and prudent measures to minimize potential impacts to fish, which could include additional fish relocation and dewatering. Dewatering could be required for six weeks or more at some stream crossings as explained more fully in the NMFS' Biological Opinion.

Monitoring and Reporting Program: As stated in Section 1.0. of the MRP, Caltrans is required to conduct bioassessment (benthic macroinvertebrate sampling) as well as chemical, physical, and biological monitoring components. Chemical monitoring includes parameters such as dissolved oxygen, temperature, turbidity, total dissolved solids, oil and grease, and several other constituents. Physical monitoring includes hydrology, geomorphic conditions (i.e., cross sectional water depth, wetted channel width, bankfull width, substrate characteristics, canopy cover, gradient, sinuosity, large woody debris) and other parameters. Biological monitoring includes wetland plant coverage, invasive species coverage, riparian canopy coverage, benthic macro-invertebrates surveys, as well as other parameters. Regional Water Board staff worked closely with the U.S. EPA, U.S. ACE, and Caltrans to develop the MRP and to ensure that impacts to stream temperatures are fully mitigated.

Section 3.0. of the MRP details the schedule (including the frequency of monitoring), the locations, and the evaluation of data to adequate develop the short term work plans, grazing management plan, and mitigation success criteria. The requirements for baseline assessments, monitoring during construction, procedures for enhancement verification, and long term monitoring requirements as also detailed in Section 3.0.

Section 4.0. of the MRP requires that Caltrans monitor impacts to stream temperatures associated with the construction of the bypass and Section 5.0. requires Caltrans to

measure the success of the mitigation measures (revegetation) and ensure the project does not result in a significant increase in stream temperatures in the long term. Additionally, the Water Quality Certification and MRP require Caltrans to plant riparian vegetation in all areas within the bypass alignment and mitigation lands to provide the maximum site potential shade to streams within the project area. Section 3.0 of the MRP also require Caltrans to include additional and robust success criteria within the MMP for measuring effectiveness of riparian mitigation measures that incorporate percent canopy cover and percent effective shade requirements which measure the effectiveness of riparian creation and enhancement actions for mitigating impacts to streams.

Potentially Significant Impact - Direct and Indirect Impacts to Wetlands and Waters of the U.S. (FEIS/EIR, §§ 3.7.3, 3.17.2):

Impact Description:

The project will result in impacts to wetlands and surface waters within the Outlet Creek HSA, including Haehl Creek, Baechtel Creek, Broaddus Creek, Mill Creek, Outlet Creek, Upp Creek, Ryan Creek and two ponds (Rutledge and Niesen). Caltrans has determined that the project would directly impact a total of 89.27 acres of waters of the U.S[3]., including 83.77 acres of impacts to wetlands and 5.5 acres (12,416 linear feet) to streams and ponds also identified as waters of the U.S. The project would temporarily impact 29.88 acres of wetlands and 3.16 acres (9,255 linear feet) of streams and ponds identified as waters of the U.S[4]. In addition, the project would result in permanent impacts to 53.89 acres of wetlands and to 2.34 acres (3,161 linear feet) of streams and ponds that are waters of the U.S.[5] The FEIS/EIR has identified this as a potentially significant impact.

Finding:

Pursuant to Public Resources Code Section 21081(a) and CEQA Guidelines Section 15091(a), the Regional Water Board finds that changes or alterations have been

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[3] Waters of the U.S. is defined in section 232.2 of Title 40 of the Code of Federal Regulations and includes "all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide. All interstate waters, including interstate wetlands. All other waters including intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflates, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which would or could affect interstate or foreign commerce… and wetlands adjacent to waters (other than waters that are themselves wetlands) …"

[4] A temporary impact is the short term impact that occurs during the placement of fill within wetlands for access roads, or the removal of trees and vegetation along streams to construct false work and structures.

[5] A permanent impact is the placement of fill within areas for the purpose of a permanent structure such as the roadway embankments for the new highway, bridge footings, or culverts within streams.

required in, or incorporated into, the project that would avoid or substantially lessen the significant environmental effect to a less than significant level. The Regional Water Board further finds that mitigation measures and conditions identified below are feasible to offset the impact and are, therefore, incorporated as conditions of the Water Quality Certification and MRP.

Facts that Support the Finding:

FEIS/EIR Mitigation Measures:

BIO-1: Mitigation and monitoring: The Modified Alternative J1T project will comply with terms and conditions provided by the U.S. FWS and NMFS, in their Biological Opinions. Caltrans will also comply with conditions of the permits issued by all of the resources agencies, and will implement mitigation and monitoring measures provided in the MMP.

BIO-2: Compensatory Mitigation: Compensatory mitigation would include the creation, restoration, enhancement, and/or preservation of sensitive habitats affected by the project. Compensatory rations shall be developed through coordination with U.S. ACE, U.S. FWS, NMFS, U.S. EPA, and CDFG. See Other Conditions section below for more detailed information.

BIO-3: Avoidance and Minimization: During the final design phase of the Modified Alternative J1T project, Caltrans biologists, Caltrans design engineers, and resource agencies will work together on additional design solutions that will avoid or minimize impacts to sensitive biological resources.

BIO-4: Environmental Sensitive Area: Caltrans will establish and delineate ESAs on project plans and specifications to protect sensitive biological resources adjacent to the construction corridor by prohibiting construction activities in those areas.

BIO-5: Training: Caltrans will develop and implement an environmental awareness and training program that informs the contractor and construction workers of the environmental regulations that Caltrans is committed to comply with, and measures established for the project to minimize and avoid sensitive habitats and species.

BIO-6: Monitoring: Qualified biologists and water quality monitors would monitor construction activities in sensitive biological resource areas to ensure permit conditions and mitigation requirements are adhered to.

BIO-7: Construction In Streams: Caltrans would avoid working in live stream channels to the extent feasible. Construction associated with stream crossings (bridges, viaduct and culvert) would conform to the work window of June 15 though October 15 of each year for work associated with bridge, viaduct, and culvert construction over salmonid bearing streams.

BIO-13: Wetlands and Other Waters: Caltrans will mitigate for impacts to wetlands and other waters of the U.S. by implementing the mitigation measures that are set forth in the Final MMP, The mitigation will consist of a combination of measures, including the creation of wetlands and other waters, and the restoration, enhancement and preservation of existing wetlands and other waters in Little Lake Valley.

FP-1: Structure Design: According to FEMA, the floodway is "the area of the floodplain that should be reserved (kept free of obstructions) to allow floodwaters to move downstream." For each valley alternative, the Floodway Viaduct (bridge) spans the floodway. The only encroachments in the floodway are the columns supporting the structure. In addition, the structure designs have relatively long spans, in the range of 30 m (100 ft). These structure design features limit the impacts on the floodplain by minimizing the actual footprint of the impacts and obstructions to flow.

FP-2: Drainage Philosophy: The valley alternatives include equalizing culverts at periodic points along the embankments, which should minimize the redirection of flows, maintaining the existing flood patterns. The culverts will not be included, however, if detailed hydraulic studies indicate the culverts would cause other problems with flood patterns.

FP-3: Design Cross-Sections: The cross sectional design of the facility, the side slopes, median, pavement widths, and so forth, has been established to limit impacts to floodplains as well as other resources. The median width, at 13.8 m (45 ft), is 4.8 m (16 ft) less than Caltrans' current design standard. This median width reduces the footprint of impact along the entire alignment, including the floodplain. Sideslopes are the slopes connecting the roadbed with the existing ground. When the embankment is low, the sideslopes can be constructed at relatively low angles without extending an unreasonable distance from the roadbed. But as embankments increase in height, sideslopes constructed at the same angles would cover much wider areas and add to the volume of earth to be placed. To reduce the earthwork and footprint of higher embankments, sideslopes are constructed at steeper angles. In the floodplain, the higher embankments occur at bridge approaches, and the steeper sideslopes constructed in connection with these higher embankments limit the impacted areas.

FP-4: Geometric Design: The use of tight diamond interchanges rather than spread diamonds reduces the footprint of impacts on the floodplain.

Other Conditions:

Wetlands and Other Waters: Wetlands subject to Regional Water Board jurisdiction would be permanently and temporarily affected by the project. Other waters (streams and ponds) would also be permanently and temporarily affected by the project, and consist of: 1) two ponds (one on the Colli Ranch and one in the Niesen Ranch); 2) approximately 2,500 feet of an ephemeral stream south of East Hill Road; 3) the culvert crossing over Upp Creek at the north end of the project corridor; and 4) potential temporary dewatering of perennial streams (if needed) to minimize pile driving-related noise impacts to listed salmonids.

Compensatory Mitigation: Compensatory mitigation would include the creation, restoration, enhancement, and/or preservation of sensitive habitats affected by the project. The Water Quality Certification by the Regional Water Board will be conditioned upon Caltrans obtaining control of all of the area necessary for the creation of the 24 acres of wetlands, as proposed in its mitigation and monitoring proposal. Off-site mitigation actions for wetlands creation will require site preparation, including grading uplands and modifying local hydrology; seeding graded areas; planting wetlands species; and monitoring for successful wetland establishment.

After the creation of approximately 24 acres of wetlands, the project would still result in a loss of 29 acres of wetlands. After several years of meetings and planning with Caltrans, the U.S. EPA, U.S. FWS, U.S. ACE, NMFS, CDFG, MCRCD, WEC and Regional Water Board collectively agreed to an ecologically designed watershed approach to mitigate for the loss of 29 acres of wetlands. The watershed approach would involve providing a significant improvement to the ecological functions and values of wetlands off-site of the project, but still within the Little Lake Valley. (The project is planned in the west-central portion of the Little Lake Valley.) The resource agencies collectively agreed that the mitigation should be focused within Little Lake Valley, because it hosts a variety of unique ecological features, including the presence of several rare, threatened, and endangered species (e.g. anadromous fish and Baker's Meadowfoam).

This watershed approach mitigation strategy would combine habitat creation, restoration, enhancement, and preservation, which is consistent with the U.S. EPA and U.S. ACE new Compensatory Mitigation Rule released on April 10, 2008. The watershed approach is discussed in the Code of Federal Regulations [33 CFR Part 332.3(h)] which details the applicability, considerations, information needed, and watershed scale. As stated in the Federal Mitigation Rule, "If a functional or condition assessment of other suitable metric is not used, a minimum of one-to-one acreage or linear foot compensation ratio must be used." With Caltrans unable to provide the required acreage for wetlands establishment (creation) they proposed mitigating through the watershed approach. Approximately 1,011 acres of existing wetlands would be enhanced and in combination with the 24 acres created, and the 54 acres preserved, for a total of approximately 1,088 acres of wetlands to be secured and managed in perpetuity. Wetland enhancement actions include: filling in man-made drainage ditches to increase the residence time of surface waters within the wetland area; implementing a grazing management plan to reduce the impacts from cattle; and removing invasive species to promote the health and natural recruitment of native wetland species. The mitigation site preservation and site protection instruments would be a combination of fee title purchase, conservation easement, or other deed restriction. The Water Quality Certification (Condition 8) will be conditioned upon Caltrans obtaining control of all of the area necessary for the enhancement and preservation of wetlands, as identified in their mitigation plan.

The Federal Mitigation Rule (33 CFR Part 332.3) discusses the considerations for the watershed mitigation approach which include water quality and watershed impairments. The Eel River watershed is listed on the Clean Water Act section 303(d) list as impaired for sediment and temperature. In 2004, the U.S. EPA established sediment and temperature total maximum daily loads (TMDLs) for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury). Therefore, to fully develop a watershed approach the mitigation must include a nexus to address the temperature and sediments impairments.

The nexus relates how the proposed mitigation will implement additional measures to reduce stream temperatures and excessive sediment inputs into the watershed. For sediment, Caltrans has prepared an assessment of all the erosion sites located within the off-site mitigation lands, which includes the inventory, prescription, and prioritization of restoration actions that will reduce erosion and sediment delivery within the watershed. In addition, the bypass structure has been designed reduce erosion and sediment delivery to the maximum extent practicable (MEP). For temperature impairment, the most practical way to reduce stream temperatures is to provide riparian vegetation in all areas feasible within the project limits, including bypass alignment and off-site mitigation lands (maximum site potential shade). In addition, baseline surveys will be conducted to find all areas that benefit from riparian plantings to achieve maximum site potential shade, and percent effective shade (shade on water). Additionally, the current land management practices of stream alteration and cattle grazing have potentially negative side effects on water. Therefore, the proposed grazing management plan, which is geared towards the enhancement and protection of natural resources, will be implemented to improve the overall health of the watershed.

Monitoring and Reporting Program: To compensate for the impacts to wetlands Caltrans proposes a watershed approach to achieve an increase in functions and values within the selected mitigation area. The MRP is intended to provide the data necessary to validate that proposal. The MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands. It is necessary to establish baseline conditions of surface waters to verify the establishment and enhancement of wetlands, riparian areas, and waters of the U.S. and State within the mitigation lands.

The primary objectives of the MRP include, but are not limited to:

A. Assessing the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
B. Assessing the overall health and evaluating trends in receiving water quality;
C. Assessing the potential biological, chemical, physical impacts, both during and after construction, of the bypass alignment;

D. Determining and revising site specific performance standards and success criteria for the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
E. Evaluating the effectiveness of BMPs, mitigation measures, and avoidance measures;
F. Evaluating activities that results in or may result in violations of MRP and the Water Quality Certification that may warrant additional BMPs or stop work orders;
G. Identifying sources of pollutants;
H. Assessing compliance with water quality objectives and TMDLs;
I. Measuring and assessing the reductions or prevention in pollutant loads; and
J. Verifying and successful repair within the bypass alignment and enhancement of the mitigation lands.

The MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands. The baseline assessment of wetlands within the bypass alignment and the off-site mitigation parcels includes:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition]
- Absolute percent coverage of wetland plants
- Absolute percent cover of native plant species
- Species richness
- Absolute percent coverage of invasive species
- CRAM score.

Potentially Significant Impact-Impacts to Special-Status Wildlife (FEIS/EIR, § 3.7.5)

Impact Description:

Construction of Modified Alternative J1T could affect Northern spotted owl (a federally listed threatened species) by removing suitable habitat that could be used by this species at the optional borrow site (Oil Well Hill). Using Oil Well Hill for borrow material could also affect Pacific fisher (a federal candidate for listing as threatened or endangered), as well as red tree vole (a non-listed state special-status species), by removing suitable habitat.

Modified Alternative J1T would remove riparian woodland and scrub habitat (within all three categories) along streams that provide nesting and foraging habitat for white-tailed kite, a California fully protected species, and Cooper's hawk, yellow-breasted chat, and California yellow warbler, which are California special-status species. In addition,

Modified J1T would remove oak woodland that could provide nesting and foraging habitat for white-tailed kite, Coopers hawk, and other raptors.

Construction of the bridges and viaducts for Modified Alternative J1T could affect Northwestern pond turtle and foothill yellow-legged frog that could be present in the streams within the project corridor.

The FEIS/EIR identifies these impacts as potentially significant.

Finding:

Pursuant to Public Resources Code Section 21081(a) and CEQA Guidelines Section 15091(a), the Regional Water Board finds that changes or alterations have either been required in or incorporated into the project such that it would avoid or substantially lessen the significant environmental effect to a less than significant level. The Regional Water Board further finds that mitigation measures and conditions identified below are feasible to offset the impact and are, therefore, incorporated as conditions of the Water Quality Certification and associated MRP.

Facts that Support the Finding:

FEIS/EIR Mitigation Measures:

BIO-1: Mitigation and monitoring: The Modified Alternative J1T project will comply with terms and conditions provided by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), in their Biological Opinions. Caltrans will also comply with conditions of the permits issued by all of the resources agencies, and will implement mitigation and monitoring measures provided in the Final MMP, dated June 2010, includes measures that would compensate for impacts to wetlands and other waters; riparian woodlands, oak woodlands, listed salmonids; northern spotted owl and Pacific fisher; Baker's meadowfoam and non-listed special-status species.

BIO-2: Compensatory mitigation: Compensatory mitigation would include the creation, restoration, enhancement, and/or preservation of sensitive habitats affected by the project. The U.S. EPA, U.S. FWS, U.S. ACE, NMFS, CDFG, MCRCD, WEC and Regional Water Board collectively agreed to and developed an ecologically based watershed approach designed to ensure no net loss of ecological functions and values. The watershed approach would provide significant improvements to the ecological functions and values of wetlands off-site of the project, but still within the Little Lake Valley[6]. (The project is planned in the west-central portion of the Little Lake Valley.)

[6] During the Willits Bypass Mitigation Development Team meetings, it was collectively agreed between the U.S. EPA, U.S. ACE, U.S. FWS, CDFG, NMFS, WEC, Caltrans, and the Regional Water Board that the most appropriate use of the mitigation funds would be a watershed approach within Little Lake Valley. The resource agencies believe, that in this case, a watershed based approach will be superior to an approach relying on wetland creation/establishment ratios..

The resource agencies agreed that the mitigation should be focused within Little Lake Valley because it hosts a variety of unique ecological features, including the presence of several rare, threatened, and endangered species (e.g. anadromous fish and Baker's Meadowfoam). Caltrans proposed that 1,011.13 acres of existing wetlands would be enhanced and in combination with the 24.33 acres created and 53.44 acres preserved, for a total of 1,088.90 acres of wetlands secured in perpetuity. In addition, an off-site fish passage project at Ryan Creek will be implanted to provide salmonids with access to previously blocked habitat.

BIO-3: Avoidance and Minimization: During the final design phase of the Modified Alternative J1T project, Caltrans biologists, Caltrans design engineers, and the resource agencies have worked together on construction scenarios, BMPs, work windows and project monitoring strategy that will avoid and/or minimize impacts to sensitive biological resources.

BIO-4: Environmentally Sensitive Areas: Caltrans will establish and delineate Environmentally Sensitive Areas (ESAs) on project plans and specifications to protect sensitive biological resources adjacent to the construction corridor by prohibiting construction activities in those areas.

BIO-5: Training: Caltrans will develop and implement an environmental awareness and training program that informs the contractor and construction workers of the environmental regulations that Caltrans is committed to comply with, and measures established for the project to minimize and avoid sensitive habitats and species.

BIO-6: Monitoring: Qualified biologists would monitor construction activities in sensitive biological resource areas to ensure permit conditions and mitigation requirements are adhered to.

BIO-8: Oak Woodland: Oak woodland occurring in the project corridor consists of valley oak woodland, Oregon white oak woodland, and black oak woodland, which would be permanently affected by the Modified Alternative J1T.
Minimization efforts during construction would consist of the removal of only the minimum number of trees necessary to allow for efficient project construction. Environmentally Sensitive Area (ESA) fencing would be installed around oak woodlands adjacent to the work areas. Any encroachment beyond the ESA fencing during construction (including driving, material or equipment storage and vehicle parking) would be prohibited. The ESA fencing would be accurately depicted on the final contract drawings. Compensation for the permanent loss of oak woodland would consist of in-kind creation/restoration, enhancement and preservation of oak woodlands on newly acquired parcels. These parcels would be purchased in fee or by a conservation easement and preserved in perpetuity. On sites to where creation/restoration or enhancement is to occur, oak trees would be initially planted in these areas at the ratio of five new saplings for each oak lost with the goal of three of them surviving after a ten-year monitoring period. Other compensation options may include: 1) a monetary

contribution to the California Oak Woodlands Conservation Fund, administered by the State Wildlife Conservation Board for the purpose of purchasing oak woodland conservation easements, or; 2), if there is an established CDFG oak woodland mitigation bank, the mitigation bank could be used to fulfill the off-site compensation requirements (refer to Conceptual Mitigation Plan; Appendix L).

BIO-14: Migratory Bird Treaty Act: To comply with the provisions of the Migratory Bird Treaty Act, vegetation required for removal will be removed or trimmed during the fall and/or winter months, to the extent possible, to avoid impacts to nesting birds. If vegetation cannot be removed during the non-breeding season, Caltrans will arrange to have a qualified biologist conduct preconstruction surveys of impact areas to check for nesting activity of all bird species. If nesting activity is detected, Caltrans will, if possible, establish a buffer around the nest(s). The buffer width would be determined through consultation with USFWS and CDFG. The buffer will be maintained and construction activities will avoid nest sites until the biologist determines that the young have fledged or nesting activity has ceased.

BIO-16 (revised): Northern Spotted Owl Habitat at Oil Well Hill. Excavation at the designated borrow site at Oil Well Hill could affect a maximum of 40 acres of Northern spotted owl (NSO) foraging and dispersal habitat. Caltrans will conduct additional pre-construction protocol-level surveys to determine the status of NSO in the vicinity of the Oil Well Hill borrow site. If NSO is found nesting within 1.3 miles of the borrow site, Caltrans/FHWA will consult with the USFWS (refer to USFWS Biological Opinion (BO) for NSO, Appendix D). Caltrans/FHWA will document the results of all protocol surveys conducted for Northern spotted owls. Caltrans will implement mitigation measures provided in the USFWS BO for NSO, which include:

BIO-16A: All large trees that can reasonably be avoided at Oil Well Hill will be protected.
BIO-16B: Vegetation removal at Oil Well Hill will occur during the non-breeding season (September 15 – February 1), to the extent feasible, to minimize potential impacts to spotted owls. Vegetation will be removed incrementally (i.e., only on those portions of the site that are needed for borrow material), rather than removing all vegetation on the approximately 16 ha (40 ac) site prior to excavation.
BIO-16C: Planting the same tree species that occurred at the borrow site following excavation, if feasible, could restore vegetation at Oil Well Hill.

BIO-17: This mitigation measure is retained, but has been renamed BIO-16D (see above).
BIO-18: Non-listed Special-Status Wildlife Species: If non-listed special-status wildlife species are found nesting on or near the project site, including California yellow warbler, yellow-breasted chat, and raptors, Caltrans will establish buffers around each nest. The buffer width will be determined through consultation with CDFG. The buffer shall be maintained and construction activities shall avoid nest sites until the Caltrans biologist determines that the young have fledged or nesting activity has ceased.

For white-tailed kites and other raptors, Caltrans shall conduct a pre-construction survey during the spring or early summer (April-early July) to determine whether nesting raptors (e.g., white-tailed kites, Cooper's hawks, red-tailed hawks, red-shouldered hawks) are present on or within 0.40 km (0.25 mi) of the selected alternative. If the survey detects nesting raptors on or within 0.40 km (0.25 mi) of the selected alternative, Caltrans will maintain buffer areas and seasonal construction constraints (e.g., no work during active nesting periods) in coordination with USFWS and CDFG.

BIO-19: White-tailed kite and other raptors: Mitigation Measure BIO-19 is retained, but has been incorporated as part of BIO-18 (above). Mitigation measures for all non-listed special-status are now discussed under BIO-18.
BIO-20: Yellow-breasted chat: Mitigation Measure BIO-20 is retained, but has been incorporated as part of BIO-18 (above). Mitigation measures for all non-listed special-status are now discussed under BIO-18.
BIO-21: Wildlife Crossings: The proposed viaduct and bridge crossings would provide access for wildlife to cross under the proposed alignment. Caltrans could construct additional wildlife under-crossings, if feasible, that would be suitable for use by deer and other wildlife species. If the construction of other wildlife crossings is feasible, the location, number and design of the under-crossings would be determined through consultation with CDFG.

Other Conditions:

The project will comply with terms and conditions listed in the USFWS Biological Opinion to minimize impacts. In addition, all appropriate BMPs will be implemented to minimize impacts to Northern spotted owl and other sensitive resources in the area.

Measures implemented for salmonids would also minimize impacts to northwestern pond turtle and foothill yellow-legged frog.

Monitoring and Reporting Program: The MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands. It is necessary to establish baseline conditions of surface waters to verify the establishment and enhancement of wetlands, riparian areas, and waters of the U.S. and State within the mitigation lands.

The primary objectives of the MRP include, but are not limited to:

A. Assessing the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
B. Assessing the overall health and evaluating trends in receiving water quality;
C. Assessing the potential biological, chemical, physical impacts, both during and after construction, of the bypass alignment;

D. Determining and revising site specific performance standards and success criteria for the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
E. Evaluating the effectiveness of BMPs, mitigation measures, and avoidance measures;
F. Evaluating activities that results in or may result in violations of MRP and the Water Quality Certification that may warrant additional BMPs or stop work orders;
G. Identifying sources of pollutants;
H. Assessing compliance with water quality objectives and TMDLs;
I. Measuring and assessing the reductions or prevention in pollutant loads; and
J. Verifying and successful repair within the bypass alignment and enhancement of the mitigation lands.

The MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands.

California Regional Water Quality Control Board
North Coast Region

Monitoring and Reporting Program No. R1-2010-0066

For

California Department of Transportation
Highway 101 – Willits Bypass Project
WDID No. 1B10019WNME

Mendocino County

1.0. INTRODUCTION and OBJECTIVE

This Monitoring and Reporting Program (MRP) is issued as a condition of the Clean Water Act Section 401 Water Quality Certification and requires the monitoring and assessment of waters of the State (wetlands, streams, and riparian areas) and the submission of technical reports. The objective of monitoring conducted under this MRP is to provide the California Department of Transportation (Caltrans) and the North Coast Regional Water Quality Control Board (Regional Water Board) with information concerning the conditions and quality of waters of the State and concentration trends within and adjacent to the proposed Highway 101 Willits Bypass Project (project) alignment and the associated off-site mitigation lands. The requirement for technical reports associated with this MRP is related to Caltrans March 1, 2010, application for a Clean Water Act Section 401 Water Quality Certification/Waste Discharge Requirements.

The technical reports required within this MRP are necessary for the Regional Water Board to appropriately determine whether or not the project will adequately comply with the Basin Plan and all applicable Water Quality Standards and provide the mitigation necessary to compensate impacts to jurisdictional resources. To compensate for the impacts to wetlands Caltrans proposes a watershed approach to achieve an increase in functions and values within the selected mitigation area. This MRP is intended to provide the data necessary to validate that proposal. This MRP is designed to collect data and provide reports that assess the biological, chemical, physical characteristics and conditions of resources within the jurisdiction of the Regional Water Board for both the bypass alignment and the associated mitigation lands. It is necessary to establish baseline conditions of surface waters to verify the establishment and enhancement of wetlands, riparian areas, and waters of the U.S. and State within the mitigation lands.

Documenting pre-project baseline conditions of surface waters for the bypass alignment and the mitigation lands are required as part of this MRP. Baseline data will be used to demonstrate that the bypass, both during and after construction, is in compliance with the Basin Plan, California's antidegradation policy in State Water Board Resolution No. 68-16, and the United States Environmental Protection Agency (U.S. EPA) established

sediment and temperature total maximum daily loads (TMDLs) for the Upper Main Eel River and tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury). Pursuant to Regional Water Board Resolution R1-2004-0087, *Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Receiving Waters within the North Coast Region* (Sediment TMDL Implementation Policy), the Executive Officer is directed to "rely on the use of all available authorities, including existing regulatory standards, and permitting and enforcement tools to more effectively and efficaciously pursue compliance with sediment-related standards by all dischargers of sediment waste."

The primary objectives of the MRP include, but are not limited to:

A. Assessing the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
B. Assessing the overall health and evaluating trends in receiving water quality;
C. Assessing the potential biological, chemical, physical impacts, both during and after construction, of the bypass alignment;
D. Determining and revising site specific performance standards and success criteria for the biological, chemical, and physical environmental characteristics within the bypass alignment, and within the mitigation lands;
E. Evaluating the effectiveness of BMPs, mitigation measures, and avoidance measures;
F. Evaluating activities that results in or may result in violations of MRP and the Water Quality Certification that may warrant additional BMPs or stop work orders;
G. Identifying sources of pollutants;
H. Assessing compliance with water quality objectives and TMDLs;
I. Measuring and assessing the reductions or prevention in pollutant loads; and
J. Verifying and successful repair within the bypass alignment and enhancement of the mitigation lands.

The data collection and evaluation will be broken down into four separate phases for the bypass alignment and mitigation lands (with multiple tasks per phase). Data collection and evaluation may necessitate revisions to the MRP as trends and comparisons are established. This MRP requires the collection and evaluation of data to supplement the Caltrans prepared Final Mitigation and Monitoring Proposal (Final MMP), dated June 2010, for the performance standards and success criteria, short term, and long term mitigation plans. Also see MRP Appendix 1 – Willits Bypass Flow Chart.

The requirements outlined in this MRP are not subject to an expiration date, and remain in full effect and are enforceable. The Executive Officer of the Regional Water Board may add to or modify this MRP, as appropriate.

The four phases and associated tasks of this MRP will be:

Phase I - Baseline Evaluation and Reporting (Bypass Alignment)

Baseline Tasks

a) Collect baseline water quality data for stream reaches along the bypass alignment
b) Collect baseline bioassessment data for bypass alignment
c) Collect baseline wetland data for bypass alignment
d) Prepare and submit reports that evaluate data sets to assess the baseline biological, physical, and chemical properties
e) Incorporate data evaluation, revised success criteria, and revised management plans into MMP

Phase I - Baseline Evaluation and Reporting (Mitigation Lands)

Baseline Tasks

f) Collect baseline water quality data for mitigation lands
g) Collect baseline bioassessment data for mitigation lands
h) Collect baseline wetland data for off-site mitigation lands
i) Prepare and submit reports that evaluate data sets to assess the biological, physical, and chemical properties
j) Incorporate data evaluation, revised success criteria, and revised management plans into MMP

Phase II - Construction Compliance Monitoring and Reporting (Bypass Alignment)

Construction Compliance Tasks

a) Conduct water quality monitoring within the stream reaches along the bypass alignment
b) Submit monthly reports on construction compliance
c) Annual Report summary on construction compliance

Phase II - Construction Compliance Monitoring and Reporting (Mitigation Lands)

Construction Compliance Tasks

d) Conduct water quality monitoring within the mitigation lands
e) Annual qualitative status reports on progress of plantings, and mitigation construction compliance, and mitigation trends and progress

Phase III - Repair Success (Bypass Alignment) – Evaluating and Measuring Success

Repair Monitoring Tasks

a) Conduct water quality monitoring within the stream reaches along the bypass alignment to verify repair success
b) Collect bioassessment data within the stream reaches along the bypass alignment to verify repair success
c) Collect wetland data for bypass to verify repair success
d) Annual reporting on compliance and mitigation progress

e) Final Mitigation Report verifying success.

Phase III - Mitigation Land Enhancement (Mitigation Lands) – Evaluating and Measuring Success

Enhancement Monitoring Tasks

f) Conduct water quality monitoring within the mitigation lands to verify repair and enhancement success
g) Collect bioassessment data for the mitigation lands to verify repair and enhancement success
h) Collect wetland data for the mitigation lands to verify repair and enhancement success
i) Annual reporting on compliance and mitigation progress
j) Final Mitigation Report verifying success.

Phase IV - Long Term Total Maximum Daily Load (TMDL) compliance for the Bypass.

TMDL and Long Term Management Tasks

a) Once success has been achieved for the on-site repair areas, Caltrans shall develop TMDL Compliance Plan and Long Term Management Plan.

Phase IV - Long Term Total Maximum Daily Load (TMDL) compliance for the Mitigation Lands.

TMDL and Long Term Management Tasks

b) Once success has been achieved for the repair areas and the off-site mitigation lands, Caltrans shall develop TMDL Compliance Plan and Long Term Management Plan.

This MRP will detail Phases 1 and 2 to ensure the proper development and implementation of Phase 3 and 4, which are structured within this order similarly to the baseline monitoring program. However, monitoring requirements throughout Phases 3 and 4 will vary, depending on the results of the baseline evaluation and construction compliance monitoring programs. In addition, all phases of this MRP are subject to site specific conditions, climatic variability, and ultimate need for information and therefore may warrant appropriate changes to best reflect the primary objectives stated above.

2.0. SURFACE WATER MONITORING and REPORTING PROGRAM DEVELOPMENT

Prior to implementing a monitoring and sampling program Caltrans shall develop the proper Quality Assurance Project Plan (QAPP) to ensure the data gathered will be reliable for statistical evaluation. The validity of the data collected for the MRP hinges on the proper methods and procedures used.

2.1. Quality Assurance Project Plan

Caltrans shall develop a QAPP for the bypass footprint (including onsite repair areas) and the offsite mitigation lands. The QAPP shall be submitted to the Executive Officer of the Regional Water Board for review, consideration, and concurrence.

2.2. Bioassessment Protocols

Pre-project bioassessments must be conducted prior to initiating any ground-disturbing activities or vegetation removal. Post-project bioassessments shall be performed the following season after completion of the bypass. In addition, for the mitigation lands, post-project bioassessments shall be performed the season after the completion of the mitigation actions at years five and ten of the mitigation monitoring period. The stream bioassessments must be performed in accordance with the State Water Resources Control Board (SWRCB) Surface Water Ambient Monitoring Program (SWAMP) *Standard Operating Procedures for Collecting Benthic Macroinvertebrate Samples and Associated Physical and Chemical Data for Ambient Bioassessments in California,* dated February 2007, and associated standard operating procedure memo, dated 21 May 2007, and guidance on quality assurance, dated 17 September 2008. In addition, the *Standard Operating Procedures for Collecting Stream Algae Samples and Associated Physical Habitat and Chemical Data for Ambient Bioassessments in California,* dated June 2009, shall be used for the algae portion of the bioassessment.

The bioassessment must be conducted in accordance with the stream algae samples and the "full" suite of physical habitat characterization measurements, using the "reachwide benthos (Multi-Habitat) procedure". The SWRCB SWAMP standard operating procedures, memos, and guidance documents can be found online at: http://swamp.mpsl.mlml.calstate.edu/resources-and-downloads/standard-operating-procedures

3.0. PHASE I - BASELINE MONITORING AND REPORTING

The results of the monitoring requirements outlined below shall be used to develop performance standards and success criteria for the on-site repair areas (bypass alignment) and the off-site mitigation lands. Additionally, the data will be used to demonstrate the enhancement and protection of beneficial uses and long term TMDL implementation for the receiving waters with the Outlet Creek Hydrologic Sub-Area (HSA).

3.1. Baseline Bypass Monitoring

The following water quality constituents will be measured as part of the baseline monitoring within the bypass alignment. This baseline data shall be collected from

August 20th, 2010 to at least May 15th, 2011, if baseline conditions are not changed, baseline monitoring shall continue. Baseline data collection will continue until construction activities have a measureable effect on receiving water monitoring data.

Constituent(s)	Frequency
Stream flow (cubic feet per second)	Continuous[1]
pH	Continuous
Temperature (Air and Water)	Continuous
Total Dissolved Solids	Continuous
Turbidity	Continuous
Specific Conductance	Continuous
Dissolved Oxygen	Continuous
Total Settleable Solids	Event based*
Hardness	Event based*
Total and Dissolved Metals (Cam 17)	Event based*
Oil and Grease	Event based*
Bioassessment – BMI, Phab, & Algae	One Baseline Survey in Summer 2010. (Reaches that are dry in 2010 shall be conducted in Spring 2011)
California Rapid Assessment Method (CRAM) Score	One survey to be determined per CRAM methodology (Spring 2011)
* Additional precipitation event sampling to be conducted in conjunction with the "first flush[2]" event and the seven subsequent storm events > 0.25 inches of precipitation in 24 hours. Precipitation events are separated by 48 hours of dry weather. Precipitation monitoring shall be conducted daily from Phase I through Phase III of this program at a weather station within Little Lake Valley and a method approved by Regional Water Board staff.	

In addition, precipitation event-based monitoring will include visual observations of the appearance of the stream, including color, presence of floating or suspended matter or debris; appearance of the receiving water at the station location (e.g., occurrence of erosion and scouring, solids deposition, unusual aquatic growth, algae); and observations about the receiving water, such as the presence of aquatic life.

Wetland baseline assessments throughout the bypass alignment shall include:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition] - Hydrology frequency at two week intervals from **November 1st - May 30th, 2010**
- Absolute percent coverage of wetland plants
- Absolute percent cover of native plant species

1 Continuous monitoring shall occur at all sampling sites at 15 minute intervals.

2 First flush is the initial surface runoff from a rainstorm after the dry season that causes a measurable increase of flow in surface waters.

- Species richness
- Absolute percent coverage of invasive species
- CRAM score.

3.2. Baseline Bypass Monitoring Locations

The number of monitoring locations will vary according to the status of bypass construction. Baseline water quality data will be collected at the following 10 locations along the bypass alignment, as shown in Figure 1:

- Upper Haehl Creek downstream of the Haehl Creek interchange construction footprint (WQ-3);
- Middle Haehl Creek downstream of the Haehl Creek bridge construction footprint (WQ-5);
- Lower Haehl Creek downstream of the viaduct construction footprint, but upstream of the Baechtel Creek confluence (WQ-9);
- Baechtel Creek upstream of the Baechtel Creek retaining wall construction footprint (WQ-6), upstream of the Haehl Creek confluence (WQ-7), and upstream of the viaduct construction footprint (WQ-10);
- Broaddus Creek upstream of the viaduct construction footprint (WQ-12);
- Outlet Creek downstream of the viaduct construction footprint (WQ-11);
- Mill Creek downstream of the viaduct construction footprint (WQ-14); and
- Upp Creek downstream of the Quail Meadows interchange construction footprint (WQ-17).

Bioassessment monitoring will occur at the following 13 locations along the bypass alignment, as shown in Figure 2:

- Upper Haehl Creek upstream of the Haehl Creek interchange (BA-1), within the Haehl Creek interchange creek repair (BA-2), and downstream of the Haehl Creek interchange (BA-3);
- Baechtel Creek below its confluence with Haehl Creek (BA-4), along the Category I riparian enhancement area parcels (BA-5), and below the riparian enhancement area (BA-6);
- Outlet Creek downstream of the Baechtel-Broaddus Creek confluence but upstream of the Category I riparian enhancement area (BA-7);
- Mill Creek upstream of the bypass footprint (BA-8), below the bypass footprint (BA-9), and downstream of the Category I riparian enhancement parcel (BA-10); and
- Upp Creek upstream of the Quail Meadows interchange (BA-11), within the Quail Meadows interchange creek repair (BA-12), and downstream of the Quail Meadows interchange (BA-13).

Wetland baseline assessments throughout the bypass alignment shall be conducted in accordance with the following:

- Plants surveys conducted in spring 2011 for 10-20% of total wetland acreage
- A minimum of 10-20% of the wetland surface area will be surveyed. Following this data collection, a percent cover-area curve will be developed to determine if 10-20% is an adequate sample size to accurately monitor vegetation. If not, additional quadrats will be sampled until the curve reaches the appropriate number of samples needed to minimize error and maximize accuracy (by capturing the inherent variability in the vegetation across the wetland). Once the cover-area curve has stabilized, an additional 3 quadrats will be sampled to confirm that the curve's plateau does not shift.

Following baseline data collection, a statistical analysis will be conducted to determine if the number of quadrats sampled was appropriate to accurately assess the vegetation. The data will be combined and averaged by habitat type and the analysis will include the following parameters:

- Power analysis at 80%;
- Test of significance at 10% (i.e., the probability of mistakenly rejecting accurate data is no more than the stated probability);
- Minimum detectable change at 20%; and
- Standard error by habitat type.

The result of this analysis will determine the number of quadrats to be sampled in subsequent years (this number could be greater than or less than 10-20% of the wetland surface area). While the complete statistical analysis described above will not be required in subsequent years, the standard error will be reported for each monitoring year.

3.3. Baseline Mitigation Monitoring

The following water quality constituents will be measured as part of baseline monitoring in the mitigation lands. This baseline data shall be collected from **August 20th, 2010 to at least October 15th, 2011**, if baseline conditions are not changed by construction activities or mitigation actions then baseline monitoring shall continue until conditions are altered. Baseline data collection will continue until implemented mitigation activities have a measureable effect on receiving water monitoring data.

Constituent(s)	Frequency
Stream flow	Continuous
pH	Continuous
Temperature (air and water)	Continuous
Total Dissolved Solids	Continuous

Constituent(s)	Frequency
Turbidity	Continuous
Specific Conductance	Continuous
Dissolved Oxygen	Continuous
Total Settleable Solids	Monthly*
Total and Dissolved Metals (Cam 17)	Monthly*
Total Nitrogen	Monthly*
Ammonia	Monthly*
Nitrate and Nitrite	Monthly*
Total Kjeldahl Nitrogen	Monthly*
Biochemical Oxygen Demand	Monthly*
Total and Dissolved Phosphorus	Monthly*
Hardness	Monthly*
Fecal Coliform	Monthly*
Enterococcus	Monthly*
Total Organic Carbon	Monthly*
Bioassessment – BMI, Phab, & Algae	Two Baseline Surveys Summer 2010 and Spring 2011 (April/May).
CRAM Score	One survey to be determined per CRAM methodology (Spring 2011)
* Additional precipitation event sampling to be conducted in conjunction with the "first flush" event and the seven subsequent storm events > 0.25 inches of precipitation in 24 hours. Precipitation events are separated by 48 hours of dry weather. Precipitation monitoring shall be conducted from Phase I through Phase III of this program at a weather station within Little Lake Valley and a method approved by Regional Water Board staff.	

In addition, monthly and precipitation event-based monitoring will include visual observations of the appearance of the stream including color, presence of floating or suspended matter or debris; appearance of the receiving water at the station location (e.g., occurrence of erosion and scouring, solids deposition, unusual aquatic growth, algae); and observations about the receiving water, such as the presence of aquatic life.

Wetland baseline assessments throughout the mitigation lands shall include:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition] - Hydrology frequency **every two weeks from November 1st - May 30th, 2010**
- Nutrient removal/transformation
- Sediment/toxicant retention
- Absolute percent coverage of wetland plants
- Relative percent cover of native plant species
- Species richness

- Absolute percent coverage of invasive species
- CRAM score

3.4. Baseline Mitigation Land Monitoring Locations

The number of monitoring locations may vary according to the status of bypass construction. Baseline water quality data will be collected at the following 11 locations at the offsite mitigation parcels (Figure 1):

- Old Outlet Creek downstream of parcel 108-030-04 (WQ-20), west of parcel 108-010-06 along the Category I riparian creation area (WQ-21), and west of parcel 108-010-06 downstream of the Category II riparian creation site on lower Wild Oat Canyon Creek (WQ-22);
- Outlet Creek downstream of parcels 108-030-05 (WQ-18) and 108-020-04\ (WQ-19);
- Davis Creek upstream of parcel 108-070-08 (WQ-23), downstream of parcel 108-060-01 (WQ-24), and downstream of parcel 108-010-05 (WQ-25);
- Berry Creek upstream of Category I riparian creation on parcel 108-070-09 (WQ-26), and downstream of parcel 108-060-02 (WQ-28); and
- Outlet Creek (WQ-27) downstream of the confluence with Davis Creek and Caltrans existing Highway 101 Outlet Creek Bridge post mile (PM) 50.66.

Bioassessment monitoring will occur at the following 10 locations at the offsite mitigation lands (Figure 2):

- Outlet Creek downstream of parcels 108-030-05 (BA-14) and 108-020-04 (BA-15);
- Old Outlet Creek downstream of parcel 108-030-04 (BA-16), west of parcel 108-010-06 along the Category I riparian creation area (BA-17), and west of parcel 108-010-06 downstream of the Category II riparian creation site on lower Wild Oat Canyon Creek (BA-18);
- Davis Creek upstream of parcel 108-070-08 (BA-19), downstream of parcel 108-060-01 (BA-20), and downstream of parcel 108-010-05 (BA-21); and
- Berry Creek upstream of Category I riparian creation on parcel 108-070-09 (BA-22), and downstream of parcel 108-060-02 (BA-24).

Wetland baseline assessments throughout the mitigation lands shall be conducted in accordance with the following:

- Plants surveys conducted in spring 2011 for 10-20% of total wetland acreage
- A minimum of 10-20% of the wetland surface area will be surveyed. Following this data collection, a percent cover-area curve will be developed to determine if 10-20% is an adequate sample size to accurately monitor vegetation. If not, additional quadrats will be sampled until the curve reaches the appropriate

number of samples needed to minimize error and maximize accuracy (by capturing the inherent variability in the vegetation across the wetland). Once the cover-area curve has stabilized, an additional 3 quadrats will be sampled to confirm that the curve's plateau does not shift.

Following baseline data collection, a statistical analysis will be conducted to determine if the number of quadrats sampled was appropriate to accurately assess the vegetation. The data will be combined and averaged by habitat type and the analysis will include the following parameters:

- Power analysis at 80%;
- Test of significance at 10% (i.e., the probability of mistakenly rejecting accurate data is no more than the stated probability);
- Minimum detectable change at 20%; and
- Standard error by habitat type.

The result of this analysis will determine the number of quadrats to be sampled in subsequent years (this number could be greater than or less than 10-20% of the wetland surface area). While the complete statistical analysis described above will not be required in subsequent years, the standard error will be reported for each monitoring year.

3.4.1. Baseline Evaluation Reports and Revised MMP

Caltrans shall submit reports documenting the results of the baseline water quality surveys required by this MRP: A report for the bypass alignment and a report for the mitigation lands. The report for the bypass alignment shall evaluate the data gathered and revise the performance standards and success criteria for proposed repair and restoration actions. In addition, the bypass alignment report shall present how the revised performance standards and success criteria will be used to implement the sediment and temperature TMDLs. The report for the off-site mitigation lands shall evaluate the data gathered and revise the performance standards and success criteria for the enhancement of the off-site mitigation lands. Additionally, the mitigation land report shall present how the revised performance standards and success criteria will be used to implement the sediment and temperature TMDLs.

The CRAM scores shall be entered into the CRAM database. In addition, the data collected shall be SWAMP compatible and submitted electronically to the Regional Water Board. The baseline evaluation reports will be used to amend the final MMP. The reports shall include, at a minimum, the following information:

- Data collection procedures protocols
- QA/QC for sample collection, handling and analysis
- Data in narrative summaries and data analysis
- Summaries and conclusions
- Data tables

- Data concentration graphs
- Site maps
- Site photographs
- Laboratory analytical reports
- Field logs and data sheets
- Filed instrument calibration logs

The reports shall correlate site observations, historical data, and local site specific baseline data to establish the local baseline conditions along the bypass alignment and mitigation lands to establish the proper functioning conditions (PFC). The PFC or ideal natural conditions shall be defined in the future reports subsequent to the completion of the baseline assessments. The data gathered from the baseline assessment shall be used to assess the characteristics of the PFC and shall be correlated to the performance standards and success criteria for wetlands, streams, and riparian/buffer areas for the off-site mitigation lands. The baseline reports are due to the Regional Water Board by **January 31, 2012**.

3.4.2. Revised Performance Standards / Success Criteria

The performance standards listed below shall be cumulatively assessed within each category to determine the success of the mitigation and repair actions. In other words successful mitigation shall take into consideration an overall weight of evidence. Those performance standards and success criteria shall be incorporated in the MMP, which shall be submitted to the Regional Water Board by **April 30, 2012**.

3.4.3. Riparian (Buffer) Establishment/Creation, Repair, and Enhancement Success Criteria

Based on the baseline data gathered Caltrans shall include the following performance standards and success criteria:

- Plant survival
- Plant vigor
- Percent vegetation cover (canopy)
- Maximum site potential shade
- Baseline percent canopy cover
- Percent effective shade (shade on water)
- Baseline and target temperature objectives
- Physical Habitat Criteria per SWAMP protocols
- Benthic Index of Biotic Integrity (B-IBI) for Wadeable Streams in Northern Coastal California.

3.4.4. Wetland Establishment/Creation, Repair and Enhancement Success Criteria

Based on the baseline data gathered, Caltrans shall include the following performance standards and success criteria:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition]
- Nutrient removal/transformation
- Sediment/toxicant retention
- Absolute percent coverage of wetland plants
- Absolute percent cover of native plant species
- Species richness
- Absolute percent coverage of invasive species
- CRAM score.

3.4.5. Other Waters (streams) Enhancement Success Criteria

Based on the baseline data gathered, Caltrans shall include shall include the following performance standards and success criteria:

- Geomorphic conditions (e.g., cross sectional water depth, wetted channel width, bankfull width, full channel width, cross sectional channel width, substrate characteristics, canopy cover, gradient, sinuosity, large woody debris, fish habitat characteristics and rating)
- Physical Habitat Criteria per SWAMP protocols
- IBI for BMI assessment including but not limited to (taxa richness, taxa composition, percent tolerant/intolerant organisms, functional feeding group analysis, and abundance)
- B-IBI for Wadeable Streams in Northern Coastal California
- CRAM Score.

3.4.6. Work Plan / Short Term Management Plan

Subsequent to evaluating the baseline data collected and revising the performance standards, Caltrans shall revise the work plan / short term mitigation plan for the bypass alignment and mitigation lands to include:

- Mitigation Specific Design Plans (e.g., riparian/buffer planting plans, erosion site restoration plans, exclusionary fence locations)
- Repair Action Specific Design Plans (e.g., riparian/buffer planting plans)
- Design and Construction Specifications
- Implementation Schedule

The revised work plan / short term management plan shall be incorporated in the MMP and submitted to the Regional Water Board by **April 30, 2012**.

3.4.7. Grazing Management Plan

Subsequent to evaluating the data collected from Phase I of the MRP, Caltrans shall revise the grazing management plan (parcel or zone specific) to include monitoring for the performance standards listed above that apply to streams, riparian areas, and wetlands. The goal is to monitor and manage the PFC of the wetlands, riparian areas, and streams.

The grazing management plan shall include the following goals and objectives:

- The components (functioning conditions of the ecosystem and cattle)
- What is to be accomplished (enhancement of the baseline conditions)
- The amount of change (success criteria increase from baseline)
- The locations (parcel or zone specific)
- A timeframe (schedule for success and reevaluation of management practices)

It is recommended that the grazing management plan include the following best management practices (BMPs):

- Parcel or zone specific grazing prescription;
- Parcel or quadrant specific grazing schedule that is developed with the enhancement and protection of natural resources (e.g., wetlands, streams and riparian areas) as the primary focus of the management plan;
- A setback plan (e.g. exclusionary fencing) to prevent cattle from entering streams or degrading the functions of the riparian areas;
- A schedule and plan that provides for plant development prior to, or plant recovery following, the grazing period each year; and
- An inspection schedule to assess the conditions of wetland and riparian areas at a frequency adequate to enable, if necessary, prompt corrective management action to protect the health of the riparian area. The schedule should be at least monthly during grazing within the short term mitigation implementation period.

The revised grazing management plan shall be incorporated in the MMP and submitted to the Regional Water Board by **April 30, 2012**.

4.0. PHASE II - CONSTRUCTION COMPLIANCE MONITORING and REPORTING

In order to demonstrate whether the bypass is in compliance with the applicable water quality objectives, Caltrans shall conduct monitoring in accordance with this MRP and the Water Quality Certification. This MRP requires monitoring at static locations throughout the bypass alignment during the construction phase.

4.1. Water Quality Monitoring for the Bypass Footprint.

Constituent(s)	Frequency
Stream flow	Continuous
pH	Continuous
Temperature (Air and Water)	Continuous
Total Dissolved Solids	Continuous
Turbidity	Continuous
Specific Conductance	Continuous
Dissolved Oxygen	Continuous
Total Settleable Solids	Event based*
Total and Dissolved Metals (Cam 17)	Event based*
Hardness	Event based*
Oil and Grease	Event based*
Methlylene Blue Activated Substances	Event based*
* Additional precipitation event sampling to be conducted in conjunction with the "first flush" event and the seven subsequent storm events > 0.25 inches of precipitation in 24 hours. Precipitation events are separated by 48 hours of dry weather. Precipitation monitoring shall be conducted from Phase I through Phase III of this program at a weather station within Little Lake Valley and a method approved by Regional Water Board staff.	

In addition, precipitation event-based monitoring will include visual observations of the appearance of the stream including color, presence of floating or suspended matter or debris; appearance of the receiving water at the station location (e.g., occurrence of erosion and scouring, solids deposition, unusual aquatic growth, algae); and observations about the receiving water, such as the presence of aquatic life.

Water quality data will be collected at the following 17 locations along the bypass alignment for construction compliance monitoring (Figure 1):

- Upper Haehl Creek upstream of the interchange construction footprint (WQ-1), within the construction foot print (WQ-2) and downstream of the Haehl Creek interchange (WQ-3);
- Middle Haehl Creek bridge construction upstream of the project footprint (WQ-4) and downstream of the project footprint (WQ-5);
- Baechtel Creek upstream of the Baechtel Creek retaining wall construction footprint (WQ-6), upstream of the Haehl Creek confluence (WQ-7), Lower Haehl Creek upstream of the bypass footprint (WQ-8);
- Lower Haehl Creek downstream of the viaduct construction footprint, but upstream of the Baechtel Creek confluence (WQ-9); and upstream of the viaduct construction footprint (WQ-10);

- Outlet Creek downstream of the viaduct construction footprint (WQ-11) and Broaddus Creek upstream of the viaduct construction footprint (WQ-12);
- Mill Creek upstream of the viaduct construction footprint.(WQ-13) downstream of the viaduct construction footprint (WQ-14); and
- Upp Creek upstream (WQ-15) and within (WQ-16) the Quail Meadows interchange construction footprint and downstream of the interchange construction footprint (WQ-17).

4.2. Water Quality Objectives

The relevant water quality requirements, parameters, and objectives applicable to the project are summarized below. However, the list below is not all inclusive of all relevant water quality requirements; water quality objectives, and the authority and jurisdiction of the Regional Water Board are not limited to the list below.

Constituent	**Concentrations**
pH[3]	>6.5 or <8.5
Temperature[4]	<0.5 degrees F
Dissolved Oxygen[5]	>7.0 mg/L or (>9.0 mg/L)
Total Dissolved Solids	<230[6] or <125[7]
Turbidity	<20% above background
Specific Conductance[8]	<400[5] or <200[6]
Hardness	Used to correlate metals concentrations
Total and Dissolved Metals	Various aquatic criteria within the Basin Plan and California Toxics Rule[9] for Inland Surface Waters
Total Suspended Solids	Waters shall not contain substances in concentrations that causes nuisance or adversely affect beneficial uses.
Oil and Grease	

3 Changes in normal ambient pH levels shall not change 0.5 units within the range specified in fresh waters with designated COLD or WARM beneficial uses.

4 The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. At no time or place shall the temperature of any COLD water be increased by more than 5°F above natural receiving water temperature. mg/L – milligrams per liter

5 Waters designated SPWN during critical spawning and egg incubation periods is >9.0 mg/l

6 90% or more of the yearly values must be less than or equal this limit.

7 50% or more of the monthly means must be less than this limit.

8 micromhos @ 77°F

9 California Toxics Rule (CTR) objectives are not used as effluent limitations or Basin Plan Water Quality Objectives. CTR values will be utilized to assess the effectiveness of BMPs associated with the project construction as well as post-construction treatment BMPs.

4.3. Reporting

Monthly Monitoring Reports: shall be submitted to the Executive Officer of the Regional Water Board. The monthly monitoring reports shall include, at a minimum;

1) A summary of discharges;

2) A summary of corrective actions taken (if necessary);

3) Photographs;

4) All field sampling measurements and/or results;

5) Project status (i.e. upcoming construction schedule and disturbed soil area updates);

6) Monitoring reports and field logs;

7) Water quality monitor reports and field logs;

8) All field monitoring equipment calibration logs;.

9) Caltrans shall develop, and Regional Water Board shall approve, a data management and reporting system to efficiently and effectively report sampling and monitoring data. Monthly monitoring reports are due to the Regional Water Board **by the 15th of each month** once work on the project has been initiated.

Rainy Day Reports: Caltrans shall take photos of all areas disturbed by project activities, including all excess materials disposal areas, after rainfall events that generate visible runoff from these areas in order to demonstrate that erosion control and revegetation measures are present and have been installed appropriately and successfully. A brief report containing these photos shall be submitted **within 30 days of the rainfall event that generated runoff from the disturbed areas**.

Annual Monitoring Reports: Caltrans shall provide the Regional Water Board with an Annual Monitoring Report no later than **January 31** of every year beginning with issuance of this Order and continuing until the Regional Water Board accepts the Final Mitigation Report. The annual reports (i.e. report for the bypass alignment and a report for the mitigation lands) shall include, at a minimum:

1) A summary of all monitoring reports identified in this Order;

2) A general description of the status of the project site and project activities, including actual or projected completion dates, if known;

3) A summary of the annual mitigation monitoring reports and the current implementation status of each mitigation measure;

4) An assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and mitigating project impacts (e.g., adaptive management summary for mitigation and environmental sensitive area fencing for bypass construction);

5) Results and an evaluation of the data collected from this MRP;

6) Monthly Monitoring and Rainy Day Reports; and

7) A compliance table (spreadsheet) that presents each condition of the Water Quality Certification and the MRP, time frame (yearly calendar), project milestones and achievements, all reported discharges, and all violations of this MRP and each condition of the Water Quality Certification.

5.0. PHASE III – EVALUATING SUCCESS FOR THE MITIGATION LAND ESTABLISHMENT/CREATION AND ENHACEMENT (MITIGATION LANDS) AND ON-SITE REPAIR (BYPASS)

As stated in Section 1.0., the purpose of the baseline monitoring is to establish the conditions of surface waters to verify the establishment, enhancement and repair of wetlands, riparian areas (buffers), and streams within the mitigation lands and bypass footprint, respectively. Prior to Phase III the proper functioning conditions of the establishment, enhancement, and repair sites has been determined, and the data gathered during the baseline has been correlated with the performance standards and ultimate success criteria. The following post construction monitoring will be implemented to track performance and determine success.

5.1. Post-Construction Bypass Water Quality

The following water quality monitoring program will be conducted for **one calendar year at years one, five, and ten** as part of compliance monitoring in the bypass alignment subsequent to the completion bypass. Monitoring may be extended or reduced depending on the results.

Constituent(s)	Frequency
Stream flow	Continuous
pH	Continuous
Temperature (Air and Water)	Continuous
Total Dissolved Solids	Continuous
Turbidity	Continuous

Constituent(s)	Frequency
Specific Conductance	Continuous
Dissolved Oxygen	Continuous
Total Settleable Solids	Event based*
Total and Dissolved Metals (Cam 17)	Event based*
Hardness	Event based*
Oil and Grease	Event based*
Methlylene Blue Activated Substances	Event based*
Bioassessment – BMI, Phab, & Algae	Summer and Spring Surveys twice per year (July/August and April/May) at years one, five and ten
CRAM Score	To be determined per CRAM methodology (Spring) at years one, five and ten
* Additional precipitation event sampling to be conducted in conjunction with the "first flush" event and the seven subsequent storm events > 0.25 inches of precipitation in 24 hours and which generate visible runoff. Precipitation events are separated by 48 hours of dry weather. Precipitation monitoring shall be conducted from Phase I through Phase III of this program at a weather station within Little Lake Valley and a method approved by Regional Water Board staff.	

Wetland Assessment for On-site Repair shall include:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition] - Hydrology frequency conducted at two week intervals from November 1st - May 30th
- Absolute percent coverage of wetland plants
- Relative percent cover of native plant species
- Species richness
- Absolute percent coverage of invasive species
- CRAM score.

5.2. Bypass Monitoring Locations

Water quality data will be collected at the following 17 locations along the bypass alignment (Figure 1):

- Upper Haehl Creek upstream of the interchange construction footprint (WQ-1), within the construction foot print (WQ-2) and downstream of the Haehl Creek interchange (WQ-3);
- Middle Haehl Creek bridge construction upstream of the project footprint (WQ-4) and downstream of the project footprint (WQ-5);

- Baechtel Creek upstream of the Baechtel Creek retaining wall construction footprint (WQ-6), upstream of the Haehl Creek confluence (WQ-7), Lower Haehl Creek upstream of the bypass footprint (WQ-8);
- Lower Haehl Creek downstream of the viaduct construction footprint, but upstream of the Baechtel Creek confluence (WQ-9); and upstream of the viaduct construction footprint (WQ-10);
- Outlet Creek downstream of the viaduct construction footprint (WQ-11) and Broaddus Creek upstream of the viaduct construction footprint (WQ-12);
- Mill Creek upstream of the viaduct construction footprint.(WQ-13) downstream of the viaduct construction footprint (WQ-14); and
- Upp Creek upstream (WQ-15) and within (WQ-16) the Quail Meadows interchange construction footprint and downstream of the interchange construction footprint (WQ-17).

Bioassessment monitoring will occur at the following 13 locations along the bypass alignment twice per year at years one, five and ten subsequent to the completion of the bypass (Figure 2):

- Upper Haehl Creek upstream of the Haehl Creek interchange (BA-1), within the Haehl Creek interchange creek repair (BA-2), and downstream of the Haehl Creek interchange (BA-3);
- Baechtel Creek below its confluence with Haehl Creek (BA-4), along the Category I riparian enhancement area parcels (BA-5), and below the riparian enhancement area (BA-6);
- Outlet Creek downstream of the Baechtel-Broaddus Creek confluence but upstream of the Category I riparian enhancement area (BA-7);
- Mill Creek upstream of the bypass footprint (BA-8), below the bypass footprint (BA-9), and downstream of the Category I riparian enhancement parcel (BA-10); and
- Upp Creek upstream of the Quail Meadows interchange (BA-11), within the Quail Meadows interchange creek repair (BA-12), and downstream of the Quail Meadows interchange (BA-13).

Wetland assessments for the baypass alignment shall be conducted in accordance with the following:

- Plants surveys conducted in spring for the location and area determined by the baseline surveys and associated statistical power analysis.

5.3. Mitigation Monitoring

The following water quality monitoring program will be conducted for **one calendar year at years one, five and ten** as part of establishment and enhancement monitoring in the mitigation lands subsequent to the completion of the mitigation actions. The mitigation

actions are defined as construction events (e.g., wetland creation, riparian creation, bank erosion stabilization), not management activities (e.g., grazing management).

Constituent(s)	Frequency
Stream flow	Continuous
pH	Continuous
Temperature (air and water)	Continuous
Total Dissolved Solids	Continuous
Turbidity	Continuous
Specific Conductance	Continuous
Dissolved Oxygen	Continuous
Total Settleable Solids	Monthly*
Total and Dissolved Metals (Cam 17)	Monthly*
Total Nitrogen	Monthly*
Ammonia	Monthly*
Nitrate and Nitrite	Monthly*
Total Kjeldahl Nitrogen	Monthly*
Biochemical Oxygen Demand	Monthly*
Total and Dissolved Phosphorus	Monthly*
Hardness	Monthly*
Fecal Coliform	Monthly*
Enterococcus	Monthly*
Total Organic Carbon	Monthly*
Bioassessment – BMI, Phab, & Algae	Twice per year (July/August and April/May) at years one, five and ten
CRAM Score	To be determined per CRAM methodology (Spring) at years one, five and ten
* Additional precipitation event sampling to be conducted in conjunction with the "first flush" event and the seven subsequent storm events > 0.25 inches of precipitation in 24 hours and which generate visible runoff. Precipitation events are separated by 48 hours of dry weather. Precipitation monitoring shall be conducted from Phase I through Phase III of this program at a weather station within Little Lake Valley and a method approved by Regional Water Board staff.	

In addition, monthly and precipitation event-based monitoring will include visual observations of the appearance of the stream, including color, presence of floating or suspended matter or debris; appearance of the receiving water at the station location (e.g., occurrence of erosion and scouring, solids deposition, unusual aquatic growth, algae); and observations about the receiving water, such as the presence of aquatic life.

Wetland Assessment for Mitigation Monitoring:

- Hydrology [i.e., ground water level fluctuation (discharge and recharge), inundation (depth, duration and frequency), soil saturation, drainage patterns, erosion and deposition] - Hydrology frequency conducted at two week intervals from November 1st - May 30th
- Plants surveys conducted in spring
- Nutrient removal/transformation
- Sediment/toxicant retention
- Absolute percent coverage of wetland plants
- Relative percent cover of native plant species
- Species richness
- Absolute percent coverage of invasive species
- CRAM score

5.4. Mitigation Land Monitoring Locations

The number of monitoring locations may vary according to the status of bypass construction. Water quality data will be collected at the following 11 locations throughout the offsite mitigation parcels (Figure 1):

- Old Outlet Creek downstream of parcel 108-030-04 (WQ-20), west of parcel 108-010-06 along the Category I riparian creation area (WQ-21), and west of parcel 108-010-06 downstream of the Category II riparian creation site on lower Wild Oat Canyon Creek (WQ-22);
- Outlet Creek downstream of parcels 108-030-05 (WQ-18) and 108-020-04\ (WQ-19);
- Davis Creek upstream of parcel 108-070-08 (WQ-23), downstream of parcel 108-060-01 (WQ-24), and downstream of parcel 108-010-05 (WQ-25);
- Berry Creek upstream of Category I riparian creation on parcel 108-070-09 (WQ-26), and downstream of parcel 108-060-02 (WQ-28); and
- Outlet Creek (WQ-27) downstream of the confluence with Davis Creek and Caltrans existing Highway 101 Outlet Creek Bridge.

Bioassessment monitoring will occur at the following 10 locations at the offsite mitigation lands subsequent to the completion of the mitigation actions (Figure 2):

- Outlet Creek downstream of parcels 108-030-05 (BA-14) and 108-020-04 (BA-15);
- Old Outlet Creek downstream of parcel 108-030-04 (BA-16), west of parcel 108-010-06 along the Category I riparian creation area (BA-17), and west of parcel 108-010-06 downstream of the Category II riparian creation site on lower Wild Oat Canyon Creek (BA-18);

- Davis Creek upstream of parcel 108-070-08 (BA-19), downstream of parcel 108-060-01 (BA-20), and downstream of parcel 108-010-05 (BA-21); and
- Berry Creek upstream of Category I riparian creation on parcel 108-070-09 (BA-22) and downstream of parcel 108-060-02 (BA-24).

Wetland assessments throughout the mitigation lands shall be conducted in accordance with the following:

- Plants surveys conducted in spring for the location and area determined by the baseline surveys and associated statistical power analysis.

5.5. Reporting

Annual Monitoring Reports: Caltrans shall provide the Regional Water Board with an Annual Monitoring Report no later than **January 31** of every year beginning with issuance of this MRP and continuing until the Regional Water Board accepts the verified success of the mitigation and signs of on the Final Mitigation Report. Each annual report shall include, at a minimum:

1) A summary of all monitoring reports identified in this Order;

2) A general description of the status of the project site and project activities, including actual or projected completion dates, if known;

3) A summary of the annual mitigation monitoring reports and the current implementation status of each mitigation measure;

4) An assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing, and mitigating project impacts;

5) Results and an evaluation of the data collected from this MRP;

6) Monthly Monitoring and Rainy Day Reports; and

7) A compliance table (spreadsheet) that presents each condition of the Water Quality Certification and the MRP, time frame (yearly calendar), project milestones and achievements, all reported discharges, and all violations of this MRP and each condition of the Water Quality Certification.

Slope Stability Reports: Caltrans shall provide yearly slope evaluation and erosion control monitoring reports for up to 10 years subsequent to the completion of the bypass project. Caltrans shall provide at least 80 percent coverage of established erosion control of all exposed areas along the bypass. To ensure the reduction of sediment transport into the Outlet Creek HSA, Caltrans shall conduct inspections prior to and

subsequent to each rainy season up to 10 years after completion of the bypass. Reports shall include, at a minimum:

1) Name and title of personnel conducting monitoring and/or maintenance;

2) Observation dates;

3) Site photographs;

4) Maps including percent coverage of established erosion control and revegetion efforts; and

5) An erosion evaluation.

If the new bypass project has slope failures, excessive erosion, or causes other water quality degradation corrective actions will be required to mitigate the impacts. Established erosion control is vegetation growth, not applied erosion control product.

Final Mitigation Report: No later than 120 days after achieving success criteria for the on-site repair and the off-site mitigation lands, Caltrans shall provide the Regional Water Board with a Final Mitigation Report. The Final Mitigation Report shall include, at a minimum:

1) A summary of all monthly monitoring reports and annual status reports;

2) Copies of all mitigation monitoring reports documenting when success criteria for each of the mitigation measures were achieved;

3) All available information about mitigation measures, data collection for the MRP, and projects taken to implement the sediment and temperature TMDLs;

4) Each yearly compliance calendar;

5) An assessment of the effectiveness of the required measures in avoiding, minimizing, and mitigating project impacts;

6) Any recommendations on how mitigation measures might be changed to more effectively minimize impacts to water quality and mitigate the impacts of future projects;

7) A final long term management plan;

8) Revised PAR and endowment calculation approved by the long term manager; and

9) Any other pertinent information.

The long term management plan shall include the following actions:

a) Water Quality Monitoring plans to verify habitat enhancement, compliance with the basin plan, and TMDL;
b) Inspections of the erosion sites shall be conducted annually to assess the stability and condition of the repair actions and for all the sites identified in Appendix J of the Final MMP;
c) All adaptive management plans and actions (e.g. stream channel or bank stabilization, vegetation management, and erosion control) for waters of the State (i.e., streams, riparian areas, and wetlands) shall be submitted to the Executive Officer of the Regional Water Board for prior review and concurrence.

6.0. PHASE IV – TMDL COMPLIANCE BYPASS AND MITIGATION LANDS

Once success has been achieved for the on-site repair areas and the off-site mitigation lands, Caltrans shall develop individual TMDL Compliance Plans for the bypass and mitigation lands. The TMDL compliance plan for the bypass shall be incorporated into the Annual Storm Water Work Plans and Reports, while the TMDL compliance plan shall be incorporated into the Mitigation Lands Long Term Management Plan and enrolled under the appropriate regulatory permit as determined by the Executive Officer of the Regional Water Board.

All previously gathered data shall be evaluated to determine the minimum amount of monitoring necessary to regularly evaluate whether the bypass alignment and mitigation lands are continuing to remain in compliance with the Basin Plan and applicable TMDLs or if there are contributing factors to degradation and impairments of water quality and beneficial uses.

Ordered by Catherine Kuhlman

Catherine Kuhlman
Executive Officer

August 6, 2010

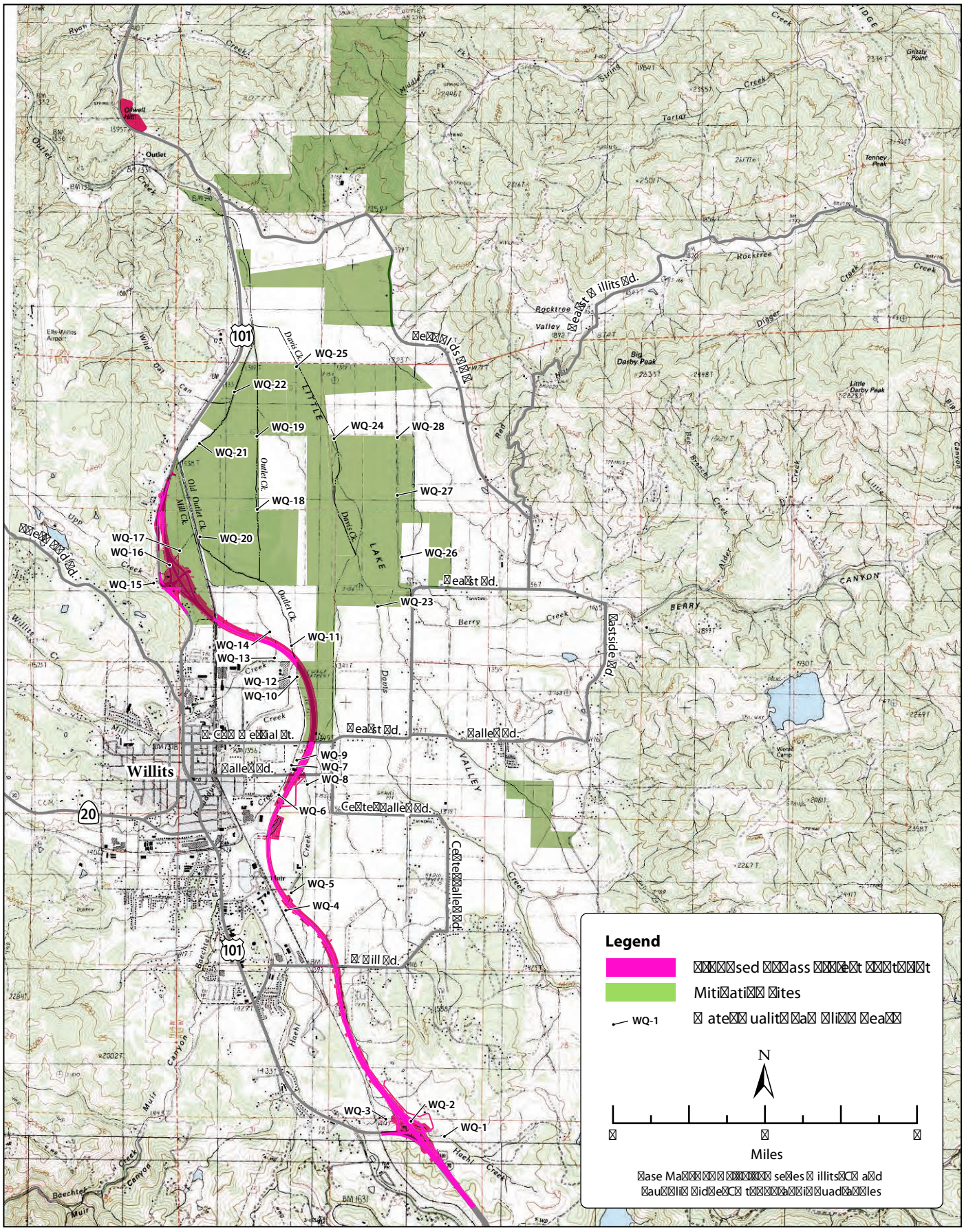


Figure 1
Location of Water Quality Sampling Reaches

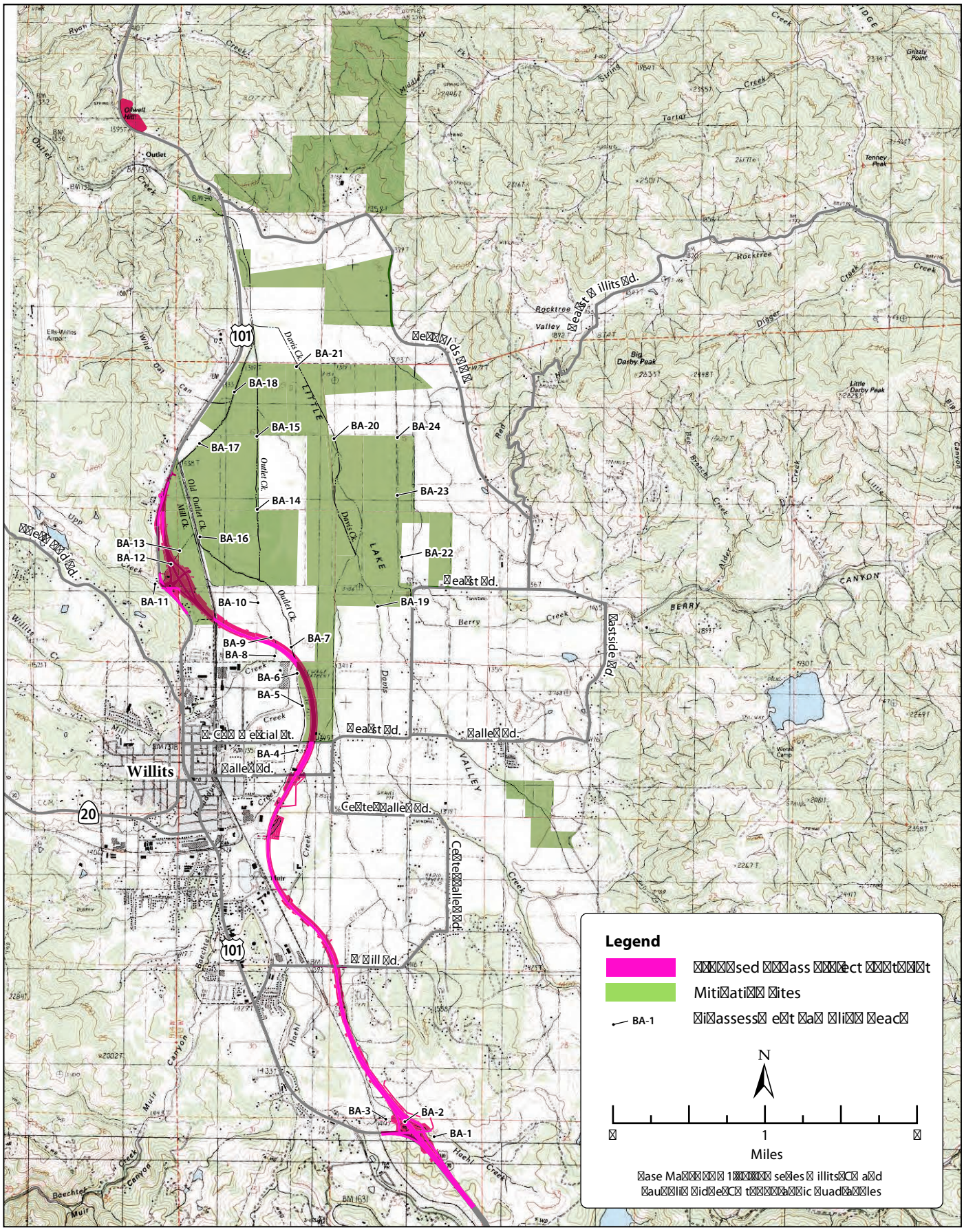
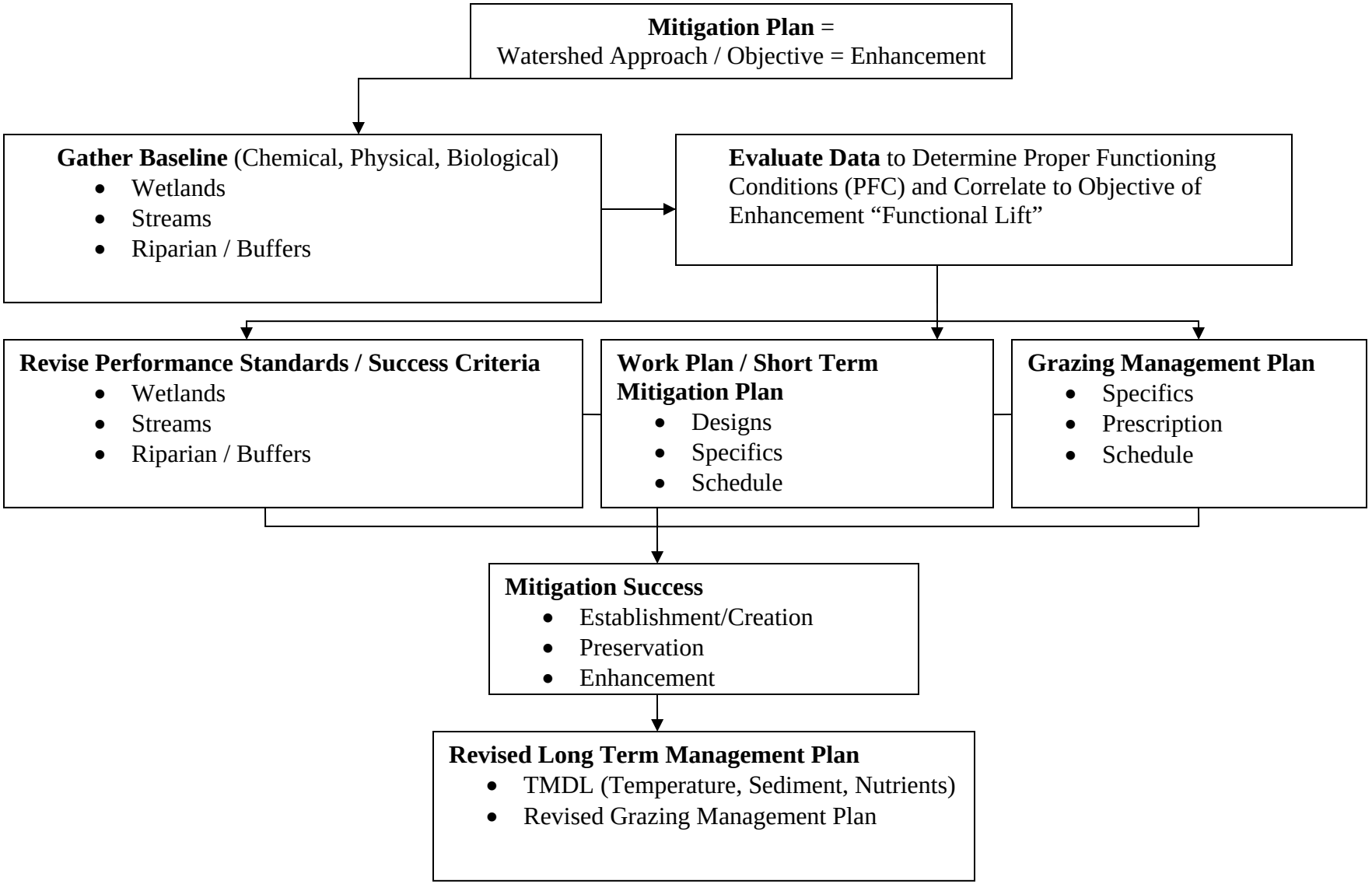


Figure 2
Location of Bioassessment Sampling Reaches

APPENDIX 1
WILLITS BYPASS MITIGATION FLOW CHART



STATE WATER RESOURCES CONTROL BOARD

WATER QUALITY ORDER NO. 2003 - 0017 - DWQ

STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR DREDGED OR FILL DISCHARGES THAT HAVE RECEIVED STATE WATER QUALITY CERTIFICATION (GENERAL WDRs)

The State Water Resources Control Board (SWRCB) finds that:

1. Discharges eligible for coverage under these General WDRs are discharges of dredged or fill material that have received State Water Quality Certification (Certification) pursuant to federal Clean Water Act (CWA) section 401.

2. Discharges of dredged or fill material are commonly associated with port development, stream channelization, utility crossing land development, transportation water resource, and flood control projects. Other activities, such as land clearing, may also involve discharges of dredged or fill materials (e.g., soil) into waters of the United States.

3. CWA section 404 establishes a permit program under which the U.S. Army Corps of Engineers (ACOE) regulates the discharge of dredged or fill material into waters of the United States.

4. CWA section 401 requires every applicant for a federal permit or license for an activity that may result in a discharge of pollutants to a water of the United States (including permits under section 404) to obtain Certification that the proposed activity will comply with State water quality standards. In California, Certifications are issued by the Regional Water Quality Control Boards (RWQCB) or for multi-Region discharges, the SWRCB, in accordance with the requirements of California Code of Regulations (CCR) section 3830 et seq. The SWRCB's water quality regulations do not authorize the SWRCB or RWQCBs to waive certification, and therefore, these General WDRs do not apply to any discharge authorized by federal license or permit that was issued based on a determination by the issuing agency that certification has been waived. Certifications are issued by the RWQCB or SWRCB before the ACOE may issue CWA section 404 permits. Any conditions set forth in a Certification become conditions of the federal permit or license if and when it is ultimately issued.

5. Article 4, of Chapter 4 of Division 7 of the California Water Code (CWC), commencing with section 13260(a), requires that any person discharging or proposing to discharge waste, other than to a community sewer system, that could affect the quality of the waters of the State,[1] file a report of waste discharge (ROWD). Pursuant to Article 4, the RWQCBs are required to prescribe waste discharge requirements (WDRs) for any proposed or existing discharge unless WDRs are waived pursuant to CWC section 13269. These General WDRs fulfill the requirements of Article 4 for proposed dredge or fill discharges to waters of the United States that are regulated under the State's CWA section 401 authority.

[1] "Waters of the State" as defined in CWC Section 13050(e)

6. These General WDRs require compliance with all conditions of Certification orders to ensure that water quality standards are met.

7. The U.S. Supreme Court decision of *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, 531 U.S. 159 (2001) (the *SWANCC* decision) called into question the extent to which certain "isolated" waters are subject to federal jurisdiction. The SWRCB believes that a Certification is a valid and enforceable order of the SWRCB or RWQCBs irrespective of whether the water body in question is subsequently determined not to be federally jurisdictional. Nonetheless, it is the intent of the SWRCB that all Certification conditions be incorporated into these General WDRs and enforceable hereunder even if the federal permit is subsequently deemed invalid because the water is not deemed subject to federal jurisdiction.

8. The beneficial uses for the waters of the State include, but are not limited to, domestic and municipal supply, agricultural and industrial supply, power generation, recreation, aesthetic enjoyment, navigation, and preservation and enhancement of fish, wildlife, and other aquatic resources.

9. Projects covered by these General WDRs shall be assessed a fee pursuant to Title 23, CCR section 3833.

10. These General WDRs are exempt from the California Environmental Quality Act (CEQA) because (a) they are not a "project" within the meaning of CEQA, since a "project" results in a direct or indirect physical change in the environment (Title 14, CCR section 15378); and (b) the term "project" does not mean each separate governmental approval (Title 14, CCR section 15378(c)). These WDRs do not authorize any specific project. They recognize that dredge and fill discharges that need a federal license or permit must be regulated under CWA section 401 Certification, pursuant to CWA section 401 and Title 23, CCR section 3855, et seq. Certification and issuance of waste discharge requirements are overlapping regulatory processes, which are both administered by the SWRCB and RWQCBs. Each project subject to Certification requires independent compliance with CEQA and is regulated through the Certification process in the context of its specific characteristics. Any effects on the environment will therefore be as a result of the certification process, not from these General WDRs. (Title 14, CCR section 15061(b)(3)).

11. Potential dischargers and other known interested parties have been notified of the intent to adopt these General WDRs by public hearing notice.

12. All comments pertaining to the proposed discharges have been heard and considered at the November 4, 2003 SWRCB Workshop Session.

13. The RWQCBs retain discretion to impose individual or general WDRs or waivers of WDRs in lieu of these General WDRs whenever they deem it appropriate. Furthermore, these General WDRs are not intended to supersede any existing WDRs or waivers of WDRs issued by a RWQCB.

IT IS HEREBY ORDERED that WDRs are issued to all persons proposing to discharge dredged or fill material to waters of the United States where such discharge is also subject to the water quality certification requirements of CWA section 401 of the federal Clean Water Act (Title 33 United States Code section 1341), and such certification has been issued by the applicable RWQCB or the SWRCB, unless the applicable RWQCB notifies the applicant that its discharge will be regulated through WDRs or waivers of WDRs issued by the RWQCB. In order to meet the provisions contained in Division 7 of CWC and regulations adopted thereunder, dischargers shall comply with the following:

1. Dischargers shall implement all the terms and conditions of the applicable CWA section 401 Certification issued for the discharge. This provision shall apply irrespective of whether the federal license or permit for which the Certification was obtained is subsequently deemed invalid because the water body subject to the discharge has been deemed outside of federal jurisdiction.

2. Dischargers are prohibited from discharging dredged of fill material to waters of the United States without first obtaining Certification from the applicable RWQCB or SWRCB.

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on November 19, 2003.

AYE: Arthur G. Baggett, Jr.
Peter S. Silva
Richard Katz
Gary M. Carlton
Nancy H. Sutley

NO: None.

ABSENT: None.

ABSTAIN: None.

Debbie Irvin
Clerk to the Board

APPLICATION FOR CALIFORNIA DEPARTMENT OF FISH AND GAME NOTIFICATION OF LAKE OR STREAMBED ALTERATION AND 1602 ADDITIONAL PAGES

CALIFORNIA DEPARTMENT OF TRANSPORTATION U.S. HIGHWAY 101 WILLITS BYPASS PROJECT MENDOCINO COUNTY, CALIFORNIA

SUBMITTED TO:

California Department of Fish and Game
Northern Region
601 Locust Street
Redding, CA 96001
Contact: Karen Moore
530/225-2381

APPLICANT:

California Department of Transportation
District 3—Office of Environmental Management
2800 Gateway Oaks Drive
Sacramento, CA 95833
Contact: Jason Meigs
916/274-0564

February 2010

For individuals with sensory disabilities, this document is available in alternate formats. Please write to Jason Meigs, California Department of Transportation, District 3—North Region Environmental Division, 2800 Gateway Oaks Drive, Sacramento, CA 95833, or call (916) 274-0564 or use the CA Relay Service TTY number (800) 735-2929.

APPLICATION FOR
CALIFORNIA DEPARTMENT OF FISH AND GAME NOTIFICATION OF LAKE OR STREAMBED ALTERATION AND 1602 ADDITIONAL PAGES

CALIFORNIA DEPARTMENT OF TRANSPORTATION
U.S. HIGHWAY 101 WILLITS BYPASS PROJECT
MENDOCINO COUNTY, CALIFORNIA

Prepared by: _____ Date: _____

Jason Meigs, Biologist
D-3 North Region Environmental Division
California Department of Transportation, District 3
916/274-0564

Approved by: _____ Date: _____

Jeremy Ketchum, Senior Environmental Planner
Office of Environmental Management S-3
California Department of Transportation, District 3
916/264-0621

Contents

Application for California Department of Fish and Game Notification of Lake or Streambed Alteration

Appendix 1: Jurisdictional Wetland Impacts Maps (Bypass Alignement) From MMP

Appendix 2: Mitigation Imapcts Maps From MMP

Appendix 3: Riparian and Oak Woodland Impact Maps From MMP

Attachment 1: Supplemental Information

- Block 3. Property Owners
- Block 8A. Project Location
  - Bypass Alignment
  - Bypass Vertical Alignment1
  - Latitude/Longitude of Key Project Components (Approximate)
- Block 8B. Rivers, Streams or Lakes Affected
  - Jurisdictional Determinations
  - Name and Description of Affected Rivers, Streams or Lakes Affected
- Block 10A. Project Description
  - Background and Changes Since the Final EIS/EIR
  - Description of Specific Design Elements
  - Description of Specific Construction Elements
- Block 10B. Equipment and Machinery
- Block 11A. Project Impacts
- Block 11B. Vegetation Type and Tree Removal
- Block 11C. Special-Status Species
- Block 12A. Techniques Used to Prevent Sediment From Entering Watercourse During Construction
- Block 12B. Avoidance and/or Minimization Measures to Protect Fish, Wildlife and Plant Resource
- Block 12C. Mitigation and Compensation Measures to Protect Fish, Wildlife and Plant Resources
  - Habitat Mitigation and Monitoring Plan
- Block 13. Permits

Attachment 2 Figures

Attachment 3 Jurisdictional Determinations

Attachment 4 Record of Decision, and Notice of Determination

Attachment 5 Section 7 Concurrence Documents

Attachment 6 Names and Addresses of Adjoining Property Owners/Lessees

Attachment 7 Copies of CWA Sec. 404 Permit Application and CWA Sec. 401 Water Quality Certification Application

FOR DEPARTMENT USE ONLY				
Date Received	*Amount Received*	*Amount Due*	*Date Complete*	*Notification No.*
	$	$		

STATE OF CALIFORNIA

DEPARTMENT OF FISH AND GAME

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

1. APPLICANT PROPOSING PROJECT

Name	Jason Meigs		
Business/Agency	State of California, Department of Transportation - District 3		
Street Address	2800 Gateway Oaks Drive		
City, State, Zip	Sacramento, CA 95833		
Telephone	(916) 274-0564	Fax	(916) 274-0602
Email	jason_meigs@dot.ca.gov		

2. CONTACT PERSON (*Complete only if different from applicant*)

Name			
Street Address			
City, State, Zip			
Telephone		Fax	
Email			

3. PROPERTY OWNER (*Complete only if different from applicant*)

Name	Refer to Attachment 6 "Names and Adressess of Adjoining Property Owners/Lessees"		
Street Address			
City, State, Zip			
Telephone		Fax	
Email			

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name	U.S. Highway 101 Willits Bypass Project			
B. Agreement Term Requested	☑ Regular (*5 years or less*) ☐ Long-term (*greater than 5 years)*			
C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (*year*)	Ending (*year*)	Start Date (*month/day*)	End Date (*month/day*)	
2011	2015	04/15	10/30	

5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.

A.	☑ Standard *(Most construction projects, excluding the categories listed below)*	
B.	☐ Gravel/Sand/Rock Extraction (*Attachment A*)	*Mine I.D. Number:* _____
C.	☐ Timber Harvesting (*Attachment B*)	THP *Number:* _____
D.	☐ Water Diversion/Extraction/Impoundment (*Attachment C*)	*SWRCB Number:* _____
E.	☐ Routine Maintenance (*Attachment D*)	
F.	☐ DFG Fisheries Restoration Grant Program (FRGP)	*FRGP Contract Number:* _____
G.	☐ Master	
H.	☐ Master Timber Harvesting	

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: The Department may not process this notification until the correct fee has been received.***

	A. Project	B. Project Cost	C. Project Fee
1	U.S. Highway 101 Willits Bypass (40 x-ings x $4,482.75)		$179,310.00
2			
3			
4			
5			
		D. Base Fee *(if applicable)*	
		E. TOTAL FEE ENCLOSED	$179,310.00

7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?

☐ Yes (*Provide the information below*) ☑ No

Applicant: _____ Notification Number: _____ Date: _____

B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?

☑ No ☐ Yes (*Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.*)

☐ *Continued on additional page(s)*

8. PROJECT LOCATION

A. Address or description of project location.

(*Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway*)

Refer to Attachment 1 "Supplemental Information:; Block 8A

☑ *Continued on additional page(s)*

B. River, stream, or lake affected by the project.	Refer to Attachment 1 "Supplemental Information; Block 8B.
C. What water body is the river, stream, or lake tributary to?	Eel River, Pacific Ocean
D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts?	☐ Yes ☑ No ☐ Unknown
E. County	Mendocino County

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Willits	18N	13W	23	

☐ *Continued on additional page(s)*

K. Meridian (*check one*) ☐ Humboldt ☐ Mt. Diablo ☐ San Bernardino

L. Assessor's Parcel Number(s)

efer to Attachment 6 "Nams and Addresses of Adjoining Property Owners/Lessees".

☐ *Continued on additional page(s)*

M. Coordinates (*If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes)*

Latitude/Longitude	*Latitude:* sup info block 8A	*Longitude:*	
	☐ Degrees/Minutes/Seconds	☐ Decimal Degrees	☐ Decimal Minutes
UTM	*Easting:*	*Northing:*	☑ Zone 10 ☐ Zone 11
Datum used for Latitude/Longitude or UTM	☐ NAD 27	☑ NAD 83 or WGS 84	

9. PROJECT CATEGORY AND WORK TYPE *(Check each box that applies)*

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	☑	☐	☐
Bank stabilization – rip-rap/retaining wall/gabion	☑	☑	☐
Boat dock/pier	☐	☐	☐
Boat ramp	☐	☐	☐
Bridge	☑	☐	☐
Channel clearing/vegetation management	☑	☐	☐
Culvert	☑	☐	☐
Debris basin	☐	☐	☐
Dam	☐	☐	☐
Diversion structure – weir or pump intake	☑	☐	☐
Filling of wetland, river, stream, or lake	☑	☐	☐
Geotechnical survey	☐	☐	☐
Habitat enhancement – revegetation/mitigation	☑	☐	☐
Levee	☐	☐	☐
Low water crossing	☑	☐	☐
Road/trail	☑	☐	☐
Sediment removal – pond, stream, or marina	☐	☐	☐
Storm drain outfall structure	☑	☐	☐
Temporary stream crossing	☑	☐	☐
Utility crossing : Horizontal Directional Drilling	☐	☐	☐
Jack/bore	☐	☐	☐
Open trench	☐	☐	☐
Other *(specify)*: Place fill for roadway	☑	☐	☐

10. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., “bird’s-eye view”) showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

Refer to Attachment 1 "Supplemental Information"; Block 10A

☑ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

refer to Attachment 1 "Supplemental Information"; Block 10B

☑ *Continued on additional page(s)*

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).	☑ Yes ☐ No (*Skip to box 11*)
D. Will the proposed project require work in the wetted portion of the channel?	☑ Yes (*Enclose a plan to divert water around work site*) ☐ No

11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

Refer to Attachment 1 "Supplemental Information"; Block 11A

☐ *Continued on additional page(s)*

B. Will the project affect any vegetation? ☑ Yes (*Complete the tables below*) ☐ No

Vegetation Type	Temporary Impact	Permanent Impact
Refer to Attachment 1 "Supplemental Information"; Block 11B	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____
	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____

Tree Species	Number of Trees to be Removed	Trunk Diameter (range)
"Supplemental Information"; Block 11B		

☐ *Continued on additional page(s)*

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☑ Yes *(List each species and/or describe the habitat below)* ☐ No ☐ Unknown

"Supplemental Information"; Block 11C

☑ *Continued on additional page(s)*

D. Identify the source(s) of information that supports a “yes” or “no” answer above in Box 11.C.

Natural Environment Study, Biological Assessment, Individual Take Permit Application

☑ *Continued on additional page(s)*

E. Has a biological study been completed for the project site?

☑ Yes (*Enclose the biological study*) ☐ No

Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.

F. Has a hydrological study been completed for the project or project site?

☑ Yes (*Enclose the hydrological study*) ☐ No

Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.

12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.

Refer to Attachment 1 "Supplemental Information"; Block 12A

☑ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Refer to Attachment 1 "Supplemental Information"; Block 12B

☐ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

Refer to Attachment 1 "Supplemental Information"; Block 12C

☐ *Continued on additional page(s)*

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

A. _____ ☑ Applied ☐ Issued

B. _____ ☑ Applied ☐ Issued

C. Attachment 1 "Supplemental Information"; Block 13 ☑ Applied ☐ Issued

D. Unknown whether ☐ local, ☐ state, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☑ *Continued on additional page(s)*

14. ENVIRONMENTAL REVIEW

A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)?

☑ Yes (*Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each*)

☐ No (*Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared*)

☐ Notice of Exemption	☐ Mitigated Negative Declaration	☐ NEPA document (*type*): EIS
☐ Initial Study	☑ Environmental Impact Report	☐ CESA document (*type*): 2081 and 2080.1
☐ Negative Declaration	☑ Notice of Determination *(Enclose)*	☐ ESA document (*type*): Sect 7
☐ THP/ NTMP	☑ Mitigation, Monitoring, Reporting Plan	

B. State Clearinghouse Number (*if applicable*)	1990030006		
C. Has a CEQA lead agency been determined?	☑ Yes (*Complete boxes D, E, and F*)	☐ No (*Skip to box 14.G*)	
D. CEQA Lead Agency	Caltrans		
E. Contact Person	Jason Meigs	F. Telephone Number	(916) 274-0564

G. If the project described in this notification is part of a larger project or plan, briefly describe that larger project or plan.

The proposed U.S. 101 Willits Bypass project is a single and complete project and is not part part of a larger project or plan.

☐ *Continued on additional page(s)*

H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid?

☑ Yes (*Enclose proof of payment*) ☐ No (*Briefly explain below the reason a filing fee has not been paid)*

Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.

15. SITE INSPECTION

Check one box only.

☐ In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry.

☑ I request the Department to first contact (*insert name*) Jason Meigs at (*insert telephone number*) (916) 274-0564 to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.

16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

☑ Yes (Please enclose the information via digital media with the completed notification form)

☐ No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

_____ _____

Signature of Applicant or Applicant's Authorized Representative Date

Jason Meigs, Caltrans District 3 Associate Env. Planner - NS

Print Name

Appendix A: Bypass Impact Maps - Waters and Wetland (From Appendix B of the Willits Bypass Mitigation and Monitoring Plan)

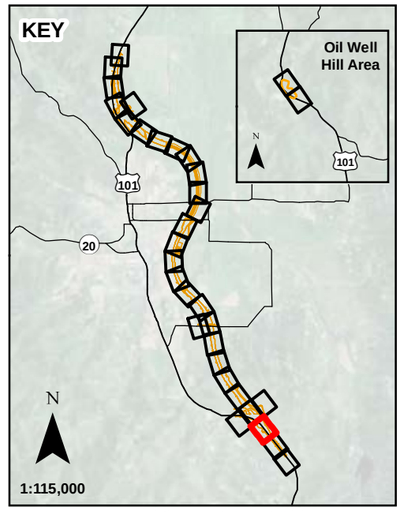
Q:\PROJECTS\CALTRANS\00543_09_WILLITS_FROM_URS\MAPDOC\APPENDIX_B\WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-4

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

FENOLIO
104-110-13

FENOLIO
104-120-01

OCHOA
104-110-12

101

104-110-RW

SCHMIDBAUER
104-090-04

104-120-RW

SCHMIDBAUER
104-090-03

SCHMIDBAUER 104-100-03

SCHMIDBAUER
104-120-02

Legend

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Jurisdictional Wetlands

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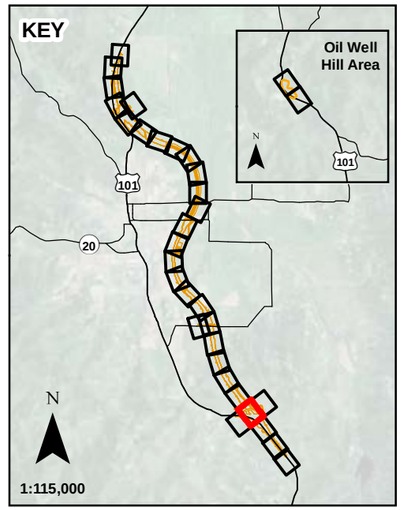
- Parcel



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Scale in Feet

Sheet B-6

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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CADGENE
104-130-10

CADGENE
104-110-14

104-110-RW

104-120-RW

FENOLIO
104-130-04

FENOLIO
104-110-13

104-110-RW

101

OCHOA
104-110-12

FENOLIO
104-120-01

Legend

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Jurisdictional Wetlands

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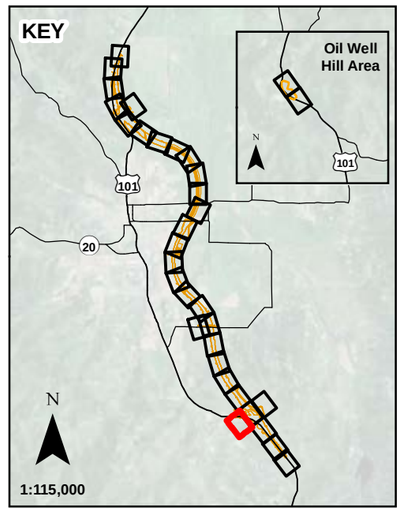
- Parcel



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Scale in Feet

Sheet B-8

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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104-120-RW

SCHMIDBAUER 104-120-02

SCHMIDBAUER
104-100-03

SCHMIDBAUER 104-100-04

SCHMIDBAUER
104-100-02

Legend

- Permanent Impact Boundary
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Jurisdictional Wetlands

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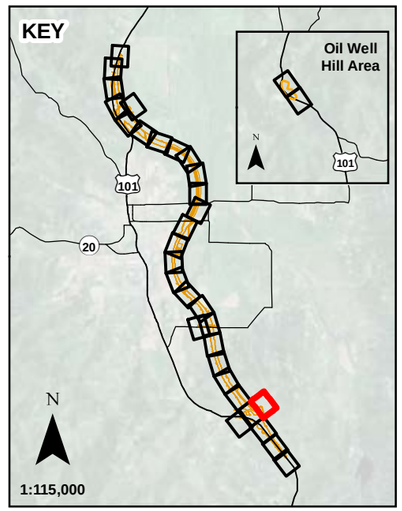
- Parcel



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Sheet B-10

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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OCHOA
104-110-12

HARWOOD
104-090-06

SCHMIDBAUER 104-090-04

104-120-RW

SCHMIDBAUER
104-090-03

BURGESS
104-070-05

SCHMIDBAUER
104-100-03

Legend

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Jurisdictional Wetlands

- Marsh
- Other Water
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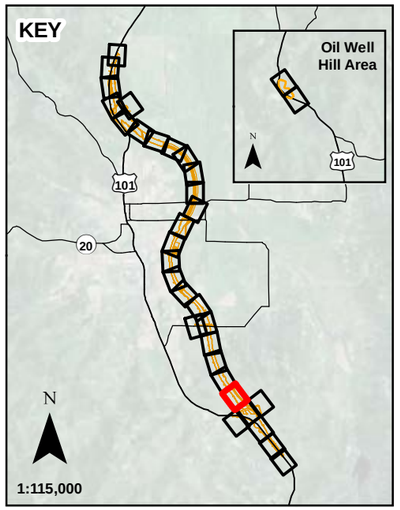
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Sheet B-12

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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HARWOOD 104-090-06

HARWOOD
104-070-06

SCHMIDBAUER
104-090-04

104-120-RW

SCHMIDBAUER
104-090-03

BURGESS 104-070-05

MORRIS
104-070-03

Legend

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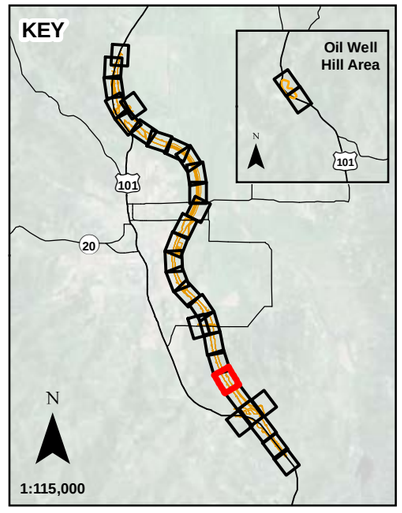
- Parcel



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Sheet B-14

Jurisdictional Wetland Impacts

Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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HARWOOD 104-070-06

HARWOOD 104-050-02

108-010-RW

HANDLEY 104-050-16

STATE 104-050-15

104-120-RW

Ditch

MORRIS 104-050-10

MORRIS 104-070-03

MORRIS 104-050-11

BURGESS 104-070-05

Legend

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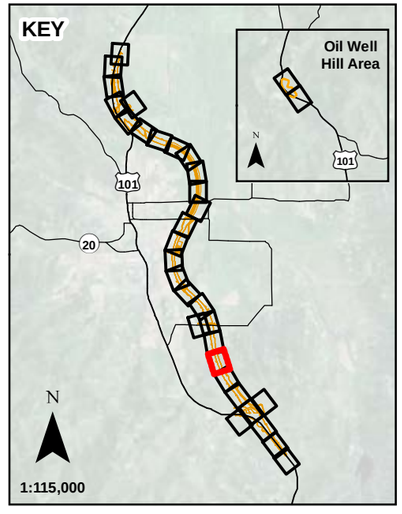
- Parcel



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Scale in Feet

Sheet B-16

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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Legend

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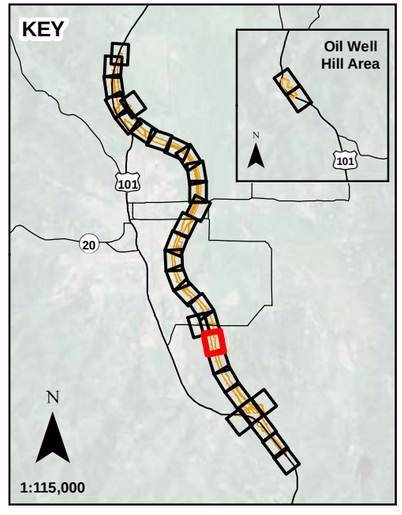

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Scale in Feet

Sheet B-18

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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Legend

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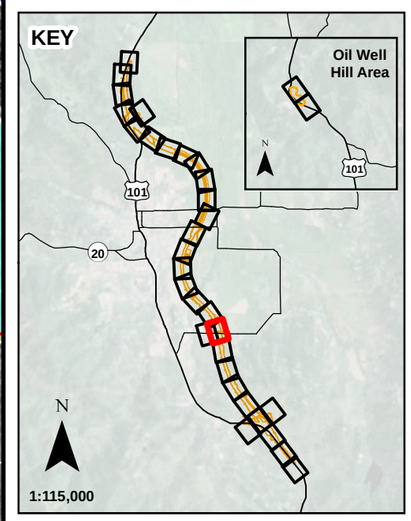

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Sheet B-20

Jurisdictional Wetland Impacts

Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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Legend

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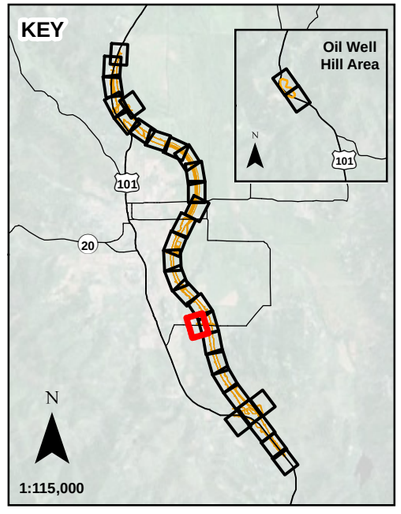

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Sheet B-22

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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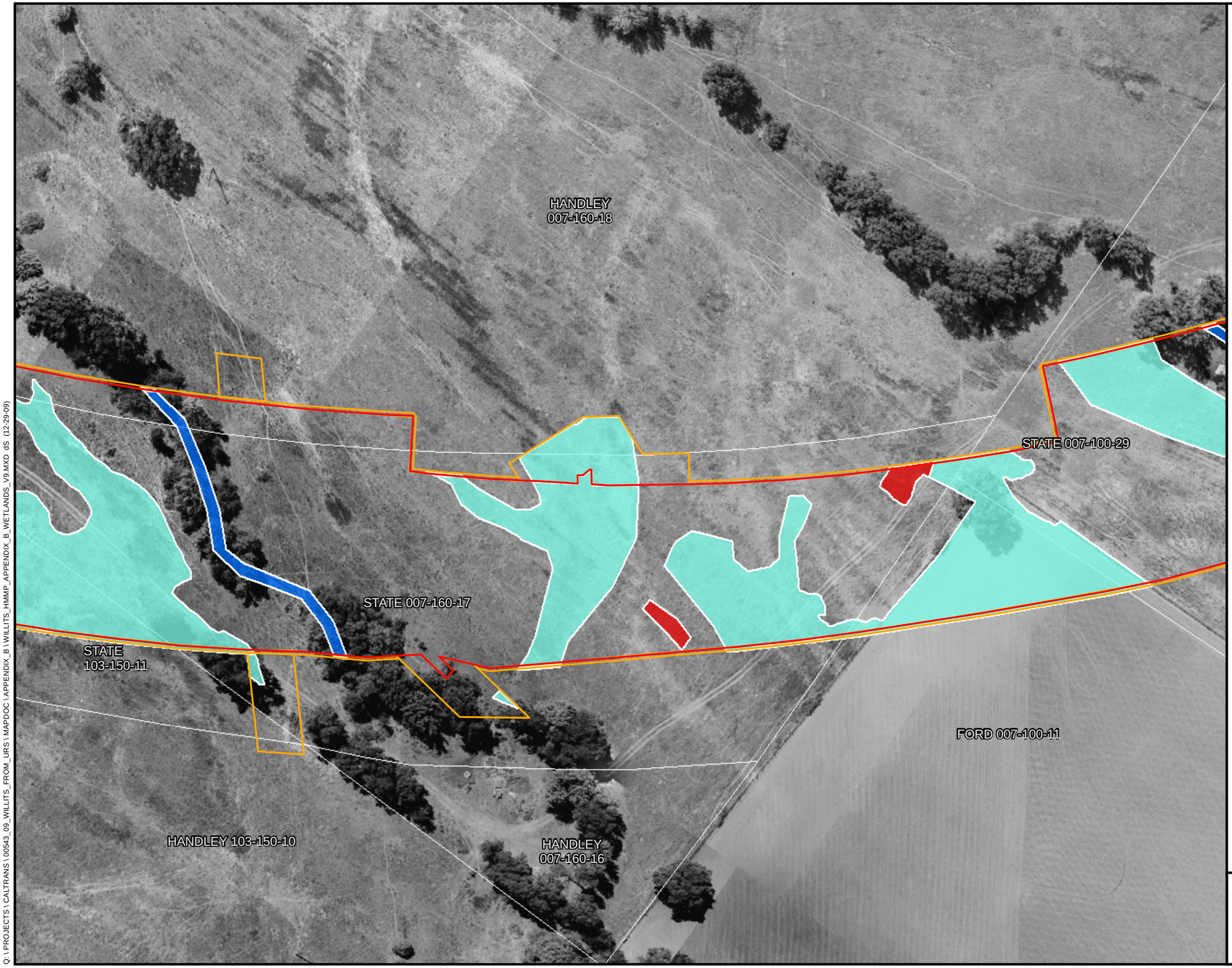

Legend

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Jurisdictional Wetlands

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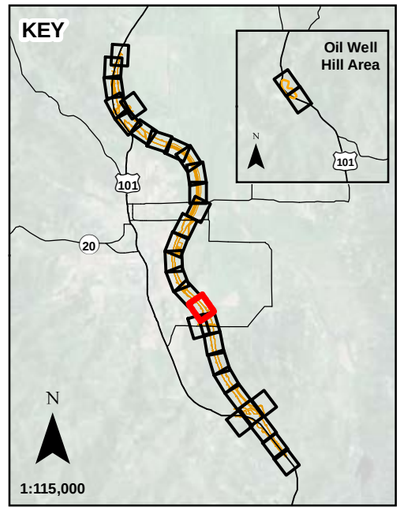

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Scale in Feet

Sheet B-24

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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Legend

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Jurisdictional Wetlands

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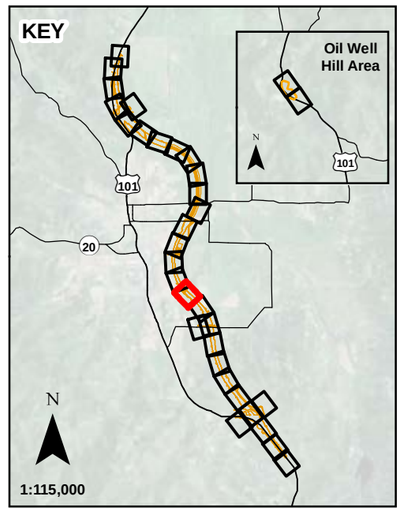
- Parcel



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Scale in Feet

Sheet B-26

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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BOWEN 007-100-21

PETERS 007-060-07

PETERS 007-060-06

NORCAL 007-100-20

PERSICO
007-060-08

STATE 007-100-16

108-010-RW

SEIBERLICH
007-100-08

RUTLEDGE 007-070-01

RUTLEDGE
007-100-09

STATE
007-100-29

Haehl Creek

Shell Ln

HANDLEY
007-100-30

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
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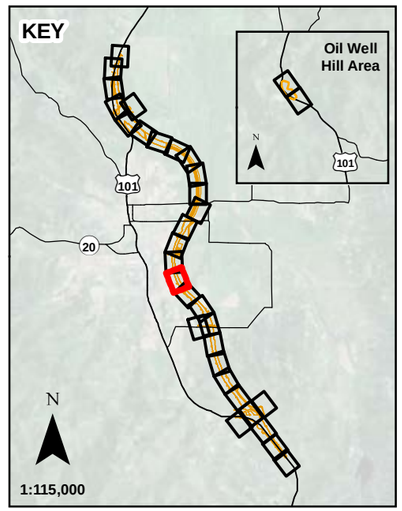

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Scale in Feet

Sheet B-28

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\PROJECTS\CALTRANS\00543_09_WILLITS_FROM_URS\MAPDOC\APPENDIX_B\WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

PETERS 007-060-06
PETERS 007-060-12
PETERS 007-060-11
PETERS 007-060-07
108-010-RW
GRIGGS 007-060-13
GRIGGS 006-143-04
GRIGGS 007-050-06
GRIGGS 007-050-07
RUTLEDGE 007-070-01
RUTLEDGE 007-050-02

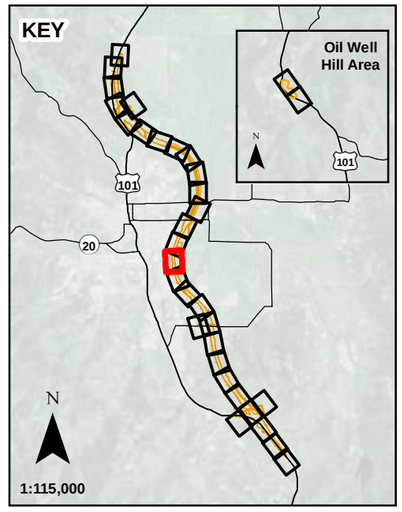
Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel

KEY



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N

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Scale in Feet

Sheet B-31

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

GRIGGS
006-143-04

WINDSOR
007-050-05

WINDSOR 007-040-16

Baechtel Creek

108-010-RW

GRIGGS
007-050-06

WINDSOR 007-040-14

GRIGGS 007-050-07

STATE
007-040-06

STATE
007-040-07

RUTLEDGE
007-050-02

GILSTRAP
007-040-08

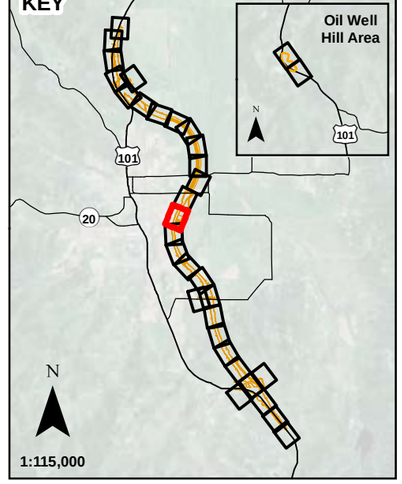
Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel

KEY



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Scale in Feet

Sheet B-34

Jurisdictional Wetland Impacts

Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\PROJECTS\CALTRANS\00543_09_WILLITS_FROM_URS\MAPDOC\APPENDIX_B\WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

WINDSOR
007-040-16

GRIGGS
007-040-15

108-010-RW

HATHAWAY
007-031-13

TWEDDELL 007-040-17

HATHAWAY
007-032-03

WINDSOR
007-040-14

Baechtel Creek

STATE 007-040-06

Center Valley Rd

SHUSTERS
007-032-04

STATE
007-040-07

GILSTRAP 007-040-09

GILSTRAP 007-040-08

WILLITS
007-032-05

GILSTRAP 007-040-10

Haehl Creek

WILLITS
007-040-11

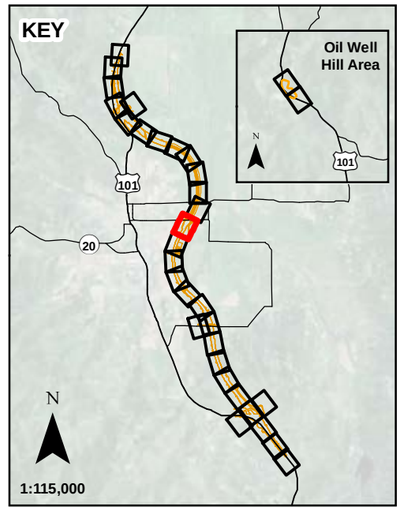
Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel

KEY



N

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Scale in Feet

Sheet B-37

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

HATHAWAY
007-032-03

COUNTY
007-032-02

Baechtel Creek

Haehl Creek

SHUSTERS
007-032-04

JENSEN 007-032-10

007-030-RW

East Commercial St

BENBOW 007-020-03

WILLITS 007-032-05

007-030-RW

HARMS
007-032-13

HARMS
007-032-11

108-010-RW

007-030-RW

007-030-RW

Center Valley Rd

WILLITS
007-040-11

SHUSTERS
007-032-12

007-030-RW

SHORT
007-040-12

007-030-RW

GRASSE
103-050-03

OLEARY
103-050-15

Bray Rd

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel

KEY

Oil Well Hill Area

101

20

N

1:115,000

N

0 100

Scale in Feet

Sheet B-40

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

COUNTY
007-032-01

WILLITS
007-020-02

JENSEN
007-032-10

Baechtel Creek

007-030-RW

East Commercial St

HARMS
007-032-13

BENBOW 007-020-03

108-010-RW

007-030-RW

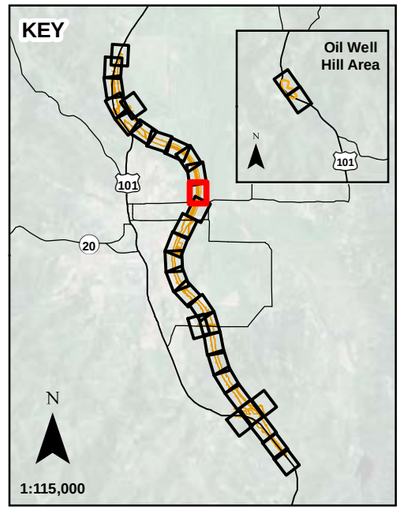
Q:\PROJECTS\CALTRANS\00543_09_WILLITS_FROM_URS\MAPDOC\APPENDIX_B\WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-43

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

WILLITS
007-020-02

WILLITS 007-010-03

Baechtel Creek

Baechtel Creek

BENBOW 007-020-03

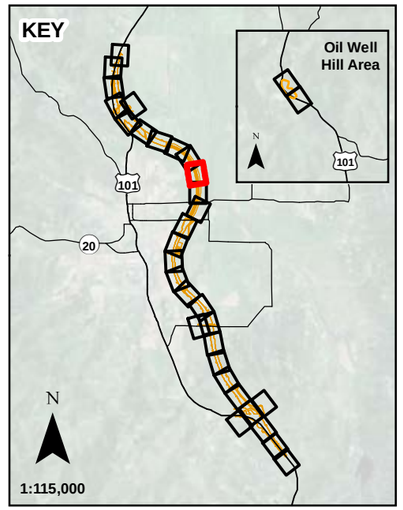
BENBOW 007-010-04

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-46

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

WILLITS 007-010-03

Broaddus Creek

WILLITS 007-010-02

WILLITS 007-010-01

Mill Creek

Baechtel Creek

CITY 108-040-03

Outlet Creek

BENBOW 007-010-04

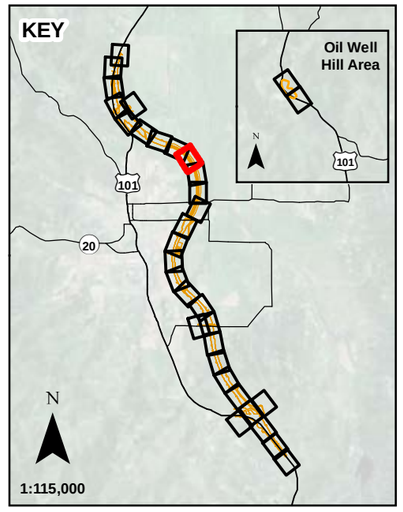
CITY 108-040-14

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-49

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

WILLITS
007-010-01

WILLITS
007-010-02

HUFFMAN
108-040-08

CITY 108-040-03

CITY
108-040-14

Outlet Creek

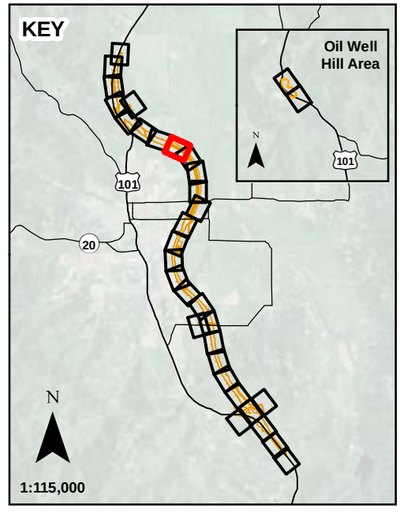
Mill Creek

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-51

Jurisdictional Wetland Impacts

Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

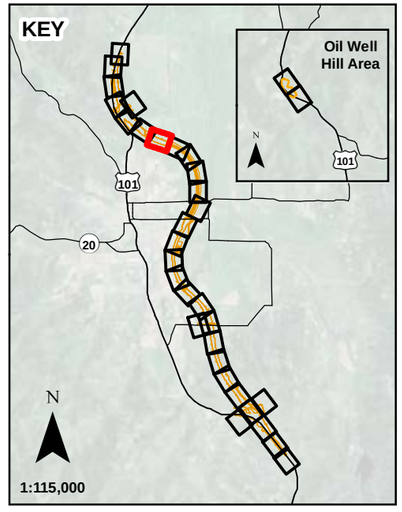
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



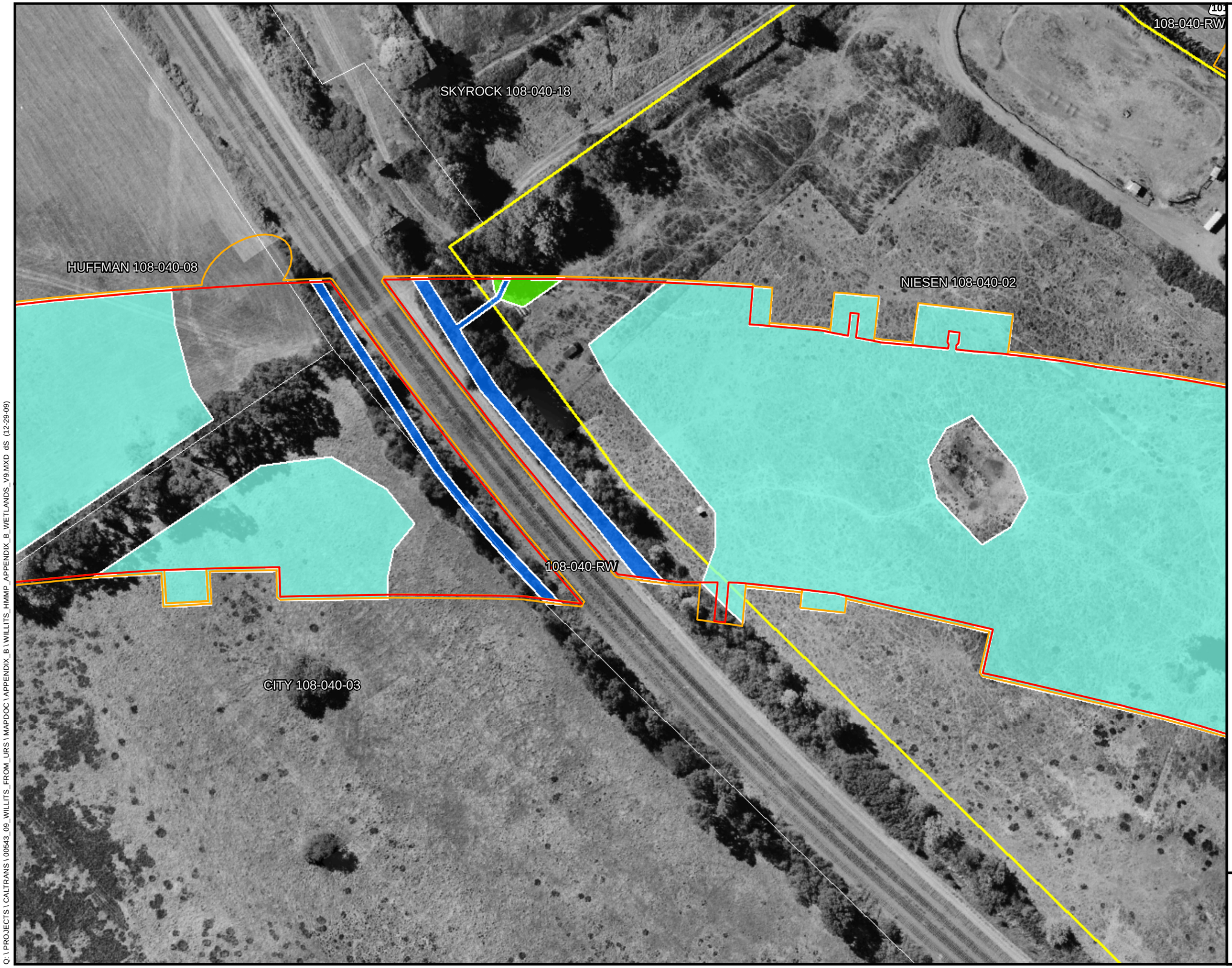
N

0 100

Scale in Feet

Sheet B-54

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps



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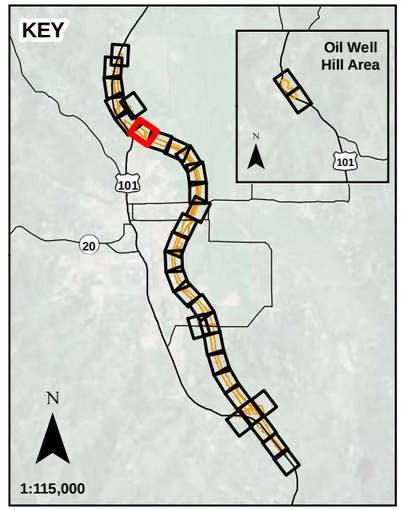
Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-57

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

WAGENET
038-080-31

SNYDER
038-080-30

108-010-RW

LUSHER 038-080-09

LUSHER
038-060-08

SNYDER
108-040-12

Redwood
Hwy

108-040-RW

101

NIESEN 108-040-02

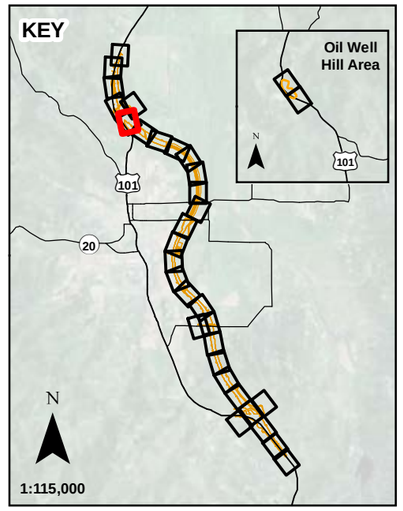
LUSHER 108-030-03

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

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Scale in Feet

Sheet B-60

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

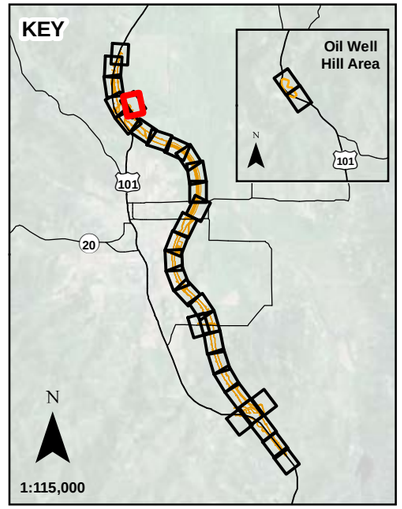
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-63

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

WAGENET
038-080-31

WAGENET
038-060-10

Upp Creek

ANDERSON 038-060-07

Redwood Hwy

PADULA 038-060-09

LUSHER
038-080-09

108-010-RW

101

LUSHER 038-060-08

LUSHER
108-030-03

BROOKE
038-040-09

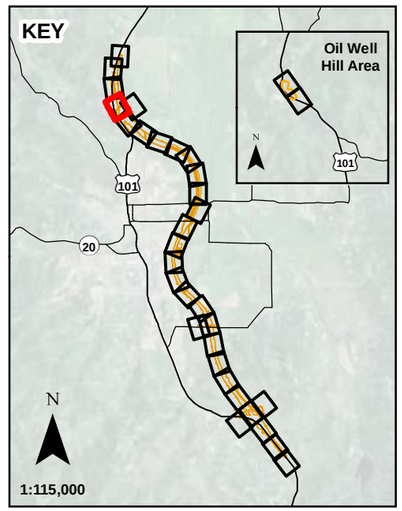
Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel

KEY



N

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N

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Scale in Feet

Sheet B-66

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

PADULA
038-060-09

KING 038-040-08

LAMB
038-040-05

PELLEGRI
038-040-07

Redwood Hwy

LUSHER
038-060-08

108-010-RW

101

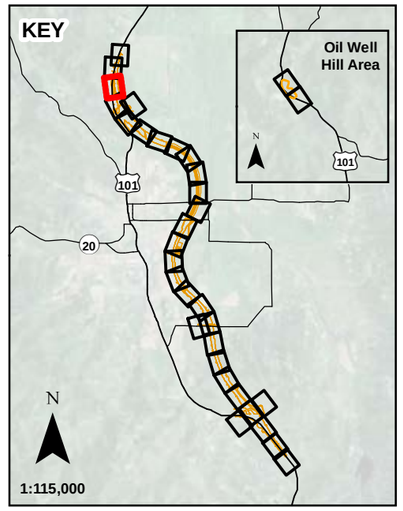
BROOKE 038-040-09

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

Scale in Feet

Sheet B-69

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

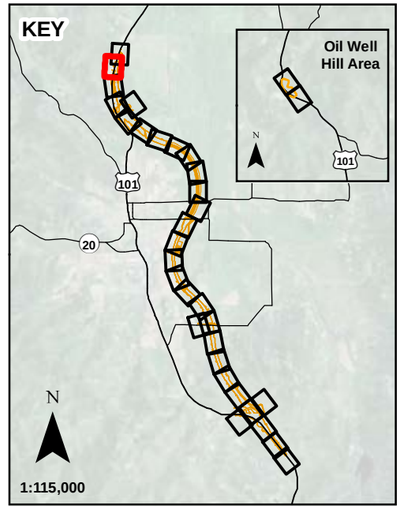
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

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Scale in Feet

Sheet B-71

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

BURTON
038-020-09

GARMAN 038-020-21

101

108-010-RW

Redwood
Hwy

BROOKE 038-020-11

Mill Creek

BROOKE 108-020-03

Old Outlet Creek

FORD 108-020-04

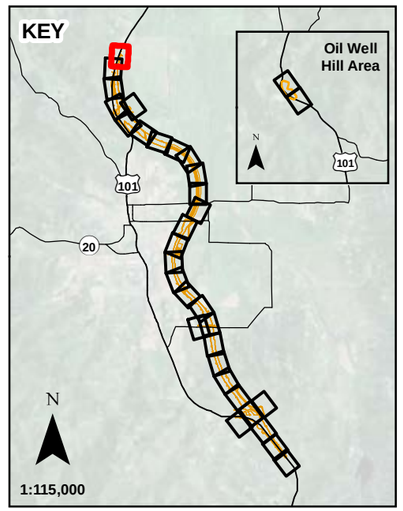
Old Outlet Creek

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

0 100

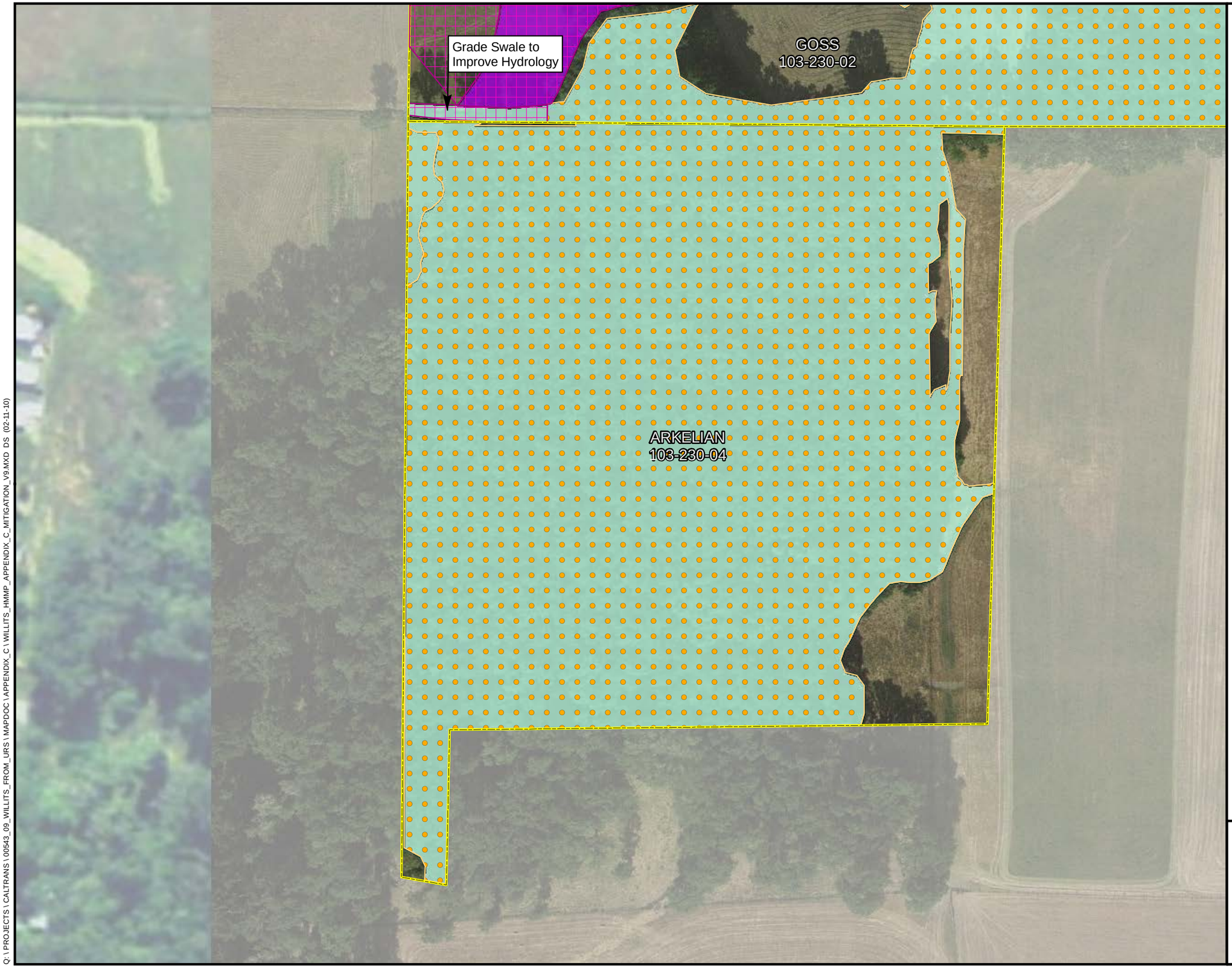
Scale in Feet

Sheet B-73

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Appendix B: Mitigation Actions Impact Maps (From Appendix C of the Willits Bypass Mitigation and Monitoring Plan)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

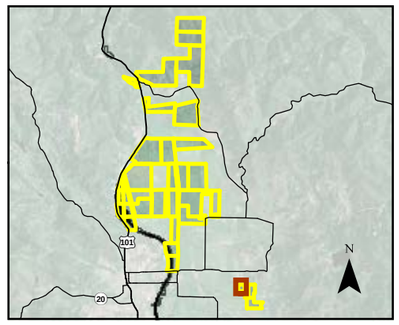
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



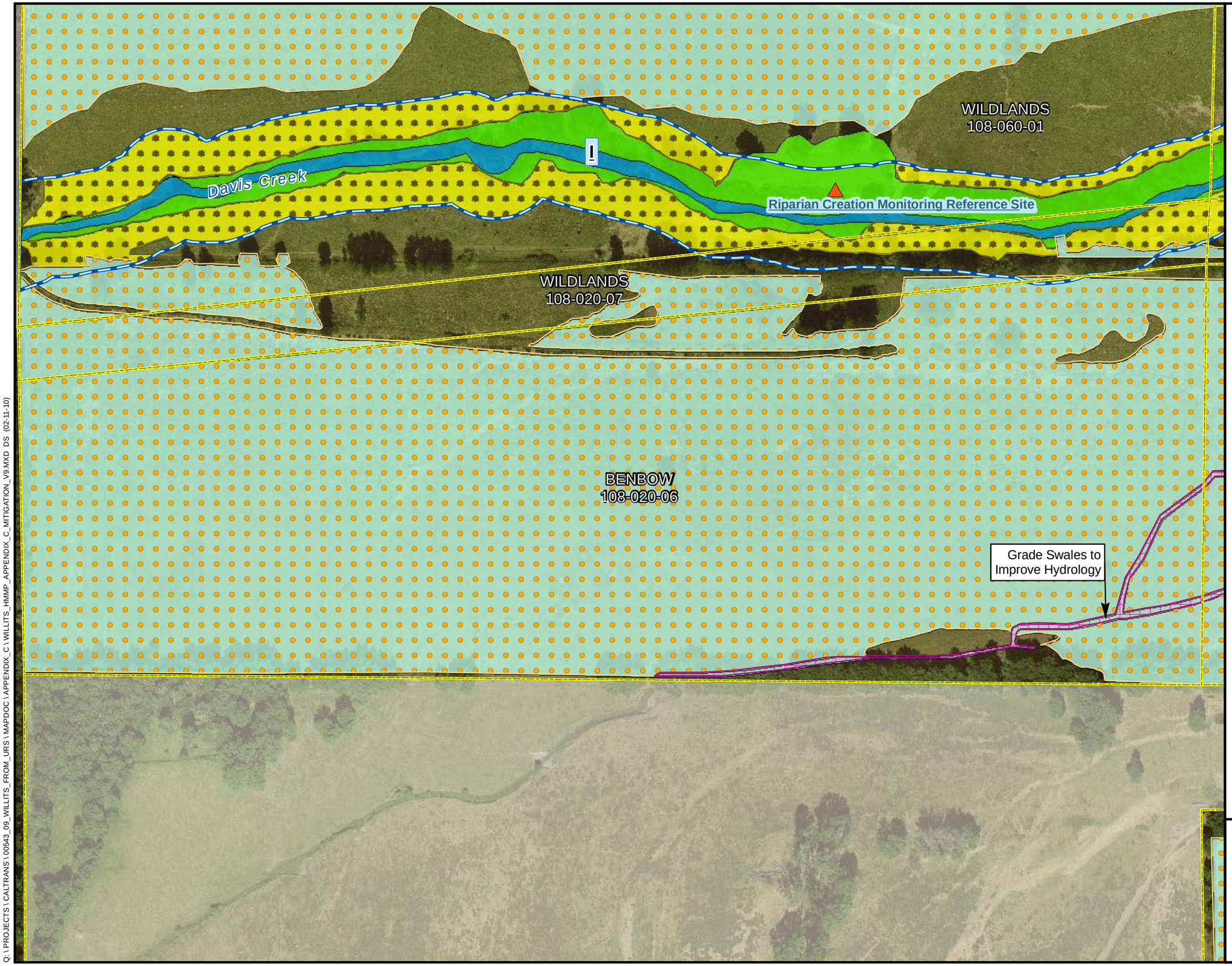
0 200

Scale in Feet

Sheet C-4
Mitigation Actions
Arkelian
APN 103-230-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

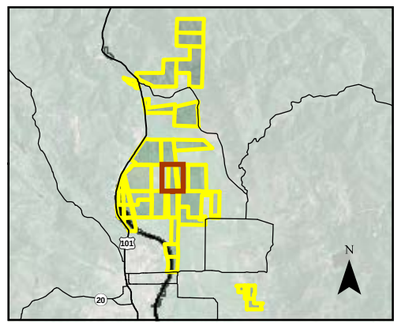
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



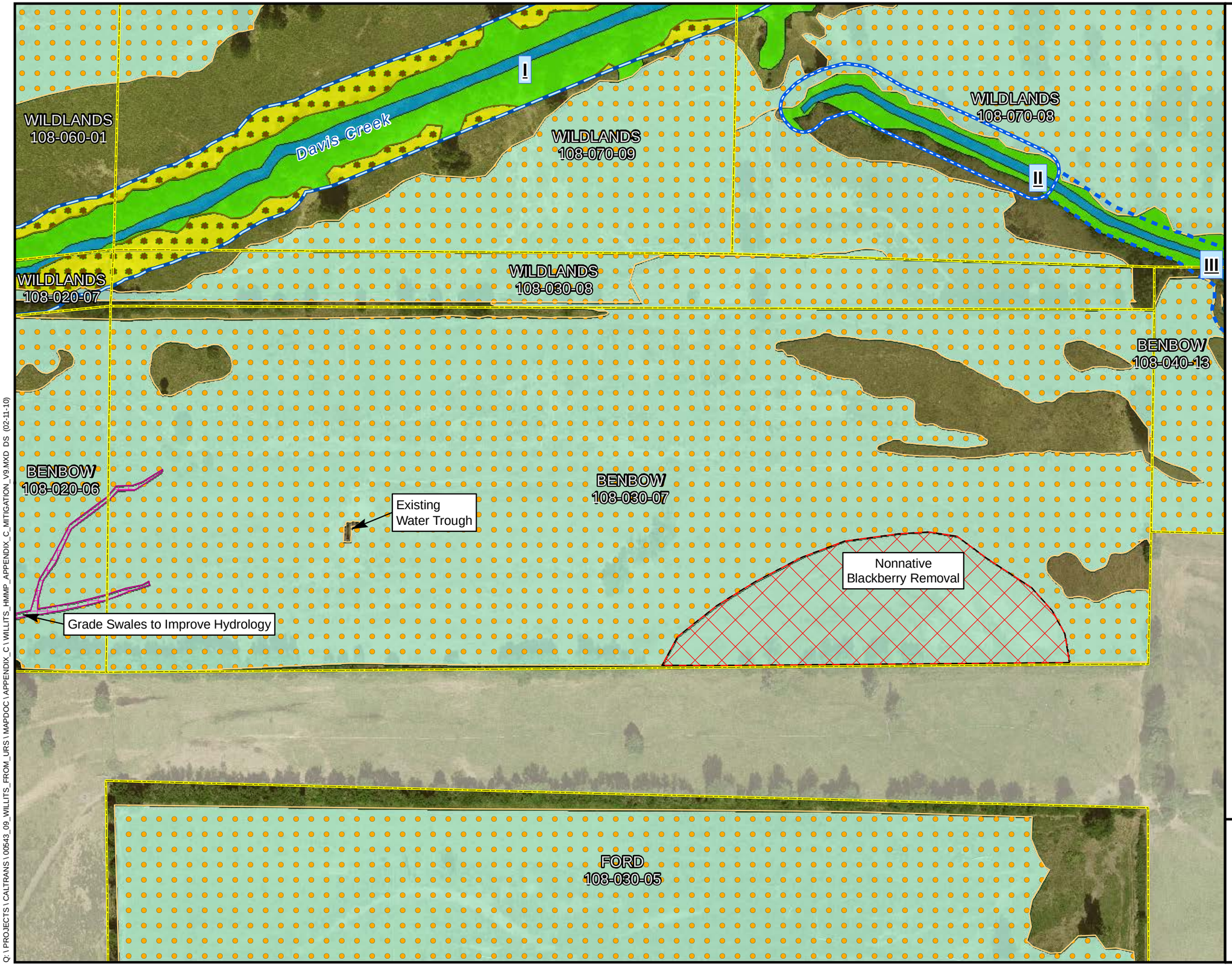
0 200

Scale in Feet

Sheet C-8
Mitigation Actions
Benbow
APN 108-020-06

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

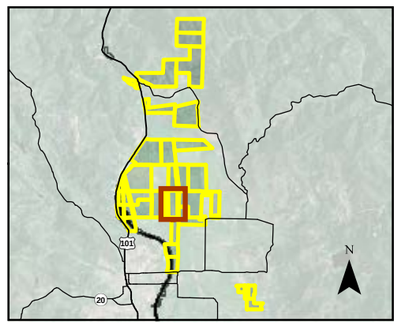
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-12
Mitigation Actions
Benbow
APN 108-030-07

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

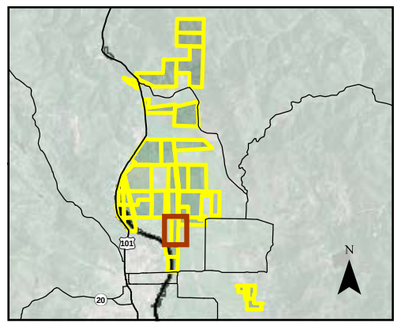
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-16
Mitigation Actions
Benbow
APN 108-040-13

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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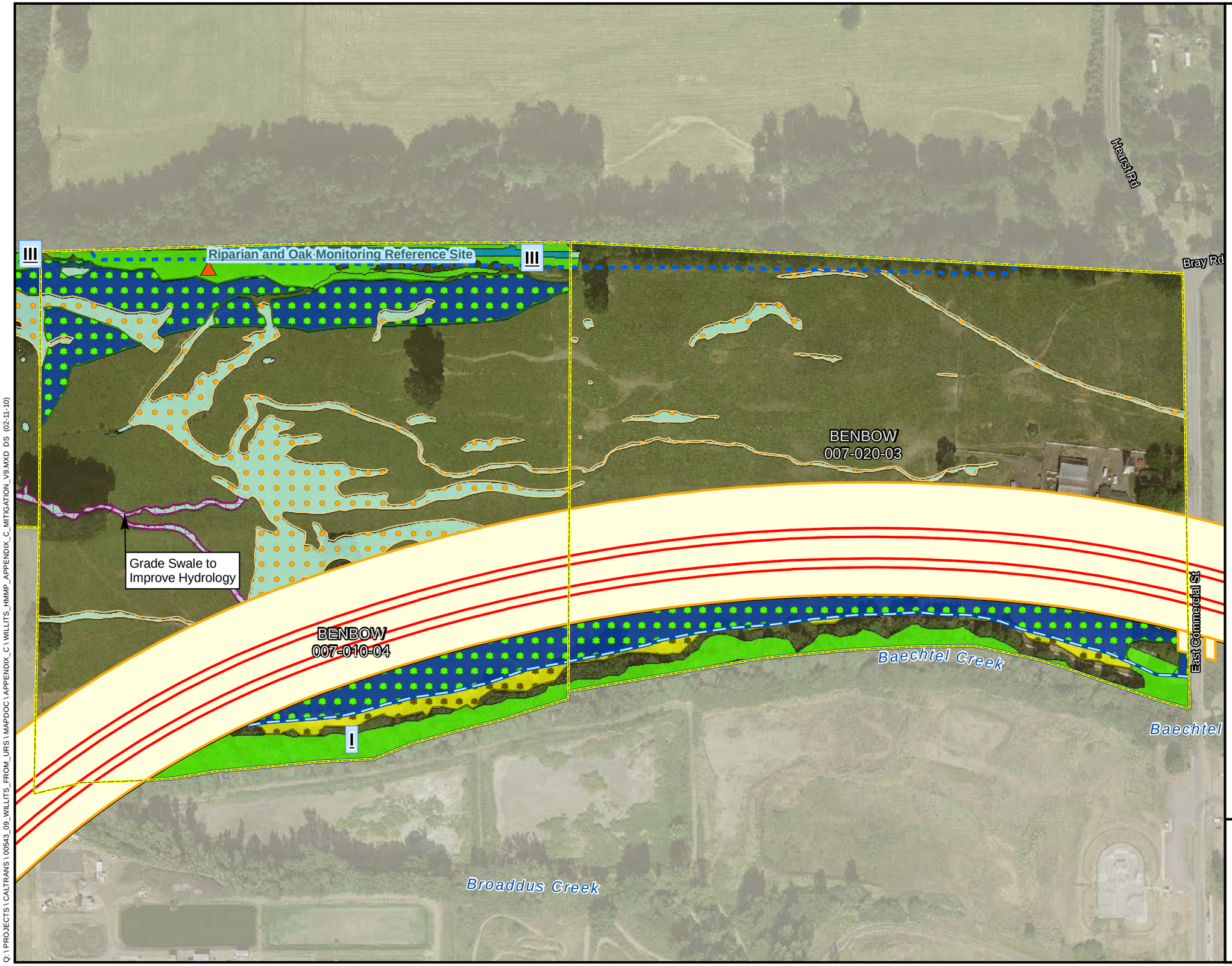


Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

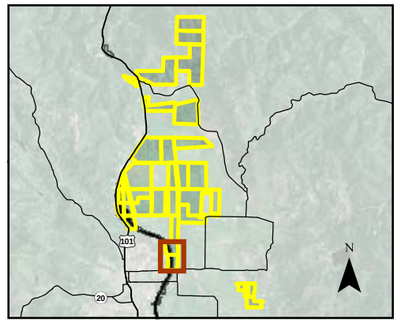
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-20
Mitigation Actions
Benbow
APNs 007-010-04 & 007-020-03

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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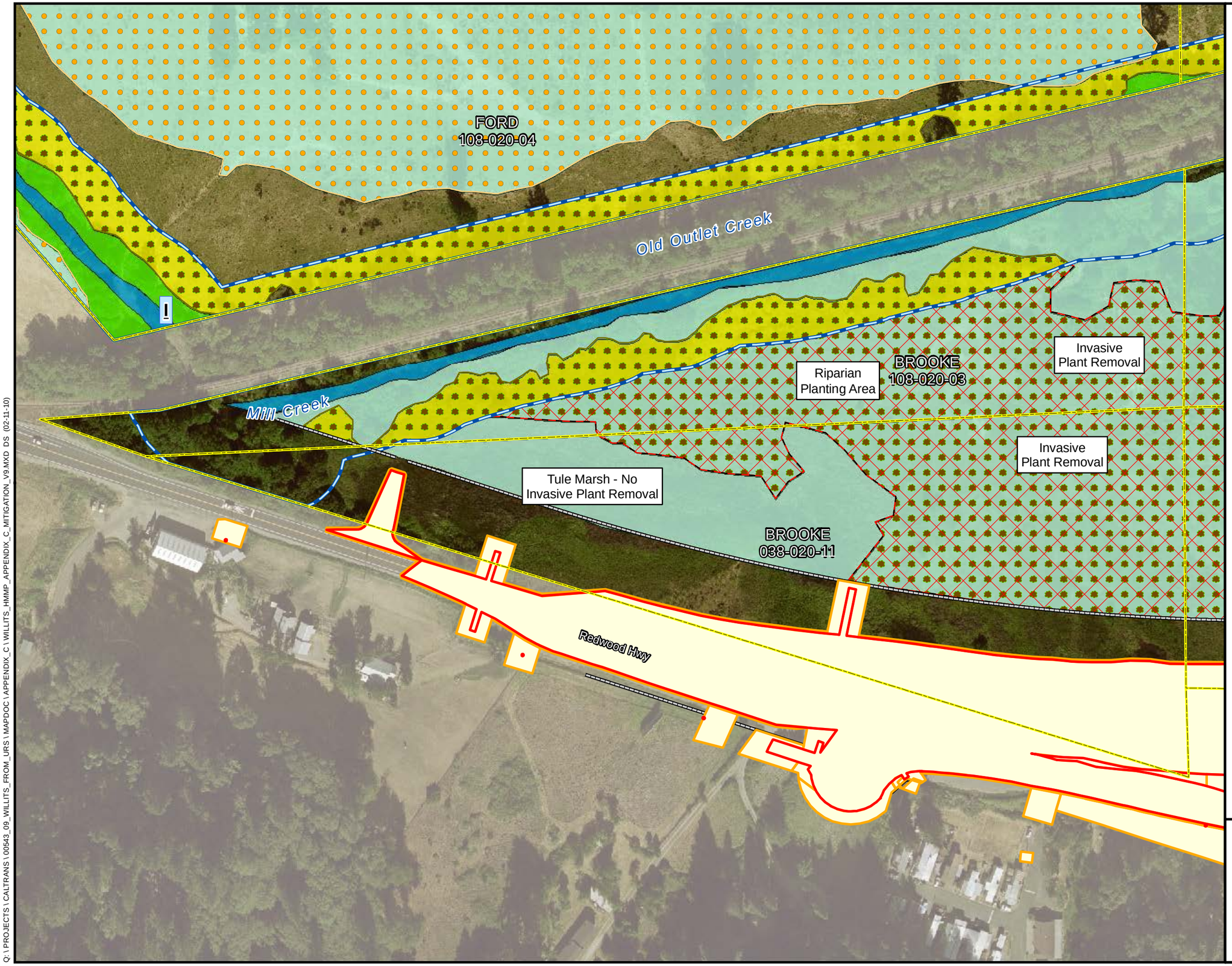


Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

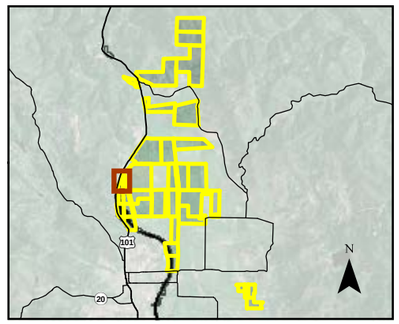
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-23
Mitigation Actions
Brooke
APNs 108-020-03 & 038-020-11

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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FORD
108-020-04

FORD
108-030-02

Old Outlet Creek

Mill Creek

Upp Creek

LUSHER
108-030-03

BROOKE
108-030-01

Riparian Creation Monitoring Reference Site

Invasive
Plant Removal

Riparian
Planting Area

BROOKE
108-020-03

Riparian
Planting Area

Invasive
Plant Removal

BROOKE
038-040-09

BROOKE
038-020-11

LUSHER
038-060-08

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

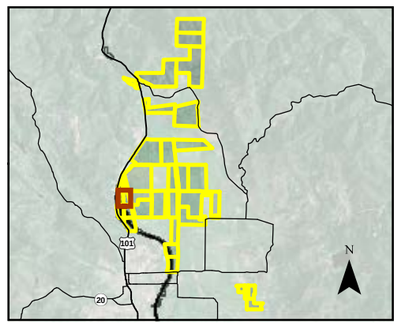
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-26
Mitigation Actions
Brooke
APNs 108-030-01 & 038-040-09

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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Wetland Creation Monitoring Reference Site

Riparian Creation Monitoring Reference Site

Redwood Hwy

Wild Oat Canyon Creek

Old Outlet Creek

Outlet Creek

FORD
108-010-06

FORD
108-020-04

I

II

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

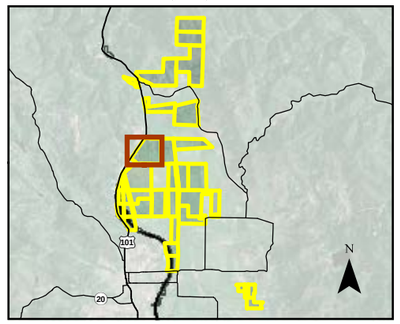
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-30
Mitigation Actions
Ford
APN 108-010-06

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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FORD
108-010-06

Redwood Hwy

Mill Creek

BROOKE
038-020-11

FORD
108-020-04

Grade Swale to
Improve Hydrology

Tule Marsh - No
Invasive Plant Removal

Riparian
Planting Area

Old Outlet Creek

BROOKE
108-020-03

Invasive
Plant Removal

Invasive
Plant Removal

BROOKE
038-040-09

BROOKE
108-030-01

FORD
108-030-02

Outlet Creek

FORD
108-030-05

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N

0 200

Scale in Feet

Sheet C-34
Mitigation Actions
Ford
APN 108-020-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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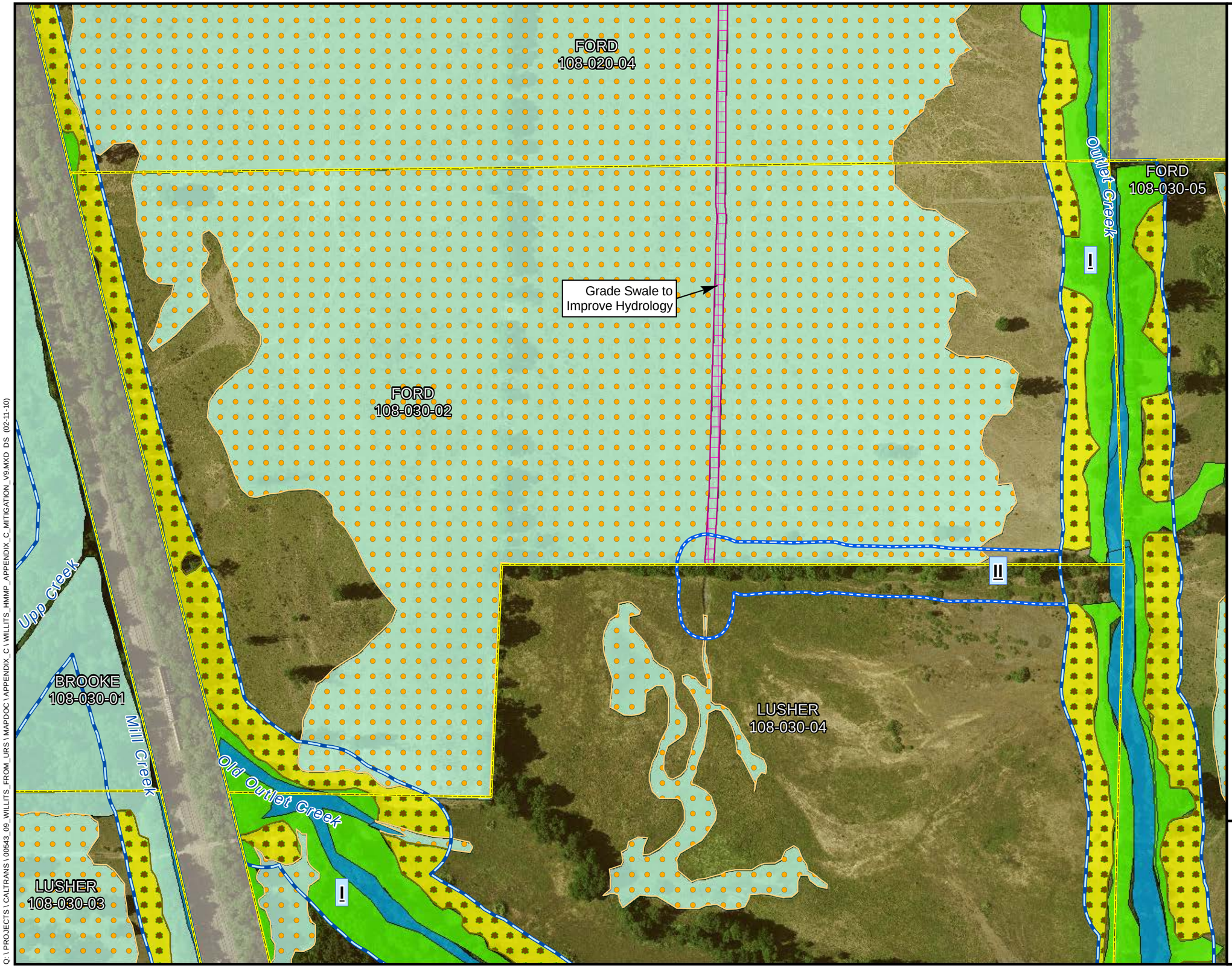


Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

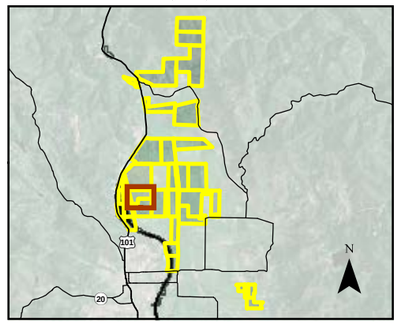
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-38
Mitigation Actions
Ford
APN 108-030-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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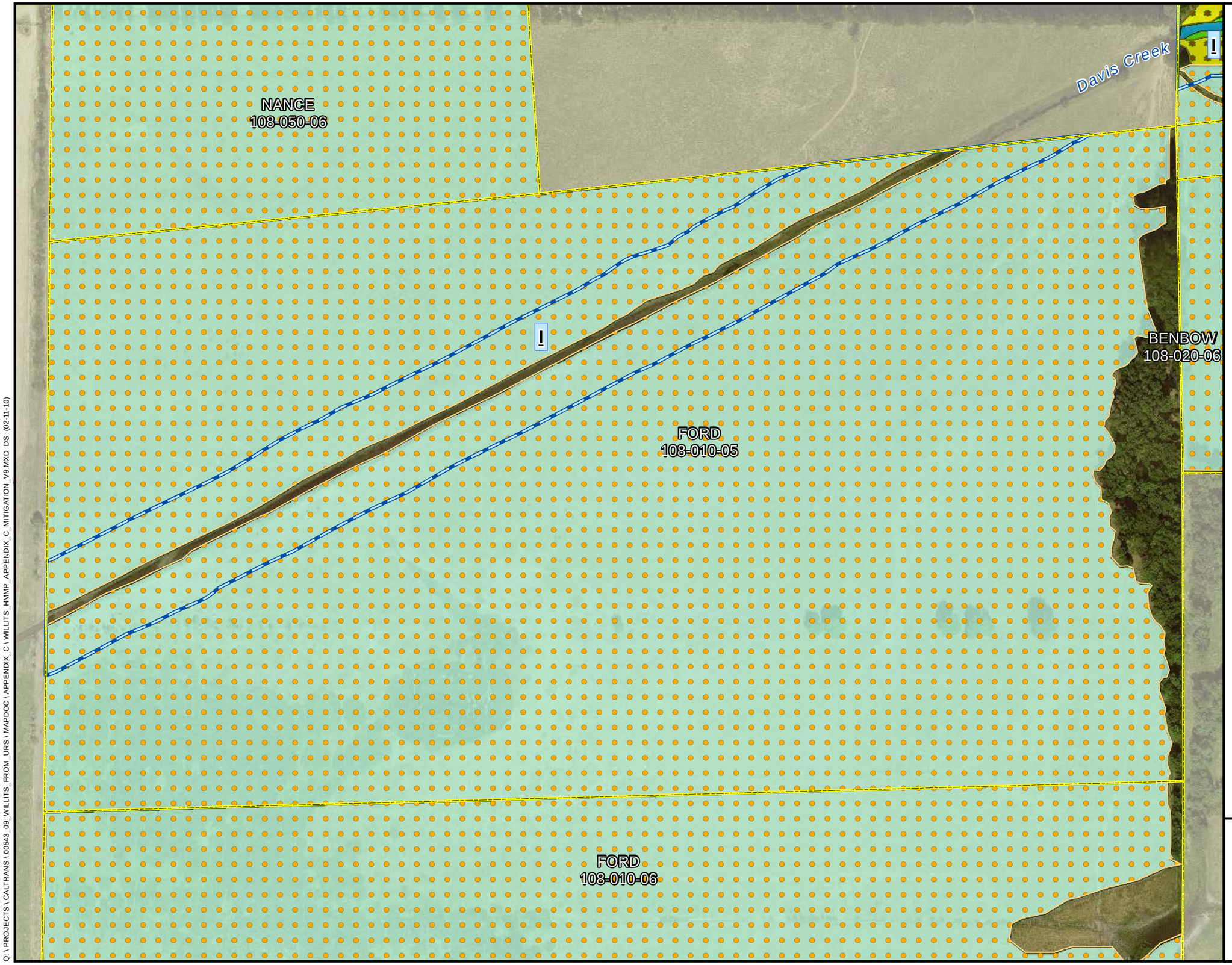


Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

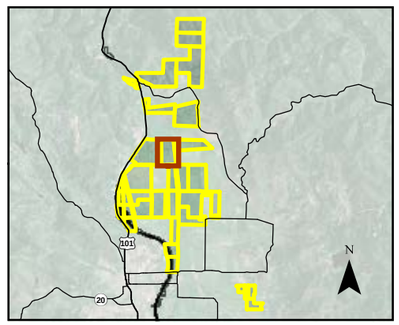
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-42
Mitigation Actions
Ford
APN 108-010-05

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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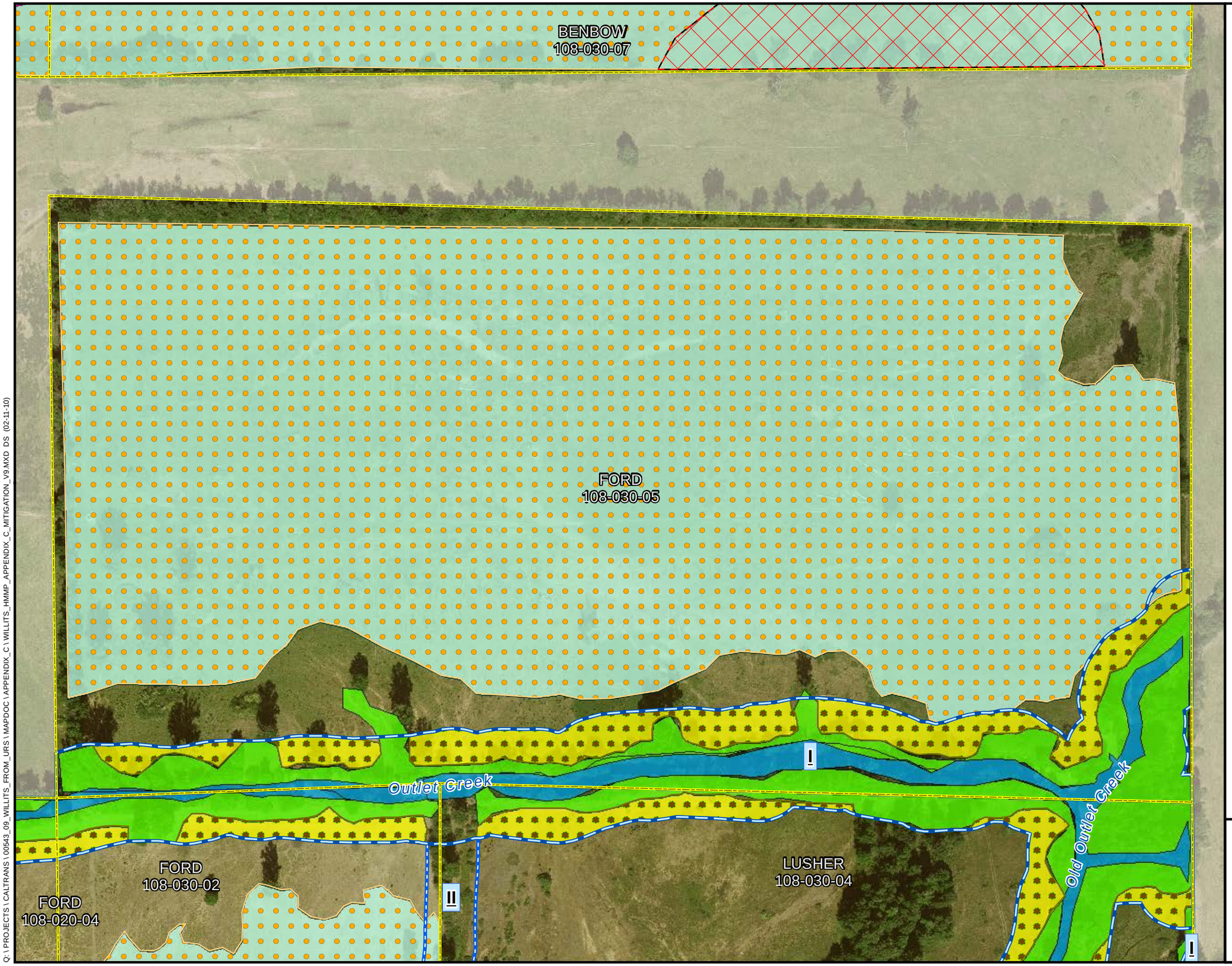


Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

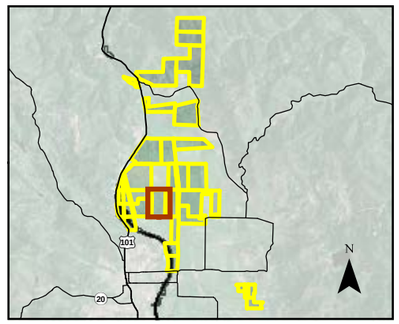
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-46
Mitigation Actions
Ford
APN 108-030-05

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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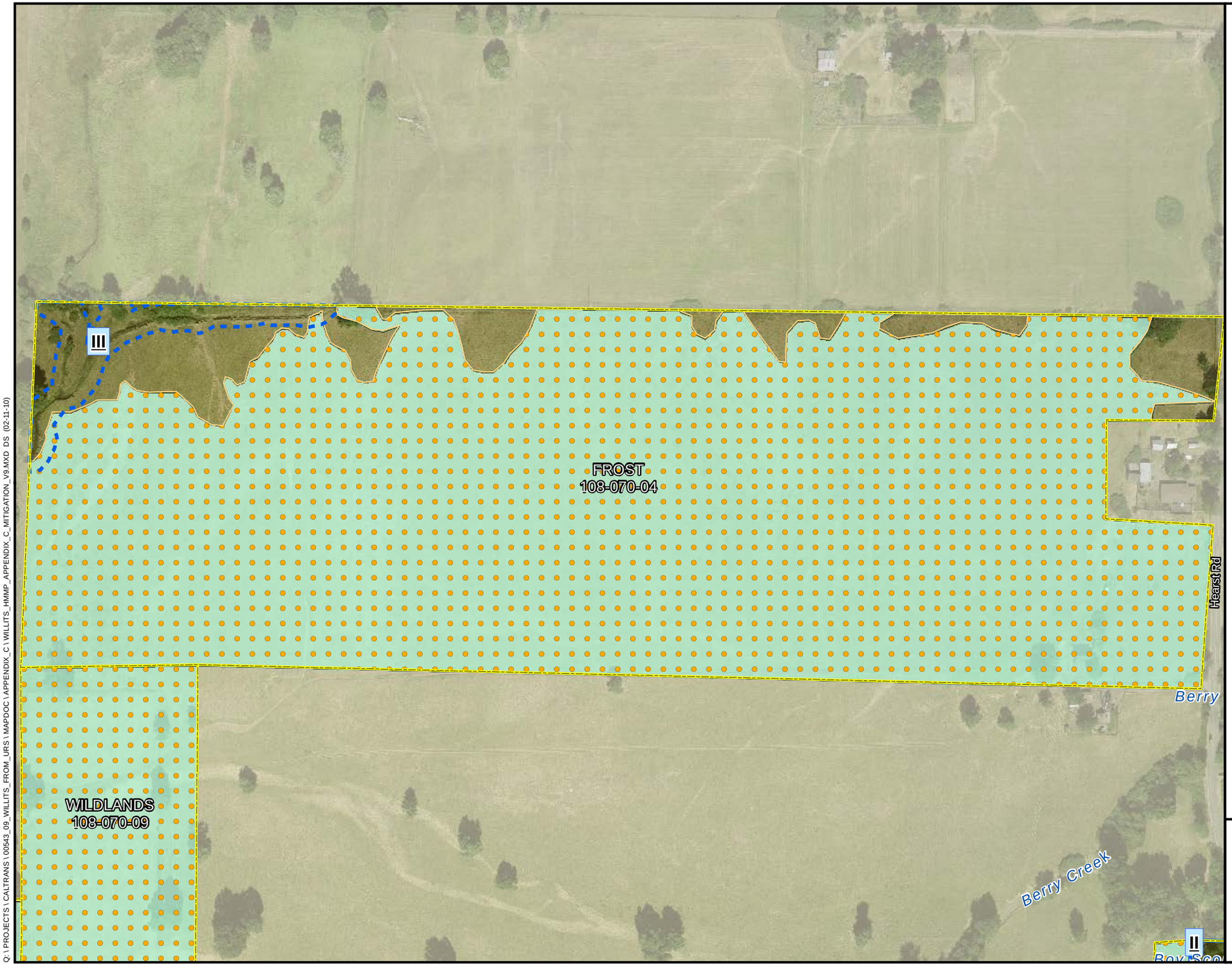


Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

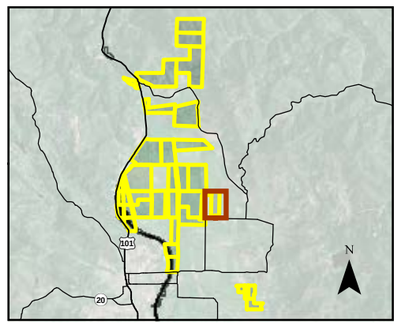
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-50
Mitigation Actions
Frost
APN 108-070-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

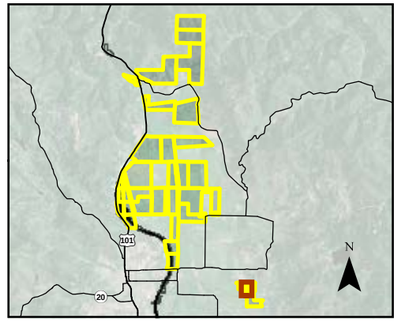
- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way



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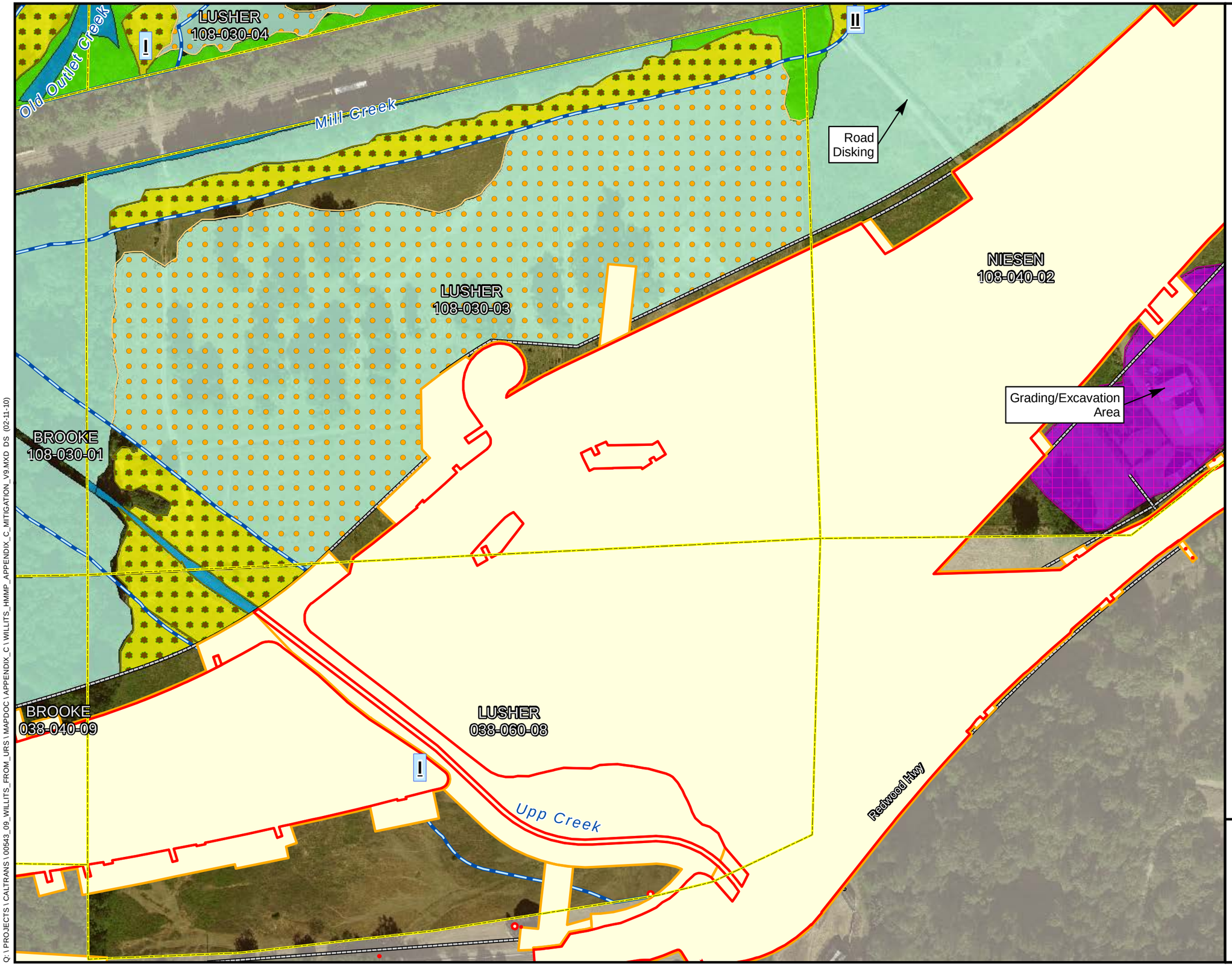
Scale in Feet

Sheet C-54
Mitigation Actions
Goss
APN 103-230-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

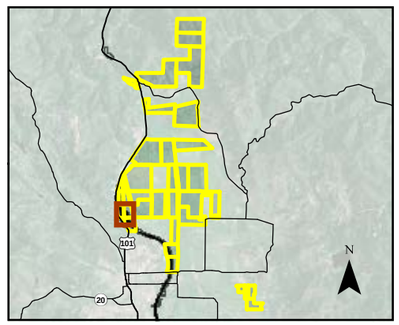
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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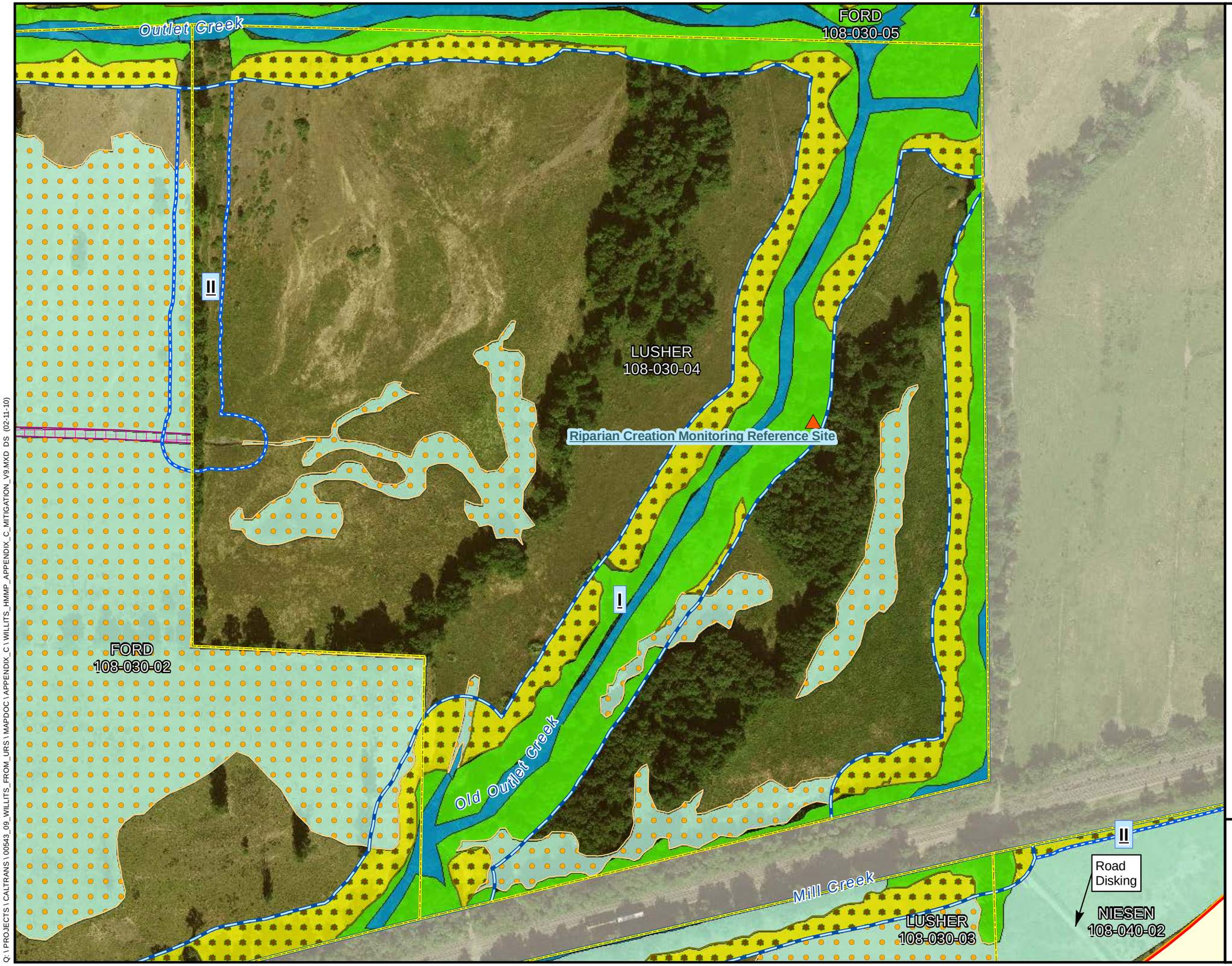
Scale in Feet

Sheet C-61
Mitigation Actions
Lusher
APNs 108-030-03 & 038-060-08

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

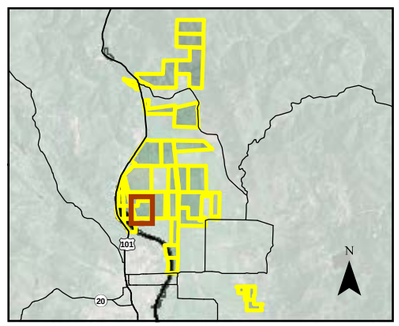
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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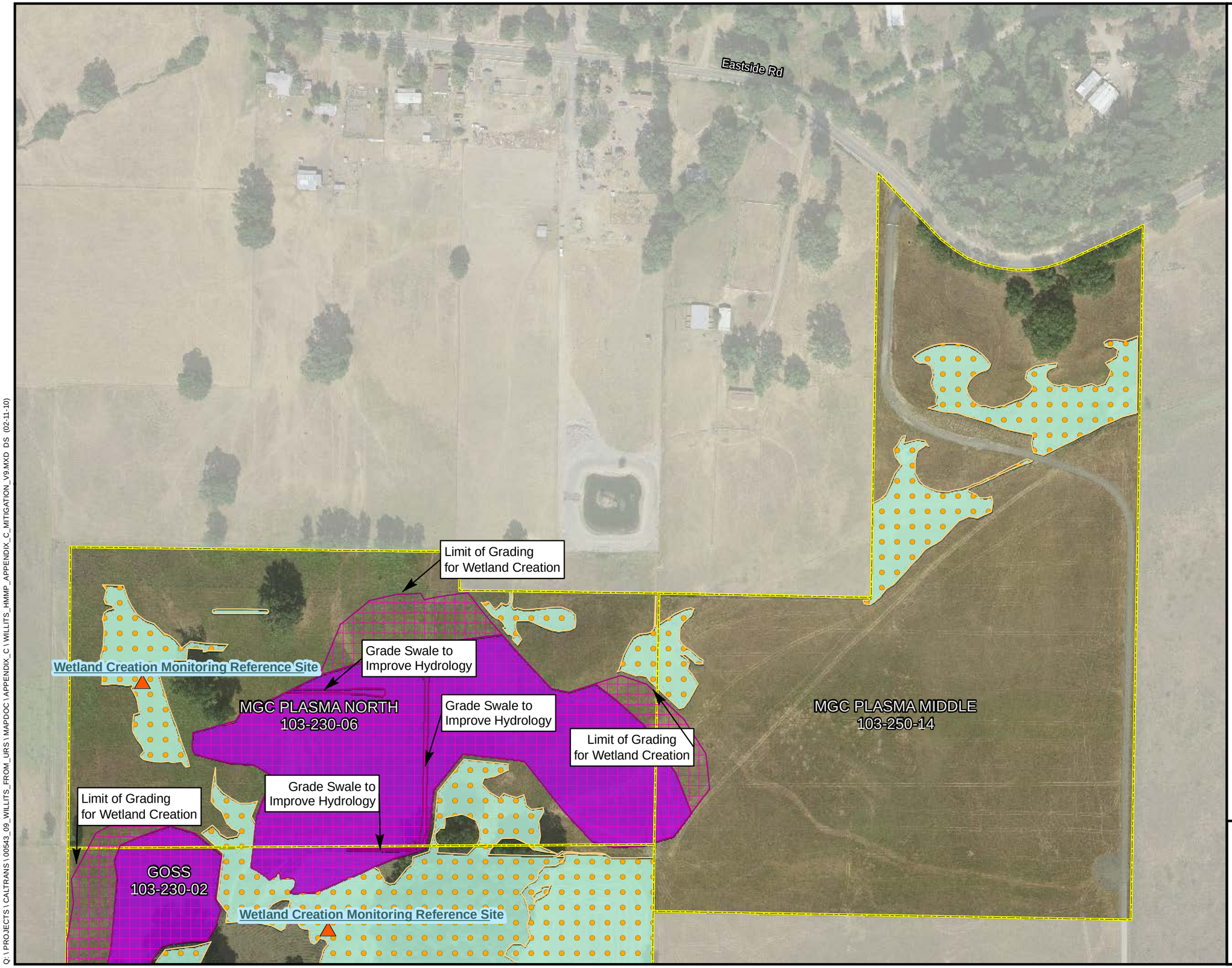
Scale in Feet

Sheet C-64
Mitigation Actions
Lusher
APN 108-030-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

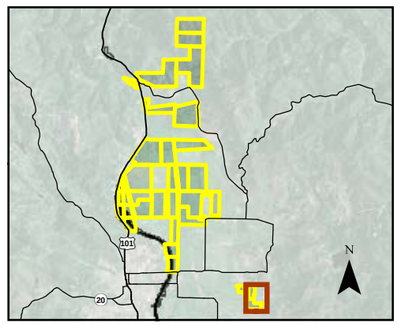
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-68
Mitigation Actions
MGC Plasma-North & Middle
APNs 103-230-06 & 103-250-14

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

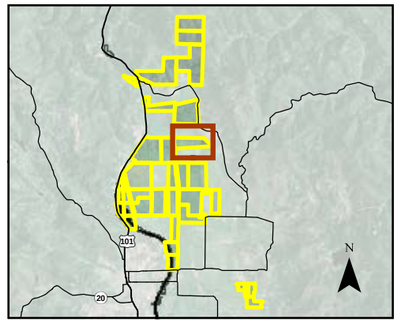
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



0 200

Scale in Feet

Sheet C-72
Mitigation Actions
Nance
APN 108-050-06

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

LUSHER
038-060-08

LUSHER
108-030-03

LUSHER
108-030-04

I

Mill Creek

II

Road
Disking

NIESEN
108-040-02

Grading/Excavation
Area

Redwood Hwy

Wetland Creation Monitoring Reference Site

Limit of Grading
for Wetland Creation

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

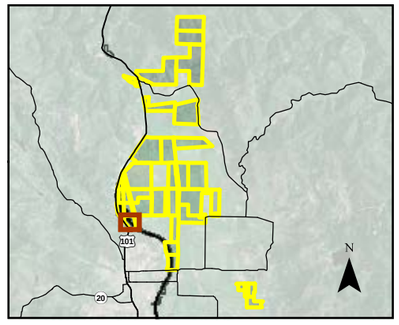
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



0 200

Scale in Feet

Sheet C-76
Mitigation Actions
Niesen
APN 108-040-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\PROJECTS\CALTRANS\00543_09_WILLITS_FROM_URS\MAPDOC\APPENDIX_C\WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

WATSON
037-250-05

Berry Creek

Wetland Creation Monitoring Reference Site

Oak Creation Monitoring Reference Site

WATSON
037-221-30

Permanent Impacts to Other Waters from Mitigation Construction

Limit of Grading for Wetland Creation

Reynolds Hwy

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

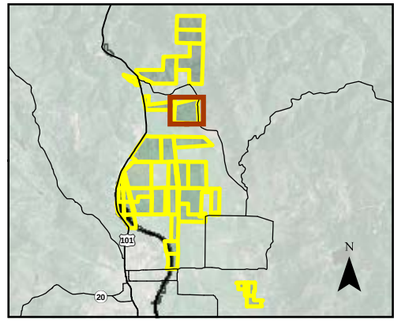
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



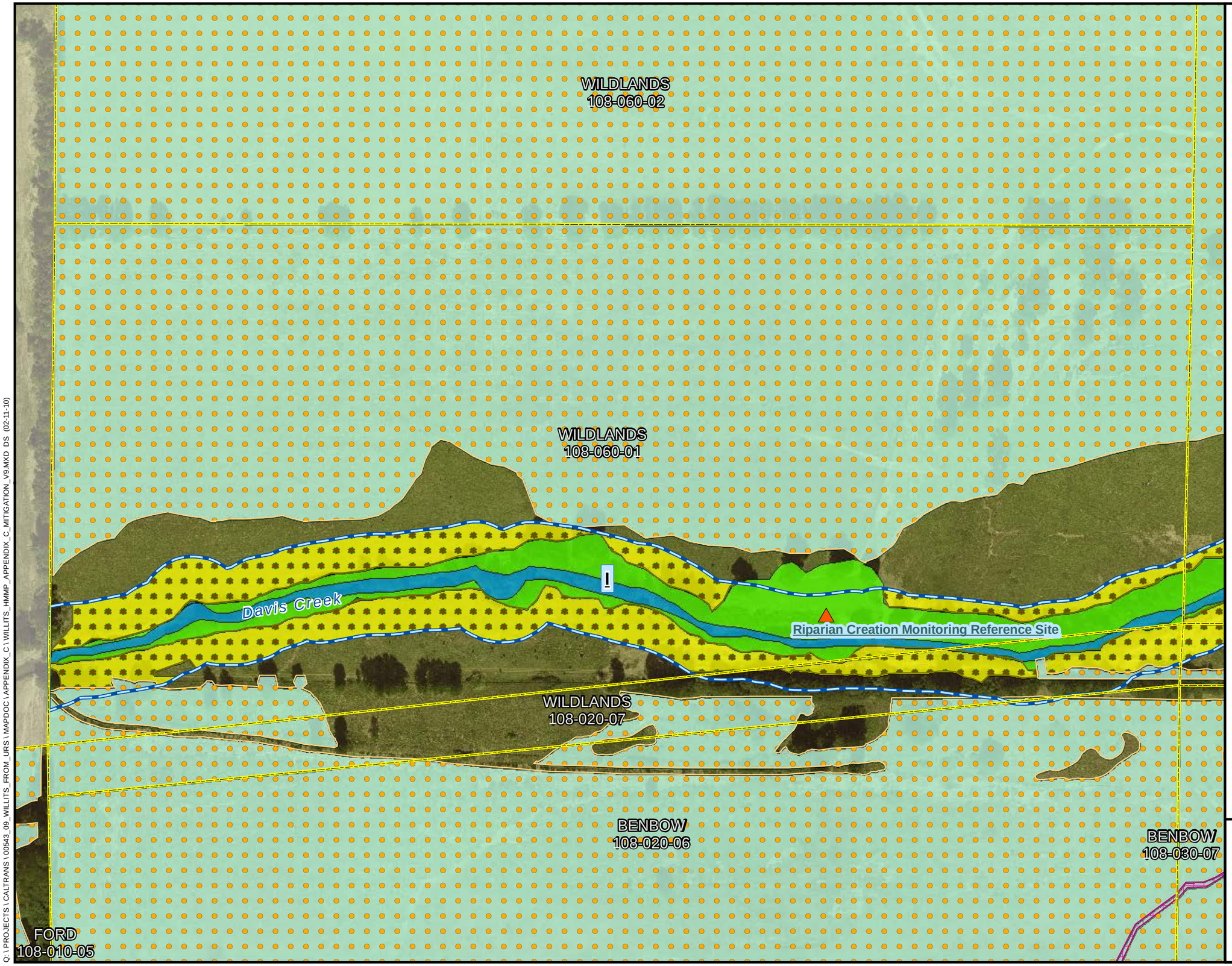
0 200

Scale in Feet

Sheet C-86
Mitigation Actions
Watson
APN 037-221-30

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

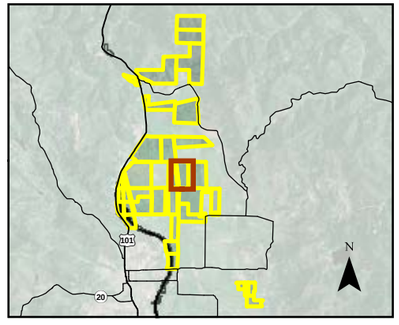
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



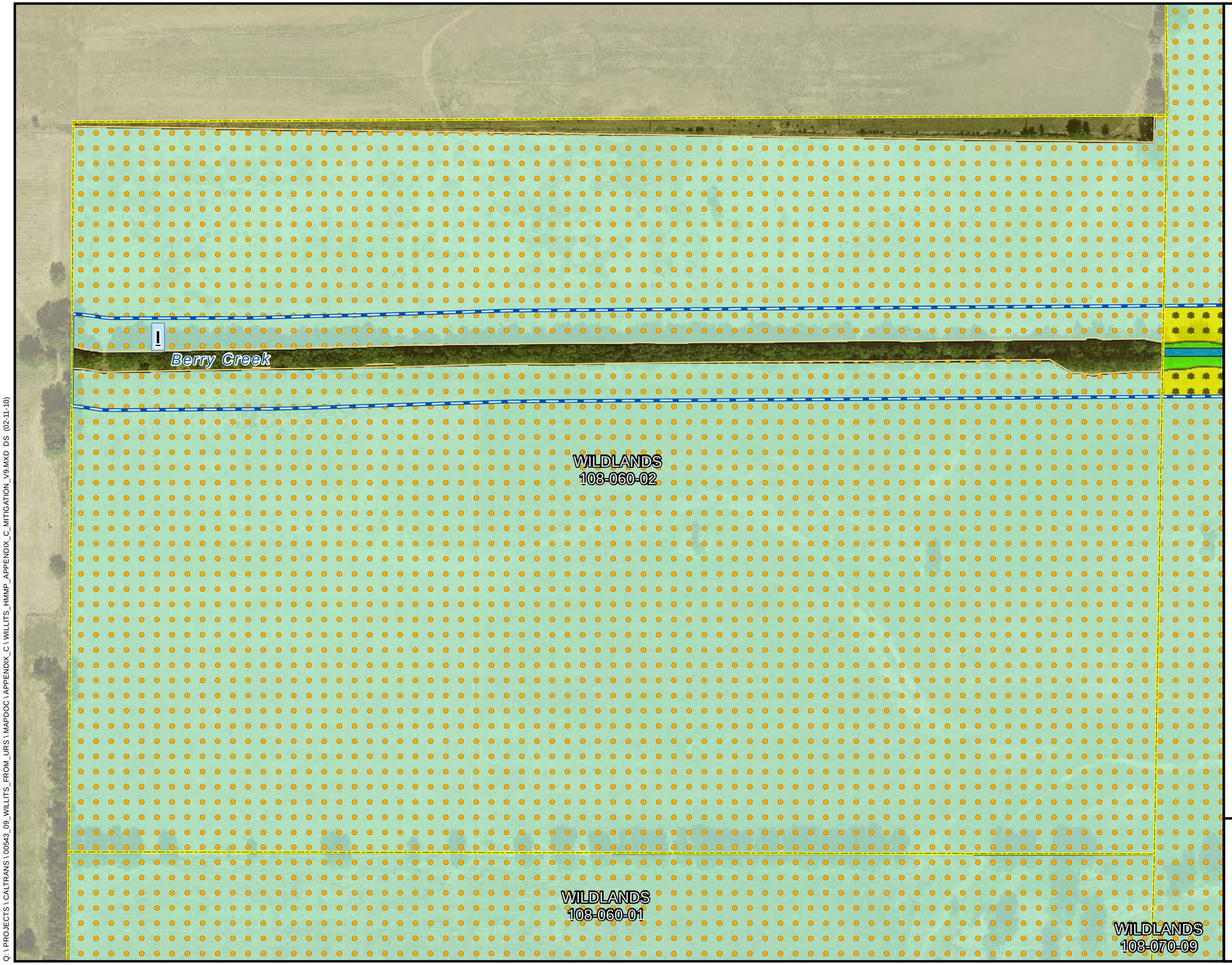
0 200

Scale in Feet

Sheet C-90
Mitigation Actions
Wildlands
APNs 108-060-01 & 108-020-07

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

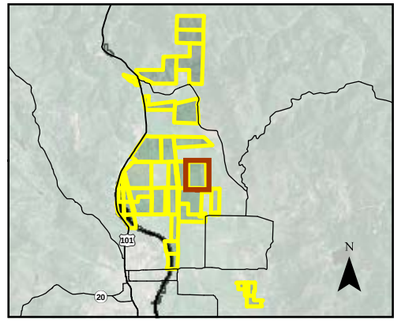
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



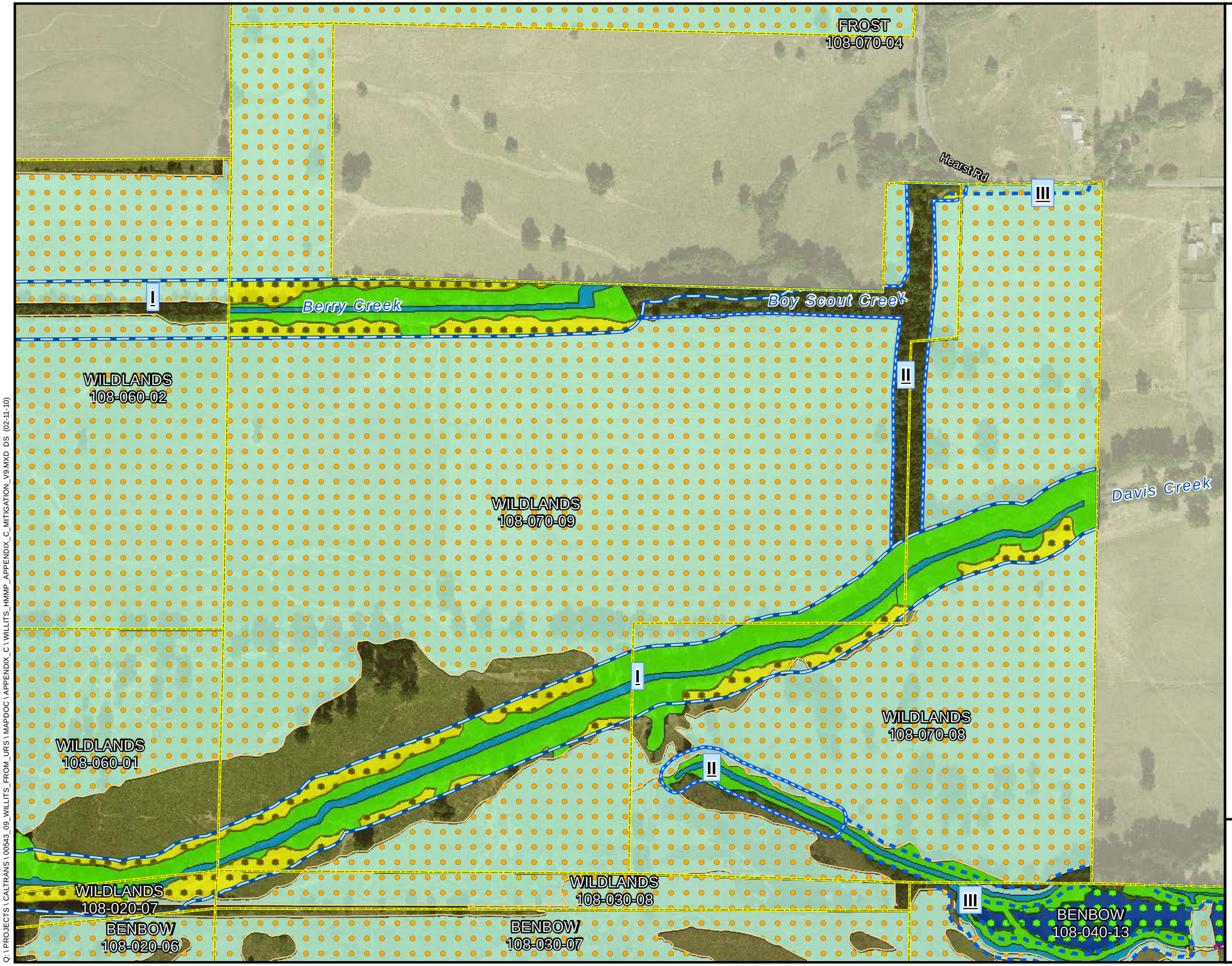
0 200

Scale in Feet

Sheet C-94
Mitigation Actions
Wildlands
APN 108-060-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

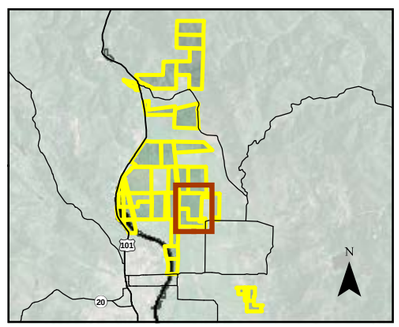
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



0 200

Scale in Feet

Sheet C-98
Mitigation Actions
Wildlands
APNs 108-030-08, 108-070-08, & 108-070-09
Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

Appendix C: Byapss Impact Maps – Riparian and Oak Woodlands (From Appendix B of the Willits Bypass Mitigation and Monitoring Plan)

FENOLIO 104-160-25

FENOLIO 104-180-04

FENOLIO 104-160-23

FENOLIO 104-260-01

101

104-120-RW

SCHMIDBAUER 104-260-07

SCHMIDBAUER 104-140-03

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

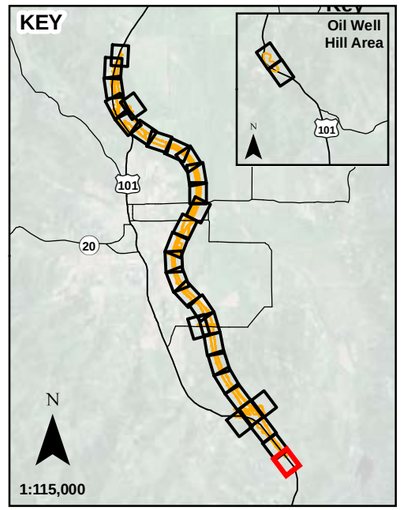
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-1

Riparian and Oak Woodland Impacts

Proposed Willits Bypass

Sensitive Biological Resource Impact Maps

Q:\PROJECTS\CALTRANS\00543_09_WILLITS_FROM_URS\MAPDOC\APPENDIX_B\WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

FENOLIO
104-160-24

FENOLIO
104-160-22

FENOLIO
104-160-25

FENOLIO 104-140-02

FENOLIO
104-160-23

101

104-120-RW

SCHMIDBAUER
104-260-07

SCHMIDBAUER
104-140-03

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

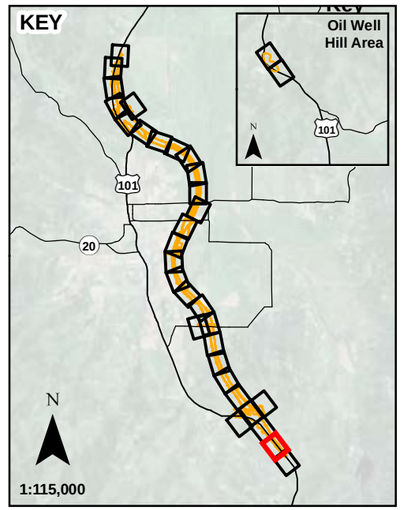
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-2

Riparian and Oak Woodland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

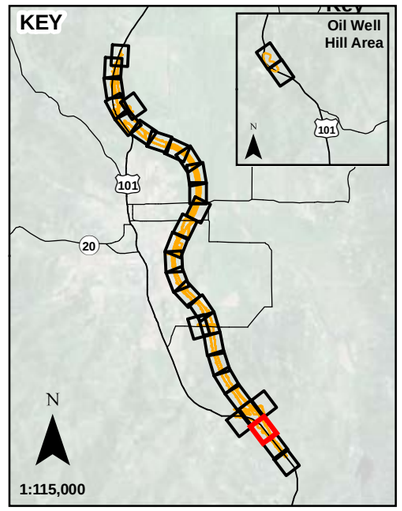
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-3

Riparian and Oak Woodland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

FENOLIO
104-110-13

FENOLIO
104-120-01

104-110-RW

OCHOA
104-110-12

104-120-RW

SCHMIDBAUER
104-090-04

101

SCHMIDBAUER
104-090-03

SCHMIDBAUER 104-100-03

SCHMIDBAUER
104-120-02

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

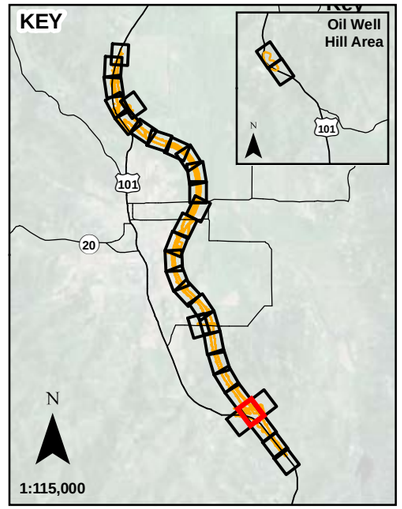
Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland

KEY



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N

0 100

Scale in Feet

Sheet B-5

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\PROJECTS\CALTRANS\00543_09_WILLITS_FROM_URS\MAPDOC\APPENDIX_B\WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

CADGENE
104-130-10

CADGENE
104-110-14

104-110-RW

FENOLIO
104-130-04

104-120-RW

FENOLIO
104-110-13

101

104-110-RW

OCHOA
104-110-12

FENOLIO
104-120-01

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

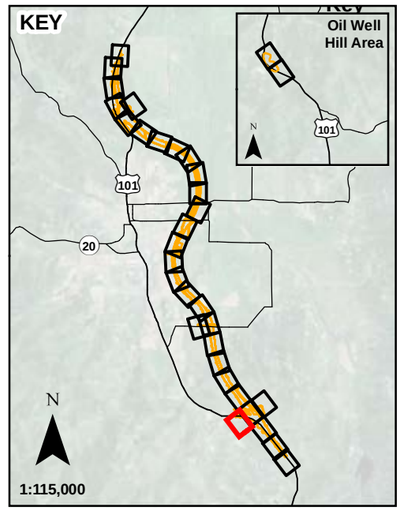
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

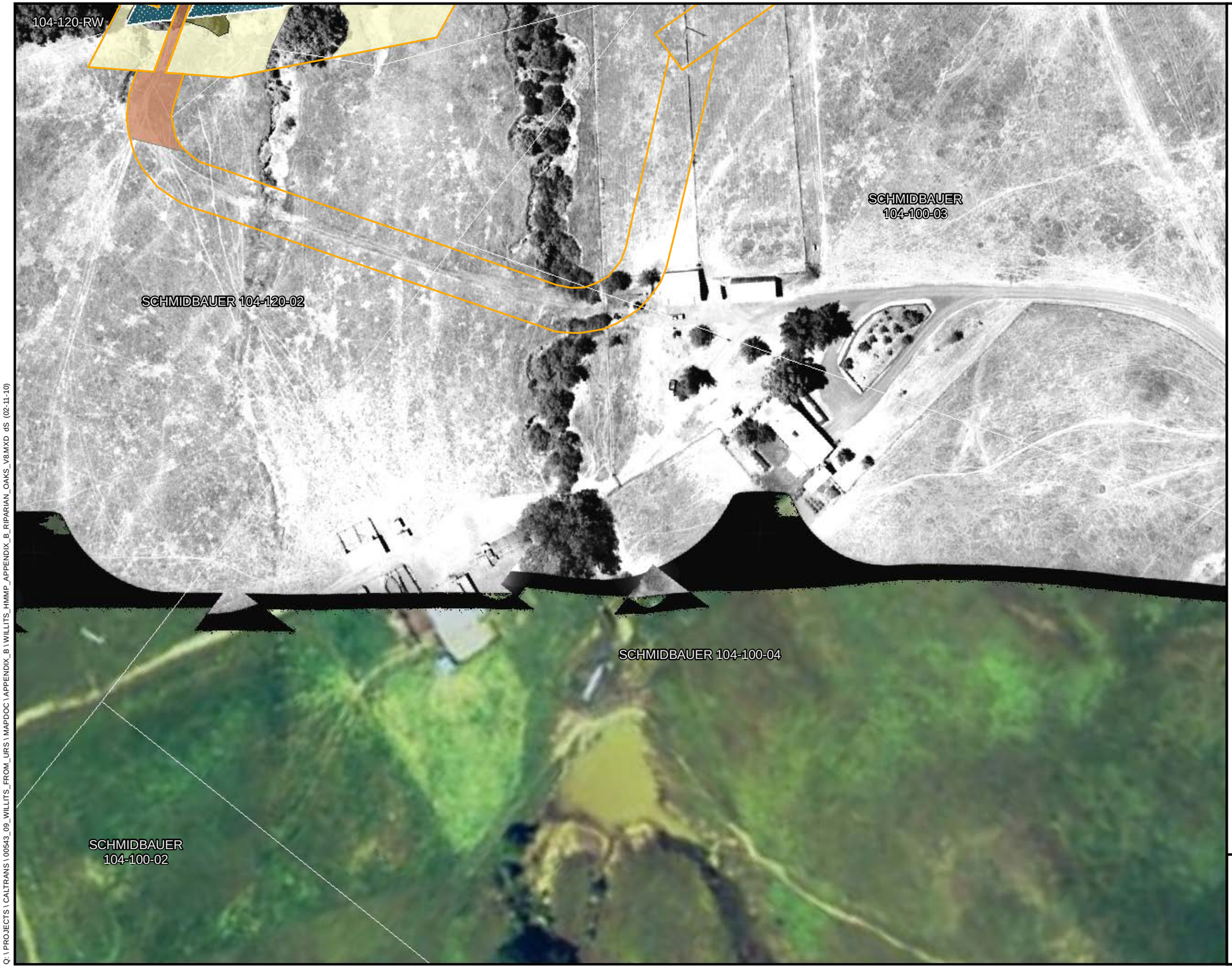
0 100

Scale in Feet

Sheet B-7

Riparian and Oak Woodland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)



Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

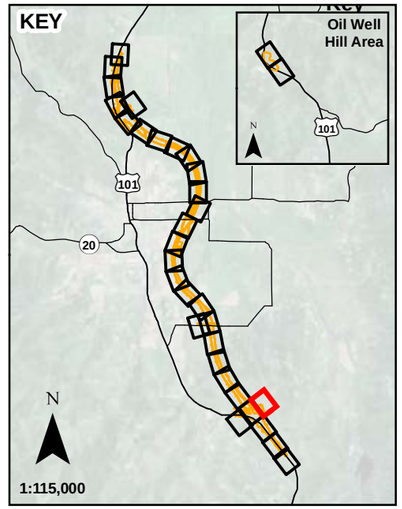
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-9

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

OCHOA
104-110-12

HARWOOD
104-090-06

SCHMIDBAUER 104-090-04

104-120-RW

SCHMIDBAUER
104-090-03

BURGESS
104-070-05

SCHMIDBAUER
104-100-03

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

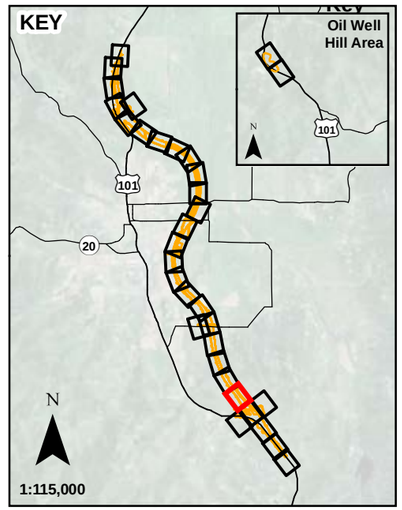
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-11

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

HARWOOD 104-090-06

HARWOOD
104-070-06

SCHMIDBAUER
104-090-04

104-120-RW

SCHMIDBAUER
104-090-03

BURGESS 104-070-05

MORRIS
104-070-03

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

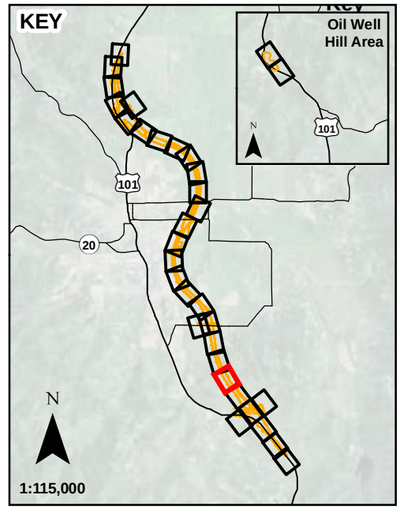
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-13

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\PROJECTS\CALTRANS\00543_09_WILLITS_FROM_URS\MAPDOC\APPENDIX_B\WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

HARWOOD 104-070-06

HARWOOD 104-050-02

108-010-RW

HANDLEY 104-050-16

104-120-RW

STATE 104-050-15

Ditch

MORRIS 104-050-10

MORRIS 104-070-03

MORRIS 104-050-11

BURGESS 104-070-05

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

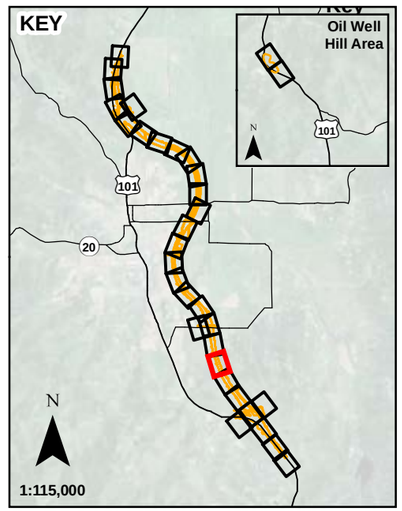
Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland

KEY



1:115,000

N

0 100

Scale in Feet

Sheet B-15

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

HARRAH 007-231-07
BEMCORE 007-232-58
BEMCORE 007-232-57
BEMCORE 007-232-56
BEMCORE 007-232-55
FRANK 007-210-15
SANHEDRIN 007-210-13
HARWOOD 104-050-02
108-010-RW
DRIPWORKS 007-210-14
San Hedrin Cir
HANDLEY 104-050-16
HANDLEY 104-030-23
STATE 104-030-22
STATE 104-050-15
104-120-RW
Ditch
MORRIS 104-050-10
MORRIS 104-030-18
MORRIS 104-050-11
CEMETERY 104-030-20

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

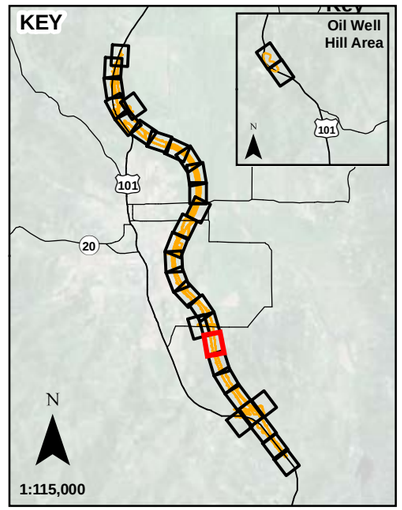
Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland

KEY



N

0 100

Scale in Feet

Sheet B-17

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

SANHEDRIN
007-210-13

FRANK
007-210-12

E. Hill Rd

HANDLEY 007-160-18

San Hedrin Cir

108-010-RW

HANDLEY 104-030-23

STATE 007-160-17

STATE 103-150-11

STATE 104-030-22

E. Hill Rd

HEIKEN
104-030-02

Ditch

MORRIS
104-030-18

HANDLEY 103-150-10

NYHOLM
103-150-02

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

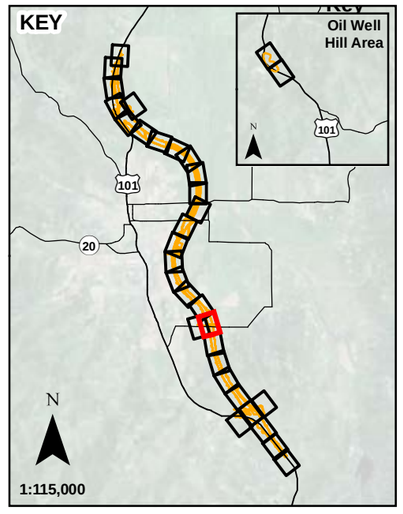
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-19

Riparian and Oak Woodland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

KELLY 007-160-06

MICROPHOR
007-160-15

FRANK 007-210-15

108-010-RW

E. Hill Rd

SANHEDRIN
007-210-13

FRANK
007-210-12

HANDLEY
007-160-18

San Hedrin Cir

HANDLEY
104-030-23

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

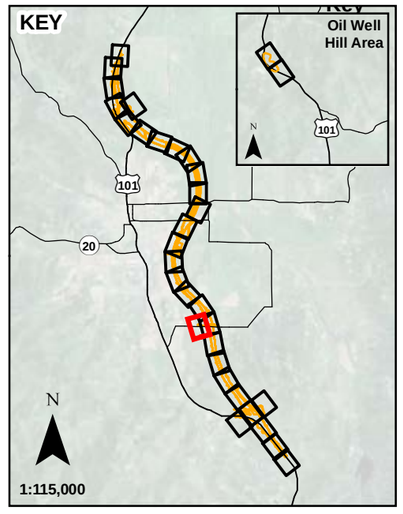
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-21

Riparian and Oak Woodland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

HANDLEY
007-160-18

STATE 007-100-29

STATE 007-160-17

STATE
103-150-11

FORD 007-100-11

HANDLEY 103-150-10

HANDLEY
007-160-16

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

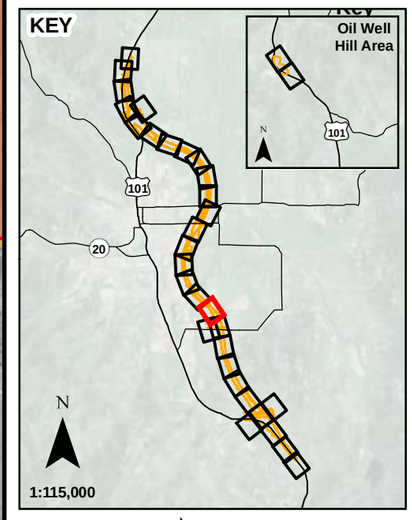
Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland

KEY



N

0 100

Scale in Feet

Sheet B-23

Riparian and Oak Woodland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

MICROPHOR
007-160-15

SENIOR
007-100-23

STATE
007-100-16

HANDLEY
007-160-18

108-010-RW

Haehl Creek

STATE 007-100-29

SEIBERLICH
007-100-08

RUTLEDGE 007-100-09

HANDLEY 007-100-30

Shell Ln

FORD
007-100-11

RUTLEDGE
007-070-01

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland

KEY

Oil Well Hill Area

101

20

N

1:115,000

N

0 100

Scale in Feet

Sheet B-25

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

BOWEN
007-100-21

STATE
007-100-16

NORCAL
007-100-20

PERSICO
007-060-08

PETERS 007-060-07

PETERS
007-060-06

108-010-RW

SEIBERLICH
007-100-08

Shell Ln

RUTLEDGE
007-070-01

RUTLEDGE
007-100-09

STATE
007-100-29

Haehl Creek

HANDLEY
007-100-30

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland

KEY

Oil Well Hill Area

101

20

N

1:115,000

N

0 100

Scale in Feet

Sheet B-27

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

PETERS 007-060-06

PETERS 007-060-12

PETERS 007-060-11

PETERS 007-060-07

108-010-RW

GRIGGS 007-060-13

GRIGGS 006-143-04

GRIGGS 007-050-06

GRIGGS 007-050-07

RUTLEDGE 007-070-01

RUTLEDGE 007-050-02

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland

KEY

Oil Well Hill Area

101

20

N

1:115,000

N

0 100

Scale in Feet

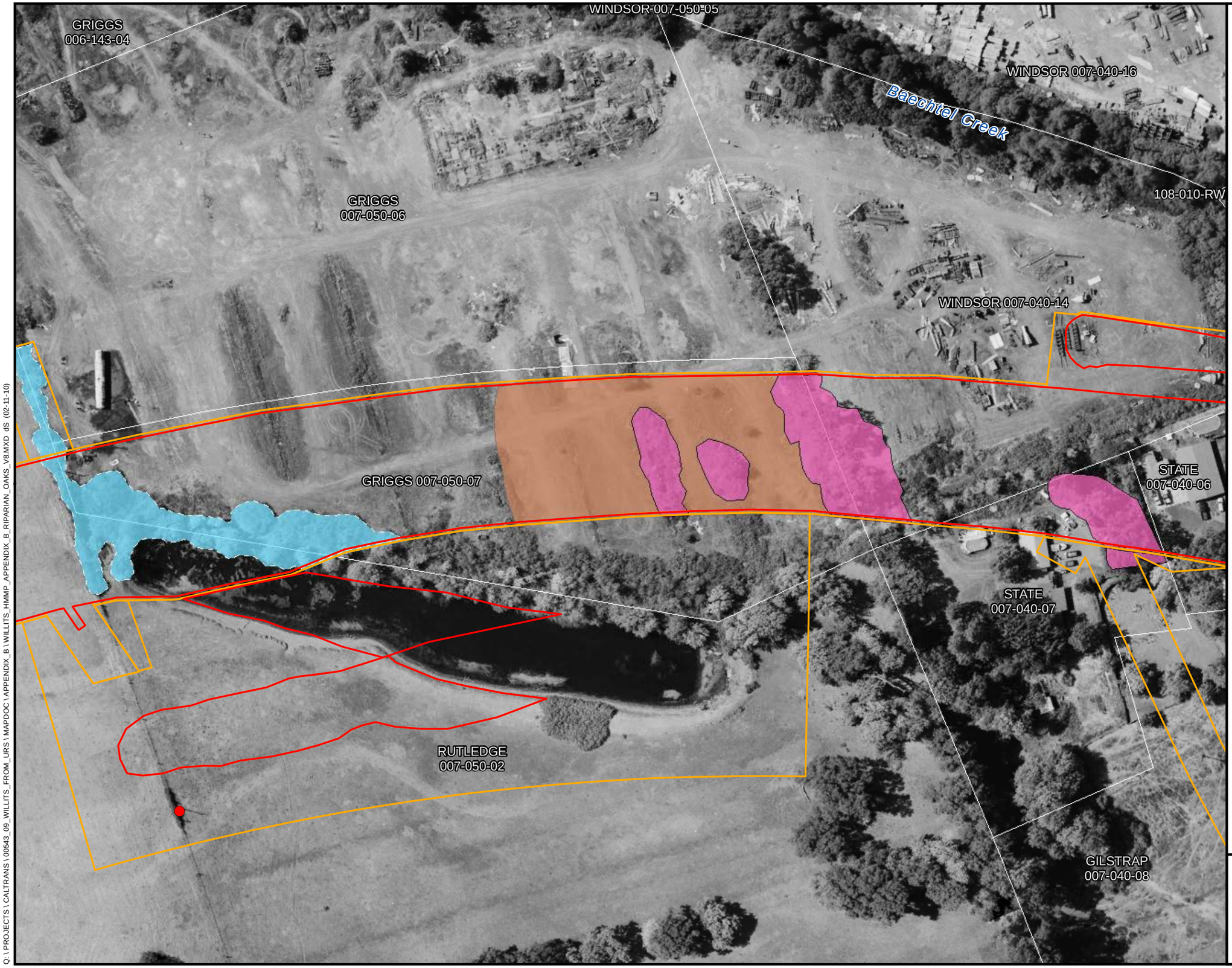
Sheet B-30

Riparian and Oak Woodland Impacts

Proposed Willits Bypass

Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)



Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

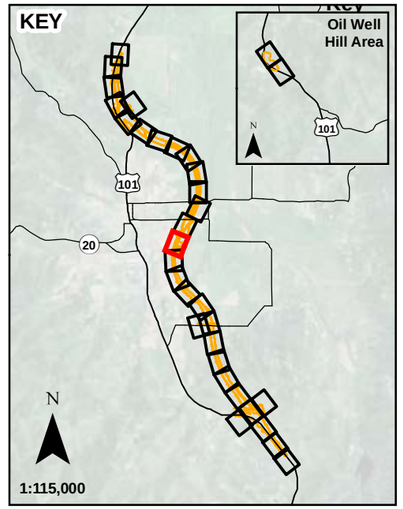
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-33

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\PROJECTS\CALTRANS\00543_09_WILLITS_FROM_URS\MAPDOC\APPENDIX_B\WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

WINDSOR
007-040-16

GRIGGS 007-040-15

TWEDDELL 007-040-17

HATHAWAY
007-031-13

HATHAWAY
007-032-03

WINDSOR
007-040-14

Baechtel Creek

SHUSTERS
007-032-04

STATE 007-040-06

108-010-RW

Center Valley Rd

STATE
007-040-07

GILSTRAP 007-040-09

GILSTRAP 007-040-08

WILLITS
007-032-05

GILSTRAP 007-040-10

WILLITS
007-040-11

Haehl Creek

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland

KEY

Oil Well
Hill Area

101

20

N

1:115,000

N

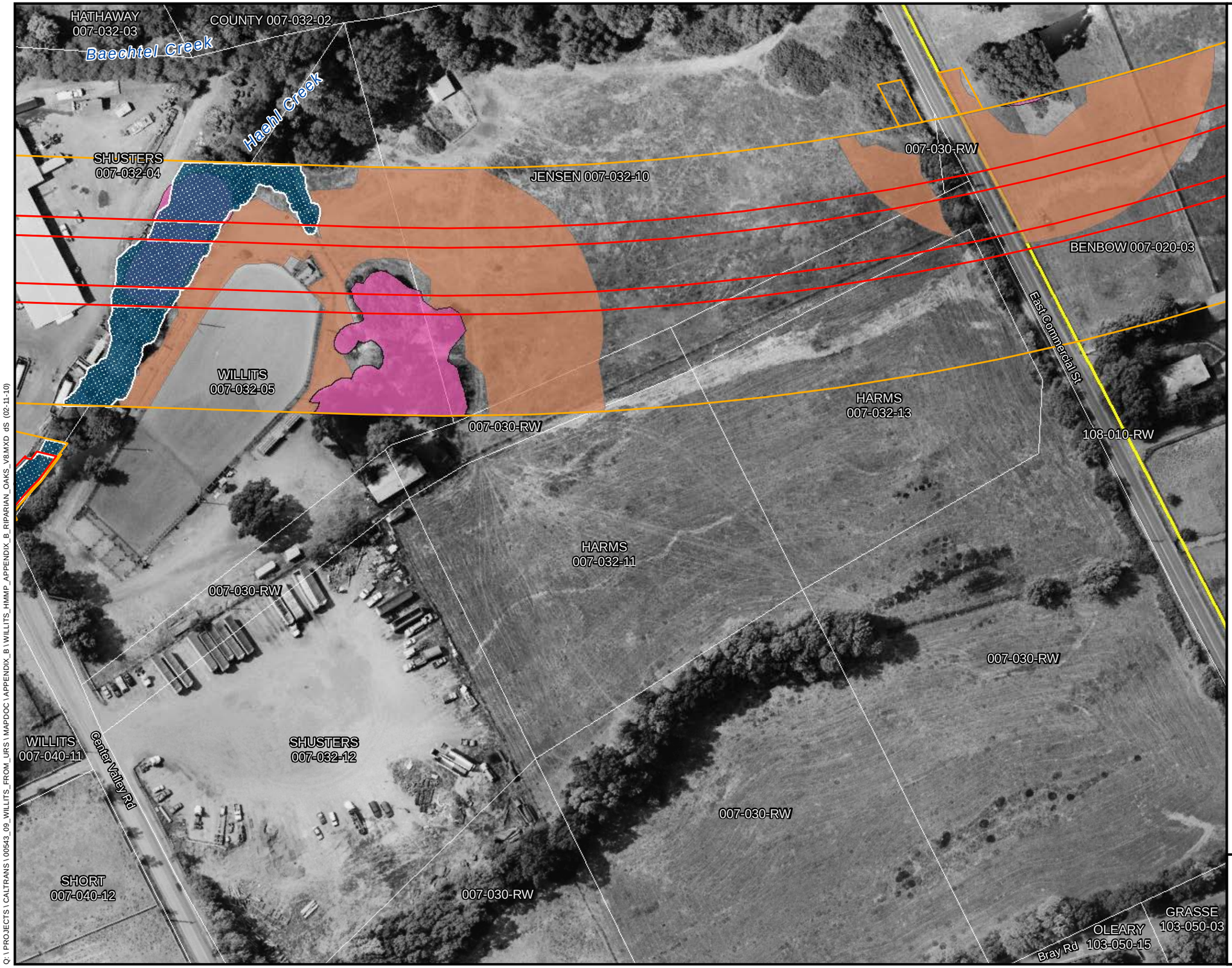
0 100

Scale in Feet

Sheet B-36

Riparian and Oak Woodland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_ B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)



Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

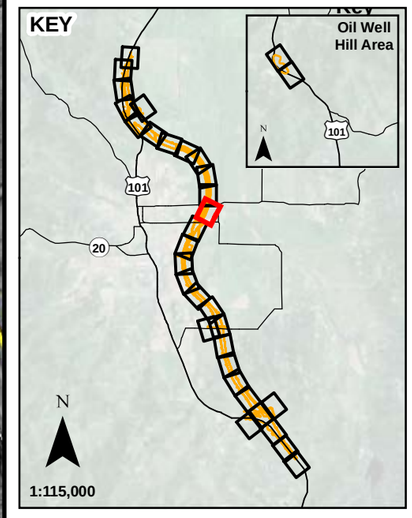
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-39

Riparian and Oak Woodland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_ B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

COUNTY
007-032-01

WILLITS
007-020-02

Baechtel

Baechtel Creek

JENSEN
007-032-10

007-030-RW

East Commercial St.

108-010-RW

HARMS
007-032-13

BENBOW 007-020-03

007-030-RW

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

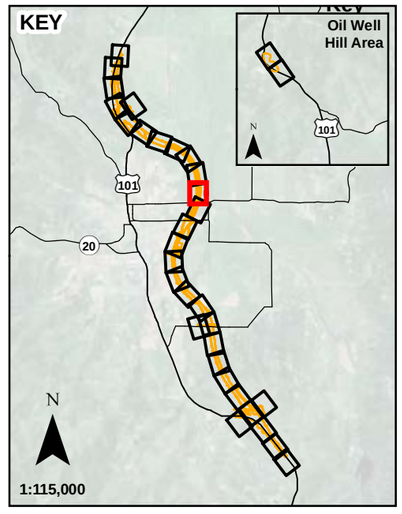
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-42

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

WILLITS
007-020-02

WILLITS 007-010-03

Baechtel Creek

BENBOW 007-020-03

BENBOW 007-010-04

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

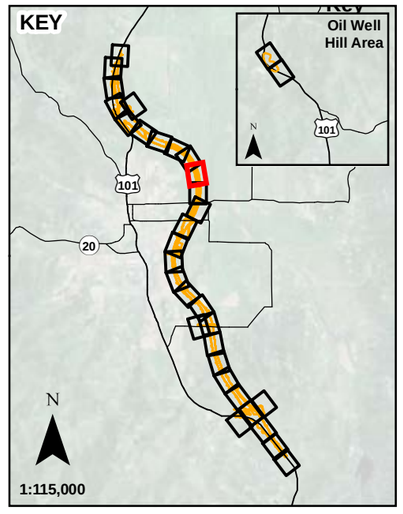
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

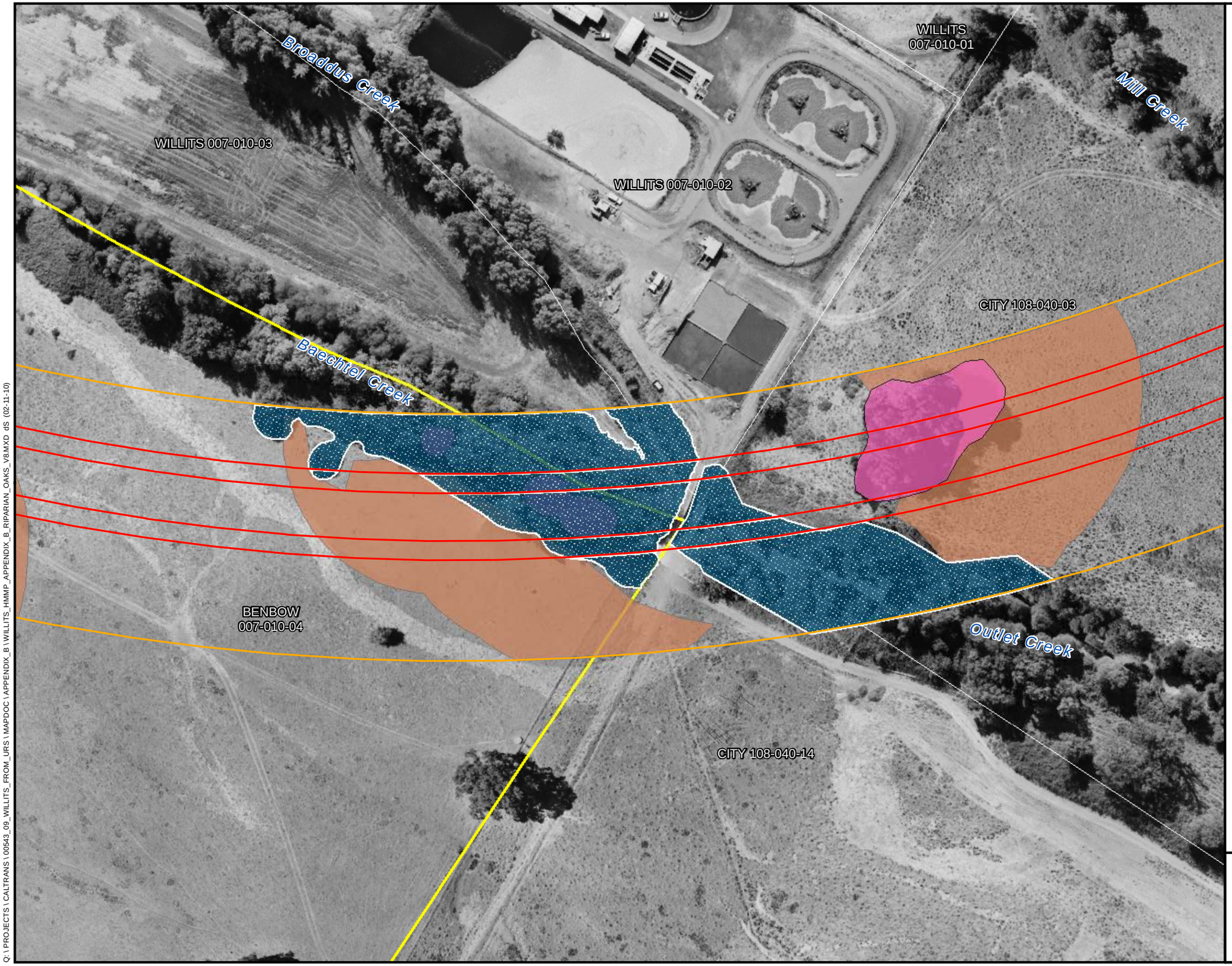
Scale in Feet

Sheet B-45

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)



Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

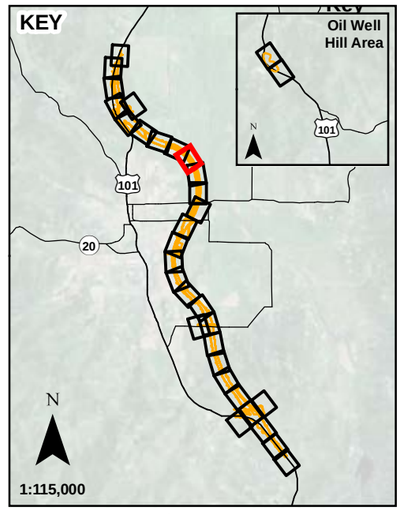
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-48

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

WILLITS
007-010-02

WILLITS
007-010-01

Mill Creek

HUFFMAN
108-040-08

CITY 108-040-03

Outlet Creek

CITY
108-040-14

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

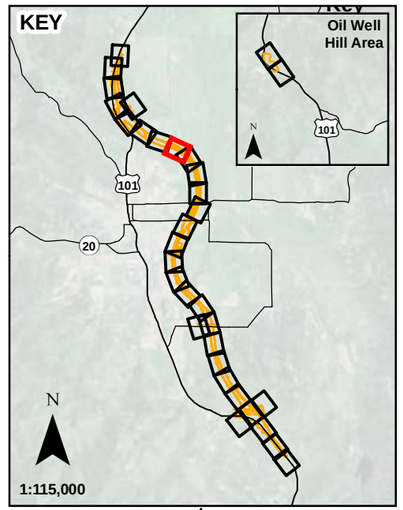
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-50

Riparian and Oak Woodland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

HUFFMAN 108-040-08

CITY 108-040-03

Mill Creek Ditch

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

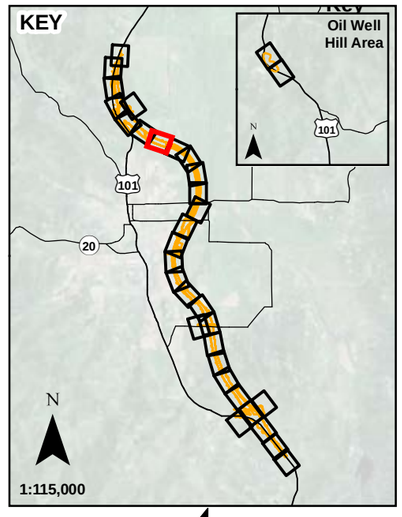
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

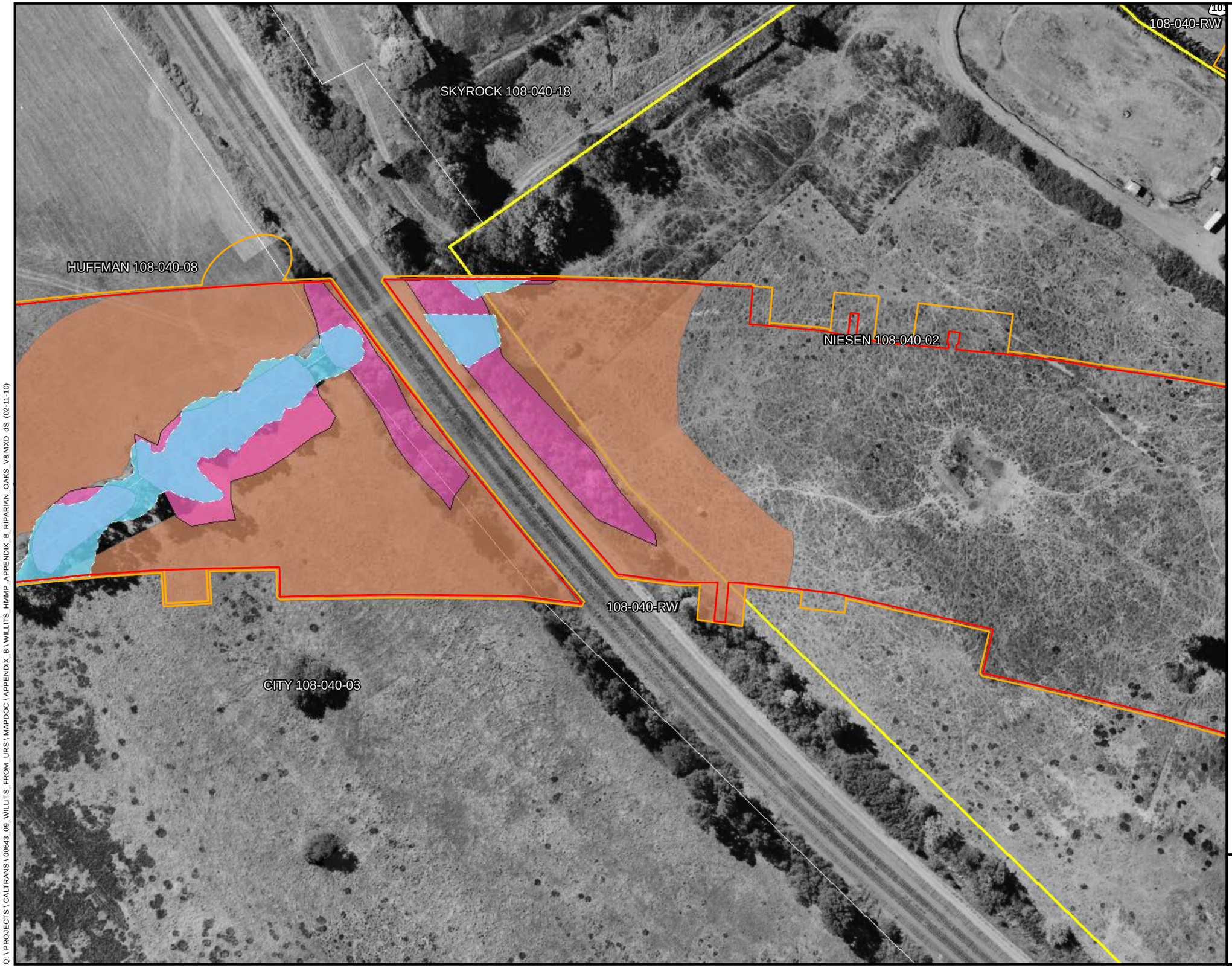
Scale in Feet

Sheet B-53

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)



Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

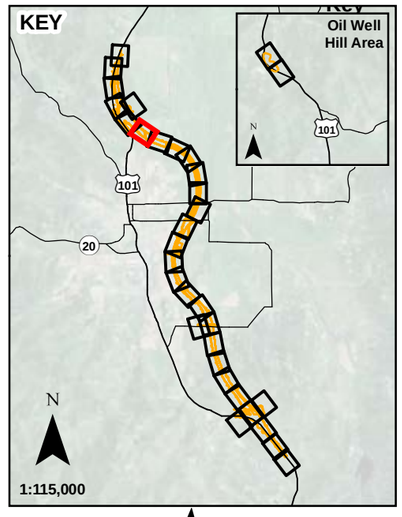
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-56

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

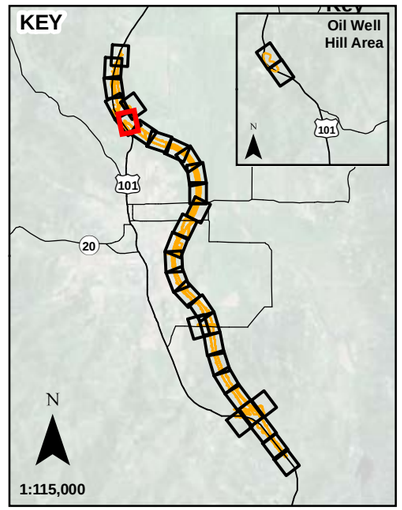
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-59

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\PROJECTS\CALTRANS\00543_09_WILLITS_FROM_URS\MAPDOC\APPENDIX_B\WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

NIESEN
108-040-02

LUSHER
038-060-08

Upp Creek

LUSHER 108-030-03

BROOKE
108-030-01

Mill Creek

108-010-RW

LUSHER
108-030-04

Old Outlet Creek

FORD
108-030-02

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

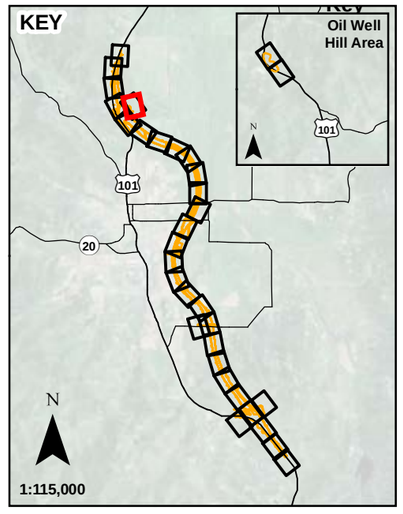
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



N

0 100

Scale in Feet

Sheet B-62

Riparian and Oak Woodland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

WAGENET 038-080-31

WAGENET 038-060-10

Upp Creek

ANDERSON 038-060-07

Redwood Hwy

101

PADULA 038-060-09

LUSHER 038-080-09

108-010-RW

LUSHER 038-060-08

LUSHER 108-030-03

BROOKE 038-040-09

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland

KEY

Oil Well Hill Area

101

20

N

1:115,000

N

0 100

Scale in Feet

Sheet B-65

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\PROJECTS\CALTRANS\00543_09_WILLITS_FROM_URS\MAPDOC\APPENDIX_B\WILLITS_HMMP_APPENDIX_B_RIPARIAN_OAKS_V8.MXD dS (02-11-10)

PADULA
038-060-09

KING 038-040-08

LAMB
038-040-05

PELLEGRI
038-040-07

LUSHER
038-060-08

Redwood Hwy
101

108-010-RW

BROOKE 038-040-09

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland

KEY

Oil Well
Hill Area

101
20
N

1:115,000

N

0 100

Scale in Feet

Sheet B-68

Riparian and Oak Woodland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

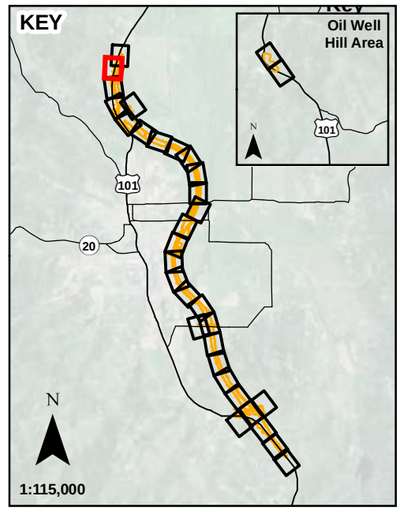
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-70

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

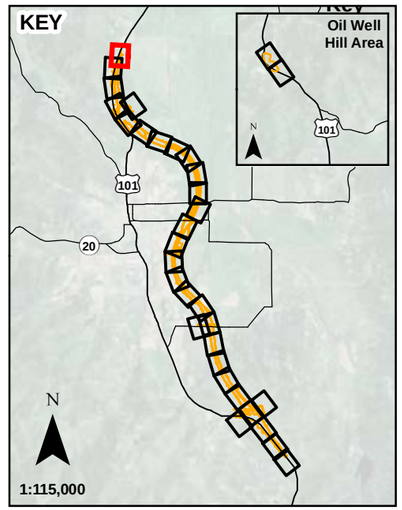
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-72

Riparian and Oak Woodland Impacts

Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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RHINE
037-170-20

037-170-RW

101

STEBBINS 037-180-27

Legend

- Mitigation Parcel
- Parcel
- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Riparian Corridor

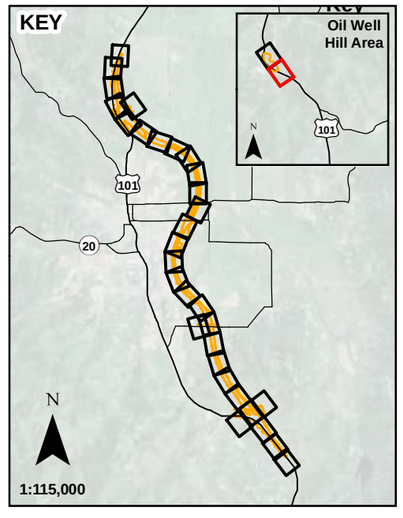
- Catagory I - Riparian Corridor
- Catagory II - Riparian Corridor
- Catagory III - Riparian Corridor

Oak Woodlands

- Black Oak
- Oregon White Oak
- Valley Oak

Oak Woodland Grassland

- Upland
- Lowland



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Scale in Feet

Sheet B-74

Riparian and Oak Woodland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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Attachment 1: Supplemental Information

Block 3. Property Owners

A full and complete list of the adjacent property owners whose property adjoins the project features is provided in Attachment 6.

Block 8A. Project Location

The project will be located near the city limits of Willits in Mendocino County, California. The bypass will begin approximately 0.8 mile south the Haehl Overhead and end approximately 1.9 miles south of Reynolds Highway. The overall length of the bypass will be approximately 5.8 miles, starting near with post mile (PM)R43.1 and ending near R49.0 (Figure 1-1).

The optional proposed borrow site at Oil Well Hill is located on the east side of Highway 101 approximately 0.85-mile north of the intersection of Reynolds Highway and Highway 101.

Bypass Alignment

The proposed bypass will diverge from existing U.S. 101 at the Haehl Creek interchange and continue northwesterly on an embankment constructed with excess fill from a previous freeway project. The alignment would swing to the northeast and then travel back to the northwest, adjacent to the WWTP. Figures 1-2a to 1-2d illustrate the bypass alignment and locations of key project components. The purpose of the viaduct is to span regulatory floodway. Additional details regarding the viaduct are provided in the "Description of Specific Design Elements" section (Block 10A) of this permit application attachment.

Bypass Vertical Alignment

The vertical alignment of the bypass will begin with a gentle downgrade at the south end of the project and proceed northwesterly from the existing freeway section to approximately 0.5 north mile of East Hill Road. From this point to the Quail Meadows interchange, the flat valley floor will allow grades that are nearly flat except at structure approaches and departures. Throughout the valley, the project lies in the 100-year floodplain elevation and the surface of the highway will be a 16.5-foot minimum clearance above the estimated 100-year floodwater surface elevation.

Location of Key Project Components (Approximate)

- **Haehl Creek interchange:** 39°22'28.48" N, 123°19'29.11" W; T18N, R13W, S32
- **Quail Meadows interchange:** 39°25'31.29" N, 123°21'10.33" W; T18N, R13W, S7
- **Viaduct structures:** 39°24'32.07" N, 123°20'21.36" W; T18N, R13W, S18

Block 8B. Rivers, Streams or Lakes Affected

Jurisdictional Determinations

The U.S. Army Corps of Engineers (USACE) verified the U.S. Highway 101 Willits Bypass Project's (proposed project) delineation of waters of the United States on March 1, 2005 (File 194741N). This verification was for the Modified Alternative J1T Alignment study area. In January 2007 and April 2008, a request to amend the previously verified delineation was submitted to the USACE to include minor changes to the footprint of the proposed Haehl Creek interchange, the road alignment to the north, and the proposed borrow area at Oil Well Hill. The USACE confirmed the requested changes to the delineation on August 15, 2008 (File 191-19470N). In December 1, 2008, a request to verify a delineation was submitted to include the revision of the project footprint to avoid the expansion of the Willits wastewater treatment Plant (WWTP). The USACE provided a verification for this area on December 2, 2009. In addition to the delineations of waters of the United States associated with the bypass alignment, Caltrans also submitted delineations for various parcels that will be part of the project's mitigation plan. The USACE jurisdictional determinations are located in Attachment 3.

Name and Description of Affected Rivers, Streams or Lakes Affected

The project area includes numerous jurisdictional wetlands and other waters of the United States. Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks and their related tributaries and adjacent wetlands are considered waters of the United States given these waterways have connectivity to a traditional navigable water/territorial sea (Pacific Ocean). These waterways will be directly or indirectly affected by the bypass because they cross the bypass alignment as they convey water through the Little Lake Valley. Construction will also affect a number of smaller unnamed tributaries and ditches in the bypass area.

Wet meadows will be the most heavily affected jurisdictional waters, by area, within the bypass footprint**.** From south of East Hill Road to the second intersection with Haehl Creek, wet meadow, which includes some small vernal pool like features, is the dominant vegetation, occupying approximately 50% of the affected area. Wet meadows dominate the project area south of East Valley Road to the area north of Upp Creek, including the area near the Willits Wastewater Treatment Plant (WWTP). The Quail Meadows interchange at the northern end of the bypass will also affect wet meadows.

Marsh is the second-most widely affected wetland feature by area. A marsh area is located east of U.S. Highway 101 (U.S. 101) on the Brooke properties at the northern end of the bypass. A large area of riparian woodland is associated with this marsh area.

Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks are the major other waters of the United States affected by the bypass. All these creeks cross the bypass alignment as they convey water through Little Lake Valley. Construction will affect a number of smaller tributaries and ditches through the bypass area.

Block 10A. Project Description

The California Department of Transportation (Caltrans), in conjunction with the Federal Highway Administration (FHWA), proposes to construct a new segment of U.S. 101 that will bypass Willits in Mendocino County. The project will reduce delays, improve safety, and achieve a level of service (LOS) of "C" for interregional traffic on U.S. 101.

The FHWA is the federal lead agency under the National Environmental Policy Act (NEPA), with Caltrans acting as liaison and providing oversight for the NEPA process. Caltrans is the state lead agency under the California Environmental Quality Act (CEQA). A joint environmental impact statement/environmental impact report (EIS/EIR) has been prepared for the project.

The draft EIS/EIR was published in May 2002. According to regulations set forth in 23 Code of Federal Regulations (CFR) 771.129, a written evaluation of the draft EIS/EIR is required if the final EIS/EIR has not been submitted to the FHWA within 3 years of the date of the draft EIS/EIR circulation. Because 3 years have elapsed since circulation of the draft EIS/EIR, Caltrans submitted a written evaluation to the FHWA for review in April 2006. The purpose of this written evaluation was to determine whether it was necessary to circulate a new or supplemental EIS/EIR. Based on the information provided to the FHWA, it was determined that no new or supplemental EIS/EIR would be necessary for the project.

Caltrans approved the final EIS/EIR and filed a notice of determination on December 15, 2006. The FHWA approved the final NEPA document and filed a record of decision on December 18, 2006. A hard copy of the final EIS/EIR will be provided under separate cover. It can be also be viewed and downloaded at <http://www.dot.ca.gov/dist1/d1projects/willits/reports.feir.htm>. Copies of the record of decision and notice of determination are included as Attachment 4 of this permit application.

Background and Changes Since the Final EIS/EIR

Modified Alternative J1T (proposed project or bypass) was selected as the preferred alternative and evolved as a result of the NEPA/404 integration process. It was not specifically identified as an alternative in the draft EIS/EIR. Modified Alternative J1T shares similar project design elements of the J1T and LT alternatives discussed in the draft EIS/EIR and was proposed to further reduce community and environmental impacts.

Since publication of the final EIR/EIS in December 2006, Modified Alternative J1T has undergone several design revisions. The primary reasons for the design revisions were: 1) to avoid conflicts with the WWTP expansion project and 2) to accommodate phasing the construction of the bypass, as discussed below. Overall, the design revisions are relatively minor changes to Modified Alternative J1T as presented in the final EIR/EIS. The project remains a four-lane freeway bypass with several bridges spanning creeks and local roads, a viaduct spanning the regulatory floodway, and interchanges on either end of the bypass. The location and design elements of project revisions are described in more detail below.

Avoidance of the Willits Wastewater Treatment Plant Expansion Project

To avoid conflicts with the WWTP expansion project, the alignment was shifted slightly to the northeast around the WWTP using a triple compound curve instead of the single curve that was originally planned. The alignment returns nearly to the original alignment near the Northwestern Pacific Railroad (NWPRR) track crossing. The profile over the railroad has also been lowered, resulting in a significant reduction of the embankment footprint (and therefore a reduction in impacts on wetlands) between the end of the viaduct (Huffman/City of Willits property line) and the railroad crossing.

Phasing of Bypass Construction

Because of funding constraints, the decision was made to construct the bypass in two phases such that a functional interim two-lane facility will be constructed initially; when adequate funding becomes available in the future, the remaining lanes will be constructed to complete the four-lane bypass. The need to phase construction of the project has had design implications, resulting in the need to modify the Quail Meadows interchange. Phasing the construction of the original Quail Meadows interchange proved geometrically complex and wasteful of resources. Therefore, the interchange was shifted approximately 1,200 feet to the north and will be a two-lane interchange in Phase 1. In addition, a roundabout has been added to the west side of the interchange to connect two ramps to the local roads. An additional benefit of the roundabout is that an existing box culvert at Upp Creek can now be removed and, therefore, will allow for the restoration of this area. All crossings of Upp Creek, which were previously planned as box culverts, will now be bridges.

Although the project will be constructed in two phases, the ultimate project remains a four-lane freeway bypass. As funding allows during Phase 1, Caltrans intends to construct as much of the four-lane roadway embankment as possible to help facilitate the construction of Phase 2. The environmental study limits (ESL) and this Section 1602 Agreement application encompass the full four-lane project area. Right-of-way purchased for the project will satisfy the requirements of the full four-lane project and will be access-controlled. Although only the two southbound lanes will be constructed initially in Phase 1, Caltrans will implement mitigation for the impacts of the ultimate four-lane project with implementation of Phase 1. The project description below discusses the ultimate four-lane facility.

Description of Specific Design Elements

Roadway Design

The proposed project is designed to accommodate the predicted interregional average annual daily traffic in 2028 at a LOS C or better. The bypass will be a four-lane freeway with a 45.3-foot median separating the northbound and southbound lanes. Each lane will be 12 feet wide. The inside shoulder width (nearest the median) will be 5 feet, while the outside shoulder width will be 10 feet. The freeway was designed for a maximum speed of 68 miles per hour (mph) and will meet the purpose of providing at least an LOS of C. Where local roads are to be improved or constructed, there will be two 12-foot lanes and shoulder width meeting local design standards.

Interchanges

Two interchanges will be constructed for the project. The Haehl Creek interchange will be located at the south end of the project near Haehl Creek and connect the existing highway into Willits with the new facility. The Quail Meadows interchange will be located near the north end of Little Lake Valley and connect the new facility to the existing highway north of Willits. Interchange ramps will be single-lane.

Bridges and Structures

The bypass will cross creeks, riparian corridors, streets, and railroad rights-of-way using 22 bridges. Three retaining walls will be built. The following structures will be constructed with this project:

- Six bridges in the Haehl Creek interchange area, one for each of the following:
  - Northbound freeway lanes separation over State Route (SR) 20
  - Southbound freeway lanes separation over SR 20
  - Southbound off-ramp over Haehl Creek
  - Northbound on-ramp over Haehl Creek
  - Northbound freeway lanes over Haehl Creek
  - Southbound freeway lanes over Haehl Creek
- Two retaining walls in the Haehl Creek interchange area adjacent to Haehl Creek:
  - East side of northbound lanes
  - West side of northbound on-ramp
- Two bridges to cross East Hill Road:
  - One bridge for the southbound roadway lanes (Phase 1)
  - One bridge for the northbound roadway lanes (Phase 2)
- Two bridges to cross the middle reach of Haehl Creek south of Shell Lane:
  - One bridge for the southbound roadway lanes (Phase 1)
  - One bridge for the northbound roadway lanes (Phase 2)
- One retaining wall on the west side of the southbound roadway lanes just south of Center Valley Road.
- Two viaduct structures to span the floodway:
  - Southbound (Phase 1)
  - Northbound (Phase 2)
- Two bridges to cross over the NWPRR tracks in the Quail Meadows interchange area, one for each of the following:
  - Southbound roadway lanes (Phase 1)
  - Northbound roadway lanes (Phase 2)

- Two bridges to cross the new connector road to existing U.S. 101 in the Quail Meadows interchange area
    - One for the southbound roadway lanes (Phase 1)
    - One for the northbound roadway lanes (Phase 2)
- Six bridges to cross Upp Creek directly north of the Quail Meadows interchange, one for each of the following:
    - Southbound roadway lanes (Phase 1)
    - Northbound roadway lanes (Phase 2)
    - Northbound on-ramp (Phase 1)
    - Northbound on-ramp (Phase 2)
    - Southbound off-ramp
    - Roundabout local intersection

    Note that the northbound on ramp bridge constructed in Phase 1 would be replaced in Phase 2 by a different bridge.

Viaduct

The proposed alignment encroaches upon the 100-year floodplain. The design includes two elevated structures, which make up the floodway viaduct. The purpose of this design feature is to span the floodway. The final floodplain evaluation report concludes that project will not increase the base flood elevation of the floodway, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q).

The viaduct s will be located in the central part of the project area and will span Center Valley Road, the lower reach of Haehl Creek just upstream of the confluence with Baechtel Creek, Hearst-Willits Road, Baechtel and Broaddus Creeks at their confluence (beginning of the Outlet Creek designation), the WWTP, and Mill Creek.

The approximately 6,000-foot-long structures will consist of a separate northbound and southbound elevated viaduct superstructure. The total area of both viaducts would be 11.6 acres. Each of the viaducts will be approximately 42.6 feet wide. The edge-to-edge distance between the structures will be approximately 31.2 feet, and each will have a 16.5-foot minimum clearance underneath. The viaducts will require supporting columns, ranging in size from 4.5 to 7 feet in diameter.

Reinforced Concrete Box Culverts

Three large reinforced concrete box (RCB) culverts will be built as part of the proposed project. The first RCB culvert will cross Haehl Creek near the Haehl Creek interchange to provide access to a ranch isolated by the new bypass; the second and third will cross under Center Valley Road, near Shuster's Trucking, and will mitigate floodplain impacts due to roadway embankment south of Center Valley Road.

The Haehl Creek culvert for the ranch access will be a natural bottom arch culvert or a partially buried box culvert. The two culverts crossing Center Valley Road will be concrete boxes and will use turf reinforcement mats in lieu of rock slope protection (RSP) at the inlets and outlets where feasible.

Retaining Walls

Three concrete retaining walls will be constructed: two at the Haehl Creek interchange, and one just before the south end of the viaduct near Baechtel Creek. One of the Haehl Creek interchange walls will be located along the west side of the northbound on-ramp. The other will be located along the east side of the northbound lanes between the separation structure over SR 20 and the Haehl Creek bridge. The third retaining wall, near Baechtel Creek, will prevent potential undermining of the roadway embankment to be undermined by Baechtel Creek.

Excavation (Cut), Embankment (Fill), and Imported Borrow

The estimated embankment requirement for Phase 1 of the proposed project is approximately 1.4 million cubic yards. Because all soil excavated on-site will be reused as embankment, no disposal sites will be required for the project. Beginning just north of the Haehl Creek interchange to the south abutment of the viaduct, and from the north abutment of the viaduct to the terminus of the project, the alignment will be constructed largely on embankment (created using excavated soil and imported fill material). Cut slopes will generally vary between a 1:2 (vertical: horizontal) and 1:2.5 ratio. Fill slopes will vary between a 1:2 and 1:4 ratio. The plans will call for slope rounding at appropriate locations.

The bypass will require imported borrow material from outside the project area in addition to material excavated on-site. The construction contractor will have the option to determine whether the source of material for earthwork fill will be a Caltrans-designated borrow site (at Oil Well Hill), a commercial borrow site, or another site.

Caltrans has designated the borrow site at Oil Well Hill, just north of Little Lake Valley, as an optional source of material that the contractor may use for the project. The material in this area is good-quality and suitable for use in embankment construction. The right-of-way for U.S. 101 at the designated borrow site is sufficient to provide the necessary embankment material for earthwork. Potential excavation at the proposed designated borrow site at Oil Well Hill could result in the removal of up to 1.3 million cubic yards of material. The State Geology and Mining Board granted an exception to the Surface Mining and Reclamation Act (SMARA) permitting requirement on March 13, 2008.

The contractor may also choose to use available commercial borrow sites in the vicinity to obtain the required fill. Typically, commercial borrow sites hold pre-approved operating permits and do not require any additional environmental permitting when soil is exported. Should the contractor select an alternative, non-commercial borrow site for this project, the contractor will be responsible for conducting a separate environmental review for the site.

Fish Passage

One existing culvert in the upper Haehl Creek channel, located under the proposed highway bridge 10-0129R/L, will be permanently removed and restored as a natural drainage feature. A second existing culvert in upper Haehl Creek will be replaced and the area restored during improvement of the proposed new Schmidbauer Ranch access road. An existing RCB culvert in the vicinity of the proposed Quail Meadows interchange and passing under US 101 will be permanently removed and the creek contoured, re-graded, stabilized, and replanted; local traffic will cross Upp Creek on the new bridge that will be on the north leg of the roundabout.

Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) will consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements will comply with guidelines established by National Marine Fisheries Service (NMFS) and California Department of Fish and Game (CDFG).

An existing access road to the Schmidbauer Ranch will be improved. This access will be from the east side of the southern interchange. The existing culvert in upper Haehl Creek will be replaced with a natural bottom arch or box culvert. The culvert replacement will occur during summer, when this reach of Haehl Creek is normally dry. However, flows through the existing culvert have created an outfall pool that can retain water throughout the year. If water is present, a qualified fisheries biologist will survey the pool for the presence of salmonids. If present, the fish will be removed and relocated before removal and replacement of the culvert.

Landscaping

Disturbed upland areas such as the cut and fill slopes adjacent to the roadway and along interchange ramps, as well as the median between the inside roadway shoulders, will be revegetated with plants native to Little Lake Valley. For drivers' safety and in compliance with Caltrans design standards, no trees will be planted within the clear recovery zone where errant vehicles could hit them. Only soft shrubby and herbaceous native species may be planted in these areas to prevent abrupt slowing, redirection, or launching of stray vehicles.

Temporarily impacted areas will be revegetated to their pre-construction plant community type. They will be seeded and planted with plants native to Little Lake Valley.

Lighting

Highway lighting will be provided at both the Haehl Creek and Quail Meadows interchanges. No lighting will be provided along the viaduct.

Fencing

Fencing will be erected along the Caltrans right-of-way where appropriate.

Stream Bank Stabilization

To prevent bank erosion and damage to the bypass facilities, RSP will be required along short lengths of creek banks. The use of RSP will be minimized through the substitution of "Rolled Erosion Control Product" (RECP; netting) or "Turf reinforcement Mat" (TRM) in appropriate locations.

At locations where Haehl and Upp Creeks pass through the right-of-way, the stream channel will be contoured, re-graded, and designed for fish passage following the guidelines set forth by NMFS and CDFG.

Mitigation Construction

Bypass construction will result in temporary and permanent impacts on riparian and wetland habitat and permanent impacts on other waters and oak habitat. Temporary impacts on riparian and wetland habitat will be mitigated on site through the use of restoration techniques. Permanent impacts on riparian and wetland habitat will be mitigated off site through the use of creation, enhancement, and/or preservation techniques.

On site mitigation implementation will focus primarily on restoring temporarily affected riparian and wetland habitat within the bypass project footprint. In addition, on site minimization efforts related to state-listed plant species (e.g., seed collection, and topsoil harvesting and stockpiling) will be required. On site mitigation actions with the potential to result in impacts on wetlands, other waters, riparian habitat, listed plant species and/or listed fish will entail the following activities, and are summarized below (a full description of proposed mitigation actions is presented in the MMP):

- **Site Preparation**. Site preparation of on site mitigation sites will entail vegetation clearing and seed, rhizome, and topsoil salvaging. Vegetation clearing will be conducted within the bypass project footprint and will entail the use of heavy equipment to strip the existing vegetation. Prior to the beginning of ground-disturbing project construction activities, known populations of listed plant species to be affected by construction either will be salvaged for transportation to adjacent on site locations or salvaged for relocation to offsite mitigation parcels, where the harvested material will be used to topdress created wetlands.

- **Grading**. Temporarily affected locations will be graded as necessary to reestablish appropriate topography and site drainage. The disturbed locations will be configured to replicated preproject conditions as closely as possible. Grading will be limited to the dry season (late spring through early fall). Erosion control seed mixes will be applied after grading is complete but prior to the onset of wet season rains to prevent loosened material/sediment from entering wetlands or waters near the bypass project footprint.

- **Seeding**. Temporarily affected riparian and wetland locations will be seeded with an erosion control mix or a wetland seed mix, depending on location in the bypass project footprint. The seed will be from locally collected seed or plants (i.e., within Little Lake Valley). All temporarily affected riparian locations and wetland locations outside the viaduct construction area will be seeded with an erosion control mix. Temporarily affected wetlands in the viaduct construction area will be seeded with a wet meadow seed mix.

- **Planting**. Temporarily affected riparian and wetland locations in the viaduct construction area will be restored using container stock grown from locally collected seed or cuttings (i.e., in Little Lake Valley). Container plants will be placed in a planting hole that will be hand excavated or augured.

Mitigation on individual offsite mitigation parcels may include a combination of habitat restoration, creation, enhancement, and/or preservation. Off site mitigation actions with the potential to result in impacts on wetlands, other waters, riparian habitat, listed plant species and/or listed fish will entail similar ground-disturbing activities (e.g., site preparation, grading, seeding, and planting) as those described above for on site mitigation areas. In addition, grazing management plans will be developed for each of the off site mitigation parcels. The plans will include strategies to promote the establishment and preservation of target wetland communities and associated plant species and to support and potentially increase the extent of currently occurring listed plant species. Enhancement actions for each parcel may include repairing and replacing existing fences and gates to control livestock; developing and implementing rotational grazing strategies to promote the establishment and preservation of target liste plant species and wetland communities; installing permanent and/or temporary exclusion fencing around sensitive areas; installing water troughs in each grazing management unit to spread grazing across the entire unit; and locating salt licks away from drainages and areas to be protected.

Utility Relocation

The relocation of overhead and underground utilities will be required to construct the Willits Bypass. Utility relocation activities are proposed at the following locations:

1. An access easement on the Schmidbauer property (104-090-03, 104-100-03, and 104-120-02) will be primarily used to access future aerial electrical utilities for both installation and maintenance purposes. The route occurs along an existing unpaved driveway and then links up to a permanent overhead easement that will be located adjacent to the new freeway R/W. Activities will include truck traffic and the installation of 18–inch diameter holes approximately every 400 feet. Following installation of poles, occasional truck traffic will occur for maintenance purposes. Temporary access will also occur along a paved road and will be necessary for topping and removing poles.
2. An access easement on the Margie Lee Handley property (103-150-10 and 007-160-18) will be used primarily to access existing aerial utilities and adjust height profile (PG&E) or to relocate underground utilities for AT&T. Activities include truck traffic and trenching and backfill operations related to relocating the AT&T utilities. Trenching depths typically are limited to 4 feet.
3. An access easement located on the Mickey (007-100-08), Rutledge (007-100-09) and Harwood (007-050-04) parcels will be used to access existing aerials for the purpose of relocating them to higher elevations along the current alignment. Activities include truck traffic, pole removal and pole installation.
4. A temporary access on the Gilstrap property (007-040-10, 007-040-09 and 007-040-08) is needed to remove service poles and relocate poles within a permanent easement to the south of Center Valley Road. Activities include truck traffic and holes drilled approximately every 250 feet. On the north side of Center Valley Road, a combination of permanent overhead and underground easements are required. Activities will include track traffic and trenching operations.
5. Permanent easements both north and south of Hearst–Willits Road are needed for relocating aerial utilities underground along existing alignments. Activities will include track traffic mainly along the paved road and trenching operations.
6. In and around the vicinity of the northern roundabout (Quail Meadows interchange) temporary easements are needed to top and remove poles. Activities include short duration truck traffic.

7. Along the north end of the project mainline, temporary easements for pole removal are needed. Activities will include removing and installing poles and short duration truck traffic. Permanent aerial easements are required for installation access and occasional maintenance. Activities include truck traffic and the installation of 18–inch diameter holes approximately every 300 feet. Permanent underground easement activities include truck traffic and trenching operations.

Description of Specific Construction Elements

Roadway Construction

Staging Areas

The first phase of construction is the establishment of staging areas. Three staging areas are proposed, located in the south-central, central, and northern portions of the project corridor. The south-central staging area is located on state-owned property (Assessor's Parcel Number [APN] 007-100-08). The central staging area is state-owned property (APN 007-040-09) located south of East Valley Street, east of the south abutment of the floodway viaduct, and west of Haehl Creek. The northern staging area is located on state-owned property (APN 108-040-02) east of existing U.S. 101, west of the Quail Meadows interchange, and south of the roundabout. In addition to the staging areas described, the contractor will have use of right-of-way not being actively used for highway purposes., except for those environmentally sensitive areas to be protected by temporary orange fencing, designated as TFESA on the construction plans in enclosed with this permit application.

The staging areas will be used by the contractor to store equipment and materials and will provide the contractor easy access to the project corridor. Access roads from the staging areas to the project corridor will be constructed where necessary. It is anticipated that work will begin at several areas at the same time. Where staging areas are located adjacent to salmon-bearing creeks, a sufficient buffer will be maintained along with appropriate best management practices (BMPs) to ensure that no untreated storm runoff from these areas enters natural drainages. No riparian vegetation will be removed within the staging areas.

Access Roads

The construction of the bypass would require new access roads through some private properties near the project area. These private access roads would need to accommodate hay trucks, fire trucks, and other equipment. Roadway width for private access roads will be approximately 24 feet to allow for a two-lane roadway with no shoulders. It may be possible to reduce this width to about 20 feet; however, the design will need to conform to the Caltrans right-of-way requirement to "replace in kind or better" and be constructed to meet the California Department of Forestry's Fire Safe road standards as required by Mendocino County. Haul trucks delivering imported borrow from the Oil Well Site will utilize a haul road to reach the south end of the project area. The temporary haul road will begin near the Quail Meadows interchange and will be constructed adjacent to the floodway viaduct. The haul road will be removed after construction of the viaduct is complete and the footprint of the haul road has been restored to pre-construction condition.

Imported Borrow

Before the construction of the embankments, all environmentally sensitive areas will be fenced to prevent encroachment from the contractor's operations.

The proposed project will be constructed largely on fill material imported to the site. The bypass requires approximately 2.5 million cubic yards of fill (1.4 million cubic yards in Phase 1). The construction contractor will determine the source of material for earthwork.

Caltrans has designated a borrow site in the project area as a possible source of material that the contractor may use for the project. The site is located at Oil Well Hill, just north of Little Lake Valley and the U.S. 101 bridge over Outlet Creek. Material from the Oil Well Hill site could be transported to the project corridor by trucks, via U.S 101. Once the haul trucks reach the project site near the Quail Meadows interchange, they may travel on a haul road constructed within the ultimate roadway footprint.

Caltrans has prepared a site-specific reclamation plan that requires the borrow site be excavated by cutting the hillside back beginning at the toe and excavating back toward the top of the hill, creating a "cut slope." Prior to hillside excavation, all topsoil and duff will be harvested and stockpiled for reapplication on excavated areas. Once use of the borrow site is finished, cut slopes will be contour graded and stockpiled topsoil and duff will be reapplied. Soil will be amended with organic slow release fertilizer and compost as necessary. Cut slopes will be planted with native plants, propagated from local source material, to stabilize slopes and prevent erosion, and to protect water quality.

Wick Drains

Before any bridge or viaduct abutments can be constructed, the embankment for the abutments must settle. The estimated settling period ranges from 30 days to as long as 10 years. To accelerate the settling period, wick drains will be used.

Wick drains are vertical drains that provide an escape path for groundwater. The groundwater usually drains to a subsurface permeable layer, but some groundwater may reach the surface. Each drain is driven into the ground, and the surface ends of all the drains are connected with a strip drain that drains into a small catch basin. Any groundwater effluent collected in the catch basins will be pumped into holding tanks for disposal or used on the project for dust control.

Beginning with the north abutment of the floodway viaduct and continuing through the north abutments of the Upp Creek bridges, wick drains will be installed before the placement of embankment. Wick drains will be used for both the roadway embankment and the abutments.

Drainage

Highway drainage will be collected from the new impervious surfaces through the use of curbs and dikes, over-side drains, drop inlets, and culverts. This runoff is routed to detention basins, then treated and discharged.

Natural flows passing through the right-of-way that existed before the project will continue to flow through the right-of-way. Temporary cross culverts will be placed where they pass though embankments requiring settling periods. After the fill prism has finished settling, the permanent culvert will be jacked and bored through the embankment.

Pavement Construction

Pavement construction for the project consists primarily of placing and compacting layers of pavement materials consisting of aggregate base (AB), hot mix asphalt (HMA), and hot mix asphalt (open graded). The pavement will be placed sometime toward the end of construction, after all embankments have settled and structures have been completed. Aggregate for both the AB and HMA layers will most likely be obtained from a commercial rock quarry located near Ridgewood Grade south of Willits. The contractor may choose to construct a temporary HMA batch plant on-site to minimize haul time. The batch plant may be located on a property located south of East Valley Street, west of Haehl Creek.

Structures Construction

General Discussion

The permanent bridges will consist of separate southbound and northbound structures. Bridge sites will be cleared of vegetation before construction for a distance of approximately 75 feet upstream and 75 feet downstream of the structures. Removal of vegetation below the top of banks is required to provide access for large equipment, but will be minimized to the extent possible to maintain bank slope stability and to provide some shade for salmonids.

Bridge construction will begin with the approach fills, where necessary, followed by construction of the abutments. The abutment work will include excavation for the footings, pile driving or drilling for the foundations, formwork for concrete placement, steel reinforcement bar placement, concrete pouring, finishing, and curing. Each of the permanent bridge abutments may require 20 or more H piles, which will be placed by pile drivers, at or near the top of bank. After the concrete for the abutments has cured, the forms will be removed and construction of the superstructure falsework will begin. The temporary falsework will be constructed during the low-flow work window[1]. Falsework supports may consist of hollow steel pipe piles, H piles, or timber pads. Installation of these supports may require pile driving. The permanent bridge superstructure forms will then be erected and the concrete poured, finished, and cured. After the concrete has set and strengthened, the falsework will be removed, and other work, including bridge rail and approach work, will be completed.

[1] The low-flow work window is typically the period from April 15th through October 30th; however, Caltrans is requesting that work be allowed outside of this period given favorable weather conditions.

The use of temporary culverts for construction of the viaduct and bridges crossing salmonid-bearing streams is not anticipated. If dewatering is required at any of these stream crossings, cofferdams may be constructed in the channel.

Erosion protection will be required on disturbed slopes where new stream crossings are constructed. RSP will be required where scour potential is higher: on the banks of upper Haehl Creek; at the southbound off-ramp; and for the northbound on-ramp (on both banks). RSP will also be required on the south bank at the highway crossing over the middle reach of Haehl Creek, south of Shell Lane.

Floodway Viaduct

The floodway viaduct has 32 two-column supports (bents[2]), which require the installation of two footings each. Each footing measures approximately 16 feet by 16 feet and requires eight or nine 2-foot-diameter steel pipe piles. The floodway viaduct bents will require 240-inch hollow steel pipe piles, typically with nine piles per footing or column. The installation of the columns and deck construction will require a 100-foot-wide work area on the east side of the viaduct, and a 55-foot-wide work area on the west side of the viaduct. Access will also be required underneath the viaduct structure. The larger work area on the east side of the viaduct is required for access by large cranes and other equipment. Constraining the work area to 55 feet on the west side of the viaduct will serve to minimize loss of riparian habitat along Baechtel Creek. The temporary work areas will be used for vehicle access and for storage of equipment and materials, as well as foundation, column, and falsework erection and removal. Permanent fill in the floodplain will be limited to the total surface area encompassed by the column footings (i.e., approximately 1% of the area under the viaduct). Each viaduct structure will be constructed in sections of several spans each; as soon as one section is complete, work will start on the next section.

Construction of the viaduct over lower Haehl Creek will require removal of vegetation for a distance of 100 feet upstream and 55 feet downstream of the viaduct overcrossings.

The viaduct crossing over Baechtel and Broaddus Creeks will require the removal of vegetation for a distance of 100 feet downstream and 55 feet upstream of the viaduct structures. The top of the footing will be 8 feet below the bottom of the creek. This may require RSP that will be located on both banks under the structures and for a maximum distance of 25 feet upstream and 25 feet downstream of the structures. Placement of the RSP will require a toe trench below the ordinary high water mark (OHWM).

The viaduct crossing over Mill Creek will require vegetation removal only, for a distance of 100 feet downstream and 50 feet upstream of the structure. Piles could be located within 10 to 50 feet of top of bank, and RSP will not be required.

Depending on the time of year each footing is constructed, groundwater may be encountered during the excavation of the footings, requiring dewatering.

[2] A bent is a substructure unit supporting each end of a bridge span (also called a pier) made up of two or more columns or column-like members connected at their topmost ends by a cap, strut, or other member holding them in their correct position.

Dewatering

A single bent (two columns) will be constructed at the confluence of Baechtel and Broaddus Creeks ("Bent 24"). Dewatering will be necessary for installation. This will include the installation of a cofferdam for concrete footing construction, as described in the 2005 BA (Attachment E).

Installation of permanent and temporary piles during project construction may require stream dewatering. At each of the nine stream crossings, the maximum distance that streams will need to be dewatered at each site where piles are driven into creek channels will be 230 feet (70 meters).

The project will require that temporary H piles be driven into creek beds to support trestles associated with haul roads and falsework construction. Temporary piles may be driven in the creek bed at the middle and lower Haehl Creek, Baechtel Creek, Broaddus Creek, and Mill Creek crossings. Vibratory driving and proofing of temporary piles also may occur within the creek bed at Upp Creek; however, the Upp Creek channel is expected to be dry when pile-driving activities are initiated. Driving of temporary piles in creek beds may require that streams be dewatered 62 feet (19 meters) upstream and downstream of piles, based on results of sound level analyses undertaken for salmonid impact assessment. Because the actual distance that may need to be dewatered will vary with summer flow conditions at the time that pile driving is occurring, and the stream length requiring dewatering associated with driving of permanent piles will be reduced, it is not possible to accurately predict the total additional length of stream that may need to be dewatered during project construction. For stream segments requiring dewatering, cofferdams will be installed and water diverted through appropriately sized pipes. The cofferdams may be constructed with impermeable liners placed over clean, (i.e., washed) commercially available river gravel (i.e., rounded, not angular), ranging in size from approximately 1 to 3 inches (2.5 to 7.5 centimeters), or with sandbags, water filled rubber bladders, or other similar devices. Upon completion of construction at each crossing, material used for the cofferdams and water diversion will be removed from the channel and any imported washed river gravel will be spread over the channel..

The floodway viaduct has 32 two-column supports (bents) that require the installation of two footings each. Each footing is approximately 16 feet by 16 feet (4.88 meters by 4.88 meters) and encapsulates either eight or nine 2-foot-diameter steel pipe piles. Groundwater may be encountered and de-watering may be required during the excavation of footings for the viaduct structures depending on the time of year each footing is constructed.

Disposal methods may include pumping into holding tanks for site reuse and as a water source for use in construction activities in embankment construction or dust control, discharge into ground (upland) infiltration, discharge into receiving waters, or off-site disposal, as determined by the Contractor. Water that has come into contact with concrete must be pumped out of the cofferdam or other impoundment areas and disposed of outside the channel and away from the stream zone or any wetland area and in conformance with the North Coast RWQCB regulations.

Retaining Walls

To construct the retaining walls, some riparian vegetation will be removed and later replaced. A portion of these walls will require RSP. The RSP will be re-vegetated using a native seed mix for the establishment of riparian habitat and is included in the fish passage design. The wall foundation will require the installation of H piles by pile driving.

Concrete Batch Plant

The contractor may choose to minimize haul time by constructing a temporary Portland cement concrete plant near the project site. One possible site for a batch plant is state-owned property located south of East Valley Street, east of the south abutment of the floodway viaduct and west of Haehl Creek (APN 007-040-09). If a different location is selected, the contractor will be responsible for the environmental compliance associated with the establishment a batch plant.

Temporary Stream Crossings

Ten temporary bridges may be required to access portions of the project site at the initial stages of construction. The type and location of the temporary bridges would be determined by the contractor. Each temporary bridge would likely consist of a Bailey Bridge, railroad flatcar, or similar type of structure. Information on Bailey Bridges can be found at <http://www.baileybridge.com>[3]. Many of the crossings are too wide for a single structure and will require temporary trestle piles to support the spans. Once these temporary bridges are installed, the temporary piles and bridges will remain in place throughout the entire Phase 1 4-year construction period. There are projected to be 40 temporary H piles for trestle bents. The trestle crossings that will require installation of piles within the creek channels include:

- lower Haehl Creek (one bent consisting of five piles total),
- middle Haehl Creek (four bents consisting of 20 piles total),
- Baechtel Creek (two bents consisting of 10 piles total), and
- Mill Creek (one bent consisting of five piles total).

Temporary bridges will be located where minimal removal of vegetation is be neccessary. Where riparian vegetation is present, placement of these bridges will require removal of vegetation for a distance of 10 feet on both sides of the structure. The bridges will be installed during the low-flow season, usually June 15 through October 15. All areas of disturbed soil will be stabilized at the end of each season through implementation of BMPs in the storm water pollution prevention plan (SWPPP) and National Pollutant Discharge Elimination System (NPDES) permit.

Pile Driving

Driven piles will support the bridge abutments, columns, and retaining walls, and will be used to support the temporary falsework. All the bridge abutments will be located above the top of the bank except for Bent 24, which will require 18 pipe piles within the OHWM of the confluence of Baechtel, Broaddus, and Outlet Creeks. All other proposed piles will be located below the tops of the stream banks but not within the OHWM.

The selected Caltrans contractors will use pre-formed concrete pads or timber-grade beams set on the earth, or driven piles to support falsework. Generally, when contractors use piles to support the falsework, the piles are relatively small (about 15 inches or smaller in diameter) or equivalently sized H piles.

[3] Bailey bridges are built on site from a pre-engineered system of ready-to-assemble components. Utilizing standardized prefabricated components, Bailey bridges can be built to match a wide range of vehicular bridging applications.

Block 10B. Equipment and Machinery

The following equipment and machinery may be used during construction to complete the U.S. 101 Willits Bypass project:

- Bulldozer
- 18-Wheel Truck
- Flatbed Delivery Truck
- Dump Truck
- Hydroseeder
- Small Box Scraper
- Big Box Scraper
- Excavator
- Crane
- Bobcat with Auger/Trencher
- Backhoe
- Compactor
- Portable Generator
- Concrete Truck
- 10-Wheel Truck
- Hand Tools
- Front-end Loader
- Water Truck
- Dewatering Pumps
- Motor Grader

No lubricants, solvents, chemicals, or other materials not normally found on construction sites would be present on the project site.

Block 11A. Project Impacts

Section 1602 Jurisdictional Waters (Waters of the United States/ Waters of the State of California)

The proposed project will affect 5.50 acres of "other waters" of the United States (streams, ditches, and ponds) by placing approximately 13,745. 79 cubic yards of fill along 10,608.45 linear feet (LF) of "other waters" of the United States " during project construction and mitigation activities. The fills include 8306.39 cubic yards of permanent fill along 8047.10 LF of other waters" of the United States and 5439.40 cubic yards of temporary fill along 2561.35 LF of other waters" of the United States. The surface area (in acres) of "other waters" of the United States are summarized in Table 2 below. Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 1, below, lists the volume (temporary and permanent) and types of fill material that will be discharged to "other waters" of the United States as a result of the proposed project. Maps depicting impacted wetlands and "other waters" of the United States" are included in Appendix A and Appendix B of this permit application.

Table 1: Willits Bypass "Other Waters" of the US - Locations of features

Map Sheet	LF Perm	LF Temp	Feature Type	Comment/Location	Fill Volume Perm	Fill Volume Temp	Fill Type	Roadway Work	Structure Work
					(cu-yards)	(cu-yards)			
B-04	400.8	0	EPH	South of haehl Interchange, parallels west side of 101	9.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), Rock Slope Protection (RSP), RSP Fabric	Roadway fill, roadside ditch, Drainage System No. 5 (STA "A" 102+43.645) & Drainage Basin No. 1 (STA "A" 102+61.854)	
B-04	155.3	0	EPH	South of haehl Interchange, on east side of 101 (across from FID 0)	14.7	0	Imported borrow (fill), concrete (DI), Alternative Pipe Culvert (APC), Alternative Flared End Section (AFES), RSP, RSP Fabric	Roadway fill & Drainage System No. 6 (STA "A" 102+67.835)	
B-06	605.5	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101	8.7	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 13 (STA "U1" 106+30.000) & 14 (STA "U1" 105+50.000)	

B-08	309.3	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101, east of FID 4	3.1	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), Concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 8 (STA "H" 97+61.686)	
B-08*	8.6	3.4	EPH	Trib To Haehl Creek from Roadway Ditch culvert, north side of hwy 101	0.2	0.1	Import borrow (fill)	Roadway fill Drainage System No. 9 (STA "H" 97+96.641)	
B-06	144.9	0	EPH	Trib To Haehl Creek, north side of hwy 101	4.1	0	Cut	Roadway excavation, Begin STA "H" 99+13.723 - End STA "H" 99+32.816 & Drainage System No. 11 ("H" 99+31.464)	
B-06	99.5	0	EPH	Trib To Haehl Creek, north side of hwy 101. extension of FID 7	3.4	0	Import borrow (fill)	Roadway fill, Begin STA "A" 106+77.199 - End STA "A" 106+97.700	
B-06	96.4	3.4	EPH	Trib To Haehl Creek, conflunecing with Haehl Cr from NE	80.5	2.8	Import borrow (fill), roadway excavation, concrete (headwall), APC, RSP, RSP Fabric	Roadway fill, roadway excavation, Drainage System No. 18 (STA "U4" 106+35.000)	
B-06	577.6	0	EPH	Trib To Haehl Creek, parallels dirt road on north side of hwy 101	71.2	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (bridge abutment), RSP, RSP Fabric, Turf Reinforcement Mat (TRM)	Roadway fill, Begin STA "A" 105+35.903 - End STA "A" 107+46.190	
B-12	1006.6	0	EPH	On NE side of J1T align, NW of haehl interchange, “Schmidbauer”	362.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 30 ("A" 110+71.840)	
B-12	12.6	12.6	EPH	On Nw side of J1T align, NW of haehl interchange	3.2	3.2	Imported borrow (fill), APC, AFES, RSP, RSP Fabric	Roadway fill & Drainage System No. 30 ("A" 110+71.840)	

B-12	0	74.5	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 13, “Schmidbauer”	0	36.7	Import borrow (fill)	Roadside ditch	
B-14	920.3	0	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 15, “Schmidbauer”	274.5	0	Imported borrow (fill), RSP, RSP Fabric	Roadside ditch & Drainage System No. 33 ("A" 114+44.741)	
B-14	77	3.4	EPH	Trib runs to the NE, to “Schmidbauer”	8.1	0.4	Cut	Median ditch	
B-34	149.2	3.4	EPH	Ditches in Log Yard	11.9	0.3	Import borrow (fill)	Roadway fill	
B-34	118.6	3.4	EPH	Ditches in Log Yard	9.4	0.3	Import borrow (fill)	Roadway fill	
B-34	71.7	3.4	EPH	Ditches in Log Yard	5.7	0.3	Import borrow (fill)	Roadway fill	
B-34	55.9	3.4	EPH	Ditches in Log Yard	4.5	0.3	Import borrow (fill)	Roadway fill	
B-34	58.7	3.4	EPH	Ditches in Log Yard	4.7	0.3	Import borrow (fill)	Roadway fill	
B-34	74.3	3.4	EPH	Ditches in Log Yard	5.9	0.3	Import borrow (fill)	Roadway fill	

B-34	41.8	3.4	EPH	Ditches in Log Yard	3.3	0.3	Import borrow (fill)	Roadway fill	
B-34	90.9	3.4	EPH	Ditches in Log Yard	7.2	0.3	Import borrow (fill)	Roadway fill	
B-34	17.2	3.4	EPH	Ditches in Log Yard	1.4	0.3	Import borrow (fill)	Roadway fill	
B-34	123.2	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	11.8	3.4	EPH	Ditches in Log Yard	0.9	0.3	Import borrow (fill)	Roadway fill	
B-34	122.6	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	153.7	3.4	EPH	Ditches in Log Yard	12.2	0.3	Import borrow (fill)	Roadway fill	
B-06	59.3	1027.1	INT	Haehl Creek (Main Fork) – Re-Align	221.3	3832.6	Import borrow (fill), Concrete (headwall & wingwall), APC, RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (9402.7 m^3) 2. Sand & Gravel (1559.3 m^3) **Above OHW:** 1. RSP(4161.5 m^3) 2. Sand & Gravel (2611.3 m^3)	**Haehl Creek Bridges: Br No.** **10-0129F, 10-0129G & 10-0129RL** 1. Potential Temp. stream crossing (1 trestle bent in channel) at bridge 10-0129RL. 2. Potential Falsework (1 falsework bent in channel) at each structure .

									3. Potential stream Diversion/temporary culvert.
B-18	188.6	160.25	INT	"Schmidbauer"	53.3	47	Import borrow (fill)	Roadway fill	
B-24	401	6.8	INT	Crosses align north of east Hill road	404.7	6.9	Imported borrow (fill), roadway excavation & concrete (headwall)	Roadway fill & Drainage Basin No. 3 ("A" 127+50.000)	
B-57	433	6.8	INT	RR Ditch at RR x-ing, east side of tracks	262.2	4.1	Import borrow (fill)	Abutment fill, new ditch (to be design by Design) & temp. culvert	**Quail Meadows OH (Br No. 10-0171)** 1. Temp. dirt road across RR tracks (Temp Haul Road) 2. Temp. Culvert crossing
B-26	514.1	6.8	INT	East Fork Haehl Creek, Handley parcel, south of Shell rd.	2324.5	30.7	Imported borrow (fill), roadway excavation, APC, AFES, RSP, RSP Fabric	Roadway fill, Drainage Basin No. 4 ("A" 132+00.000), Drainage System No. 45 ("A" 132+52.219)	
B-40	65.13	26.3	INT	Heahl Creek, Near Baechtel Confluence – Under Viaduct, Just north of East valley Street	260.0 (culvert work)	105.0 (culvert work)	Trestle/falsework construction		**Haehl Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)

B-49	7	10	INT	Broadus, Baechtel, Outlet Confluence - Under Viaduct, NE of WWTP	54.0 (footing for bents?)	77.2 (falsework)	Concrete (Bent 24), RSP, RSP Fabric, Trestle/falsework construction		**Confluence of Broaddus/Baechtel Creek** 1. Footing Impact (329.9 m3) 2. Potential temp. stream crosssing (Baechtel Creek - 2 falsework bents in channel, Broaddus Creek - 1 falsework bent in channel, & Outlet Creek- 2 trestle bents in channel)
B-51	0	429.8	INT	Mill Creek - Under Viaduct	0	0 (access and veg removal only, no temp fills below OHWM)	Trestle/falsework construction		**Mill Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-37	0	403.1	INT	Baechtel Creek, south of center valley road, west side of J1T align	0	595.7		Current Design does not show any impact at this location.	
B-26	0	270.5	INT	West (Main) Fork Haehl Creek, along west side of handley parcel	0	692.6	RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (2857.9 m^3) 2. Sand & Gravel (348.1 m^3) **Above OHW:** 1. RSP(3444.9 m^3) 2. Sand & Gravel (2309.7 m^3)	**Haehl Creek (Br No. 10-0159)** 1. potential temp. stream crossing (4 trestle bents in channel). 2. potential temp. falsework (4 trestle bents in channel).

B-57	1172.6	82.4	INT	Upp Creek and RR ditch on west side of RR x-ing, and Mill Creek on the east side of RR x-ing	1817.5	127.7	Import borrow (fill), roadside ditch (RR), Concrete (bridge structures), APC, RSP (Fish Passage Design at Upp Creek)	**<u>Upp Creek</u>** **Below OHW:** 1. RSP (5848.5 m^3) 2. Sand & Gravel (1258.3 m^3) **Above OHW:** 1. RSP(3100.0 m^3) 2. Sand & Gravel (1325.1 m^3)	**<u>Quail Meadows OH</u>** **Br No. 10-0171** 1. Potential Temp. culvert crossing 2. Potential dirt road crossing over RR tracks (temp haul road) **<u>Upp Creek Bridges</u>** **Br No. 10-0305, 10-0174, 10-0174K & 10-0174S** 1. Potential Temp. stream crossing (1 trestle bent in channel) at Quail Meadows I.C. 2. Potential Falsework (1 falsework bent in channel) at each structure 3. Potential Stream Diversion at each structure
B-31 and B-34	139.8	3.4	POND	Rutledge Pond	2263.1	55	Class 3 Permeable Material Filter Fabric Embankment	Class 3 Permeable Material (3213 m^3) Filter Fabric (6802 m^2) Embankment (3505 m^3)	
C-86	**375.95**	288.16	EPH	Stream Entering Watson East Mitigation Parcel	29.59	0	Grading for wetland creation		
Totals:	**8860.48**	**2862.91**			**8306.39 yd^3**	**5439.40 yd^3**			

The proposed project will directly affect a total of 89.12 acres of wetlands and other waters of the United States, of which 56.23 acres will be permanently filled and 32.89 acres will be temporarily disturbed during project construction and mitigation activities. Fill types affecting wetlands include those listed in Table 1 for "other waters of the United States" (permanent fills consisting of roadway and structures fill, asphalt concrete, RSP, TRM and RECP, new culverts, culvert end and treatments; temporary fills consisting of temporary falsework and falsework supports, cofferdams, temporary roadway fills, stream re-alignments, and temporary access routes). Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 2 shows the surface area (acres) of the resources that will be affected by the bypass. Maps depicting impacted wetlands and "other waters" of the United States" are included in Appendix A and Appendix B of this permit application.

Table 2. Summary of Project Construction Impacts on Wetlands and Other Waters of the United States

Wetland Type / Other Waters	Project Impacts on Wetlands and Other Waters (acres)			Mitigation Impacts on Wetlands and Other Waters (acres)			Total Impacts on Wetlands and Other Waters (acres)
	Temporary	Permanent	Total	Temporary	Permanent	Total	Total
Marsh	1.38	8.15	9.53	0.49	0.00	0.49	**10.02**
Riparian Scrub	0.17	0.21	0.38	0.00	0.00	0.00	**0.38**
Riparian Woodland	1.61	3.21	4.82	0.07	0.02	0.09	**4.91**
Swale	0.03	0.00	0.03	0.26	0.05	0.31	**0.34**
Vernal Pool	0.05	0.16	0.21	0.00	0.00	0.00	**0.21**
Wet Meadow	20.69	41.64	62.33	4.98	0.45	5.43	**67.76**
Subtotal Wetlands	**23.93**	**53.37**	**77.30**	**5.80**	**0.52**	**6.32**	**83.62**
Other Waters	3.10	2.25	5.35	0.06	0.09	0.15	**5.50**
Total	**27.03**	**55.62**	**82.65**	**5.86**	**0.61**	**6.47**	**89.12**

1602 Jurisdiction Riparian Vegetation

In addition, the proposed project would impact a total of 21.00 acres of riparian habitat (15,227.3 linear feet). Effects to riparian vegetation include 10.88 acres (8534.70 linear feet) of permanent impacts due to permanent vegetation removal, and the placement of roadway and structures fills and the installation of permanent drainage features. An additional 10.12 acres (6692.60 linear feet) of riparian vegetation will be temporarily impacted due to temporary vegetation removal (followed by revegetation) and vegetation trimming during the course of project construction and along temporary access routes. All temporary impacts would be returned to pre-project contours and elevations prior to completion of the project. See Table 3 for the surface area affected by the bypass. Maps depicting impacted riparian resources are included in Appendix C of this permit application.

Table 3. Project Construction Impacts to Section 1602 Jurisdiction Riparian Vegetation

Resource	Project Impacts (acres)			Mitigation Impacts (acres)		
	Temporary Impact[a] Area	Permanent Impact[a] Area	Total	Temporary[b]	Permanent[b]	Total
Category I Riparian Corridor[d]	9.49	2.50	11.99	none	none	none
Category II Riparian Corridor[d]	0.23	3.74	3.97	none	none	none
Category III Riparian Corridor[d]	0.40	4.64	5.04	none	none	none
Total	**10.12**	**10.88**	**21.00**	**0**	**0**	**0**

[a] Temporary impacts—Direct impacts outside the permanent impact area (bypass footprint), as depicted in the map set in Appendix B. Includes temporary access roads and staging areas. Permanent Impacts—Direct impacts within the bypass footprint as depicted in Appendix B.

[b] Temporary mitigation impacts—Impacts caused by the construction and installation of offsite mitigation for the bypass project.

[c] Category I Riparian Corridors—Areas of salmonid streams (Haehl, Baechtel, Broaddus, Mill, and Upp Creeks, tributaries of Outlet Creek) and adjacent riparian areas extending laterally from the ordinary high water mark (OHWM)100 feet (30.5 m) on each bank. Category II Riparian Corridors—Tributaries of Category I Riparian Corridors that are within 1,000 feet (304.8 m) of the confluence with a Category I Stream, extending 50 feet (15.2 m) from the OHWM on each bank. Category III Riparian Corridors—Tributaries of Category I Riparian Corridors that are more than 1,000 feet (304.8 m) upstream of the confluence with the Category I Stream, extending 25 feet (7.6 m) from the OHWM on each bank.

[d] Upland oak—Oak woodlands identified as Oregon white oak, black oak/Douglas-fir, Oregon white oak/Douglas-fir/California fescue, and Douglas-fir/canyon live oak alliances were counted as upland oak. Lowland oak—Oak woodlands identified as valley oak and black oak/valley oak alliances were considered lowland oaks. 50% of the areal canopy in the Douglas-fir/oak alliances was counted as upland oak woodland.

[e] All oak woodland impacts are considered permanent because of the long-term loss of oak woodland functions in areas where oaks would be removed.

Block 11B. Vegetation Type and Tree Removal

In addition to USACE and CDFG jurisdictional habitat that would be impacted by the project (outlined in Tables 1, 2, and 3), the proposed project would also result in the following impacts to non-jurisdictional habitat:

- Oak Woodland – aerial canopy: 15.60 acres total (15.35 acres permanent impact for Bypass construction; 0.25 acre permanent impact for mitigation construction)
- Oak Woodland – grassland: 54.27 acres total (49.02 acres permanent for Bypass construction; 4.45 acres temporary impact for mitigation construction; 0.80 acres permanent impact for mitigation construction)

Maps depicting impacted oak woodland and oak woodland grasslands are included in Appendix C of this permit application.

Block 11C. Special-Status Species

The project area contain suitable habitat for 11 federal and/or state listed special-status species The following federally and/or state listed special-status species have the potential to occur in the project sites and could be affected by project activities:

- Northern Spotted Owl (federal threatened)
- Pacific Fisher (federal candidate)
- Red Tree Vole (California non-listed special-status species)
- White-Tailed Kite (California fully protected)
- Northwestern Pond Turtle
- Central California Coast Chinook Salmon (federal threatened)
- Southern Oregon/Northern California Coho (federal endangered, state endangered)
- Northern California Steelhead (federal threatened)
- Baker's Meadowfoam (state rare)
- Rodericks's Fritillary (state endangered)
- North Coast Semaphore Grass (state threatened)

Accordingly, potential effects to federally listed species are addressed in the project's Biological Assessments and EIS/EIR (refer to Attachment 4: ROD/NOD and to the Final EIR/EIS enclosed as a CD with this permit application). The Biological Assessments were used in support of USACE's consultation with the U.S. Fish and Wildlife Service and NMFS pursuant to Section 7 of the Endangered Species Act. Federal and state dual-listed species (threatened or endangered) will require a 2080.1 consistency determination from the CDFG. Species solely listed by the state will require a 2081 incidental take permit from the CDFG.

Block 12A. Techniques Used to Prevent Sediment From Entering Watercourse During Construction

In addition to preparation of a SWPPP, Caltrans will implement the following measures to minimize disturbances of aquatic resources:

- In-channel construction, including creek bank and channel-bed construction below the OHWM at each of the flowing creek crossings will be implemented between June 15 and October 15 of each year, unless earlier and/or later dates for construction activities at the creek crossings are approved by NMFS, the California Department of Fish and Game, and the North Coast Regional Water Quality Control Board on a year-by-year basis;
- All construction-related materials will be stored in designated staging areas at least 100 feet from waterways and drainages.
- Refueling and vehicle maintenance will be performed at least 100 feet from creeks and other water bodies.
- Operation of heavy equipment will be minimized in waterways to the greatest extent possible.
- Temporary sedimentation barriers, such as sandbags or siltation fencing, will be installed to minimize the amount of silt entering the creeks and any ephemeral/intermittent drainages with water present in the channel. The locations of these barriers will be determined by the resident engineer and environmental monitor, and will be clearly marked in the field before construction activities begin.
- Additional BMPs will be implemented to prevent runoff from adjacent lands from flowing across construction areas, slow down the runoff traveling across construction sites, remove sediment from on-site runoff before it leaves the site, and provide soil stabilization.
- To address potential water quality impacts during construction, Caltrans will require the contractor to use a combination of BMPs to control potential erosion and sedimentation that could result from construction activities. Caltrans has developed a suite of construction site BMPs that will be implemented on the proposed project. The construction site BMP manual can be downloaded at: http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm
- Caltrans will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters. For example, on this project, equipment operating in water bodies will be required to be steam cleaned prior to arrival onsite, and be maintained in a clean condition during the length of activities.
- Following the construction process, the contractor will stabilize disturbed soil areas through permanent revegetation or other means. An appropriate design will be used that will allow all finished slopes to achieve stabilization, even under severe conditions, and also provide erosion control BMPs at all point source discharges of stormwater runoff. Treatment BMPs, such as biofiltration, will be incorporated where feasible.
- As part of standard operation and maintenance procedures, Caltrans has developed a standard Hazardous Waste and Spill Response Plan, which Caltrans will ensure is implemented during the project. These BMPs address water quality issues associated with accidental spills.

Measures designed to further control sedimentation and turbidity within waters of the U.S. and State, including BMPs for operation of heavy equipment in wetlands and waterways will include:

- Non-rainy season BMPs will be implemented in accordance with the SWPPP, including inspection, maintenance and repair, to minimize delivery of soil to the stream channels;
- The use of vehicles and heavy equipment in areas below the top of bank will be limited to the extent feasible; equipment may enter the stream reaches that are normally dry during the summer months (upper Haehl Creek and Upp Creek) to facilitate construction; however, no vehicles or heavy equipment will be allowed below the OHWM for the other crossings where flowing water is likely to occur, at any time, either for crossing the creeks or for construction activities (with the exception of installing a cofferdam to isolate work areas from flowing or standing water);
- The project's contractor will be required to implement appropriate BMPs to prevent the discharge of equipment fluids to the stream channel; the minimum requirements will include:
  - storing hazardous materials outside of the stream banks;
  - checking equipment for leaks and preventing equipment with leaks from accessing any areas below the top of bank or from going onto the falsework structures;
  - pressure washing equipment to remove fluid residue on any of its surfaces prior to its entering the live channel (if equipment is needed in the channel to establish a flow diversion);
  - maintaining spill response material and suitably trained personnel at the project site;
  - responding immediately to any fluid releases and applying containment booms and absorbent materials as appropriate; and
  - notifying the RWQCB of releases and discharges; or minor accidental releases of equipment fluid to the dewatered channel, the contractor will be required to remove and properly dispose of contaminated material;
- Equipment will not be stored in the channel when not in use; all equipment will be removed from the channel at the end of each work day; all equipment will be fueled, maintained, and repaired at sites well away from the streambanks;
- Where feasible, Rolled Erosion Control Product (RECP; netting) will be substituted in as many locations as possible that traditionally would receive RSP. Unlike RSP, RECP allows native riparian vegetation to grow through the mat structure while providing erosion protection for affected banks and bridge abutments; and
- Erosion control measures will be implemented at the end of each work window or completion of project activities to prevent material from entering watercourses.

Block 12B. Avoidance and/or Minimization Measures to Protect Fish, Wildlife and Plant Resource

In addition to the creation, enhancement, and preservation strategies included in the MMP, Caltrans has incorporated numerous minimization measures into the project design. The following minimization measures have been incorporated into the design since the final EIS/EIR:

- The bypass re-alignment will avoid conflicts with the planned WWTP expansion project which will allow the WWTP to avoid impacts to waters of the United States; specifically, the profile over the railroad has been lowered, resulting in a significant reduction of the embankment footprint and corresponding reduction in wetlands impacts between the end of the viaduct and the railroad crossing;
- The bypass's profile over the railroad was lowered, resulting in a significant reduction of the embankment footprint and therefore a reduction in impacts on wetlands;
- An existing box culvert at Upp Creek can will be removed given the implementation of the roundabout and, therefore, will allow for the restoration of this area;
- The roundabout at the Quail Meadows interchange allows for an existing box culvert at Upp Creek to be removed, and all of the Upp Creek crossings will now be bridges rather than box culverts;
- Construction of the viaduct minimizes impacts to floodplain and special-status species (preserving connectivity);
- The project was redesigned to avoid direct impacts to park and recreation complex and a business park;
- The highway median was reduced to 45.3 feet which will reduce the project's area of impact;
- Omission of a second passing lane on the interchange ramps will reduce the project's area of impact; and
- The proposed Oil Well Hill borrow site has been reduced from approximately 40 ac to 12.17 ac (4.93 ha) and has been configured to avoid impacts on jurisdictional wetlands, and other waters of the United States, and riparian habitat including Category I– III riparian corridor .
- Environmental Sensitive Areas (ESA), such for wetlands and waters (State and U.S.) and to protect trees, is to be identified in the contract plans and to be delineated by Temporary Fence (Type ESA) through out the limits of the project. The locations of the ESAs will be determined by the Resident Engineer and Environmental Monitor and will be installed prior to commencement of ground disturbing activities.

The following is a summary of the conservation measures Caltrans would implement to avoid and minimize impacts to fish, plant, and wildlife resources during construction activities. Refer to the project's EIS/EIR and Biological Assessments for a full description of the proposed avoidance and minimization measures.

- Establish Environmentally Sensitive Areas on all project plans.
- Implement an environmental awareness and training program.

- Biological monitoring during construction.
- Avoid work in live stream channels.
- Avoid impacts to nesting birds.
- Implement invasive non-native plant program.

Block 12C. Mitigation and Compensation Measures to Protect Fish, Wildlife and Plant Resources

Mitigation and Monitoring Proposal

Caltrans developed a mitigation and monitoring proposal (MMP) for impacts of the bypass on jurisdictional wetlands, other waters of the United States, riparian habitat, state-listed plants, and oak woodlands. In addition to compliance with federal Clean Water Act (CWA) Section 404 permitting, the MMP will provide compliance with CWA Section 401, Section 1602 of the California Fish and Game Code (FGC), and Section 2081 of the California Endangered Species Act (CESA).

The overall goal of the MMP is to compensate successfully for impacts resulting from bypass construction on sensitive biological resources resulting from bypass construction by restoring some of the historical ecological functions and values to habitat in Little Lake Valley through a combination of habitat restoration, creation, enhancement, and preservation. Additionally, the MMP aims to restore and enhance many previously lost or degraded wetland functions and values and to help offset past damage to parts of the Outlet Creek Basin. As stated in Block 11A, construction of the bypass will result in temporary and permanent impacts on wetlands and other waters of the United States. Table 4 shows the total amount of jurisdictional habitat that will be created, enhanced, or preserved as compensation for the proposed project's impacts on sensitive resources.

Table 4. Mitigation Approach

Resource (Order of Mitigation Importance)	Mitigation Acres			
	Creation	Enhancement	Preservation	Restoration
Special-Status Plants				
Baker's Meadowfoam	0	0	1,068.3	17.83
North Coast Semaphore Grass	0	0	6.21	0
USACE-Jurisdiction				
Wetlands	33.4	1032.90	1122.11	5.96
Other Waters	0	17.32	24.7	0.06
CDFG-Jurisdiction				
Category I Riparian Corridor	47.70	51.33	102.38	0
Category II Riparian Corridor	1.76	0.84	9.44	0
Category III Riparian Corridor	0.02	3.57	9.45	0

The proposed project's MMP will be provided in its entirety in a separate transmission.

Block 13. Permits

Table 3 below presents a list of approvals and consultations that may be required before project implementation.

Table 3. List of Authorizations, Approvals, and Consultations That May Be Required

Agency	Type of Approval	Identification No.	Date Applied	Date Approved	Date Denied
U.S. Army Corps of Engineers	CWA Section 404 Individual Permit	–	March 2010	–	–
North Coast Regional Water Quality Control Board	CWA Section 401 Water Quality Certification (Attachment 7)	–	March 2010	–	–
California Department of Fish and Game	FGC Section 1602 lake and Streambed Alteration Agreement	–	March 2010	–	–
	FGC Section 2080.1 consistency determination	–	March 2010	–	–
	FGC Section 2081 CESA Incidental Take Permit	-	March 2010		
U.S. Fish and Wildlife Service	Federal Endangered Species Act (ESA) Section 7 consultation; biological opinion (Attachment 5)	1-14-1998-0095	September 2005	March 2005	–
National Marine Fisheries Service	ESA Section 7 consultation; Biological Opinion (Attachment 5)	2005/07370:TKD	October 2005	September 2006	–
National Marine Fisheries Service	ESA Section 7 consultation addendum; Biological Opinion		March 2010		
California State Office of Historic Preservation	Concurrence	FHWA000717A	November 2005	December 2005	–
Mendocino County	SMARA exception	–	–	March 2008	–

Attachment 2: Figures

Figure 1-1
Regional Location

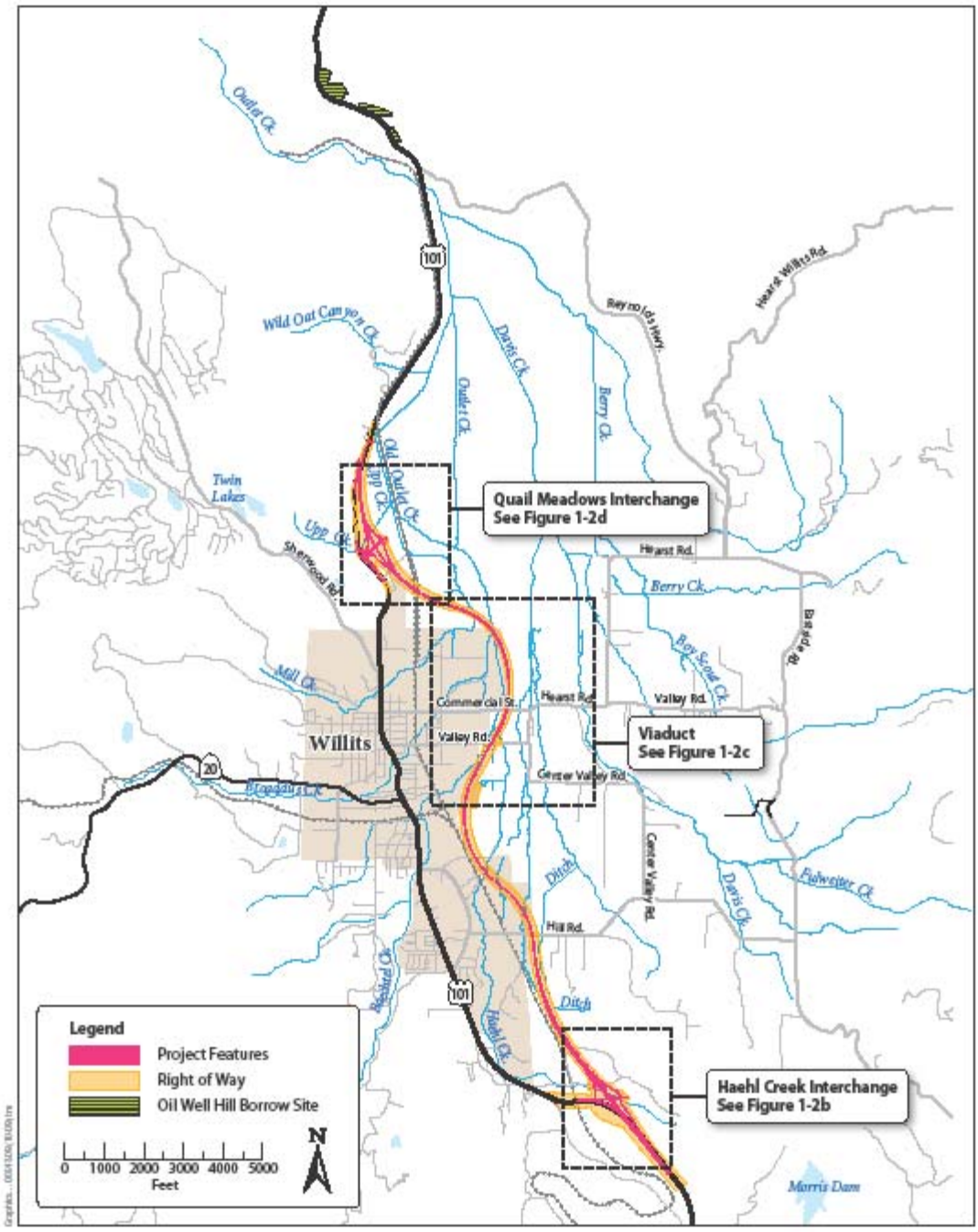

Figure 1-2a
Project Features—Overview Phase 1

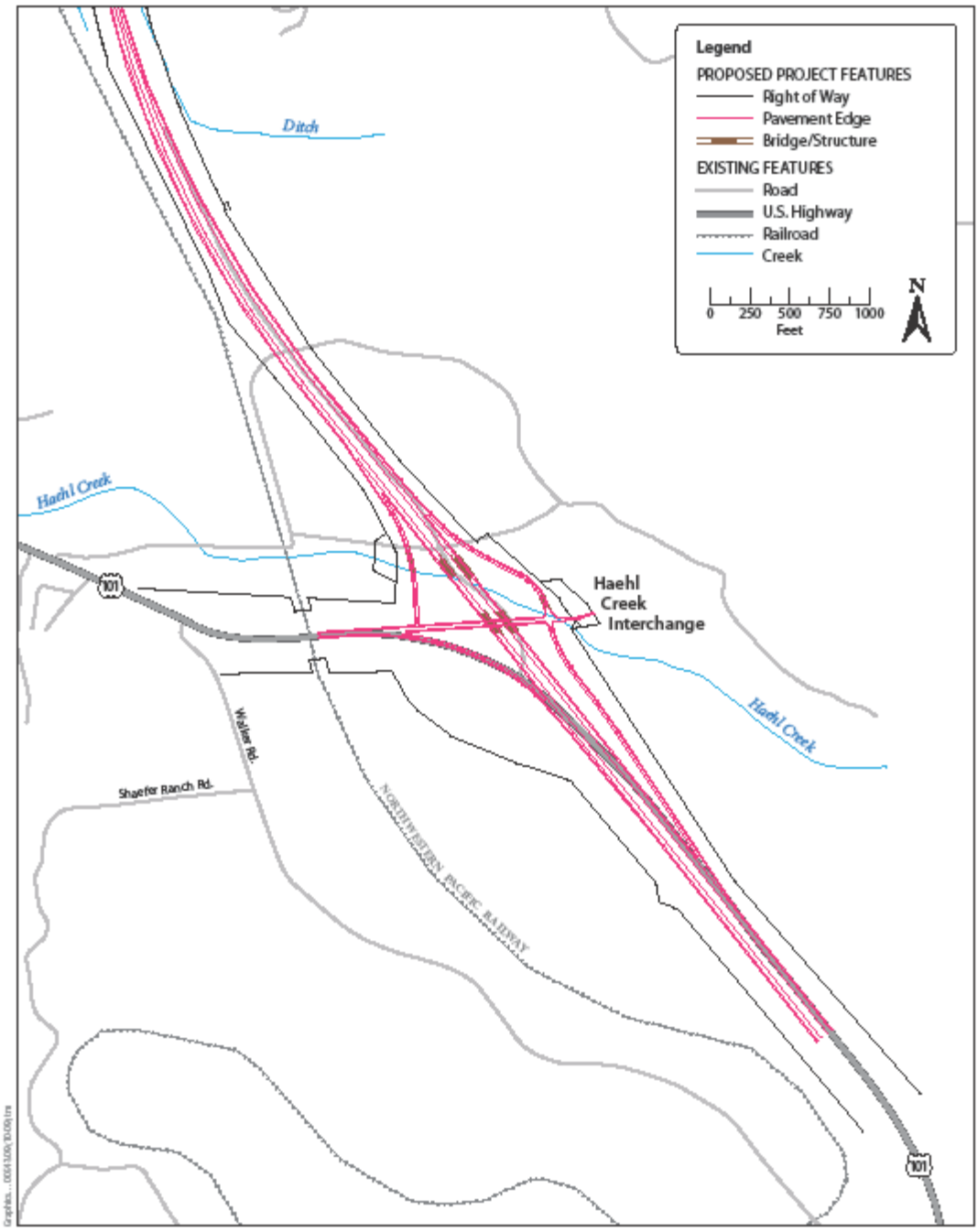

Figure 1-2b
Southern End Project Features—Haehl Creek Interchange Phase 1

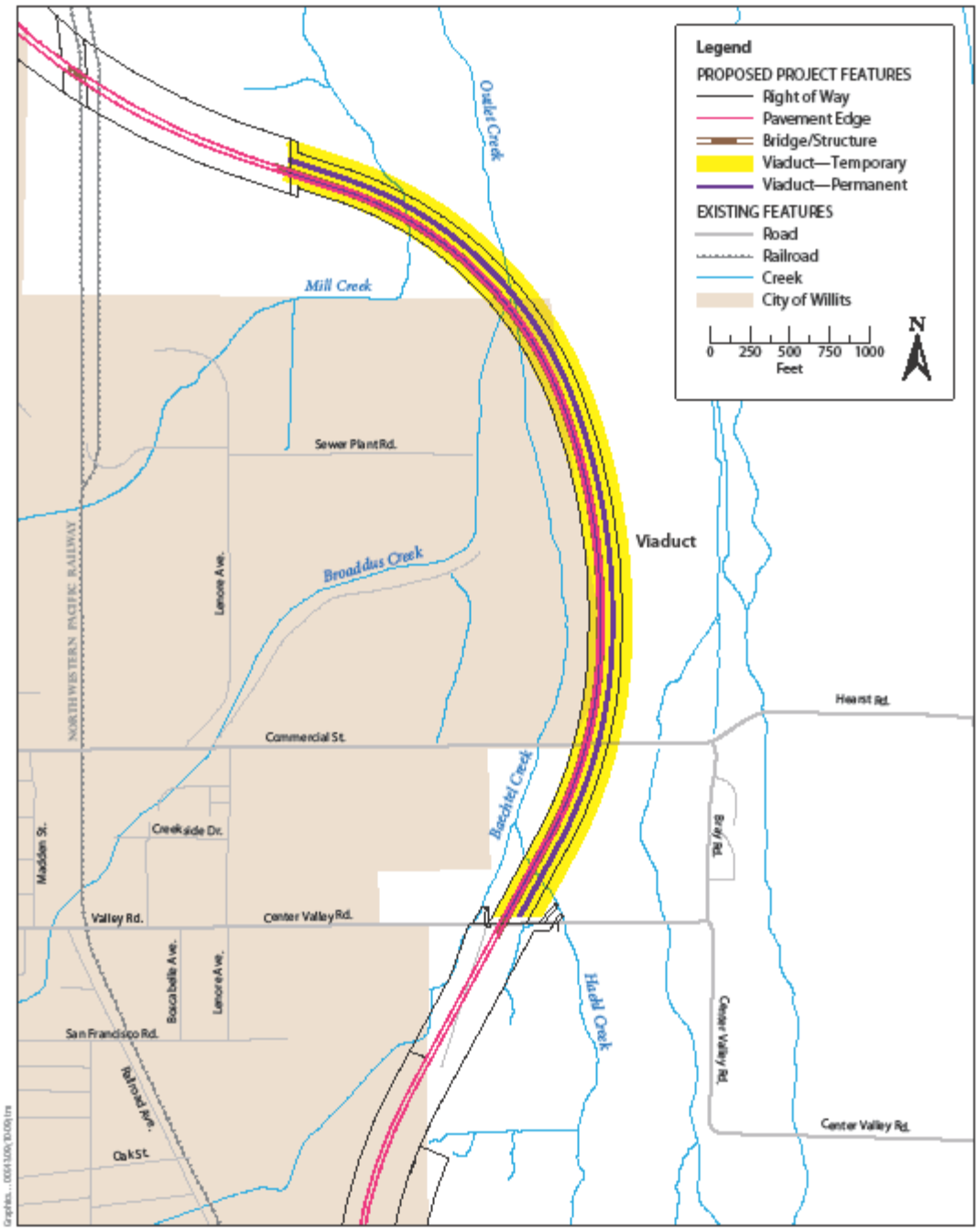

Figure 1-2c
Middle Project Features—Viaduct Phase 1

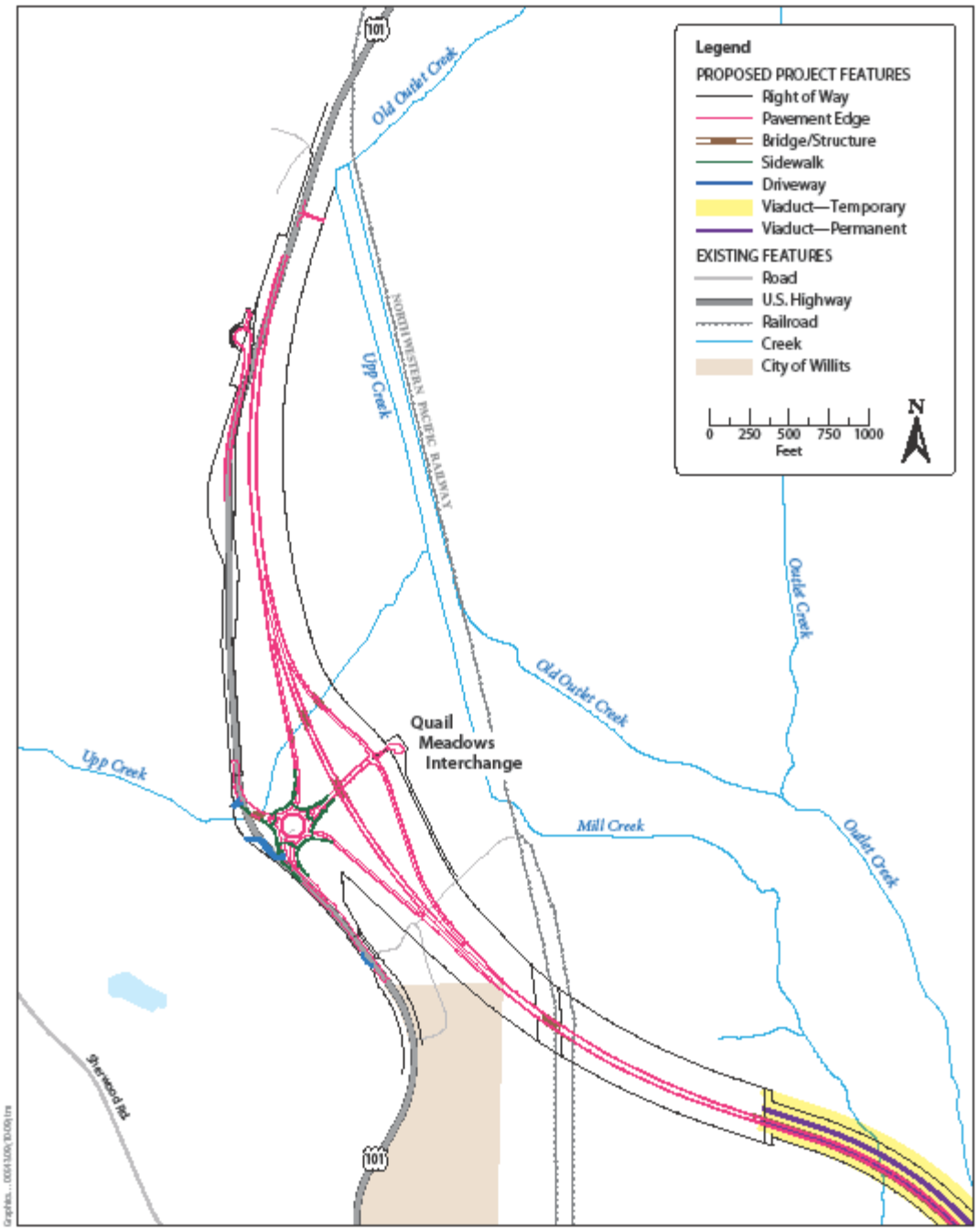

Figure 1-2d
North End Project Features—Quail Meadows Interchange Phase 1

Attachment 3: Jurisdictional Determinations

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
333 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94105-2197

REPLY TO

MAR 0 1 2005

Regulatory Branch

Subject: File No. 194741N

Mr. Jeremy Ketchum
California Department of Transportation
District 3-Sacramento Office
Office of Environmental Management, S-1
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letters of February 11, 2004, and February 6, 2005, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring within the Modified J1T Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California.

The enclosed map entitled, "Potential Jurisdictional Wetlands and Waters of the United States Within Alternative Modified J1T," in five (5) sheets date certified February 23, 2005, accurately depicts the extent and location of Corps jurisdiction within the project alignment study area. The jurisdictional delineation is based on the current conditions of the site, as verified during field investigations of April 20-22, June 1-3, and July 13, 2004, and January 19, 2005, and other data included with your submittals. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change in field conditions warrants a revision to the delineation map prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States and within the lateral extent of wetlands adjacent to these waters will require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters, and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce. Section 404 waters within the project alignment study area include both seasonal and perennial wetlands, and numerous intermittent and perennial drainages, including Haehl, Broaddus, Mill, and Upp Creeks, that are tributary waters to Outlet Creek and ultimately the Eel River. The wetland basins and swales are adjacent (neighboring or bordering) to these tributary waters, and their lateral extents are defined by the presence of hydrophytic vegetation,

hydrology, and hydric soils. The plane of ordinary high water of the tributary waters is defined by the presence of shelving, debris lines, and transitional vegetation on the banks.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 CFR Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. Peter Straub of my staff by telephone at 415-977-8443 or by e-mail at peter.s.straub@spd02.usace.army.mil. All correspondence should be addressed to the Regulatory Branch, North Section, referencing the file number at the head of this letter.

Sincerely,

Jane M. Hicks

Jane M. Hicks
Acting Chief, Regulatory Branch

Enclosures

Copy Furnished:

US EPA, San Francisco, CA (w/o encls)

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

AUG 15 2008

REPLY TO

Regulatory Division

Subject: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
District 3-Sacramento Office
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letters of January 26, 2007, and April 10, 2008, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring in portions of the Modified J1T Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California. This request is related to minor changes to the footprint of the proposed Haehl Creek Interchange and the road alignment to the north, and the inclusion of the proposed borrow area at Oil Well Hill.

The enclosed maps entitled, "Figures 3-4, Oil Well Hill Wetland Delineation," "Figure 5, Haehl Creek Interchange Expanded Area Wetland Delineation," "Figure 6, Existing Embankment Creek Expanded Area Wetland Delineation," in four (4) sheets date certified August 1, 2008, accurately depict the extent and location of Corps jurisdiction within the project boundary area. The jurisdictional determination is based on the current conditions of the site, as verified during a field investigation of February 13, 2008, and other data included with your submittal. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation maps prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States, or below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters, require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce.

Section 404 waters within the expanded project alignment study area include both seasonal and perennial wetlands, and several intermittent and perennial unnamed streams and drainages that are tributary waters to Outlet Creek and ultimately the Eel River and the Pacific Ocean. The additional wetland basins and swales are adjacent (abutting) to these tributary waters, and their lateral extents are defined by the presence of hydrophytic vegetation, hydrology, and hydric soils. The plane of ordinary high water of the tributary waters is defined by the presence of scouring, sediment deposits, shelving, debris lines, and transitional vegetation on the banks. This jurisdictional determination is presumed to be consistent with the official interagency guidance of June 5, 2007, interpreting the Supreme Court decision, *Rapanos v. United States*, 126 S. Ct. 2208 (2006).

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. Peter Straub of my Regulatory staff by telephone at 415-503-6774 or by e-mail at peter.s.straub@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

Peter S. Straub

for Jane M. Hicks
Chief, Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 02 2009

Regulatory Division

Subject: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letter of September 29, 2009, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring within the W-Line Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California.

The enclosed map entitled, "Potential Jurisdictional Wetlands and Waters of the United States Within the W-Line, " in seventeen (17) sheets date certified December 1, 2009, accurately depicts the extent and location of Corps jurisdiction within the project alignment study area. The jurisdictional determination is based on the current conditions of the site, as verified during field investigations of August 6, 2009, and other data included with your submittals. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation map prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States and within the lateral extent of wetlands adjacent to these waters will require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters, and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. David Wickens of my Regulatory staff by telephone at 415-503-6787 or by e-mail at david.m.wickens@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

Jane M. Hicks
Chief, Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 01 2009

Regulatory Division

Subject: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letter of September 29, 2009, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring within the following proposed mitigation sites for the State Highway 101 Willits By-Pass Project: MGC Plasma North Parcel, MGC Plasma South Parcel, and the Frost Parcel. The aforementioned study areas are located in Little Lake Valley, Mendocino County, California.

The enclosed map entitled, "Caltrans Willits Bypass Project Potential Mitigation Sites, Modifications for Verification," in eight (8) sheets updated by Jason Meigs, Caltrans District 3 on April 6, 2009, accurately depicts the extent and location of Corps jurisdiction within the project alignment study area. The jurisdictional determination is based on the current conditions of the site, as verified during field investigations of February 18, 2009, and other data included with your submittals. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation map prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States and within the lateral extent of wetlands adjacent to these waters will require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters, and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. David Wickens of my Regulatory staff by telephone at 415-503-6787 or by e-mail at david.m.wickens@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

for

Jane M. Hicks
Chief, Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 16 2009

Regulatory Division

SUBJECT: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2800 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to a previous Jurisdictional Determination letter you received from our office regarding your proposed "Modified J1T Alignment" dated March 1, 2005. The aforementioned letter confirmed the Corps jurisdiction within the Modified J1T Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California. This letter re-confirms the Corps jurisdiction within the Modified J1T Alignment Study Area.

Enclosed are five (5) sheets titled, "Potential Jurisdictional Wetlands and Waters of the US Within Alternative Modified J1T." These drawings were originally date certified by the Corps February 23, 2005. They continue to accurately depict the extent and location of the Corps jurisdiction. Therefore, the enclosed drawings have received a new certification date of November 19, 2009. The jurisdictional determination is based on the current conditions of the site as verified during field investigations of April 20-22, June 1-3, and July 13, 2004, and January 19, 2005. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation maps prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States, or below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters, require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce. This jurisdictional determination is presumed to be consistent with the official interagency guidance of June 5, 2007, interpreting the Supreme Court decision, *Rapanos v. United States*, 126 S. Ct. 2208 (2006).

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. David Wickens of my Regulatory staff by telephone at 415-503-6787 or by e-mail at david.m.wickens@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

Jane Monaus
for

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Attachment 4: Record of Decision, and Notice of Determination (Final EIS/EIR included on separate CD)

NOTICE OF DETERMINATION

TO: Office of Planning and Research
PO Box 3044, 1400 Tenth Street, Room 222
Sacramento, CA 95812-3044

FROM: California Department of Transportation
1120 N Street
Sacramento, CA 95814

Subject:
Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code

Project Title

Willits Bypass Project

State Clearinghouse Number	Lead Agency Contact Person	Area Code/Telephone
1990030006	Jeremy Ketchum	916-274-0621

Project Location (include County)

The project, which involves bypassing a segment of existing U.S. 101, is located in the vicinity of the City of Willits, Mendocino County, California.

Project Description:

The California Department of Transportation, in conjunction with the Federal Highway Administration, proposes to construct a new segment of U.S. 101 that would bypass the City of Willits in Mendocino County. The proposed bypass would be a four-lane freeway with full access control and grade separation. The existing U.S. 101 facility within the project study limits is a two-lane conventional highway, which currently serves as the Main Street through the town of Willits. The purpose of the project is to reduce delays, improve safety, and achieve a minimum level of service (LOS) of at least 'C' for interregional traffic on U.S. 101 within the vicinity of Willits through the 20-year design period (i.e., 2028). One no-build alternative and four build alternatives (E3, C1T, J1T, and LT) were considered in the Draft EIS/EIR. Since public circulation of the Draft EIS/EIR, revisions were made to one of the build alternatives, which resulted in the *Modified Alternative J1T*. The Modified Alternative J1T has been selected as the preferred alternative because it would have the least overall impact to the environment. The proposed new U.S. 101 bypass would diverge from the existing facility approximately 0.8 mi south of the Haehl Overhead (Post Mile R43.1). The alignment would then traverse the valley east of Willits and converge back with the existing facility 2.9 km south of Reynolds Highway (Post Mile R49.0). The overall length of the bypass would be approximately 5.8 miles.

This is to advise that the California Department of Transportation has approved the above-described project on (date) **12/15/06** and has made the following determinations regarding the above-described project:

1. The project [☐ will ■ will not] have a significant effect on the environment.
2. ■ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☐ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [■ were ☐ were not] made a condition of the approval of the project.
4. A Statement of Overriding Considerations [☐ was ■ was not] adopted for this project.
5. Findings [■ were ☐ were not] made pursuant to the provisions of CEQA.

The ■ certified EIR or ☐ adopted ND with comments and responses and record of the project approval is available to the general public at:

Willits Public Library – 390 East Commercial Street, Willits, CA

Ukiah Public Library – 105 North Main Street, Ukiah, CA

Fort Bragg Public Library – 499 East Laurel Street, Fort Bragg, CA

Caltrans District 1 Office – 1656 Union Street, Eureka, CA

Caltrans Website – http://www.dot.ca.gov/dist1/d1projects/willits/reports.feir.htm

Wells	12/15/06	Environmental Manager
Signature (California Department of Transportation)	Date	Title

Date received for filing at OPR:

RECEIVED
DEC 18 2006
STATE CLEARING HOUSE

FHWA-CA-EIS-02-02-F
P56038

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

RECORD OF DECISION

Willits Bypass
Mendocino County

This Record of Decision (ROD) was developed pursuant to 40 CFR 1505.2 and 23 CFR 771.127. The California Department of Transportation (Caltrans), in cooperation with the Federal Highway Administration (FHWA), has identified the need to reduce delays, improve safety, and achieve a minimum level of service (LOS) "C" for interregional traffic on U.S. Highway 101 in the vicinity of the City of Willits, Mendocino County, California.

The project's purpose and need are described in Chapter 2 of the Willits Bypass *Final Environmental Impact Statement* (FEIS), approved by FHWA on October 25, 2006. The FEIS is incorporated into the ROD by reference. The Notice of Availability for the FEIS was published in the *Federal Register* on November 9, 2006.

A. Decision

This ROD approves the preferred alternative identified in the Willits Bypass FEIS. After reviewing public comments, as well as coordinating with the regulatory agencies and local stakeholders, including the City of Willits in Mendocino County, California, it was determined that the **Modified Alternative J1T** is the Least Environmentally Damaging Practicable Alternative (LEDPA). The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency have concurred in this determination. The Modified Alternative J1T has, therefore, been identified as the selected alternative. This decision is based upon information in the Draft and Final EIS, as well as comments from other Federal and state agencies, elected officials, and members of the public. Following approval of this ROD, the project will be advanced to final design, right-of-way acquisition, and construction.

All practicable measures to avoid or minimize harm to the environment have been employed in the design of this project and are described in Section D of this document.

The Department could design and construct all or part of the proposed project depending on funding availability. In an effort to balance potential funding limitations and the need for the project, the Willits Bypass could be constructed in phases, whereby a functional interim facility would be constructed initially, and completion of the full facility would occur at a later date when additional funding is available.

B. Alternatives Considered

Based on input from the community and the resource agencies, as well as on engineering and environmental analyses, the **Modified Alternative J1T** has been identified as the Preferred Alternative for the proposed Willits Bypass project. In accordance with Section 404(b)(1) of the Clean Water Act, a Final Alternatives Analysis, which compares the alternatives considered in the DEIS/EIR, was completed in April 2005 (see FEIS, Appendix G). As a result of the Final Alternatives Analysis, the Modified Alternative J1T, which shares design elements with Alternatives LT and J1T, was identified as the LEDPA for the proposed project. Modified Alternative J1T was determined to be the LEDPA/Preferred Alternative because it would have the least overall impact to both natural and community resources, while still meeting the purpose and need for the project. The factual determinations in the Final Alternatives Analysis demonstrate the following:

Alternative E3, which would affect approximately 15 acres of wetlands and other waters, should be eliminated from consideration as the LEDPA for the following reasons: (a) it has the greatest potential to degrade water quality because of highly erosive soils and numerous of stream crossings, as well as the extensive earthwork required, and therefore; (b) it has the greatest potential to affect local populations of three federally listed salmonid species; (c) it would have the largest direct impact to foraging habitat for northern spotted owl because of the removal of approximately 300 acres of coniferous forest; (d) it would displace the largest number of homes and businesses (133); (e) it has the potential to affect the largest number of archaeological sites (18); (f) it would convert a large amount of Williamson Act Contract farmland (59.3 ha/146.6 ac); and (g) it would impact larger areas of upland/foothill habitats, including oak woodland which is more difficult to replace, than the other alternatives.

Alternatives C1T and L/C (the south segment of Alternative LT plus the north segment of Alternative C1T) should be eliminated from consideration as the LEDPA because of substantial impacts to wetlands and other waters of the U.S. and to federally-listed fish species. The impacts associated with Alternatives C1T and L/C include the greatest direct impact to jurisdictional wetlands and other waters of the U.S. when compared to the other build alternatives: 52.7 ha (130.2 ac) for Alternative C1T, and 48.5 ha (119.9 ac) for Alternative L/C. Both alternatives would require realignment of approximately one mile of salmon-bearing creek, which is critical habitat for three federally-listed fish species.

Alternative LT should be eliminated from consideration as the LEDPA because it would directly impact approximately 29.9 ha (73.8 ac) of jurisdictional wetlands and other waters of the U.S. Alternative LT would also result in fragmentation of the largest stand of valley oak riparian woodland in the valley.

Alternative J1T does not meet LEDPA criteria because, while it has impacts to wetlands and other waters of the U.S. comparable to those of Modified Alternative J1T, it creates

unacceptable impacts to the local and regional park/recreation complex ("human use characteristics" under Section 404(b)(1) Subpart F of the Clean Water Act) and the Sanhedrin industrial park. In addition impacts to the industrial park would result in the loss of businesses that would not or could not relocate in Willits. Thus, even though wetlands impacts would be comparable impacts to those of Modified Alternative J1T, Alternative J1T is the more environmentally damaging of the two alternatives.

Modified Alternative J1T meets LEDPA criteria because it would result in the least overall environmental harm. The Draft Alternatives Analysis had identified Alternatives J1T and LT as potential candidates for the LEDPA; however, it became necessary to develop a modified alignment that incorporated portions of these two alternatives in order to avoid important community and biological resources. The Modified Alternative J1T would have comparable wetlands impacts to those of Alternative J1T, but it avoids the important community resources that Alternative J1T would have otherwise impacted. Modified Alternative J1T has fewer impacts to wetlands than Alternative LT and avoids a large stand of valley oak riparian woodland that would have been impacted and fragmented by Alternative LT.

No-Build Alternative is not a practicable alternative because it does not meet the purpose and need of the project.

The U. S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (USEPA) have issued letters of concurrence that Modified Alternative J1T is the LEDPA (see FEIS, Appendix C). Both the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) have issued Biological Opinions (BOs), which state that construction of the Preferred Alternative is not likely to jeopardize the continued existence of federally listed species (see FEIS, Appendix D).

C. Section 4(f)

The Modified Alternative J1T avoids impacts to Section 4(f) properties; therefore, no formal Section 4(f) evaluation is required for this project.

D. Measures To Minimize Harm

All practicable measures to avoid or minimize environmental harm have been incorporated into the decision and are described as follows.

Air Quality

The bypass project would not generate any additional long-term carbon monoxide (CO) emissions to local air quality. Activities during construction would produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and vehicles transporting the construction crew. The use of construction equipment on site would result in localized exhaust emissions. The Department's standard specifications for

construction would be adhered to in order to reduce construction related emissions. Dust emissions during construction, could also have a substantial temporary impact on local air quality. Dust emissions would result from earthmoving (dust generation) and heavy equipment use. Such dust emissions could be generated from land clearing, ground excavation, cut and fill operations, and the construction of the roadway itself. Dust emissions would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing weather. A major portion of these emissions probably would result from equipment traffic over temporary construction roads. The following measures, which are standard best management practices and comply with Rule 430 (Mendocino Air Quality Management District), will minimize construction-related air quality impacts due to dust emissions. Naturally Occurring Asbestos (NOA) is not known to occur in the vicinity of Oil Well Hill; however, measures are in place in the event NOA is encountered during construction. The following measures will avoid or minimize impacts to air quality:

- The contractor will apply water and/or chemical dust suppression on dirt haul roads and surfaces over which equipment will travel.

- The contractor will cover and/or water exposed dirt storage piles to inhibit wind erosion.

- The contractor will stagger the time and location of fugitive dust-generating activities.

- Caltrans Standard Special Provisions for the identification and handling of soils containing NOA will be included in the construction contract documents.

- The contractor will ensure that grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.

- The contractor will utilize electric powered equipment in lieu of gasoline-powered engines where feasible.

- The contractor will ensure that grading plans include a statement that work crews will shut off equipment when not in use.

- The contractor will time the construction activities so as not to interfere with peak hour traffic and minimize obstruction of through traffic lanes adjacent to the site. If necessary, a flag person shall be retained to maintain safety adjacent to existing roadways.

- The contractor will support and encourage ridesharing and transit incentives for the construction crew.

Cultural Resources

Two historic properties were identified within the Area of Potential Effects (APE) established for the Modified Alternative J1T alignment (one archaeological site and one built environment property). The cultural resource investigation conducted for the project concluded that the two cultural resources could be avoided and would not be adversely affected by the project. An Environmentally Sensitive Area (ESA) Action Plan has been developed, as part of the SHPO-approved cultural resource compliance documents, to further ensure the avoidance and protection of cultural resources during the construction phase of the project. The following measures will avoid or minimize potential impacts to cultural resources.

- It is Caltrans' standard policy to avoid cultural resources whenever possible. If buried cultural materials are encountered during construction, it is Caltrans' policy that all work in that area must halt until a qualified archaeologist can evaluate the nature and significance of the find (Caltrans Environmental Handbook, Volume 2, Chapter 1).

- If human remains are unearthed during construction, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur, in the immediate vicinity of the discovery, and the county Coroner shall be notified so that a determination can be made as to origin of the remains. If the Coroner determines that the remains are associated with a Native American archaeological site, the provisions of California Public Resources Code 5097.98 shall be followed to notify the Native American Heritage Commission and to identify the Most Likely Descendent from the local Native American community.

- The ESA Action Plan, which is included as part of the Historic Property Survey Report, has been developed to ensure the avoidance and protection of historic properties during project construction. The ESA Action Plan details the protective measures to be employed at various stages of the project (before, during, and after construction) and identifies the parties responsible for the implementation of such measures, which include the placement of protective fencing and monitoring by a qualified archaeologist. The ESA Action Plan will be included in the Resident Engineer pending file.

Biological Resources

Modified Alternative J1T, as well as the designated borrow site at Oil Well Hill, would result in direct impacts to the following biological resources: Sensitive plant communities and habitats, including wetlands and other waters of the U.S., oak woodland, and riparian woodlands; Three listed salmonid species; One listed plant species (Baker’s meadowfoam); One listed wildlife species (Northern spotted owl); and Seven non-listed plant and wildlife species (white-tailed kite, Cooper’s hawk, yellow-breasted chat, California yellow warbler, foothill yellow-legged frog, northwestern pond turtle, and red tree vole). The following measures will avoid, minimize, or compensate for impacts to biological resources resulting from construction of the Willits Bypass, Modified Alternative J1T, project:

- The project will comply with the terms and conditions provided by the USFWS and NMFS, in their BOs. Caltrans will also comply with conditions of the permits issued by all of the resources agencies, and will implement mitigation and monitoring measures provided in the Conceptual Mitigation Plan (CMP; see FEIS, Appendix L). The CMP includes measures that would compensate for impacts to wetlands and other waters; riparian woodlands, oak woodlands, listed salmonids; northern spotted owl and Pacific fisher; Baker's meadowfoam and non-listed special-status species.

- Compensatory mitigation would include the creation, restoration, enhancement, and/or preservation of sensitive habitats affected by the project. Conceptual mitigation ratios are provided in the CMP for the Modified Alternative J1T alignment. These ratios were developed through consultation with the USACE, USFWS, NMFS, USEPA, the California Department of Fish & Game (CDFG), and the Regional Water Quality Control Board (RWQCB). A number of mitigation sites have been considered and evaluated for their potential for the creation, restoration, enhancement and/or preservation values. A Final Mitigation and Monitoring Plan will be developed and adopted after approval and distribution of the Final Environmental Impact Report/Environmental Impact Statement.

- During the final design phase of the Modified Alternative J1T project, Caltrans biologists, Caltrans design engineers, and resource agency staff will work together on additional design solutions that will avoid or minimize impacts to sensitive biological resources.

- ESAs will be established and delineated on project plans and specifications to protect sensitive biological resources adjacent to the construction corridor by prohibiting construction activities in those areas.

- Caltrans/FHWA will develop and implement an environmental awareness and training program that informs the contractor and construction workers of the environmental regulations with which Caltrans is committed to comply and measures established for the project to minimize and avoid sensitive habitats and species.

- Qualified biologists will monitor construction activities in sensitive biological resource areas to ensure adherence to permit conditions and mitigation requirements.

- Working in live stream channels to the extent feasible will be avoided. Construction associated with stream crossings (bridges, viaduct, and culvert) would conform to the work window of June 15 though October 15 of each year for work associated with bridge, viaduct, and culvert construction over salmonid bearing streams.

- Oak woodland occurring in the project corridor consists of valley oak woodland, Oregon white oak woodland, and black oak woodland. Minimization efforts during construction would consist of the removal of only the minimum number of trees necessary to allow for efficient project construction. ESA fencing would be installed around oak woodlands adjacent to the work areas. Any encroachment beyond the ESA fencing during construction (including driving, material or equipment storage and vehicle parking) would be prohibited. The ESA fencing would be accurately depicted on the final contract drawings. Compensation for the permanent loss of oak woodland would consist of in-kind creation/restoration, enhancement, and preservation of oak woodlands on newly acquired parcels. These parcels would be purchased in fee or by a conservation easement and be preserved in perpetuity. On sites where creation/restoration or enhancement is to occur, oak trees would be initially planted in these areas at the ratio of five new saplings for each oak lost with the goal of three of them surviving after a ten-year monitoring period. Other compensation options may include: 1) a monetary contribution to the California Oak Woodlands Conservation Fund, administered by the State Wildlife Conservation Board for the purpose of purchasing oak woodland conservation easements, or; 2), if there is an established CDFG oak woodland mitigation bank, the mitigation bank could be used to fulfill the off-site compensation requirements (refer to Conceptual Mitigation Plan; Appendix L of FEIS).

- Riparian woodlands within the project corridor are divided into three categories for management purposes (CMP; see FEIS, Appendix L). Category I riparian woodlands are associated with salmonid bearing streams, and Categories II and III riparian woodlands are other riparian woodlands that are not associated with salmonid streams. Minimization measures that would occur during construction would include: (1) removing the minimum amount of vegetation necessary; (2) installing ESA fencing, and enforcing protection of riparian vegetation located within established protected areas; (3) implementation of appropriate BMPs; and (4) pre-construction training sessions to inform contractors and construction workers of the status of sensitive habitats and special-status species and the requirements for avoidance of protected areas. Mitigation for all affected riparian woodlands would be implemented through creation/restoration, enhancement, and preservation within Little Lake Valley. Local native plant species would be used for the revegetation of impacted riparian zones along salmonid streams within the project limits, as well as off-site mitigation areas. Mitigation would be in-kind, and plant propagules would be collected in Little Lake Valley. Riparian trees would be replanted initially, and associated shrubs, herbaceous plants, and annuals would be seeded or planted along with the riparian trees. Planting methods would include the installation of stem (pole) cuttings from plants such as willows, cottonwood, thimbleberry, coyote bush, or other species capable of easy rooting from cuttings. Pole cuttings would also be used to revegetate areas where Rock Slope Protection (RSP) is required on the stream banks. In mitigation areas where some riparian vegetation is already present, additional vegetation would be

planted. Revegetation of unvegetated stream banks would be considered creation. Removal of invasive exotic vegetation and planting of additional vegetation on sparsely vegetated streambanks would be considered enhancement.

- Modified Alternative J1T would temporarily and permanently affect two populations of Baker's meadowfoam, one in the central portion of the project (in the area of the Colli Ranch) and one in the northern portion of the project, in the vicinity of the Quail Meadows Interchange. The project would avoid most of the central population of Baker's meadowfoam, but would impact the majority of the northern population. Impacts to Baker's meadowfoam plants would be mitigated by off-site preservation of existing populations and habitat, as well as by creation/enhancement of new habitat for populations occurring on upland sites and on wetland sites (refer to CMP, FEIS, Appendix L). Portions of temporarily impacted Baker's meadowfoam habitat could be restored where feasible. Baker's meadowfoam habitats occurring within jurisdictional wetlands would be mitigated by a combination of creation/restoration at the same ratios as jurisdictional wetlands, and preservation. Baker's meadowfoam creation/restoration parameters would be based on specific hydrologic and soil conditions specified and described for the species in a formerly prepared study titled "Hydrologic and Soil-Geomorphic Conditions Associated with Baker's Meadowfoam in Little Lake Valley, Mendocino County, California". Baker's meadowfoam preservation sites would be acquired within Little Lake Valley. Additionally, funds would be necessary in order to set up a long-term management and maintenance program. The Baker's meadowfoam preserves would be maintained in perpetuity and their management could be transferred to CDFG or a mitigation bank (refer to FEIS, Appendix L).

- To comply with the provisions of the Migratory Bird Treaty Act, vegetation required for removal will be removed or trimmed during the fall and/or winter months, to the extent possible, to avoid impacts to nesting birds. If vegetation cannot be removed during the non-breeding season, Caltrans will arrange to have a qualified biologist conduct preconstruction surveys of impact areas to check for nesting activity of all bird species. If nesting activity is detected, Caltrans will, if possible, establish a buffer around the nest(s). The buffer width would be determined through consultation with USFWS and CDFG. The buffer will be maintained and construction activities will avoid nest sites until the biologist determines that the young have fledged or nesting activity has ceased.

- Excavation at the designated borrow site at Oil Well Hill could affect a maximum of 40 acres of Northern spotted owl (NSO) foraging and dispersal habitat. Caltrans will conduct additional pre-construction protocol-level surveys to determine the status of NSO in the vicinity of the Oil Well Hill borrow site. If NSO is found nesting within 1.3 miles of the borrow site, Caltrans/FHWA will consult with the USFWS (refer to USFWS Biological Opinion, FEIS, Appendix D). Caltrans/FHWA will document the results of all protocol surveys conducted

for NSOs. Caltrans will implement measures provided in the USFWS BO for NSO, which include: **(1)** All large trees that can reasonably be avoided at Oil Well Hill will be protected; **(2)** Vegetation removal at Oil Well Hill will occur during the non-breeding season (September 15 – February 1), to the extent feasible, to minimize potential impacts to NSOs. Vegetation will be removed incrementally (i.e., only on those portions of the site that are needed for borrow material), rather than removing all vegetation on the approximately 16 ha (40 ac) site prior to excavation; **(3)** Planting the same tree species that occurred at the borrow site following excavation, if feasible, could restore vegetation at Oil Well Hill; **(4)** If an active NSO nest is found within 0.8 km (0.5 mi) of any proposed construction activity, USFWS may require that Caltrans establish a 0.8 km (0.5 mi) diameter buffer around the activity center during the breeding season (February 15 to August 31).

- If non-listed special-status wildlife species are found nesting on or near the project site, including California yellow warbler, yellow-breasted chat, and raptors, Caltrans will establish buffers around each nest. The buffer width will be determined through consultation with CDFG. The buffer shall be maintained and construction activities shall avoid nest sites until the Caltrans biologist determines that the young have fledged or nesting activity has ceased. For white-tailed kites and other raptors, Caltrans shall conduct a pre-construction survey during the spring or early summer (April-early July) to determine whether nesting raptors (e.g., white-tailed kites, Cooper's hawks, red-tailed hawks, red-shouldered hawks) are present on or within 0.40 km (0.25 mi) of the selected alternative. If the survey detects nesting raptors on or within 0.40 km (0.25 mi) of the selected alternative, Caltrans will maintain buffer areas and seasonal construction constraints (e.g., no work during active nesting periods) in coordination with USFWS and CDFG.

- The proposed viaduct and bridge crossings would provide access for wildlife to cross under the proposed alignment. Caltrans may construct additional wildlife under-crossings, if feasible, that would be suitable for use by deer and other wildlife species. If the construction of other wildlife crossings were feasible, the location, number and design of the under-crossings would be determined through consultation with CDFG.

- In addition to requiring the contractor to prepare a Storm Water Pollution Prevention Plan (SWPPP), Caltrans will implement the following measures to minimize disturbances to aquatic resources: **(1)** All construction-related materials shall be stored in designated staging areas at least 100 feet from perennial waterways and drainages; **(2)** Refueling and vehicle maintenance shall be performed at least 100 feet from creeks and other water bodies; **(3)** Operation of heavy equipment shall be minimized in perennial creeks (to the greatest extent possible). If equipment must access perennial creeks, this will occur during the late summer months when the stream flows are low, or when no water is in the channels. If water is flowing, the channels will be dewatered; **(4)** Temporary sedimentation barriers, such as sandbags or siltation fencing, shall be installed to

minimize the amount of silt entering the creeks and any ephemeral drainages with water present in the channel. The location of these barriers shall be determined by the resident engineer and environmental monitor, and shall be clearly marked in the field before construction activities begin; **(5)** Additional Best Management Practices (BMPs) shall be implemented to prevent runoff from adjacent lands from flowing across construction areas, slow down the runoff traveling across construction sites, remove sediment from onsite runoff before it leaves the site, and provide soil stabilization.

- To reduce the spread of invasive non-native plant species and minimize the potential for disturbance activities to decrease palatable vegetation for wildlife species, Caltrans will implement the following protection measures to comply with Executive Order (EO) 13112: **(1)** Prior to construction, Caltrans will conduct surveys in the construction corridor of the NEPA/404 preferred alternative for populations of plants listed on the California Department of Food and Agriculture (CDFA) noxious weed list. Populations of noxious weeds will be mapped. This will establish a baseline from which to evaluate the possible impacts of this construction on the spread of these invasive exotic plants or the establishment of other invasive exotic plants; **(2)** Caltrans will not allow disposal of soil and plant materials from any areas that supports invasive species in areas that support stands dominated by native vegetation; **(3)** Plant species used for erosion control will consist of native, non-invasive species or non-persistent hybrids that will serve to stabilize site conditions and prevent invasive species from colonizing; **(4)** All off highway equipment used on the project shall be free of mineral soil and vegetation. Evidence of high pressure washing or steam cleaning, prior to initial entry to the project limits, will be required to minimize the potential for the spread of invasive weeds from outside the Little Lake Valley area. Contract language will inform Contractors and Caltrans inspection staff of the methods to be used to control and prevent the spread of identified invasive non-native species. Gravel and/or fill material from borrow areas and commercial sources will come from weed free sources. Certified weed-free, landscape and erosion control materials will be used; **(5)** Following construction, Caltrans will conduct a three-year program of invasive exotic weed monitoring, which will consist of conducting surveys every six months during the spring and late summer. The percent cover of invasive exotic plant species occurring within the construction corridor must not exceed the cover of invasive exotic plant species found outside the construction corridor, or the cover found in the construction corridor prior to construction. Monitoring potential invasive species will occur only where ground was disturbed within the construction corridor; **(6)** If, during the three-year monitoring program, invasive weeds show evidence of spreading, Caltrans will develop an Invasive Weed Eradication Plan, targeting identified invasive species on the CDFA list. Herbicides would not be used since Caltrans does not use herbicides in Mendocino County.

- During pile driving activities below the top-of-bank and within 15 m (50 feet) of salmonid bearing streams, Caltrans will dewater the stream (including relocating fish), and a qualified fisheries biologist will monitor underwater noise levels both

upstream and downstream of the dewatered area. If noise levels exceed 187 dB_{SEL} or 208 dB peak, Caltrans will cease pile driving at this location and immediately contact NMFS to discuss further reasonable and prudent measures to minimize potential impacts to fish, which could include additional fish relocation and dewatering. Dewatering could be required for six weeks or more at some stream crossings. See also NMFS Biological Opinion (FEIS, Appendix D).

Business and Residential Relocation

Modified Alternative J1T would require the relocation of 10 residences. The Final Relocation Impact Statement (FRIS) prepared for this alternative concludes that replacement housing would be available for all impacted households in the replacement area and would not dramatically alter the local housing market. Modified Alternative J1T would also impact six industrial businesses and one non-profit organization. Adequate relocation facilities exist in Willits and the surrounding valley for these business uses. The following measures will reduce impacts related to residential and/or business relocations.

- Caltrans will provide relocation assistance payments and counseling to persons and businesses in accordance with the Federal Uniform Relocation Assistance and Real Properties Acquisition Policies Act, as Amended, to ensure adequate relocation and a decent, safe, and sanitary home for displaced residents (see Volume 3, DEIS/EIR, Appendix J for a detailed discussion). All eligible displacees will be entitled to moving expenses. All benefits and services will be provided equitably to all residential and business relocatees without regard to race, color, religion, age, national origins and disability as specified under Title VI of the Civil Rights Act of 1964.

- Caltrans will arrange for Last Resort Housing payments to displaced residents unable to utilize standard relocation benefits to locate existing housing within the project area.

- Caltrans will work with potentially displaced residents and local agencies to develop a comprehensive Relocation Plan to provide displaced residents with the greatest possible use of relocation benefits and Last Resort Housing payments.

Farmland

The Modified Alternative J1T does not exceed the 160-point impact threshold in its conversion of Prime and Unique farmland to other uses; however, this alternative would have several irreversible impacts on agriculture in this area. It would convert over 100 acres of Prime and Unique farmland to non-farm uses, relocate one ranch, and affect over 50 acres of land held in Williamson Act contracts. The following mitigation measures are proposed to offset these impacts.

- The Purchase of Agricultural Conservation Easements (PACE) program enables the landowners to separate and sell their right to develop land from their other property rights. After selling easements, the landowner retains all other rights of

ownership, including the right to farm the land, prevent trespass, and sell the land. Caltrans may purchase an agricultural conservation easement in or near the project area, consisting predominantly of Prime Farmland, which will ensure preservation of the land for farming uses in perpetuity. This mitigation may be combined with mitigation for lost wetlands, assuming that wetlands are suitable for grazing purposes. Easement titles could be deeded to non-profit environmental organizations or to organizations such as the American Farmland Trust.

- Caltrans will stockpile as much topsoil as is feasible for local and re-vegetation use to conserve valuable Prime Farmland (soils). The use of topsoil facilitates the reestablishment of plant communities on disturbed soils and reintroduces this important resource back into the local ecosystem. The topsoil will be stored at an environmentally approved site. Possible applications for the topsoil include: mitigation sites; landscaping the Willits bypass project corridor; and use by the City of Willits, Mendocino County, and local/county residents/businesses/ farming operations.

- Caltrans may contribute to the Department of Conservation's Farmland Conservancy Fund, in an amount to be determined in coordination between Caltrans and the Department of Conservation. The fund provides grants for projects that use and support agricultural conservancy easements for protection of agricultural lands. Caltrans can buy "credits" per Public Resources Code 10231.5, which states "the Department may accept donations of funds if the department is the designated beneficiary of the donation and agrees to use the funds for the purposes of the program in a county specified by the donor." The Department of Conservation, which oversees the Farmland Conservancy Fund can accept funds and apply them within a designated area (Little Lake Valley or near the Willits Bypass Project).

Floodplain

The construction of Modified Alternative J1T within the floodplain would have minimal impact related to additional impervious surface area or to beneficial floodplain values. The following measures will minimize potential floodplain impacts.

- According to FEMA, the floodway is "the area of the floodplain that should be reserved (kept free of obstructions) to allow floodwaters to move downstream." For each valley alternative, the Floodway Viaduct (bridge) spans the floodway. The only encroachments in the floodway are the columns supporting the structure. In addition, the structure designs have relatively long spans, in the range of 30 m (100 ft). These structure design features limit the impacts on the floodplain by minimizing the actual footprint of the impacts and obstructions to flow.

- The valley alternatives include equalizing culverts at periodic points along the embankments, which should minimize the redirection of flows, maintaining the existing flood patterns. The culverts will not, however, be included if detailed

hydraulic studies indicate the culverts would cause other problems with flood patterns.

- The cross sectional design of the facility, the side slopes, median, pavement widths, and so forth, has been established to limit impacts to floodplains as well as other resources. The median width, at 13.8 m (45 ft), is 4.8 m (16 ft) less than Caltrans' current design standard. This median width reduces the footprint of impact along the entire alignment, including the floodplain. Sideslopes are the slopes connecting the roadbed with the existing ground. When the embankment is low, the sideslopes can be constructed at relatively low angles without extending an unreasonable distance from the roadbed. But as embankments increase in height, sideslopes constructed at the same angles would cover much wider areas and add to the volume of earth to be placed. To reduce the earthwork and footprint of higher embankments, sideslopes are constructed at steeper angles. In the floodplain, the higher embankments occur at bridge approaches, and the steeper sideslopes constructed in connection with these higher embankments limit the impacted areas.

- The use of tight diamond interchanges rather than spread diamonds reduces the footprint of impacts on the floodplain.

Geology and Soils

Geologic conditions in the project area consist of active faults, shallow groundwater, and soil deposits that could be subject to liquefaction, shear failures, and settlement. Based on sampling and data analyses, the primary geotechnical considerations for the Modified Alternative J1T is the potential for differential settlement. The following measures will reduce potential impacts related to these geologic conditions:

- If necessary, Caltrans will incorporate special design considerations into the project, such as specialized foundation treatments, specialized cut slope and fill slope design, mechanically reinforced embankments, stabilization trenches, catchment areas, and specialized subsurface drainage techniques.

- Where deposits are highly erodible and prone to landsliding, Caltrans will design the project to include specific slope ratios, special foundation treatments, and other engineering solutions.

- To minimize or prevent settlement, Caltrans will incorporate foundation treatments or long-term settlement periods into the design and construction of the project.

- For any structures overlying potentially liquefiable deposits, Caltrans will design the project to be constructed on foundation piles that could be extended through the susceptible zones into structurally competent materials.

Hazardous Materials

No hazardous waste issues have been identified within the Modified Alternative J1T alignment, and no hazardous waste/materials issues have been identified at the Oil Well Hill borrow site area. On a short-term basis, during construction/demolition activities, the Modified Alternative J1T has potential for the presence of asbestos-containing building materials (ACBM) and lead-based paint in the buildings within the project boundaries. The following measures will avoid or minimize hazardous waste impacts:

- Caltrans will complete an asbestos and lead-based paint survey prior to demolition activities. Caltrans will obtain a Mendocino County Air Quality Management District permit (i.e., NESHAP permit – National Emission Standards for Hazardous Air Pollutants), which is required for demolition.

- Inspections for a NESHAP permit are done by Cal/OSHA certified inspectors. Regulated Asbestos Containing Materials (RACMs), Category I and II materials, are identified during the survey and are noted on NESHAP permit**.** Caltrans will have all Regulated Asbestos Containing Materials (RACM) and lead-based paint abated by a licensed asbestos and lead-based paint contractor.

Noise

Projected noise levels for the Modified Alternative J1T are below the Noise Abatement Criteria; therefore no abatement is to be undertaken under Title 23, Part 772, Code of Federal Regulations, "Procedures for Abatement of Highway Traffic Noise". During the construction phase of the project, noise from construction activities would dominate the noise environment in the immediate area. Activities involved in construction would generate noise levels ranging from 70 to 90 dB at a distance of 15 m (50 ft). Construction activities would be temporary in nature, typically occurring during normal working hours. Noise levels related to pile driving activities would exceed this range, but would vary depending upon the type of equipment, the size/type of piles, and the soil conditions where the work is occurring. The following mitigation measures are proposed to address noise impacts during construction.

- The contractor shall comply with all local sound control and noise level rules, regulations and ordinances, which apply to any work performed pursuant to the contract (Caltrans Standard Specifications Section 7-1.01(I) "Sound control requirements").

- Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without the muffler (Caltrans Standard Specifications Section 7-1.01(I) "Sound control requirements".

- Although standard practice requires that construction be restricted to between the hours of 7:00 am and 7:00 pm (8:00 am and 7:00 pm on Saturdays), some

nighttime work may be needed. Standard practice precludes construction work on Sundays and federal holidays.

- Stationary construction equipment, such as compressors and generators, will be shielded and located as far away as feasible from receptor locations.

- Place any maintenance yard, batch plant, haul roads, and other construction operations as far as possible from sensitive receptor locations.

- Caltrans will keep area residents informed regarding construction work, the time involved, and control measures that will be used to reduce construction-related impacts.

- A Traffic Management Plan will provide methods and restrictions to minimize construction traffic impacts to residents.

Public Services

During construction of the project, traffic delays would not be anticipated since most of the project would be constructed on new alignment, and therefore, would have minimal impact on local roadways. However, to reduce conflicts with emergency services providers and other public services, and local traffic, the following measures are proposed:

- Caltrans will make preconstruction contacts with the fire department, law enforcement, and ambulance services.

- Caltrans will notify concerned agencies of the construction schedule.

- Caltrans will implement a traffic management plan to minimize impacts to roadway users during construction of the project.

SMARA/Grading Permit (Disposal, Borrow, Staging)

Removal of embankment material from the designated borrow site would result in impacts to some biological resources. The biological measures described above will avoid or minimize impacts, as will the following:

- Caltrans/FHWA will obtain a permit pursuant to the State Mining and Reclamation Act (SMARA), if required, before construction activities begin. Caltrans will submit a permit application, a Mendocino County-approved Reclamation Plan, and financial assurance to the Department of Conservation, Office of Mine Reclamation. Caltrans will implement the reclamation plan, which will include steps for maintaining water and air quality, minimizing flooding, erosion and damage to wildlife and aquatic habitats caused by the surface mining. The reclamation process will include topsoil replacement and revegetation with suitable plant species. The reclamation plan also will contain measures to mitigate visual impacts.

Visual Resources

The Modified Alternative J1T would have a less than adverse visual impact to the South Valley, Little Lake Valley, Miracle Mile, and Historic District Landscape Assessment Units (LAUs), and no visual impact to the Brooktrails LAU. At the designated borrow site, one home near the excavation on the east side of the highway and higher on the hill could be impacted visually. The following measures are proposed to minimize visual impacts:

- Caltrans will have the contractor avoid and preserve trees and vegetation where feasible. Native vegetation that is removed for construction of the project will be replaced with like varieties to blend the freeway into the landscape. Tree mitigation is discussed under Biological Resources.

- Caltrans will use stockpiled topsoil in revegetation efforts.

- Slope protection will blend with existing features, simulating natural forms (i.e., rounding tops and bottoms of cut and fill slopes).

- The contractor will avoid/preserve large rock formations that do not interfere with construction of the project.

- Caltrans will provide plantings in appropriate locations, including adjoining highway slopes, to reduce visual impacts. Plant materials will include a combination of native oaks, pines, and/or redwood trees, as well as native shrubs and ground covers, where appropriate.

- For Oil Well Hill only: Caltrans will incorporate into the project design slope rounding, contour grading, and to the extent feasible, leaving a vegetative buffer between the highway and cut slope. At the time of final design, the Caltrans Office of Landscape Architecture will provide specific design solutions for slope treatment.

- For Oil Well Hill only: Caltrans will provide screen planting for the home closest to excavation at the designated borrow site.

- Caltrans Structures and Aesthetics Division, in cooperation with the Office of Landscape Architecture, will provide design treatments for project structures, such as bridges and viaduct, and to highway appurtenances.

- Landscape Plantings for the South Valley Landscape Assessment Unit: After the initial erosion control seeding, Caltrans may provide permanent landscape plantings for this area. Plant material selection is to include native species. Plantings must be concentrated at areas where existing groves of trees occur and leaving open areas unplanted. This method will preserve the existing grassland and horizontal views, which are unique to this landscape unit.

Water Quality

Construction of the bypass would increase the overall impervious surface within Little Lake Valley, which could result in a higher volume of storm water runoff. This will, to some degree, modify the drainage patter near the proposed alignment, which can increase the potential for erosion. Generally, the increase in storm water runoff can increase the potential for erosion due to point discharges, overland flow, and stream bank erosion. Storm water runoff, both during and after construction, and other long-term maintenance activities could potentially introduce chemicals, oil, and grease to surface waters. Construction activities, including the removal of embankment material at Oil Well Hill, would result in soil and ground disturbances, creating loose or unprotected soil that could be transported by storm water runoff or wind to nearby watercourses. Such increases in sediment and turbidity could impact receiving water quality. Modified Alternative J1T does not propose stream channel realignments for any salmonid bearing streams therefore, impacts due to loss of canopy cover and elevated stream temperatures are significantly reduced, compared to the other build alternatives.

- To address potential water quality impacts during construction, Caltrans will require the contractor to use a combination of Best Management Practices (BMPs) to control potential erosion and sedimentation from the project site. Caltrans has developed a suite of construction site BMPs that will be implemented on the proposed project. The Plans, Specifications and Estimates (PS&E) developed for the project will require the contractor to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP), and other project specific construction BMPs, which will effectively reduce potential pollutants of concern in storm water discharges. The SWPPP will be reviewed and approved by the Caltrans Resident Engineer to ensure all the necessary BMPs are incorporated. The SWPPP will also include a final Revegetation Plan to be implemented at the end of construction activities.

- Caltrans' Standard Special Provisions (SSPs) will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters. For example, on this project, equipment operating in water bodies will be required to be steam cleaned prior to arrival on site, and be maintained in a clean condition during the length of activities.

- Where vegetation along streams is removed or severely trimmed back, Caltrans will plant replacement vegetation using native species for shading of creeks to reduce temperature related impacts to water quality.

- Following the construction process, the contractor will stabilize disturbed soil areas through permanent re-vegetation or other means. The Storm Water Quality Handbook, Project Planning and Design Guide (revised July 2005), provides detailed procedures for design of permanent slope stabilization controls, design pollution prevention, and permanent treatment BMPs. The procedures are intended to ensure that an appropriate design is developed that will allow all finished slopes to achieve stabilization, even under severe conditions, and also

provide erosion control BMPs at all point source discharges of storm water runoff. Treatment BMPs, such as biofiltration, will be incorporated where feasible.

- The placement of sand on roads in the Willits area occurs relatively infrequently. When applied, Caltrans uses clean sand and follows the practices and procedures in Maintenance BMP (R1) Snow and Ice Control.

- As part of standard operation and maintenance procedures, Caltrans has developed a standard Hazardous Waste and Spill Response Plan (HW&SRP), which Caltrans will ensure is implemented during the project. These BMPs address water quality issues associated with accidental spills.

Wetlands Only Practicable Alternative Finding

Pursuant to Executive Order 11990 [23 CFR 771.125(a)(1)], Caltrans/FHWA has determined that there is no practicable alternative to constructing the project in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands, which may result from such use. The analysis for this Wetlands Only Practicable Alternative Finding is located in Appendix J of the FEIS.

E. Monitoring or Enforcement Program

In cooperation with the NEPA/404 resource agencies, Caltrans has prepared a Conceptual Mitigation Plan (CMP; see FEIS, Appendix L), which contains detailed information about: the biological resources identified within the project area; how these resources would be impacted by the proposed project; the avoidance and minimization measures to be implemented; and a conceptual plan for the compensatory mitigation of project-related impacts. The USACE, USEPA, USFWS, and NMFS have issued letters of concurrence that the CMP, which will serve as the basis for the Final Mitigation Plan, is adequate (see FEIS, Appendix C). Caltrans will continue to work with the resource agencies to develop the Final Mitigation and Monitoring Plan, which will detail the location and extent of all biological mitigation requirements to be implemented for the project.

The USFWS and NMFS have each issued the BO, which states that the proposed project is not likely to jeopardize the continued existence of Northern spotted owl, Pacific fisher, and three listed salmonid species, after implementation of mitigation measures. The BOs issued by the USFWS (March 2006) and NMFS (September 2006) can be found in Appendix D. The project shall comply with the terms and conditions of the USFWS and NMFS BOs to further minimize impacts to these resources.

F. Comments on Final EIS

This portion of the ROD includes comments received by Caltrans on the Final EIS for the Willits Bypass. The Final EIS was approved by FHWA on October 25, 2006. A Notice

of Availability of the FEIS was published in the Federal Register on November 9, 2006, with the wait period ending December 11, 2006.

Four letters were received in response to the notice in the Federal Register.

Letter Number	Letter From	Date Sent
1	Federal Emergency Management Agency (FEMA)	11/21/06
2	Individual Citizen (Mr. Freddie Long)	11/28/06
3	Willits Environmental Center	12/8/06
4	United States Environmental Protection Agency	12/11/06

Caltrans and FHWA have reviewed the comment letters and have concluded that all substantive comments in the letter have been addressed and FHWA has considered all Final EIS comments before reaching the decisions documented in this ROD.

Letter 1

The FEMA letter contained four recommendations (bold). The following are the recommendations and Caltrans and FHWA's response:

1. **All buildings constructed within a riverine floodplain must be elevated so that the lowest floor is at or above the Base Flood Elevation level in accordance with the effective Flood Insurance Rate Map (FIRM).**

   As stated in Section 2.3 of the FEIS, the highway will be built on elevated structures above the 100-year floodwater surface level.

2. **If the area of construction is located within a Regulatory Floodway as delineated on the Flood Insurance Rate Map, any development must not increase base flood elevations.**

   A detailed hydraulics study has been conducted. Results of the study were included in Section 3.6 of the FEIS. Construction of the floodway viaduct will avoid any increase in the floodway water surface elevation.

3. **Areas within a coastal high hazard area must be elevated on pilings and columns, so that the lowest horizontal structural member is elevated to or above the base flood elevation level.**

   The project is not within a coastal area.

4. **Upon completion of any development that changes existing Special Flood Hazard Areas, the National Flood Insurance Program directs all**

participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision.

Caltrans will complete and submit necessary hydrologic and hydraulic data as appropriate upon completion of the project.

Letter 2

Mr. Long's letter contained the following comments (bold) with Caltrans and FHWA's response below them.

The demand for oil is outstripping the supply resulting in higher fuel prices. As a result traffic levels on 101 will be lower rather than higher in the future. The funds for the project should be spent on pedestrian and bicycle improvements, thereby saving money and impacts to the environment.

There is no data available that shows a substantial change in the mode of transportation in the Willits area in the foreseeable future. A discussion on the appropriateness of a 4-lane bypass has been addressed in General Response 1.10 Two-Lane Bypass in Volume 2 of the FEIS.

Letter 3

The Willits Environmental Center letter contained three comments. The following are the comments and Caltrans and FHWA's response:

1. **The 2-lane Alternative has inappropriately been dismissed as a practical alternative.**
   General Response 1.10 in Volume 2 of the FEIS addresses the suggestion of a 2-lane bypass.

2. **Cost estimates fall short of true costs of the project.**
   Project costs have been continually updated using the best available information to Caltrans staff. Estimates do include funding set aside for mitigation. As stated in Section 1.2 of the FEIS, a combination of funding strategies will be utilized to bridge the gap between construction estimates and programmed amounts. The project may be constructed in full or in part depending on funding availability.

3. **The final mitigation plan does not disclose specific proposed methods for mitigating environmental impacts.**
   The comment that mitigation measures proposed by the project are too conceptual in nature was presented as a comment to the DEIS. General Response 1.14 in Volume 2 of the FEIS addresses this comment.

4. **The project does not address the issue of global warming and rising oil prices. The Environmental documents do not address the community**

responses to these issues, which include increased public transit, reducing vehicle use and greenhouse gases.
Please see the response to letter 2 for the issue on rising oil prices and anticipated public reaction. As for global warming and greenhouse gases, the project has been reviewed pursuant to all applicable air quality regulations. The results of these studies are included in Section 3.12 of the FEIS.

Letter 4

The Environmental Protection Agency letter contained one recommendation. The following are the recommendations and Caltrans and FHWA's response.

The EPA recommends Caltrans to continue to work collaboratively with the City of Willits and resource and regulatory agencies on this project on the development of a final detailed mitigation plan. Caltrans is also encouraged to work jointly with the City and EPA on exploring mitigation opportunities for the bypass and wastewater treatment facility.

Caltrans intends to continue its collaboration with the City and resource and regulatory agencies during the development of the final mitigation plan and with respect to the wastewater treatment plant.

G. Record of Decision Approval

Based on the analysis and evaluation contained in the proposed project's FEIS and after careful consideration of all the identified social, economic, and environmental factors and project commitments outlined in this ROD, it is the decision of FHWA to approve the Modified Alternative J1T as the Selected Alternative for the Willits Bypass Project.

12/18/06
Date of Approval

Gene K. Fong
GENE K. FONG
Division Administrator
Federal Highway Administration

Attachment 5: Section 7 Concurrence Documents

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Arcata Fish and Wildlife Office
1655 Heindon Road
Arcata, California, 95521
Phone: (707) 822-7201 Fax: (707) 822-8411

In Reply Refer To:
1-14-1998-0095

MAR 3 0 2006

Gene K. Fong
Division Administrator
Federal Highway Administration
California Division
650 Capitol Mall, Suite 4-100
Sacramento, California 95814

Subject: Formal Consultation on the Proposed Willits Bypass Project, on U.S. Highway 101, Mendocino County (EA 01-262000, Document # P53181)

Dear Mr. Fong:

This correspondence transmits the Fish and Wildlife Service's (Service's) biological opinion, based on our review of the Federal Highway Administration's (FHWA's) proposed action, construction of the Willits Bypass Project, located between post miles (PM) 43.1 and 52.3, on U.S. Highway 101, in Mendocino County, California, and its effects on the threatened northern spotted owl (*Strix occidentalis caurina*) (spotted owl). You determined that the proposed action may affect and is likely to adversely affect the spotted owl. You also determined that the proposed action may affect but is not likely to adversely affect the threatened bald eagle (*Haliaeetus leucocephalus*). In this response, we also transmit the Service's concurrence with your determination of effects to the bald eagle. This document is prepared in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 O.K. 1531 et seq.) (Act). We received your September 7, 2005, request for consultation on September 12, 2005.

The proposed action is not located within critical habitat designated or proposed for any listed or proposed species, and will not affect any primary constituent element of critical habitat. Therefore, critical habitat need not be addressed further in this consultation.

This consultation is based on information you provided in the August 2005 biological assessment (BA) and its appendices submitted with your request, telephone conversations between staff biologists of the Service's Arcata Fish and Wildlife Office (AFWO) and the California Department of Transportation (Caltrans), field visits to the site of the proposed construction

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project, and other sources of information. A complete administrative record of this consultation is on file at this office.

Consultation History

As early as 1995, Caltrans and other Federal and State agencies began planning numerous design and alignment alternatives for the Willits Bypass project. Various studies and documents have been published by Caltrans since that time. A complete list of those documents can be found on page 14 of the BA. More intensive planning has occurred since 1998, and especially during the most recent five-year period. Field visits to the Willits Bypass project area occurred on several occasions during the years 2002 through 2005, including a visit to the proposed excavation site. The purpose of those field visits was to gain a better understanding of the effects of the proposed project on wetlands in Little Lake Valley, the potential spotted owl suitable habitat in the vicinity of Oil Well Hill, and the effects of design alternatives on fish, wildlife and plant habitat. Several meetings of the project development team (PDT) occurred during this time period as well to discuss project design alternatives, potential effects to wetlands and listed species, and community needs. Additional meetings among Federal, State and local agency representatives were held to discuss effects of various design alternatives, mitigation measures for impacts to wetlands, and scheduling of planning and construction activities. On September 27, 2005, FHWA submitted a request for formal consultation on the Willits Bypass project to AFWO. A biological assessment, dated August 2005, was enclosed with that request.

Concurrence on Effects to Bald Eagle

FHWA determined that the Willits Bypass Project may affect bald eagles in or near Little Lake Valley. These potential effects are analyzed in the August 2005 BA. Based on this analysis, FHWA determined that the proposed action may affect but is not likely to adversely affect the bald eagle. The following discussion documents the Service's concurrence with FHWA's determination. The proposed action is briefly described in the biological opinion which follows, and is discussed in detail in the BA, and will not be repeated here. The reader is referred to the BA for details regarding location, extent of effects, and timing of the proposed action.

Bald eagle nest sites are always associated with a lake, river, or other body of water, and usually occur within approximately 1 mile (1.6 km) of these water bodies (Lehman 1979). Nests are usually constructed in a tree that provides an unobstructed view of the water body and that is almost always the dominant or co-dominant tree in the surrounding stand (Lehman 1979). Snags and dead-topped live trees are important habitat components in a bald eagle nesting territory and provide perch and roost sites. Bald eagles winter along rivers, lakes, or reservoirs that support adequate fish or water bird prey, and that have mature trees or large snags available for perch sites. They often roost communally during the winter, typically in mature trees or snags with open branching structures that are isolated from human disturbance.

No bald eagle nests were observed during field surveys, and no bald eagles are known to nest in the Little Lake Valley area (Caltrans 2000). One adult bald eagle was observed incidentally during other surveys conducted in winter 1993 (Caltrans 1997). Scott Harris (CDFG fisheries biologist, pers. comm., cited in BA) has observed bald eagles in Little Lake Valley on only three

or four occasions over the past 10 years while conducting salmonid surveys in Little Lake Valley, and noted that these birds did not remain in the area for any length of time.

The proposed project will permanently affect approximately 48 acres of wetlands, with approximately 81 percent (39 acres) consisting of wet meadow habitat, and approximately 5.4 acres (11 percent) of mixed marsh. The remaining 8 percent of wetlands affected consist of jurisdictional riparian woodland and scrub habitat. These wetlands are located primarily in the central and southern portions of the valley, and are in the topographically higher central portion of the valley, where flooding occurs only during the wettest years. Hence, these wetlands would provide lower quality habitat for waterfowl, used only during very wet periods. In addition, the majority of the stream reaches within the Modified Alternative J1T project corridor that support salmonids have a fairly dense riparian woodland canopy cover over the creeks, which would restrict the use of these streams by eagles, which require open water to capture their prey.

The northern portion of the valley, north of the project corridor, is topographically lower than the rest of the valley, and standing water in this portion of the valley occurs more regularly, is deeper, and remains longer during the winter months. Approximately 700 acres of higher quality winter waterfowl habitat were identified in the northern portion of the valley outside the action area, which provides the primary habitat for wintering waterfowl in Little Lake Valley (Caltrans 1997). Also, riparian vegetation is sparse along the reach of Outlet Creek north of the project corridor, which would facilitate access to migrating fish by eagles. These areas, which comprise the significant foraging habitat for bald eagles in Little Lake Valley, would not be affected by the proposed action.

Due to the low number of observations of bald eagles in Little Lake Valley, the absence of nesting activity, and the absence of higher quality foraging habitat in and near the proposed project corridor, it is likely that bald eagles observed in the valley are individuals that are occasional winter visitors that forage opportunistically during wet winters, when waterfowl or other suitable prey are present. Hence, project related impacts to wetlands and the streams reaches in the central and southern portions of the valley are not expected to result in a significant loss of foraging habitat for bald eagles.

The Service concurs with your determination that the proposed action may affect but is not likely to adversely affect the bald eagle, based on the following factors:

1. No forest habitat that currently functions as nesting habitat for the bald eagle will be removed, degraded or downgraded. The bald eagle does not currently nest in Little Lake Valley or on Oil Well Hill, and no nest trees currently used or known to have historically been used will be removed as a result of this proposed action.

2. The proposed action will not result in noise or visual disturbance to the species. Bald eagles use Little Lake Valley sporadically during some winters as foraging habitat, and may roost on occasion in or near the valley. However, no communal roosts are known to exist in the valley, so none will be subject to noise or visual disturbance. As indicated above, bald eagles are not known to nest in Little Lake Valley, so nesting bald eagles would not be subject to disturbance.

3. The proposed action will not result in injury or death of any individuals of the species.

4. The action will not result in adverse effects to any primary constituent element of critical habitat, since critical habitat is not designated for the species.

BIOLOGICAL OPINION

The following biological opinion addresses the effects of the proposed action on the northern spotted owl. No other species has been determined by FHWA and Caltrans to be adversely affected by the proposed action. Hence, no other species need be addressed by this opinion.

DESCRIPTION OF THE PROPOSED ACTION

Introduction

A complete description of the proposed action, including construction activities and equipment necessary to complete this action, can be found in the August 2005 BA and its appendices. That document is hereby included by reference. The following discussion provides a brief description of the construction activities most pertinent to this consultation. The reader is referred to the BA for complete details and additional clarification regarding the proposed activities.

Scope of Activities

FHWA and Caltrans propose to construct a bypass highway through Little Lake Valley around the community of Willits. The purposes of this project are to improve the level of service and safety for travelers along U.S. Highway 101; reduce delays for interregional traffic; and improve traffic flow and safety on Main Street, which currently functions as Highway 101 through the city. Caltrans proposes to construct a four-lane, divided highway along an alignment to the east of the city limits. This alignment, referred to as the Modified J1T alternative, would be constructed on a combination of imported fill material and elevated viaduct. Two interchanges are proposed, one each on the south and north ends of the new alignment, to access the community along the existing Highway 101/Main Street.

Construction activities along the proposed alignment through Little Lake Valley will not occur within or near habitat currently occupied, or likely to be occupied in the foreseeable future, by listed species under the regulatory jurisdiction of the Service. However, the road alignment passes through substantial wetlands, and may affect several streams in Little Lake Valley currently occupied by listed salmonid fishes under the jurisdiction of the National Marine Fisheries Service (NOAA Fisheries). Section 7 consultation has been initiated with NOAA Fisheries for those species.

In order to obtain enough fill material to construct the elevated roadway through the valley, Caltrans proposes to import fill material from a major excavation site north of the main roadway construction area and adjacent to the existing highway on Oil Well Hill north of Outlet Creek. Figures 1-3 and 1-4 of the BA, Appendix I, depict the location of the excavation site. Although

Caltrans anticipates that the contractor will obtain fill material from this site, the contractor may choose to import fill from another site if feasible. Caltrans requires that any use of an alternative site comply with all local, state and federal environmental and permitting use regulations, and requires the contractor to prepare and submit documentation of compliance to the Caltrans Resident Engineer. The present consultation addresses only the proposed excavation site on Oil Well Hill, and does not address effects to listed species that may arise from use of any alternative extraction site.

The Oil Well Hill borrow site is immediately adjacent to Highway 101 and north of Outlet Creek. It has been designated as a proposed borrow site because of its proximity to the project corridor, its location within the existing Caltrans right-of-way, and the presence of soil material suitable for use as fill for this project. Other sites were not proposed as designated borrow site(s) for this project due to the cost involved in acquiring land and the distance from the proposed project corridor.

Proposed Construction Activities

Fill material extraction at the Oil Well Hill site would require the removal of forested habitat. This habitat removal has the potential to remove, downgrade or degrade habitat suitable for the spotted owl. Hence, activities related to the extraction and transport of this fill material from Oil Well Hill to the proposed highway alignment in Little Lake Valley are the focus of the following description of proposed activities.

Caltrans proposes to extract soil fill material on a maximum of 40 acres (16.2 ha) for use in constructing the roadbed of a major portion of the Willits Bypass. Caltrans estimates the fill requirements for the Modified J1T alignment to be 1.9 million cubic meters (2.5 million cubic yards), although revisions to the final design standards could reduce the actual acreage and volume of excavated materials. For purposes of this consultation, the estimate of 40 acres of habitat removal and 1.9 million cubic meters of fill are assumed to be reasonable worst case figures. Although the exact amount of fill material to be excavated, and the acreage of forest habitat to be removed, are not precisely known at this time, the extent of habitat removed will be minimized to the extent practicable. As indicate above, some or all of this fill material may come from alternative sites at the discretion of the contractor, provided Caltrans-specified conditions are met.

The material will be excavated by using heavy equipment, assumed to include large excavators, bulldozers, loaders, and large dump trucks, as well as a variety of small power tools and equipment. The material will be transported by truck to the abandoned truck scale area, located about two miles south of the borrow site, via Highway 101, and from there along the new road alignment to its final deposition site. Use of this equipment will modify existing traffic noise dynamics at the excavation site, especially on the east side of extraction area which currently is buffered from the direct noise effects of existing highway use. Changes to the noise dynamics will occur along the haul route as well. The actual effects of these changes to the sound regime on listed species are discussed in detail in the Effects to the Species section of this biological opinion.

Excavation of fill material at Oil Well Hill may require the use of explosives. The number and frequency of charges will be determined by the contractor. The charges will be set below ground to fracture and loosen rock; above-ground use is not anticipated.

Excavation will remove portions of the cut slope on the east side of the existing highway and establish a new cut slope a maximum of 183 meters (600 feet) east of the highway. Caltrans anticipates that these changes will result in minimal alteration of the sound regime within the remaining spotted owl habitat.

Night work is proposed at the excavation site to reduce the cost and time period for construction. Limiting the excavation activities to daylight hours would extend the duration of construction from 2 years to a total of 4 years, and are anticipated to increase costs by approximately $5 million per year of extension (Dave Kelley, Caltrans, pers. comm., as cited in BA).

The area where this fill material would be extracted is currently covered by forested habitat, primarily of the Douglas-fir series. As indicated above, up to 40 acres of forest habitat may be removed to allow the extraction of fill material, although this figure may be reduced to less than 20 acres should substantial modifications be made to the project design. No provisions are identified to reestablish forest habitat on the excavation site due to the permanent removal of suitable topsoil during bypass construction, and the potential use of some of the excavation area for future highway expansion. However, some vegetation reestablishment, including grasses, herbs, and shrubs, is likely as a result of natural colonization. This natural colonization is not expected to result in the establishment of forest habitat in the foreseeable future.

Caltrans anticipates that no disposal sites are needed for this project, as no excess fill material will be generated.

Minimization Measures

Caltrans proposes the following minimization measures at the excavation site to minimize adverse effects:

- The amount of fill material will be minimized to that necessary to complete the proposed project.
- During all timber clearing operations at the proposed Oil Well Hill excavation site, monitoring for the presence of spotted owls will be conducted by a Service-approved biologist to assess potential adverse effects to roosting or nesting adults, their eggs, or juvenile spotted owls. If spotted owls are found on or within 0.8 km (0.5 mile) of the borrow site during timber clearing, Caltrans will consult with the Service immediately to develop a strategy for minimizing impacts to the species.
- All equipment will have sound control devices that are no less effective than those provided by the manufacturer of the equipment.
- All equipment will be operated and maintained to minimize noise generation, and no equipment will have unmuffled exhaust systems.
- Acoustic barriers will be installed around all stationary construction noise sources.
- All large trees that can be avoided will be protected.

- During each construction season, the contractor will limit the removal of vegetation to those portions of the borrow site necessary to provide fill material for that season's construction needs.

Appropriate Best Management Practices (BMP's) would be implemented to minimize impacts to spotted owls and other sensitive resources in the area, and could include: Preservation of Existing Vegetation; Hydroseeding (where feasible); Silt Fencing; Sandbag Barriers; Stabilized construction Entrances/Exits; Material Delivery and Storage; Stockpile Management; Spill Prevention and Control; Solid Waste Management; Hazardous Waste Management; and Sanitary/Septic Waste Management (BMP descriptions are attached as Appendix G of the BA).

A 2-year protocol-level survey will be conducted prior to the start of construction to determine the status of spotted owls in the vicinity of the borrow site prior to excavation. Surveys are anticipated to occur during the years 2007 and 2008. Survey results will be provided to the Service each year upon completion of each survey. If spotted owls are found nesting within 0.8 km (0.5-mile) of the borrow site, Caltrans will reinitiate consultation with the Service to develop a strategy for minimizing adverse impacts.

Conservation Measures

When used in the context of the Act, "conservation measures" represent actions pledged in the project description that the action agency will implement to further the recovery of the species under review. Caltrans is not proposing to include any conservation measures as part of the proposed action.

Action Area

The regulations governing section 7 consultation define "action area" as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). Delineating the analysis area enables the Service to more fully understand the cumulative, interrelated, and interdependent effects of the action within a more appropriate landscape context.

The action area for this proposed action is located in a rural area of Mendocino County, California in the Coast Range Mountains east and north of the community of Willits. The action area includes the existing roadway of U.S. Highway 101 through Willits, as well as the proposed new alignment of the highway as described in planning alternative Modified J1T. The action area also includes the proposed site of fill material excavation adjacent to and east of the highway alignment north of Willits on the grade known as Oil Well Hill.

Areas to be directly affected by the proposed project include the existing road alignment, the proposed new road alignment, and all newly created road cuts, roadbed fills, shoulders, and turnouts. Further, the action area includes all areas affected by the extraction of fill material on the proposed excavation site adjacent to the existing highway on Oil Well Hill. This portion of the action area is also referred to as the "construction footprint".

The action area also extends into a band of natural habitat immediately adjacent to both sides of the road, to a distance of up to one-half mile. This portion of the action area may be subject to elevated sound levels generated by the construction activities, including blasting, heavy machinery, and other sources that have a potential to adversely affect listed species.

STATUS OF THE SPECIES

NORTHERN SPOTTED OWL

Legal Status

The Service listed the northern spotted owl under the Act as a threatened species on June 26, 1990, due to widespread habitat loss across the entirety of its range and the inadequacy of existing regulatory mechanisms to provide for its conservation (USFWS 1990b).

Life History

Taxonomy

The northern spotted owl is one of three subspecies currently recognized by the American Ornithologists' Union, and is the subspecies with the most northerly distribution. The taxonomic separation of these three subspecies is supported by genetic (Barrowclough and Gutiérrez 1990), morphological (Gutiérrez et al. 1995) and biogeographic information (Barrowclough and Gutiérrez 1990). More detailed accounts of the taxonomy, ecology, and reproductive characteristics of the spotted owl are found in the 1987 and 1990 Status Reviews (USFWS 1987, 1990a); the 1989 Status Review Supplement (USFWS 1989); the Interagency Scientific Committee (ISC) Report (Thomas et al. 1990); the Forest Ecosystem Management Assessment Team (FEMAT) Report (Thomas and Raphael 1993); the final rule designating the spotted owl as a threatened species (USFWS 1990b); and the Scientific Evaluation of the Status of the Northern Spotted Owl (Courtney et al. 2004).

Physical Description

The northern spotted owl, the largest of the three subspecies of spotted owl, is medium sized, approximately 46-48 cm in length and 490-850 g in weight (Gutiérrez et al. 1995). The body is dark brown, with a barred tail and white spots on the head and breast. A prominent facial disk surrounds dark brown eyes. Three age classes are distinguishable, based on plumage characteristics (Forsman 1981, Moen et al. 1991). The spotted owl closely resembles the barred owl (*S. varia*), a congeneric species with which it occasionally hybridizes (Kelly et al. 2003). Hybrids exhibit characteristics of both species (Hamer et al. 1994).

Current and Historical Range

The current range and distribution of the spotted owl extends from southern British Columbia through western Washington, Oregon, and California, as far south as Marin County (USFWS 1990a). The southeastern boundary of its range is the Pit River area of Shasta County,

California. The range of the spotted owl is partitioned into 12 physiographic provinces (provinces), based upon recognized landscape subdivisions exhibiting different physical and environmental features (Thomas et al. 1993). These provinces are distributed across the range as follows: four provinces in Washington (Washington Cascades East, Olympic Peninsula, Washington Cascades West, Western Lowlands); five provinces in Oregon (Oregon Coast Range, Willamette Valley, Oregon Cascades West, Oregon Cascades East, Klamath Mountains); and three provinces in California (California Coast, California Klamath, California Cascades). The current range of the spotted owl is similar to its historical range where forested habitat still exists. The relatively contiguous distribution is influenced by the natural insularity of habitat patches within the geographic provinces and by natural and man-caused fragmentation of vegetation. The spotted owl is extirpated or rare in some areas within its historic range, such as southwestern Washington and British Columbia. Timber harvest activities have eliminated, reduced or fragmented spotted owl habitat sufficiently to decrease overall population densities across its range, particularly within the coastal provinces where habitat reduction has been concentrated (Thomas and Raphael 1993).

Behavior

Spotted owls are territorial. However, home ranges of adjacent pairs may overlap (Forsman et al. 1984, Solis and Gutiérrez 1990), which suggests that the area defended is smaller than the areas used for foraging. Territorial defense is primarily effected by hooting, barking and whistle type calls.

Spotted owls are monogamous and usually form long-term pair bonds. "Divorces" occur but are relatively uncommon. There are no known examples of polygyny in this species, although associations of three or more birds have been reported (Gutiérrez et al. 1995).

Habitat Relationships

Home Range

Spotted owl home range size varies by province. Home range generally increases from south to north, which is likely in response to decreasing habitat quality (USFWS 1990a). Home range size is linked to habitat type, availability, and abundance of prey (Zabel et al. 1995).

Based on available radio-telemetry data (Thomas et al. 1990), the Service estimated median annual home range size for the spotted owl by province. Because the actual configuration of the home range is rarely known, and may change from year to year, a circle representative of the median home range size approximates the provincial home range. The circle centers upon a spotted owl activity center, with an area approximating the provincial median annual home range. For example, estimated home range area varies from 3,340 acres (based on a 1.3-mile radius area) in California to 14,271 acres (based on a 2.7-mile radius circle) in Washington. The Service approximates the area most heavily used by spotted owls during the nesting season, identified as the core area, by a 0.7-mile-radius circle (985 acres). The nest tree, location of pre-fledged juveniles, or most significant location of the pair determines the center of the circle. Spotted owls in northern California focused their activities in core areas that ranged from about

167 to 454 acres, with a mean of about 409 acres; approximately half the area of the 0.7-mile radius circle (Bingham and Noon 1997). Spotted owls maintain smaller home ranges during the breeding season and often dramatically increase their home range size during fall and winter (Forsman et al. 1984, Sisco 1990).

Although differences exist in natural stand characteristics that influence provincial home range size, habitat loss and forest fragmentation caused by timber harvest effectively reduce habitat quality in the home range. A reduction in the acreage of suitable habitat results in a reduction in spotted owl abundance and nesting success (Bart and Forsman 1992, Bart 1995).

Habitat Use

Forsman et al. (1984) report that spotted owls have been observed in the following forest types: Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), grand fir (*Abies grandis*), white fir (*Abies concolor*), ponderosa pine (*Pinus ponderosa*), Shasta red fir (*Abies magnifica shastensis*), mixed evergreen, mixed conifer hardwood (Klamath montane) and redwood (*Sequoia sempervirens*). Use of these types coincides with appropriate forest structure (see below). In parts of the Oregon Coast Range, spotted owls have been recorded in pure hardwood stands (Glenn et al. 2004). In California, spotted owls are found from near sea level in coastal forests to approximately 2130 m (7000 ft) in the Cascades (Gutiérrez 1996). The upper elevation limit at which spotted owls occur decreases with increasing latitude in Oregon and Washington (Lint et al. 2005). In all areas, the upper elevation limit at which spotted owls occur corresponds to the transition to subalpine forest, which is characterized by relatively simple structure and severe winter weather (Gutiérrez 1996).

Roost sites selected by spotted owls have more complex vegetation structure than forests generally available to them (Barrows and Barrows 1978, Forsman et al. 1984, Solis and Gutiérrez 1990). These habitats are usually multi-layered forests having high canopy closure and large diameter trees in the overstory.

Spotted owls nest almost exclusively in trees. Like roosts, nest sites are found in forests having complex structure dominated by large diameter trees (Forsman et al. 1984, Hershey et al. 1998). Even in forests that have been previously logged, spotted owls select forests having a structure (i.e., larger trees, greater canopy closure) different than forests generally available to them (Folliard 1993, Buchanan et al. 1995, Hershey et al. 1998).

Foraging habitat is the most variable of all habitats used by territorial spotted owls (Thomas et al. 1990). Descriptions of foraging habitat have ranged from complex structure (Solis and Gutiérrez 1990) to forests with lower canopy closure and smaller trees than forests containing nests or roosts (Gutiérrez 1996).

Habitat Selection

Spotted owls generally rely on the structures and characteristics of older forested habitats for nesting, roosting, foraging, and dispersal. These characteristics include (Thomas et al. 1990, USFWS 1990a):

- A multi-layered, multi-species canopy dominated by large overstory trees;
- Moderate to high canopy closure;
- A high incidence of trees with large cavities and other types of deformities;
- Numerous large snags;
- An abundance of large, dead wood on the ground; and
- Open space within and below the upper canopy for spotted owls to fly.

Forested stands with high canopy closure also provide thermal cover (Weathers et al. 2001), as well as protection from predation. Recent landscape-level analyses in portions of the Klamath Province suggest that a mosaic of late-successional habitat interspersed with other vegetation types may benefit spotted owls more than large, homogeneous expanses of older forests (Zabel et al. 2003, Franklin et al. 2000, Meyer et al. 1998). In redwood forests along the coast range of California, spotted owls may be found in younger forest stands with structural characteristics of older forests (Thomas et al. 1990). However, spotted owls do not generally appear to select for stands of intermediate or younger ages (Solis and Gutiérrez 1990, Thomas et al. 1990).

In mixed conifer forests of the East Cascades province in Washington, 27 percent of nest sites were in old-growth forests, 57 percent in the understory reinitiation phase of stand development, and 17 percent in the stem exclusion phase (Buchanan et al. 1995). In the West Cascades province in Oregon, 50 percent of spotted owl nests were in late-successional (greater than 80 years old) or old-growth stands, and none were found in stands less than 40 years old (Irwin et al. 2000).

Ward (1990) reported that spotted owls foraged in areas that had lower variance in prey densities (prey were more predictable in occurrence) within older forests and near ecotones of old forest and brush seral stages. Zabel et al. (1995) showed that spotted owl home ranges are larger where flying squirrels (*Glaucomys sabrinus*) are the predominant prey. Conversely, home ranges are smaller where woodrats (*Neotoma* spp.) are the predominant prey.

In the Western Washington Cascades, spotted owls used mature/old forests dominated by trees greater than 50 cm diameter-at-breast height (dbh) with greater than 60 percent canopy closure more often than expected for roosting during the non-breeding season. They used young forest (trees 20-50 cm dbh with greater than 60 percent canopy closure) less often than expected based on availability (Herter et al. 2002).

Reproductive Biology

Adult spotted owls exhibit high annual survival rates and are relatively long-lived (USFWS 1992a and Anthony et al. 2004). Spotted owls do not typically reach sexual maturity until after 2 years (Miller et al. 1985 and Thomas et al. 1990). Adult females lay an average of two eggs per clutch, with a range of one to four eggs. Spotted owl pairs typically do not nest every year, nor are nesting pairs successful every year (USFWS 1990a). The small clutch size, temporal variability in nesting success, and somewhat delayed maturation all contribute to the relatively low fecundity of this species (Gutiérrez 1996).

In the Douglas-fir region, nest sites are usually located within stands of old-growth and late-successional forest dominated by Douglas-fir, and they contain structures such as cavities, broken tree tops, and mistletoe (*Arceuthobium* spp.) brooms (Forsman et al. 1984, Blakesley et al. 1992, LaHaye and Gutiérrez 1999). In general, courtship and nesting behavior begins in February to March with nesting occurring from March to June; however, timing of nesting and fledging varies with latitude and elevation (Forsman et al. 1984). After young fledge from the nest, they depend on their parents until they are able to fly and hunt on their own. Parental care continues post-fledging into September (USFWS 1990b), and sometimes into October (Forsman et al. 1984). During this time, the adults may not roost with their young during the day, but they respond to begging vocalizations by bringing food to the young (Forsman et al. 1984).

Some spotted owls, known as "floaters", do not demonstrate territorial behavior, but either remain as residents within the territory of a pair or move among territories (Gutiérrez 1996). Floaters have special significance in spotted owl populations because they may buffer the territorial population from decline (Franklin 1992). Little is known about floaters other than that they exist and typically do not respond to calls as vigorously as territorial birds (Gutiérrez 1996).

Dispersal Biology

Natal dispersal of spotted owls from Oregon and Washington typically begins during mid- to late-September, and shows remarkable synchrony across broad areas (Forsman et al. 2002). When data from many dispersing spotted owls are pooled, the direction of dispersal away from the natal site appears random (Miller 1989, Ganey et al. 1998, Forsman et al. 2002). Dispersal direction from individual territories, however, may be non-random in response to the local distribution of habitat and topography (Forsman et al. 2002). Natal dispersal occurs in stages, with juvenile spotted owls settling in temporary home ranges between bouts of dispersal (Forsman et al. 2002). Median natal dispersal distance is about 10 miles for males and 15.5 miles for females (Forsman et al. 2002, see also Miller 1989, Ganey et al. 1998). Successful dispersal of juvenile spotted owls may depend on their ability to locate unoccupied suitable habitat in close proximity to other occupied sites (LaHaye et al. 2001).

Breeding dispersal occurs among a small proportion of adult spotted owls; these movements were more frequent among females and unmated individuals (Forsman et al. 2002). Breeding dispersal distances were shorter than natal dispersal distances and are apparently random in direction (Forsman et al. 2002).

Large non-forested valleys are apparent barriers to natal and breeding dispersal; forested foothills between valleys may provide the only opportunities for dispersal (Forsman et al. 2002). The degree to which extensive water bodies, such as the Columbia River estuary and Puget Sound, function as barriers to dispersal is unclear. Analysis of genetic structure of spotted owl populations suggests adequate rates of gene flow may occur across the Puget Trough between the Olympic Mountains and Washington Cascades, and across the Columbia River between the Olympic Mountains and the Coast Range of Oregon (Haig et al. 2001). Both telemetry and genetic studies indicate inbreeding is rare.

Dispersing juvenile spotted owls experience high mortality rates, exceeding 70 percent during their first year in some studies (USFWS 1990b, Miller 1989). Leading known causes of mortality are starvation, predation, and accidents (Miller 1989, USFWS 1990b, Forsman et al. 2002). Parasitic infection may contribute to these causes of mortality (Forsman et al. 2002). In a study on habitat use by dispersing juvenile spotted owls in the Oregon Coast Range, Klamath and Western Oregon Cascades Provinces (Miller et al. 1997), mature and old-growth forest were used slightly more than expected, compared to availability, during the transient phase and nearly twice its availability during the colonization phase. Dispersing juvenile spotted owls used closed pole-sapling-sawtimber habitat roughly in proportion to availability in both phases; they used open sapling and clearcuts less than expected based on availability during colonization.

Food Habits

Spotted owls are mostly nocturnal (Forsman et al. 1984), but may forage opportunistically during the day (Laymon 1991, Sovern et al. 1994). Composition of prey in the spotted owl's diet varies regionally, seasonally, annually, and locally, likely in response to prey availability (Laymon 1988, Ganey 1992, Verner et al. 1992, Carey 1993, Ward and Block 1995, Forsman et al. 2001). Northern flying squirrels and woodrats are usually the predominant prey, in biomass and in frequency (Barrows 1980; Forsman et al. 1984; Ward 1990; Bevis et al. 1997; Forsman et al. 2001, 2004), with a clear geographic pattern of diet, paralleling differences in habitat (Thomas et al. 1990). Northern flying squirrels are generally the dominant prey item in the more mesic Douglas-fir/western hemlock forests characteristic of the northern portion of the range. Woodrats are generally the most abundant prey item in the drier mixed conifer/mixed evergreen forests typically found in the southern portion of the range (Forsman et al. 1984, Thomas et al. 1990, Ward et al. 1998, reviewed by Courtney et al. 2004). These prey items were found to be approximately equally abundant in the southwest interior of Oregon (Forsman et al. 2001, 2004).

Other prey species, such as the red tree vole (*Arborimus longicaudus*), red backed voles (*Clethrionomys gapperi*), mice, rabbits and hares, birds, and insects, may be seasonally or locally important (reviewed by Courtney et al. 2004). For example, Rosenberg et al. (2003) showed a strong correlation between annual reproductive success of spotted owls (number of young per territory) and abundance of deer mice (*Peromyscus maniculatus*) ($r^2 = 0.68$), despite the fact they only made up 1.6±0.5 percent of the biomass consumed. However, it is unclear if the causative factor behind this correlation was prey abundance or a synergistic response to weather (Rosenberg et al. 2003). Ward (1990) also noted that mice were more abundant in areas selected for foraging by owls. Nonetheless, spotted owls deliver larger prey to the nest and eat smaller food items, perhaps to reduce foraging energy costs. Therefore, managers should not underestimate the importance of smaller prey items such as *Peromyscus* in the spotted owl diet (Forsman et al. 1984, 2001, 2004).

Population Dynamics

The spotted owl is a relatively long-lived species, produces few but relatively large young, invests significantly in parental care, experiences later or delayed maturity, and exhibits high adult survivorship. The spotted owl's long reproductive life span allows for some eventual recruitment of offspring, even if recruitment does not occur each year (Franklin et al. 2000).

Annual variation in population parameters for spotted owls has been linked to environmental influences at various life history stages (Franklin et al. 2000). In coniferous forests, mean fledgling production of the California spotted owl (*S. o. occidentalis*), a closely related subspecies, was higher when minimum spring temperatures were higher (North et al. 2000), a relationship that may be a function of increased prey availability. Across their range, spotted owls have previously shown a pattern of alternating years of high and low reproduction (Franklin et al. 1999). For reasons unknown, highest reproduction has occurred during even-numbered years. Annual variation in breeding may relate to weather conditions and fluctuation in prey abundance (Zabel et al. 1996). Forsman et al (1996) provided the results of multiple studies showing the effects of weather, specifically temperature and precipitation, on northern spotted owl productivity.

A variety of factors may regulate spotted owl population levels. These factors may be density-dependent (e.g., habitat quality, habitat abundance) or density-independent (e.g., weather). Interactions may occur among factors. For example, severe weather may prove more detrimental to individual spotted owls in fragmented or otherwise poor quality habitat than those living in high quality, contiguous habitat. As habitat quality decreases, density-independent factors may have more influence on variation in survival, which tends to increase variation in the rate of population growth (Franklin et al. 2000). A consequence of this pattern is that, at some point, lower habitat quality may cause the population to be unregulated (i.e., have negative growth) and decline to extinction (Franklin et al. 2000).

Threats

Reasons for Listing

The Service listed the spotted owl as threatened throughout its range "due to loss and adverse modification of suitable habitat as a result of timber harvesting and exacerbated by catastrophic events such as fire, volcanic eruption, and wind storms" (USFWS 1990a). More specifically, significant threats to the spotted owl included low or declining populations; limited or declining habitat; fragmented or isolated distribution of habitat and populations; isolation of provinces; predation and competition; lack of coordinated conservation measures; and vulnerability to natural disturbance (USFWS 1992a). The Service characterized the threats within each province as severe, moderate, low, or unknown. Declining habitat was recognized as a severe or moderate threat to the spotted owl in all 12 provinces, isolation of provinces within 11 provinces, and declining populations in 10 provinces. Consequently, these three factors represented the greatest concern range-wide to the conservation of the spotted owl. Limited habitat was considered a severe or moderate threat in nine provinces, and low populations a severe or moderate concern in eight provinces, suggesting that these factors are a concern throughout the majority of the range. The Service rated the vulnerability to natural disturbances as low in five provinces.

The degree to which predation and competition poses a threat to the spotted owl was unknown in more provinces than any of the other threats, and indicates a need for additional information. Few empirical studies exist to confirm that habitat fragmentation contributes to increased levels of predation on spotted owls (Courtney et al. 2004). However, great horned owls (*Bubo virginianus*), an effective predator on spotted owls, are closely associated with fragmented

forests, openings, and clearcuts (Johnson 1992, Laidig and Dobkin 1995). As mature forest harvest continues, great horned owls may colonize fragmented forests, thereby increasing spotted owl vulnerability to predation.

New Threats

Barred Owls

Since the listing of the spotted owl under the Act, new information suggests that hybridization with the barred owl is less of a threat (Kelly and Forsman 2004) and competition with the barred owl is a greater threat than previously anticipated (Courtney et al. 2004). Since 1990, the barred owl has expanded its range south into Marin County, California and the central Sierra Nevada Mountains, such that it is now roughly coincident with the range of the northern spotted owl and the California spotted owl (Courtney et al. 2004). Further, notwithstanding the likely bias in survey methods towards underestimating actual barred owl numbers (Courtney et al. 2004), barred owl populations appear to be increasing throughout the Pacific Northwest, particularly in Washington and Oregon (Zabel et al. 1996, Dark et al. 1998, Wiedemeier and Horton 2000, Kelly et al. 2003, Pearson and Livezey 2003, Anthony et al. 2004a). Barred owl numbers now may exceed spotted owl numbers in the northern Washington Cascades (Kuntz and Christopherson 1996) and British Columbia (Dunbar et al. 1991) and appear to be approaching spotted owl numbers in several other areas, including Redwood National and State Parks in California (Schmidt 2003). Barred owl populations in the Pacific Northwest appear to be self-sustaining based on current density estimates and apparent distribution (Courtney et al. 2004).

Barred owls apparently compete with spotted owls through a variety of mechanisms: prey overlap (Hamer et al. 2001), habitat overlap (Hamer et al. 1989, Dunbar et al. 1991, Herter and Hicks 2000, Pearson and Livezey 2003), and agonistic encounters (Leskiw and Gutiérrez 1998, Pearson and Livezey 2003). New information on encounters between barred owls and spotted owls comes primarily from anecdotal reports that corroborate initial observations that barred owls react more aggressively towards spotted owls than vice versa (Courtney et al. 2004). Limited circumstantial evidence exists documenting barred owl predation on spotted owls (Leskiw and Gutiérrez 1998, Johnston 2002). Information collected to date indicates that encounters between these two species tend to be agonistic in nature, and that the outcome is unlikely to favor the spotted owl (Courtney et al. 2004).

Although biologists initially thought barred owls were more closely associated with early successional forests than spotted owls (Hamer 1988, Iverson 1993), recent studies indicate that barred owls utilize a broader range of forest successional stages than do spotted owls (Courtney et al. 2004). The only study comparing spotted owl and barred owl food habits in the Pacific Northwest indicated that barred owl diets overlapped strongly (greater than 75 percent) with spotted owl diets (Hamer et al. 2001). However, barred owl diets were also more diverse than spotted owl diets, including species associated with riparian and other moist habitats, as well more terrestrial and diurnal species.

Evidence that barred owls are causing the displacement of spotted owls is largely indirect, based primarily on retrospective examination of long-term data collected on spotted owls. Correlations

between local spotted owl declines and barred owl increases have been noted in the northern Washington Cascades (Kuntz and Christopherson 1996, Herter and Hicks 2000, Pearson and Livezey 2003), on the Olympic peninsula (Wiedemeier and Horton 2000; Gremel 2000, 2003), in the southern Oregon Cascades Johnston 2002), and in the coastal redwood zone in California (Schmidt 2003).

Spotted owl occupancy was significantly lower in spotted owl territories where barred owls were detected within 0.8 km (0.5 mi) of the spotted owl territory center than in spotted owl territories where no barred owls were detected (Kelly et al. 2003). Kelly et al. (2003) found spotted owl occupancy to be significantly lower ($P < 0.001$) when barred owls detections occurred within 0.8 km of the spotted owl territory center. Occupancy was "only marginally lower" ($P = 0.06$) if barred owls were located more than 0.8 km from spotted owl territory centers. In a Roseburg, Oregon, study area, 46 percent of spotted owls moved more than 0.8 km, and 39 percent of spotted owls were not relocated in at least two years, after barred owls were detected within 0.8 km of the territory center. Observations provided by Gremel (2000) from the Olympic National Park are consistent with those of Kelly et al. (2003); he documented significant displacement of spotted owls following barred owl detections "coupled with elevational changes of northern spotted owl sites on the east side of the Park" (Courtney et al. 2004). Pearson and Livezey (2003) reported similar findings on the Gifford Pinchot National Forest where unoccupied spotted owl sites were characterized by significantly more barred owl sites within 0.8-km, 1.6-km, and 2.9-km from the territory center than in occupied spotted owl sites.

In two study areas in Washington, investigators found relatively high numbers of territories, previously occupied by spotted owls, that are now apparently not occupied by either spotted or barred owls. Forty-nine of 107 territories in the Cascades (Herter and Hicks 2000), and 23 of 33 territories in the Olympic Experimental State Forest (Wiedemeier and Horton 2000) were no longer occupied by either species. Since the habitat was still present in these vacant territories, some factor or factors may be reducing habitat suitability or local abundance of both species. For example, weather conditions could cause prolonged declines in abundance of both species (Franklin et al. 2000). Because spotted owls have been reported anecdotally to give fewer vocalizations when barred owls are present, it is possible that these supposed vacant territories are still occupied by spotted owls that do not respond to surveys. Likewise, survey protocols for spotted owls are believed to under-detect barred owls (Courtney et al. 2004). Preliminary results from Olson et al. (2005) suggest that barred owl presence had a negative effect on spotted owl detection probabilities. Thus, some proportion of seemingly vacant territories may be an artifact of reduced detection probability. Nonetheless, previously occupied territories apparently vacant of both *Strix* species suggests that factors other than barred owls alone are contributing to declines in spotted owl abundance and territorial occupancy (Courtney et al. 2004).

Two studies (Kelly 2001, Anthony et al. 2004a) attempted to determine whether barred owls affected fecundity of spotted owls in the long-term demographic study areas. Neither study was able to clearly do so, although the Wenatchee and Olympic demographic study areas showed possible effects (Anthony et al. 2004a). However, both studies described the shortfalls of their methods to adequately test for this effect. Iverson (2004) reported no effect of barred owl presence on spotted owl reproduction, but his results could have been influenced by small sample size (Livezey, in review). Barred owls had a negative effect on spotted owl survival on

the Wenatchee and Olympic study areas and possibly an effect on the Cle Elum study area (Anthony et al. 2004a). Olson et al. (in press) found a significant but weak negative effect of barred owl presence on spotted owl reproductive output but not on survival at a Roseburg, Oregon study area (Courtney et al. 2004).

Regarding interactions between barred and spotted owls, the uncertainties associated with methods, analyses, and possible confounding factors, such as the effects of past habitat loss and weather, warrant caution in interpretation of the patterns emerging from the data and information collected to date (Courtney et al. 2004). Further, data are currently lacking that would allow accurate prediction of how barred owls will affect spotted owls in the southern, more xeric, provinces in the California and Oregon Klamath region. In spite of these uncertainties, the preponderance of the evidence gathered thus far is consistent with the hypothesis that barred owls play some role in spotted owl population decline, particularly in Washington, portions of Oregon, and the northern coast of California (Courtney et al. 2004).

Although the barred owl currently constitutes a significantly greater threat to the northern spotted owl than originally thought at the time of listing (Courtney et al. 2004), it is unclear whether forest management influences the outcome of interactions between species (Courtney et al. 2004, summarized by Lint et al. 2005). The most recent summaries compiled on the barred owl (Courtney et al. 2004, Lint et al. 2005, USDI Fish and Wildlife Service 2004) do not provide recommendations on how to deal with this potential threat. In their status review of the northern spotted owl, the Service (U.S. Fish and Wildlife Service 2004) did not consider the increased risk to northern spotted owl populations due to the uncertainties surrounding barred owls and other factors sufficient to reclassify the subspecies as endangered at this time. Because it was not clear if additional protection of northern spotted owl habitat would reverse the population trends in some portions of the species' range, and because the results of their study did not identify the causes of those trends, Anthony et al. (2004) declined to make any recommendations to alter the current NWFP management strategy.

Wildfire

In 1994, the Hatchery Complex wildfires burned 43,480 acres (17,603 ha) in the Wenatchee National Forest, eastern Cascades, Washington, affecting six spotted owl activity centers (Gaines et al. 1997). Spotted owl habitat within a 2.9 km radius of the affected activity centers was reduced by 8 to 45 percent (mean = 31 percent) due to direct effects of the fire and by 10 to 85 percent (mean = 55 percent) due to delayed mortality of fire-damaged trees and insect caused tree mortality. Spotted owl habitat loss was greater on mid to upper slopes (especially south-facing) than within riparian areas or on benches (Gaines et al. 1997). Direct mortality of spotted owls was assumed to have occurred at one site. Data were too sparse for reliable comparisons of site occupancy or reproductive output between sites affected by the fires and other sites on the Wenatchee National Forest.

Two wildfires burned in the Yakama Indian Reservation, eastern Cascades, Washington, in 1994, affecting home ranges of two radio-tagged spotted owls (King et al. 1997). Although the amount of home ranges burned was not quantified, spotted owls were observed using areas that received

low and medium intensity burning. No direct mortality of spotted owls was observed, even though thick smoke covered several spotted owl site centers for a week.

The short-term effects of wildfires on spotted owl demography are an important consideration for resources managers. Bond et al. (2002) examined the demography of spotted owls post wildfire, in which wildfire burned through spotted owl nest and roost sites in varying degrees of severity. Depending on the severity of the burn, wildfires may have relatively little short-term impact on spotted owl demography (i.e., survival, reproduction and site fidelity). In a preliminary study conducted by Anthony et al. (2004) in the Klamath Province of Oregon, their sample of spotted owls appeared to be using a variety of habitat types within the Timbered Rock Fire, including areas that had experienced moderate burning.

At the time of listing there was recognition that catastrophic wildfire posed a threat to the spotted owl (USFWS 1990a). New information suggests fire may be more of a threat than previously thought. In particular, the rate of habitat loss in the relatively dry East Cascades and Klamath provinces has been greater than expected (see "Habitat Trends" below). However, the total amount of habitat affected by wildfires has been relatively small (Lint et al. 2005). We may be able to influence, through silvicultural management, how fire prone forests will burn, and the extent of the fire when the inevitable fire occurs. Such silvicultural efforts are currently being implemented throughout the spotted owl's range, in an attempt to overcome nearly 100 years of effective fire suppression. However, we now recognize that our ability to protect spotted owl habitat and viable populations of spotted owls from these large fires through risk-reduction endeavors is largely uncertain (Courtney et al. 2004). Lint et al. (2005) indicated that the NWFP recognized wildfire as an inherent part of managing spotted owl habitat in certain portions of the range. The repetitive design of the NWFP can help mitigate the risks associated with large-scale fire (Lint et al. 2005).

West Nile Virus (WNV)

WNV has killed millions of wild birds in North America since it arrived in 1999 (McLean et al. 2001, Caffrey 2003, and Marra et al. 2004). Mosquitoes are the primary carriers (vectors) of the virus that causes encephalitis in humans, horses, and birds. Mammalian prey may also play a role in spreading WNV among predators, like spotted owls. Owls and other predators of mice can contract the disease by eating infected prey (Garmendia et al. 2000, Komar et al. 2001). Recent tests of tree squirrels from Los Angeles County, California, found over 70 percent were positive for WNV (R. Carney, pers. comm. 2004, cited in USFWS 2004). One captive spotted owl in Ontario, Canada, contracted WNV and died.

Health officials expect that WNV will eventually spread throughout the area that includes the range of the spotted owl (Courtney et al. 2004), but it is unknown how WNV will ultimately affect spotted owl populations. Susceptibility to infection and mortality rates of infected individuals vary among bird species, and even within groups of species (Courtney et al. 2004). Owls appear to be quite susceptible. Breeding eastern screech owls (*Megascops asio*) in Ohio experienced 100 percent mortality (T. Grubb, pers. comm., cited in Courtney et al. 2004). In contrast, barred owls showed lower susceptibility (B. Hunter, pers. comm., cited in Courtney et al. 2004). Some level of innate resistance may occur (Fitzgerald et al. 2003), which could

explain observations in several species of markedly lower mortality in the second year of exposure to WNV (Caffrey and Peterson 2003). Wild birds also develop resistance to WNV through immune responses (Deubel et al. 2001). The effects of WNV on bird populations at a regional scale have not been large, even for susceptible species (Caffrey and Peterson 2003), perhaps due to the short-term and patchy distribution of mortality (K. McGowan, pers. comm., cited in Courtney et al. 2004) or annual changes in vector abundance and distribution.

Courtney et al. (2004) offer competing propositions for the likely outcome of spotted owl populations being infected by WNV. One proposition is that spotted owls can tolerate severe, short-term population reductions due to WNV, because spotted owl populations are widely distributed and number in the several hundreds to thousands. An alternative proposition is that WNV will cause unsustainable mortality, due to the frequency and/or magnitude of infection, thereby resulting in long-term population declines and extirpation from parts of the spotted owl's current range.

West Nile virus (WNV) has been identified as a potential threat of unknown magnitude to the spotted owl (Courtney et al. 2004), and has the potential to reduce the population numbers beyond the projected decline anticipated under the NWFP (Lint et al. 2005). Thus far, no mortality in wild, northern spotted owls has been recorded. Habitat restoration and recovery for northern spotted owls is anticipated to take decades, due to the long-term regrowth and development of late-successional forest structure. As such, it is too early to evaluate the long-term effectiveness of conservation efforts and regulatory changes in conserving northern spotted owls. However, the WNV threat to the northern spotted owl may not be influenced by habitat management or improvement (USFWS 2004).

Sudden Oak Death

Sudden oak death was recently identified as a potential threat to the spotted owl (Courtney et al. 2004). The fungus-like pathogen *Phytopthora ramorum* that recently invaded from Europe causes this disease, and it is rapidly spreading. At the present time, sudden oak death is found in natural forest stands that include various oak (*Quercus* spp.) species from Monterey County to Humboldt County in California, and has reached epidemic proportions in oak and tanoak (*Lithocarpus densiflorus*) forests along approximately 300 km of that coast (Rizzo et al. 2002). It also occurs near Brookings, Oregon, killing tanoak, and causing dieback of closely associated wild rhododendron (*Rhododendron* spp.) and evergreen huckleberry (*Vaccinium ovatum*) (Goheen et al. 2002). It has been found in several different forest types and at elevations from sea level to over 800 m elevation. It poses a threat of uncertain proportion because of its potential impact on forest dynamics and alteration of key habitat components (i.e., hardwood trees), especially in the southern portion of the spotted owl's range (Courtney et al. 2004). However, the potential for management to address the additive effects of sudden oak death on habitat availability is unknown and substantial uncertainty about its effects mediated against placing too much weight on this factor in the USFWS Five-Year Review Evaluation (USFWS 2004).

Inbreeding Depression, Genetic Isolation, and Reduced Genetic Diversity

The Service did not consider inbreeding and other genetic problems due to small population sizes an imminent threat to the spotted owl at the time of listing. Recent studies show no indication of reduced genetic variation and past bottlenecks in Washington, Oregon, or California (Barrowclough et al. 1999, Haig et al. in press, Henke et al. unpublished). However, in Canada, Harestad (2004) estimated the breeding population to be less than 33 pairs and annual population decline may be as high as 35 percent. Canadian populations may be more adversely affected by issues related to small population size including inbreeding depression, genetic isolation, and reduced genetic diversity (Courtney et al. 2004). Low and persistently declining populations throughout the northern portion of the species range (see "Population Trends" below) may be at increased risk of losing genetic diversity.

Climate Change

Climate change, a potential additional threat to northern spotted owl populations, is not explicitly addressed in the NWFP. Climate change could have direct and indirect impacts on northern spotted owls and their prey. However, the emphasis on maintenance of serial stage complexity and related species diversity in the Matrix under the NWFP should contribute to the resiliency of the federal forest landscape to the impacts of climate change (Courtney et al. 2004).

Based upon a global meta-analysis, Parmesan and Yohe (2003) discussed several potential implications of global climate change to biological systems, including terrestrial flora and fauna. Results indicated that 62 percent of species exhibited trends indicative of advancement of spring conditions. Bird species manifest these trends in earlier nesting activities. Because the spotted owl exhibits a limited tolerance to heat relative to other bird species (Weathers et al. 2001), subtle changes in climate have the potential to affect this species. However, at this time, there is no agreed-upon, objective means to measure that potential.

Conservation Needs of the Northern Spotted Owl

Based on the above assessment of threats, the spotted owl has the following habitat-specific and habitat-independent conservation (i.e., survival and recovery) needs:

Habitat-Specific Needs

- Large blocks of suitable habitat to support clusters or local population centers of spotted owls (e.g., 15 to 20 breeding pairs) throughout the owl's range;

- Suitable habitat conditions and spacing between local spotted owl populations throughout its range to facilitate survival and movement;

- Suitable habitat distributed across a variety of ecological conditions within the spotted owl's range to reduce risk of local or widespread extirpation;

- A coordinated, adaptive management effort to reduce the loss of habitat due to catastrophic wildfire throughout the spotted owl's range, and a monitoring program to clarify whether these risk reduction methods are effective and to determine how owls use habitat treated to reduce fuels; and

- In areas of significant population decline, sustain the full range of survival and recovery options for this species in light of significant uncertainty.

Habitat-Independent Needs

- A coordinated research and adaptive management effort to better understand and manage competitive interactions between spotted and barred owls; and

- Monitoring to better understand the risk that WNV and sudden oak death pose to spotted owls and (for WNV) research into methods that reduce the likelihood or severity of outbreaks in spotted owl populations.

Conservation Strategy

Since 1990, various efforts have addressed the conservation needs of the spotted owl and attempted to formulate conservation strategies based upon these needs, beginning with the ISC's Conservation Strategy (Thomas et al. 1990). Several ensuing efforts continued to use the basic conservation strategy designed by Thomas et al (1990), including:

- The designation of critical habitat (USFWS 1992b),

- The preparation of a Draft Recovery Plan (USFWS 1992a),

- The Scientific Analysis Team report (Thomas et al. 1993),

- The report of the Forest Ecosystem Management Assessment Team (Thomas and Raphael 1993); and

- The Northwest Forest Plan (USDA/USDI 1994a).

Each conservation strategy was based upon the reserve design principles first articulated in the ISC's report, which are summarized as follows.

- Species well distributed across their range are less prone to extinction than species confined to small portions of their range.

- Large blocks of habitat, containing multiple pairs of the species, are superior to small blocks of habitat with only one to a few pairs.

- Blocks of habitat that are close together are better than blocks far apart.

- Habitat that occurs in contiguous blocks is better than habitat that is more fragmented.

- Habitat between blocks is more effective as dispersal habitat if it resembles suitable habitat.

Federal Contribution to Recovery

The NWFP is the current conservation strategy for the spotted owl on federal lands. It is designed around the conservation needs of the spotted owl and based upon the designation of a variety of land-use allocations whose objectives are either to provide for population clusters (i.e., demographic support) or to maintain connectivity between population clusters. Several land-use allocations, including Late-Successional Reserves (LSRs), Managed Late-Successional Areas (MSLAs), Congressionally Reserved Areas (CRAs), Managed Pair Areas, and Reserve Pair Areas, are intended to contribute primarily to supporting population clusters. The remaining land-use allocations, including Matrix, Adaptive Management Areas (AMAs), Riparian Reserves (RRs), Connectivity Blocks, and Administratively Withdrawn Areas (AWAs), provide connectivity among habitat blocks intended for demographic support.

The range-wide system of LSRs set up under the NWFP captures the variety of ecological conditions within the 12 different provinces to which spotted owls are adapted. This design reduces the potential for extinction resulting from large catastrophic events in one or more provinces. Multiple, large LSRs in each province reduce the potential that spotted owls will be extirpated in any individual province and reduce the potential that large wildfires or other large-scale events will eliminate all habitat within an LSR. In addition, LSRs are generally arranged and spaced to ensure a reasonable likelihood that spotted owls disperse among two or more adjacent LSRs. This network of reserves reduces the likelihood that catastrophic events will substantially reduce habitat connectivity and population dynamics among provinces.

Although FEMAT scientists predicted that spotted owl populations would decline in the Matrix over time, they expected populations to stabilize and eventually increase within LSRs as habitat conditions improved over the next 50 to 100 years (Thomas and Raphael 1993, USDA/USDI 1994a and 1994b). Based on the results of the first decade of monitoring, the NWFP's authors cannot determine if the declining population trend will be reversed because not enough time has passed to provide the necessary measure of certainty (Lint et al. 2005). However, the results from the first decade of monitoring do not provide any reason to depart from the objective of habitat maintenance and restoration as described under the NWFP (Lint et al. 2005). Other stressors, some already in action (e.g., barred owl), and some yet unrealized (West Nile virus), complicate the conservation of the spotted owl. Currently, the new reports generated on the science of the spotted owl offer few management recommendations to address the emerging threats facing the owl. The redundancy and flexibility of the system of NWFP land use allocations may prove to be the most appropriate strategy in responding to these unexpected challenges (Courtney et al. 2004).

Under the NWFP, the agencies anticipated a decline of northern spotted owl populations during the first decade of implementation. Recent reports (Courtney et al. 2004, Anthony et al. 2004a) identified greater than expected northern spotted owl declines in Washington and northern

portions of Oregon, and more stationary populations in southern Oregon and northern California. The reports found no direct correlation between habitat conditions and changes in northern spotted owls at the metapopulation scale. In addition, no evidence currently exists to suggest that dispersal habitat is currently limiting (Courtney et al. 2004, Lint et al. 2005). Even with the population decline, Courtney et al (2004) noted that there is little reason to doubt the effectiveness of the core of the NWFP conservation strategy.

According to the Service (U.S. Fish and Wildlife Service 2004), the current scientific information, including information showing northern spotted owl population declines, indicates that the spotted owl continues to meet the definition of a threatened species. That is, populations are still relatively numerous over most of its historic range, which suggests that the threat of extinction is not imminent, and that the subspecies is not endangered even in the northern part of its range where greater than expected population declines were documented.

Conservation Efforts on Non-Federal Lands

FEMAT noted that limited Federal ownership in some areas constrained the ability to form an extensive reserve network to meet conservation needs of the spotted owl. Thus, non-federal lands were an important contribution to the range-wide goal of achieving conservation and recovery of the spotted owl. The Service's primary expectations for private lands are their contributions to demographic support (pair or cluster protection) to and/or their connectivity with Federal lands. In addition, forest practice rules in effect in each state govern timber harvest, and provide protection of spotted owls and/or their habitat to varying degrees.

Washington: In 1993, the State Forest Practices Board adopted rules (Forest Practices Board 1996) that would "contribute to conserving the spotted owl and its habitat on non-Federal lands" based on recommendations from a Science Advisory Group which identified important non-Federal lands and recommended roles for those lands in spotted owl conservation (Hanson et al. 1993, Buchanan et al. 1994). Spotted owl-related Habitat Conservation Plans (HCPs) in Washington generally provide both demographic and connectivity support as recommended in these reports and the draft recovery plan (USFWS 1992a).

Oregon: The Oregon Forest Practices Act provides for protection of 70-acre core areas around known spotted owl nest sites, but it does not provide for protection of spotted owl habitat beyond these areas (ODF 2000). In general, no large-scale strategy or mechanism for spotted owl habitat protection currently exists for non-federal lands in Oregon. The four spotted owl-related HCPs currently in effect in Oregon address relatively few acres of land; however, they will provide some nesting habitat and connectivity over the next few decades.

California: In 1990, the State amended the State Forest Practice Rules (FPRs), which govern timber harvest on non-federal lands, to require surveys for spotted owls in suitable habitat and to provide protection around activity centers (CDF 2001). Under the FPRs, no timber harvest plan (THP) can be approved if it is likely to result in incidental take of Federally listed species, unless authorized by a federal HCP. The California Department of Fish and Game initially reviewed all THPs to ensure that take was not likely to occur; the Service took over that review function in 2000. Several large industrial owners operate under Spotted Owl Management Plans that have

been reviewed by the Service; the plans specify basic measures for spotted owl protection. The Service has approved three HCPs that authorize take of spotted owls. Implementation of these plans will provide for spotted owl demographic and connectivity support to NWFP lands.

Current Condition of the Spotted Owl

The current condition of the species incorporates the effects of all past human and natural activities or events that have led to the present-day status of the species and its habitat (USFWS and NMFS 1998).

Range-wide Habitat and Population Trends

Habitat Trends

The Service has used information provided by the Forest Service, Bureau of Land Management, and National Park Service to update the habitat baseline conditions on Federal lands for spotted owls on several occasions since the listing of the spotted owl in 1990. The estimated 7.4 million acres used for the NWFP in 1994 (USDA/USDI 1994a) was believed to be representative of the general amount of spotted owl habitat on these lands. This baseline was used to track relative changes over time in the subsequent analyses. The plan's effectiveness monitoring program resulted in the production, in 2005, of a new map depicting suitable spotted owl habitat throughout the species' range (Lint et al. 2005). However, this new habitat map is not yet available for use in tracking individual actions. Therefore, the following analyses indicate changes to the baseline condition established in 1994. The Service is beginning a process to evaluate the map for future use of tracking habitat trends.

Currently, there are no reliable estimates of spotted owl habitat on other land ownerships. Consequently, consulted-on acres can be tracked but not evaluated in the context of change with respect to a reference condition on non-federal lands. However, the production of the monitoring program habitat map provides an opportunity to evaluate trends in non-federal habitat.

Range-wide Analysis 1994 – 2001

In 2001, the Service assessed habitat baseline conditions (USFWS 2001), the first assessment since implementation of the NWFP in 1994. This range-wide evaluation of habitat was necessary to determine if the rate of potential change to spotted owl habitat was consistent with the change anticipated in the NWFP. In particular, the Service considered habitat effects documented through section 7 consultations since 1994. In general, the analytical framework of these consultations focused on the reserve or connectivity goals established by the NWFP land-use allocations (USDA/USDI 1994a). The Service expressed these effects in terms of changes in acreage of suitable spotted owl habitat within those land-use allocations. The Service determined that actions and their effects were consistent with the expectations for implementation of the NWFP from 1994 through June 2001 (USFWS 2001).

Range-wide Analysis 1994 – 2004 (first decade of the NWFP)

This section updates the information considered in USFWS (2001), relying particularly on information in documents the Service produced pursuant to section 7 of the Act and information provided by NWFP agencies on habitat loss resulting from natural events (e.g., fires, windthrow, insect and disease).

In 1994, about 7.4 million acres of suitable habitat were estimated to exist on federal lands. As of April 12, 2004, the Service had consulted on the proposed removal of 575,447 acres of spotted owl habitat range-wide, of which 190,429 acres occurred on federal lands managed under the NWFP. Federal lands were expected to experience an approximate 2.6 percent decline in suitable habitat due to all management activities (not just timber harvest) over the past decade, with about 167,134 acres[1] (approximately 2.3 percent) removed by timber harvest. These anticipated changes in suitable spotted owl habitat were consistent with the expectations for implementation of the NWFP.

Most management-related habitat loss on federal lands, considered range-wide, was concentrated in the Oregon physiographic provinces. In particular, the percentage of habitat to be removed from the Oregon Klamath Mountains province was relatively high (approximately 11 percent) in comparison to other provinces, most of which were characterized by less than a 4 percent decrease in habitat. Habitat removed from the Oregon Klamath Mountains province and the two Oregon Cascades provinces made up 44 percent and 36 percent, respectively, of the habitat loss range-wide since 1994. In summary, habitat loss in Washington accounted for 9.06 percent of the range-wide loss, but it only resulted in a loss of 0.73 percent of available habitat on Federal lands in Washington. In Oregon, habitat loss accounted for 82.37 percent of the range-wide losses, but only 4.13 percent of available habitat on Federal lands in Oregon. Loss of habitat on federal lands in California accounted for 8.57 percent of the losses range-wide, but only 1.34 percent of habitat on federal lands in California.

Since 1994, habitat lost due to natural events was estimated at approximately 168,301 acres range-wide. About two-thirds of this loss was attributed to the Biscuit Fire that burned over 500,000 acres in southwest Oregon (Rogue River basin) and northern California in 2002. This fire resulted in a loss of approximately 113,451 acres of spotted owl habitat, including habitat within five LSRs.

Little information is available regarding spotted owl habitat trends on non-federal lands. Internal Service consultations conducted since 1992 have documented the eventual loss of 407,849[2] acres of habitat on non-federal lands. Most of these losses have yet to occur because they are part of large-scale, long-term HCPs.

Subsequent to the analysis for the first decade (1994–2004) of the NWFP, the Forest Service and Bureau of Land Management reported revised estimates of fire impacts. They also reported that not all effects anticipated during section 7 consultations actually occurred on the landscape, since

[1] Data compiled by the U.S. Fish and Wildlife Service, Northern Spotted Owl Coordination Group.

[2] Data compiled by the U.S. Fish and Wildlife Service, Northern Spotted Owl Coordination Group.

the action agencies have not implemented some projects. Together these reports reduce the anticipated habitat loss during that decade. Therefore, the analysis above represents a reasonable, worst-case assessment. In addition, at the time of this assessment, we had no empirical information on increases in spotted owl habitat on any ownership resulting from suitable habitat that had developed through forest succession and in-growth. The 2005 NWFP monitoring program's recently released reports suggests that approximately 515,000 to over 1 million acres of younger forests may have transitioned into late-successional forest condition, range-wide, since 1994.

Range-wide Analysis from 2004 (first decade) to the Present

This section updates the information considered in the first range-wide, decadal (1994-2004) analysis of the NWFP to the present writing of this BO. In 1994, about 7.4 million acres of suitable habitat were estimated to exist on Federal lands. As of April 2004, the Service had consulted on the removal of 575,447 acres of spotted owl habitat range-wide, of which 190,429 acres occurred on Federal lands managed under the NWFP. From April 12, 2004, to the present, the Service has consulted on the removal or downgrading of 15,455 acres of spotted owl habitat range-wide on Federal lands managed under the NWFP (190,429 acres consulted on for removal through April 12, 2004, subtracted from 205,884 acres consulted on for removal through July 19, 2005). This amount of habitat loss (0.21 percent) is consistent with the expectations for timber management under the NWFP for the second decade of implementation, using the 2004 baseline of 7,038,368 acres of suitable habitat (1994 baseline with all suitable habitat losses subtracted out).

Currently, an estimated 4,876,646 acres of spotted owl habitat in Reserves receive protection under the NWFP.

Spotted Owl Numbers, Distribution, and Reproduction Trends

There are no estimates of the historical population size and distribution of the spotted owl within preferred habitat, although spotted owls are believed to have inhabited most old-growth forests throughout the Pacific Northwest prior to modern settlement (mid-1800s), including northwestern California (USFWS 1989). According to the final rule listing the spotted owl as threatened (USFWS 1990a), approximately 90 percent of the roughly 2,000 known spotted owl breeding pairs were located on federally managed lands, 1.4 percent were located on State lands, and 6.2 percent were located on private lands. The percent of spotted owls located on private lands in northern California was slightly higher (Forsman et al. 1984, USFWS 1989, Thomas et al. 1990).

Gutiérrez (1994), using data from 1986-1992, tallied 3,753 known pairs and 980 singles throughout the range of the spotted owl. At the time the NWFP was initiated (July 1, 1994), BLM estimated 5,431 known locations or site centers of spotted owl pairs or resident singles: 851 sites (16 percent) occurred in Washington, 2,893 (53 percent) occurred in Oregon, and 1,687 (31 percent) occurred in California (BLM 1995). Because some areas were unsurveyed (USFWS 1992a, Thomas et al. 1993), and many remain so, the actual population of spotted owls across the range was believed to be larger than either count.

Because current survey coverage and effort are insufficient to produce reliable population-size estimates, researchers use other indices, such as demographic data, to evaluate trends in spotted owl populations. Analysis of demographic data can provide an estimate of the rate and direction of population growth, identified by the parameter lambda (λ). A λ of 1.0 indicates a stationary population that is neither increasing nor decreasing, a λ less than 1.0 indicates a declining population, and a λ greater than 1.0 indicates a growing population.

In January 2004, at the spotted owl demographic meta-analysis workshop, two meta-analyses were conducted on the rate of population change using the re-parameterized Jolly-Seber method (λ_{RJS}). One meta-analysis applied to all 13 study areas, and a second meta-analysis applied to the eight study areas included in the Effectiveness Monitoring Program of the NWFP (Anthony et al. 2004a). Data were analyzed separately for individual study areas, as well as simultaneously across all study areas (true meta-analysis).

Estimates of λ_{RJS} ranged from 0.896-1.005 for the 13 study areas, and all but one (Tyee) of the estimates were <1.0, suggesting population declines for most areas (Anthony et al. 2004a) (Figure 1). There was strong evidence that populations on the Wenatchee, Cle Elum, Warm Springs, and Simpson study areas declined during the study, and there also was evidence that populations on the Rainer, Olympic, Oregon Coast Range, and HJ Andrews study areas were decreasing (Figure 1). Precision of the λ_{RJS} estimates for the Rainier and Olympic study areas were poor and not sufficient to detect a difference from 1.00. The estimate of λ_{RJS} for the Rainier study area (0.896) was the lowest of all of the areas. Populations on the Tyee, Klamath, South Oregon Cascades, Northwest California, and Hoopa study areas appeared to be stationary during the study, but there was some evidence that the South Oregon Cascades, Northwest California, and Hoopa study areas were declining (λ_{RJS} <1.00).

The weighted mean λ_{RJS} for all of the study areas was 0.963 (SE = 0.009, 95 percent CI = 0.945-0.981), suggesting that populations over all study areas collectively were declining by about 3.7 percent per year from 1985-2003. The mean λ_{RJS} for the eight demographic monitoring areas on Federal lands was 0.976 (SE = 0.007, 95 percent CI = 0.962-0.990), and the mean for non-Federal lands was 0.942 (SE = 0.016, 95 percent CI = 0.910-0.974), an average decline of 2.4 versus 5.8 percent per year, respectively. This suggests that spotted owl populations on Federal lands were declining but at a lower rate than elsewhere. However, interspersion of non-federal and federal land ownership on the study areas confounds this analysis.

The number of populations that have declined and the rate at which they have declined are noteworthy, particularly the precipitous declines on the four Washington study areas (Wenatchee, Cle Elum, Rainier, and Olympic). In these study areas, the population decline is estimated at 30-50 percent over 10 years. A similar decline is estimated for the Warm Springs study area in Oregon (Anthony et al. 2004a). Declines in adult survival rates may be an important factor contributing to declining population trends. Survival rates declined over time on five of the 14 study areas: four study areas in Washington, which showed the sharpest declines, and one study area in the Klamath province of northwest California (Anthony et al. 2004a). In Oregon, apparent survival for four of six study areas showed no time trends, and the remaining two study areas had weak non-linear trends. In California, two study areas showed no

trend, one showed a slight decline, and one showed a significant linear decline (Anthony et al. 2004a). Like the trends in annual rate of population change, trends in adult survival rate showed clear declines in some areas, but not in others.

A small population of spotted owls occurs in British Columbia. This relatively isolated population apparently is declining sharply. Large areas of apparently suitable habitat are currently unoccupied (Courtney et al. 2004). Breeding populations have been estimated at fewer than 33 pairs. The species may be declining as much as 35 percent per year (Harestad et al. 2004). The amount of interaction between spotted owls in Canada and the U.S. is unknown (Courtney et al. 2004). The Canadian population has reached the point where it is now vulnerable to stochastic demographic events that could cause further declines and perhaps extirpation; conditions are not likely to improve in the short term (Courtney et al. 2004).

Status in the Project Vicinity

Information for northern spotted owl territories in Mendocino County was obtained by Caltrans from the most current version of the California Department of Fish and Game (CDFG) database. This database is maintained by CDFG and tracks all known northern spotted owl territories throughout the state of California. Currently, the CDFG northern spotted owl database lists 556 territories in Mendocino County.

Crude density (i.e., the number of owls per square kilometer) has been calculated for several forest lands in northwestern California. The current density of northern spotted owls on Mendocino Redwoods Company lands is 0.272 owls/km^2. This density appears to be one of the greater densities throughout forest lands in northern California. The Biological Opinion for Pacific Lumber Company cites a density of 0.325 owls/km^2 (USFWS 1999c), the greatest known density reported for northern California. Lower densities were found in the Willow Creek study area in Humboldt County, 0.235 owls/km^2 (Franklin et al. 1990); Green Diamond lands in northern California, 0.209 owls/km^2 (Diller and Thome 1999); and Redwood National Park, 0.163 owls/km^2 (Tanner 1999).

Research in California indicates that several northern spotted owl study populations may be stable or slightly declining (Franklin et al. 1996, Franklin et al. 2002). A minimum population estimate for northern spotted owls in California during the late 1980s and early 1990s was 1,111 pairs (Gutierrez et al. 1995). Although populations may be stable in northern California, northern spotted owl populations are declining across a large portion of their range due to destruction and fragmentation of old-growth habitat (Noon and McKelvey 1996). Fragmentation of old-growth and other late-successional forest habitat has isolated populations and reduced prey availability in areas of the northern spotted owls' range other than northern California (Thomas et al. 1990).

ENVIRONMENTAL BASELINE (in the Action Area):

Regulations implementing the Act (50 CFR §402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have

already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation process.

Distribution of Northern Spotted Owls in the Action Area

Field Surveys

Potential northern spotted owl habitat was mapped by Caltrans within the Oil Well Hill area according to California Board of Forestry guidelines (Caltrans 1997). Several vegetation communities in the project area were found to be generally consistent with spotted owl habitat characteristics. Initial preparation of the habitat map was conducted using information from the vegetation assessment.

Caltrans' surveys for northern spotted owls followed guidelines endorsed by the Service. Surveys for northern spotted owls occurred from April through August 1991; additional surveys were conducted in 1992 and 1993. Surveys were conducted in areas that provide functional nesting, roosting, and foraging habitat for spotted owls. The surveys were conducted to determine spotted owl presence and nesting status in the project area. The quality and amount of suitable habitat within an occupied spotted owl territory were described in order to assess the effects of altering spotted owl habitat in the project area. The amount of functional nesting, roasting, foraging, and dispersal habitat was measured within the proposed project corridor to determine the ability of these areas to support spotted owls (Caltrans 1997). After spotted owls were detected during night surveys in 1991, intensive day surveys were conducted to locate nest sites or activity centers. Once located, spotted owls were moused to locate nests (Caltrans 1997).

Caltrans biologists conducted informal, non-protocol, site-specific surveys for northern spotted owls in 1998, in habitat known to support spotted owls. These surveys were conducted in order to locate spotted owls detected in the 1991, 1992, and, 1993 surveys (Caltrans 2000). Following this informal survey, protocol-level surveys for northern spotted owls were initiated again, in 1999, in order to assess the status and presence of spotted owls in the project area. These surveys followed the two-year method as described in the 1992 California State Board of Forestry guidelines.

In addition to these survey results, Caltrans also utilized the Natural Environment Study (NES) (Caltrans 1997), local CDF/CDFG Timber Harvest Plans, the California Natural Diversity Database (CNDDB 2003, CNDDB 2005), and discussions with CDFG biologists to update and assess presence of northern spotted owls in the project area.

Current Condition in the Action Area

Northern spotted owls were not found within the Modified J1T project corridor, nor within the footprint of the designated borrow site at Oil Well Hill during the most recent (i.e., 1999) surveys. However, spotted owls were found historically near the project corridor and at Oil Well Hill, west of the existing U.S. Highway 101. Suitable nesting/roosting/foraging habitat does not occur within the Modified JIT corridor; the area is not capable of supporting such habitat.

However, suitable spotted owl foraging and dispersal habitat exists at the Oil Well Hill designated borrow site (Figure 3-2, Appendix I, of the BA).

Suitable northern spotted owl nesting and foraging habitat occurs in the densely forested areas around the western and northwestern perimeter of Little Lake Valley, consisting of mixed north-slope forest, Douglas-fir forest, mixed conifer forest, mixed evergreen forest, and some of the black oak and Garry oak woodland. Large stands occur at the extreme northern end of the valley, north of Outlet Creek, and west of U.S. Highway 101, just southwest of the Louisiana-Pacific mill along the west side of U.S. Highway 101 (Figure 3-2, Appendix I of the BA).

Protocol-level surveys within potential northern spotted owl habitat in the project area resulted in finding two pairs of spotted owls in 1991 and 1992 (Figure 5-4, Appendix I of the BA). Both pairs were located outside of the Modified J1T corridor and outside the proposed Oil Well Hill borrow site. One pair (pair 1) was located west of U.S. Highway 101 in the Wild Oat Canyon drainage, and the second pair (pair 2) was observed just west of U.S. Highway 101 and north of Outlet Creek (Figure 5-4, Appendix I of the BA).

Pair 1 was a breeding pair observed in 1991 and 1992. In 1991, the pair produced one young at a nest within a mature forest grove covering several hectares along an unnamed drainage. The land surrounding the nesting area (or activity center) consisted of dense mixed-conifer forest on all sides. The nest site was within 0.8 km (0.5-mile) of a rural residential area along Highway 101 north of Willits. In late 1991 all but approximately 5.7 hectares (14.1 acres) (designated as a protected area) of this nesting grove was selectively harvested. All large conifers were removed, except those within the 5.7 hectares (14.1 acres) protected area. In 1992, this pair nested in an old stick nest just north of the remnant nesting grove and produced two young. No adults were found during a one-day survey conducted on April 8, 1993. A two-year protocol-level survey conducted in 1999 and 2000 found no evidence of spotted owls nesting at this site. The nesting grove is located outside of the project corridor and designated borrow site at Oil Well Hill, approximately 2.3 km (1.4 miles) southwest of Oil Well Hill.

Pair 2 was located in the area of Outlet Creek, west of Highway 101 and north of Outlet Creek. This pair did not breed in 1991 but did breed in 1992. In 1992, this pair nested within a small unnamed drainage between Highway 101 and Outlet Creek Road, approximately 150 meters (500 feet) west of Oil Well Hill, and produced two young. Based on results of the one-day survey conducted on April 8, 1993, this pair did not breed in 1993. Most of the area is dense, second growth mixed-conifer forest with small pockets of older forest. The nesting grove is outside of the project corridor, but is near the designated borrow site at Oil Wel Hill. A two-year protocol-level survey conducted in 1999 and 2000 found no evidence of nesting activity at this nest site.

The area immediately north of Little Lake Valley, including the proposed borrow site, is the southernmost area in the Coast Range with continuous spotted owl dispersal habitat that connects the coastal spotted owl populations with more interior coastal range spotted owl populations east and south of Willits. South of this area, connections between coastal and more interior populations are fragmented by river valleys, drier forest types, agriculture, and developed areas less conducive to dispersal by spotted owls.

Critical Habitat

No designated critical habitat for northern spotted owl occurs within or near the Modified J1T alignment or the designated borrow site at Oil Well Hill. Therefore, no critical habitat will be affected by this proposed action.

EFFECTS OF THE ACTION

Scientific Basis for Evaluating Potential Effects

This section describes the scientific basis for analyzing the potential direct and indirect effects of human actions, including their interrelated and interdependent actions, on the northern spotted owl. While the implementation of most proposed actions, including the proposed Willits Bypass Project, would not result in all of the potential effects described herein, this discussion provides a general framework and understanding under which the proposed action considered in this biological opinion may be objectively analyzed.

Potential Effects of Habitat Modification

Site-Specific Effects

Forest and fire management practices have the potential to reduce the quantity and quality of spotted owl nest and roost sites. Spotted owls depend upon existing forest structures, such as cavities and broken treetops, for nest sites. Silvicultural prescriptions, timber harvest activities, and fire management activities which result in the removal of the oldest, most decadent trees or require removal of hazard trees and snags may remove potential spotted owl nest sites (Blakesley et al. 1992). Further, prescriptions designed to reduce ladder fuels or release the growth of co-dominant trees often simplify vertical structure in the understory, where spotted owls perch for hunting or roosting (Forsman et al. 1984).

Timber harvest and fire management activities can contribute to changes in habitat microclimate by reducing overall canopy closure within nesting and roosting habitat. A reduction in canopy closure often results in reduced protection from environmental factors, such as rain, wind, snow, and temperature. Laboratory and field studies have determined that spotted owls are less heat tolerant than many other bird species. Physiological limitations corroborate these observations (Weathers et al. 2001).

Removing trees, snags, and downed wood can affect prey composition and/or availability by altering characteristics of the habitat upon which prey species depend. Because the amount of snags and down material on the forest floor is positively correlated with densities of some prey species, a reduction in the abundance of these components may contribute to localized, short-term declines in prey (Williams et al. 1992). Reductions in populations of these prey species could lower spotted owl recruitment.

Landscape-Level Effects

Site-specific effects could change the function which forested stands provide for northern spotted owls. For the purposes of the following discussion, changes in habitat function resulting from cutting of trees and other vegetation are categorized as removal, downgrade, or degrade. Removal represents a complete loss of habitat function following an action. For example, an area functioned as nesting/roosting habitat; after habitat modification, the area does not provide any habitat function. Downgrade is a subset of the term removal and refers to a loss of habitat function and change from one habitat function to another. For example, if an area functioned as nesting/roosting habitat before habitat modification, but is capable of providing only foraging habitat post-project, this would be classified as downgrade. This term could also be used to signify a change in function from foraging to dispersal as well. Degrade, to be distinguished from downgrade, indicates a reduction in habitat quality, but not habitat function. For example, an area that functioned as foraging habitat prior to an action still provides foraging habitat after the effect, but prey abundance may be reduced due to a reduction in some structural components or vegetation.

Removal or downgrading of habitat within home ranges, especially when located close to the nest site, can reasonably be expected to negatively affect northern spotted owls. A reduction in northern spotted owl productivity and survivorship occurs as the amount of suitable habitat within a spotted owl home range declines (Bart 1995). In northwestern California, survivorship of adult spotted owls was greater where greater amounts of older forest were present around the activity center, but reproductive success increased where the amount of edge between older and younger forest was relatively high (Franklin et al. 2000).

Research indicates that spotted owls in northern California focus their activities in heavily-used "core areas" that range in size from about 167 to 454 acres, with a mean of about 409 acres (Bingham and Noon 1997). These core areas, which included 60 to 70 percent of the spotted owl telemetry locations during the breeding season, typically comprised only about 20 percent of the home range area. Therefore, habitat removal within core areas could have disproportionate effects on spotted owls. Spotted owl abundance and productivity significantly decrease when the proportion of suitable habitat within 0.7 mile of an activity center falls below 500 acres, which represents 50 percent of the total 1,000 acres within 0.7 mile (O'Halloran 1989; Simon-Jackson 1989; Thomas et al. 1990). For the purpose of consultation, the Service identifies the following guidelines for the amount of suitable habitat needed to maintain essential behaviors, such as breeding, within the home range area: 500 acres within 0.7 mile of the activity center and 1,336 acres within 1.3 mile of the activity center.

Potential Effects of Noise Disturbance

Some activities, such as timber harvesting, road construction and decommissioning, landslide rehabilitation, trail maintenance, and fire management, use motorized equipment (e.g., helicopters, heavy equipment, or chainsaws) that introduces high levels of noise into the environment. This elevated noise level may have adverse effects on wildlife species by interfering with essential behaviors. The effects of noise on birds are difficult to determine (Knight and Skagen 1988) and quantify. Confounding factors include the tolerance level of individual birds, type and frequency of human activity, ambient sound levels, how sound reacts

with topography and vegetation, and differences in how species perceive noise. Regardless of these difficulties, research conducted on a variety of bird species suggests that disturbance can have a negative impact on their reproductive success (Tremblay and Ellison 1979; Belanger and Bedard 1989; Piatt et al. 1990; Henson and Grant 1991). Disturbance can affect productivity in a number of ways, including interference of courtship (Bednarz and Hayden 1988), nest abandonment (White and Thurow 1985), egg and hatchling mortality, exposure and predation (Drent 1972; Swensen 1979), and altered parental care (Fyfe and Olendorff 1976; Bortolotti et al. 1984).

The few studies which examined responses of northern and Mexican spotted owls to several disturbance sources, such as helicopters, small chainsaws, and hikers, indicate that noise can disrupt spotted owl behaviors, such as flushing from roosts and prey delivery rates (Delaney et al. 1999; Delaney and Grubb 2001; Swarthout and Steidl 2001). However, spotted owl sensitivity varies with stimulus distance, location (i.e., aerial or ground), type, and timing, as well as individual tolerance (Delaney et al. 1999; Delaney and Grubb 2001; Swarthout and Steidl 2001).

Potential Effects of Injury or Mortality

In extreme cases, forest or fire management activities could result in direct injury or mortality of adults, eggs, or young. The potential for northern spotted owls to be struck and killed or injured by falling trees during harvesting or exposed to high levels of smoke during prescribed burning is confined to the area relatively close to the nest tree. Individual adult spotted owls reasonably can be expected to move from the area of disturbance and avoid injury or death. However, adult spotted owls which are incubating eggs or brooding young may be reluctant to leave the area (Delaney et al. 1999) and be vulnerable to injury or death. Young spotted owls are poor fliers immediately after leaving the nest; they develop their flight skills during their first months after leaving the nest. Thus, they are most vulnerable to being struck by falling trees during this time. Young are also susceptible to smoke inhalation. They may disperse prematurely in response to disturbance such as tree falling or smoke, thus increasing the likelihood of predation or starvation outside of the nest grove. Adults may abandon eggs in response to tree felling near the nest (Drent 1972; Swensen 1979; White and Thurow 1985). Forest management that includes falling trees may crack or destroy eggs.

Effects of the Proposed Action

The proposed project corridor and road alignment will avoid direct and indirect impacts to northern spotted owl nesting and foraging habitat, because it is greater than 0.8 km (0.5 mile) from known nesting activity centers, and would not remove any suitable habitat. Because much of the alignment through Little Lake Valley will require fill material upon which to build the road bed, very little excavation will occur in the proposed road prism. However, a substantial amount of fill material is needed to build the roadbed, and a borrow site will be needed. Oil Well Hill, located alongside Highway 101 approximately 3 miles north of the proposed road alignment, is the designated borrow site. Excavation of fill material there will require the removal of existing forest vegetation.

Potential effects of this proposed action to spotted owls within the action area include loss of suitable nesting, roosting and foraging habitat, and temporary noise and visual disturbance within potentially occupied habitat during construction. Minimization measures identified earlier in this biological opinion will reduce but will not eliminate adverse effects. The potential effects to the spotted owl from the proposed action, and reductions in the effects as a result of implementing the proposed minimization measures, are discussed below.

Caltrans anticipates the removal of a maximum of 40 acres (16 ha) of nesting, roosting, foraging and dispersal habitat, and disturbance resulting from potential differences in noise patterns during the excavation activities. In addition, existing traffic noise dynamics resulting from extensive landscape modification on the east side of the highway could change. These impacts to spotted owls are discussed in detail in the following sections. Because of the historic presence of northern spotted owl nesting within approximately 152 meters (500 feet) of the proposed Oil Well Hill borrow site, and the removal of approximately 40 acres (16 ha) of nesting, roosting, foraging and dispersal habitat at the proposed borrow site, the proposed project may adversely affect northern spotted owl.

Effects Due to Habitat Removal and Degradation

Excavation of fill material within the borrow site will require a substantial removal of native forest vegetation. The area has been subject to previous logging activities, but mature and old-growth trees are found within the forest matrix in the excavation area. The removal of this forest habitat will result in the loss of nesting, roosting, and foraging habitat for the spotted owl, as well as some dispersal habitat.

Provincial Home Range

The provincial home range of a spotted owl in the vicinity of the action area is approximated by a circle of radius 1.3 mi. (2.1 km). This circle encompasses the median area of a spotted owl home range within the California Coast Range province, as estimated through research, of approximately 3,340 ac.(1,352 ha). Provincial home ranges apply to nesting or territorial pairs as well as individual spotted owls that demonstrate multi-year occupancy of suitable nesting habitat. The center of the provincial home range is identified by a known nest tree, location of fledglings, or other sign of spotted owl occupancy of a given area.

Project effects to suitable habitat are based on the types of activities and their location within identified provincial home ranges. The threshold for harm to the spotted owl is defined as the reduction of available suitable habitat to less than 1,336 acres (40 percent of the area) within a provincial home range as a result of the current action combined with effects of previous actions. The home range is further defined by a more critical area of about 1,000 ac. (405 ha), approximated by a 0.7 mi. (1.1 km) radius circle from the spotted owl activity center. The threshold within this critical area is the reduction below 50 percent (500 acres) of suitable habitat as a result of the current action combined with previous actions in the area. Any suitable nesting/roosting habitat removal within the closest 70 ac. (2.8 ha) area to the activity center constitutes harm to spotted owls. This 70-acre core area can be approximated by a circle of

radius 985 ft. (0.186 mi., 0.304 km), or may be described as a specific polygon of habitat in a site-specific analysis.

Existing potentially suitable nesting/roosting/foraging habitat was mapped in 2005 within a 1.3-mile radius of the Oil Well Hill borrow site by Caltrans wildlife biologist Peter Lewendal (Appendix F of the BA). This study involved assembling a base map consisting of portions of the USGS 7.5 minute Longvale, Burbeck, Willis Ridge and Willits quadrangles. Aerial photographs were not available, so Caltrans had the area flown to created stereo-pair photographs of the site in 2005. The aerial photos were reviewed in April 2005 to assess spotted owl nesting/roosting, foraging and unsuitable habitats. The area was ground-truthed on April 25 and 26, 2005.

Caltrans' analysis determined that within the 1.3-mile radius polygon of this borrow site (encompassing approximately 4839.1 acres), approximately 3070.3 acres consist of suitable foraging habitat, and 99.2 acres consist of suitable nesting/roosting habitat, encompassing an area of approximately 3169.5 acres of suitable habitat, or approximately 65.5 percent of the 1.3-mile radius polygon.

Approximately 32.4 acres of the Oil Well Hill borrow site consists of suitable nesting, roosting, and foraging habitat. Hence, if the entire Oil Well Hill borrow-site is excavated, Caltrans estimated that approximately 3,137.1 acres (approximately 64.9 percent) of suitable foraging and nesting/roosting habitat would remain within the 1.3-mile radius of the Oil Well Hill borrow site (Habitat Analysis Report, Appendix F of the BA).

In a separate analysis using a slightly different classification of habitat, the Service estimated that approximately 4,802.9 acres occurs within 1.3 miles of the footprint of the borrow site, of which 2,435.5 acres (50.7 percent) currently support suitable nesting, roosting and foraging habitat. For the owl site on Oil Well Hill that would be directly affected by the removal of suitable habitat, approximately 1828.6 acres (53.9 percent) of suitable nesting, roosting, and foraging habitat currently exists within the provincial home range of the known site on Oil Well Hill.

Following the removal of a maximum of 32.4 acres of suitable habitat, the 1.3 mile buffer area around the borrow site would retain at least 2,403.1 acres of suitable, or 50.0 percent of the area. For the affected owl site, the removal of 32.4 acres of suitable will result in an estimated retention of 1,796.2 acres (53.8 percent) of suitable within the provincial home range.

In the more critical area within 0.7 miles of the site center, the Service estimates that approximately 597.9 acres of suitable habitat currently exists, or about 59.8 percent of the area. Following the removal of suitable habitat from the borrow site, approximately 565.5 acres of suitable will remain, or about 56.6 percent of the area.

Site Center

One known owl site center is located near the proposed borrow site, and we estimate that up to 10 acres of suitable nesting, roosting, and foraging habitat would be removed from the 70-acre core area. This estimate is based on the anticipated core area around the known nest site including the most favorable, contiguous nesting and roosting habitat. For this particular site,

approximately 10 acres occurs within the proposed borrow site. The known site center was not occupied during the most recent protocol surveys completed in 1999 and 2000. However, its occupancy status has not been documented since 2000, so it is presumed to still be a functional site center. Site surveys will be conducted during the two years prior to the initiation of project construction to confirm presence or absence during project implementation. These surveys are anticipated to occur during the years 2007 and 2008. It is possible that the site center for this owl site has moved to a new, undetected location since the last confirmed sighting. However, in the absence of new information, the known site center will be adversely affected by the removal of nesting and roosting habitat near a known site center.

Effects Due to Noise Disturbance

Excessive noise generated by the proposed action has the potential to disrupt essential breeding behaviors of spotted owls, or result in reduced reproductive performance through adverse effects to nesting spotted owls and their young. Based on surveys conducted during 1991 to 1993 and repeated in 1999 and 2000, only one spotted owl nest site is known to occur within 0.5 miles or less of the proposed action, on Oil Well Hill. The last known occupancy of this nest site was 1993. Spotted owls located farther than 0.5 miles from the project footprint would not be affected by noise generating activities.

A 65-hour-long, continuous noise survey conducted by Caltrans at Oil Well Hill during the period May 6-8, 2004, found that existing traffic sound levels were fairly high throughout one 24 hour period, ranging from approximately 60 to 83 decibels (dB) (L_{max}, from table in Appendix E of the BA), but were lower during the late evening and early morning hours for the other 24 hour period, ranging between approximately 37 and 52 dB (Appendix E of the BA). Caltrans anticipates that noise levels generated by heavy equipment used for excavation would range from approximately 70 to 80 dB at the project site (Keith Pommerenck, pers. comm.). Hence, it is anticipated that excavation noise levels are not expected to significantly exceed existing traffic levels for excavation occurring immediately adjacent to the existing highway. However, because excavation is expected to occur continuously during both day and night hours, the difference in the frequency of noise patterns could potentially disturb spotted owls, if they are nesting and foraging in the area.

Excavation can occur as far as 600 ft. (183 m) from the edge of the existing highway surface, if the need for fill material dictates. The ambient sound environment at this distance from the highway is anticipated to be substantially lower than what occurs nearer to the highway. The sound level generated by excavation activities may, therefore, substantially exceed the ambient condition. However, these excessive sound levels would be farther from the known nest site, and would likely have less effect on nesting owls there than if their nest site nearer this eastern edge of the excavation area.

The contractor may use explosives at Oil Well Hill as part of the excavation of fill material. The number and frequency of charges would be determined by the contractor. Blasting typically produces a rapid series of impulse type noise with mostly low frequency noise content (Illingsworth and Rodkin 2005). If explosives are used at Oil Well Hill, the charges would be set below ground rather than on the surface, to fracture and loosen the rock. Estimates of noise

levels generated by blasts in a study for the Confusion Hill Relocation Project (Illingsworth and Rodkin 2005) recorded a noise level of approximately 85 dBA at approximately 550 feet. In addition, blasting noise levels recorded for emergency work performed at Confusion Hill, Mendocino County, which involved a surface blast, recorded noise levels of 83 dBA at approximately 500 feet line-of-site from the point of detonation, as reported in the BA.

These numbers reported by Caltrans would translate to sound levels substantially higher than sound levels within the site center or at a potential nest tree under ambient conditions. Sound levels reported for blasting (85 dB at 550 feet) would translate to approximately 106 dB at 50 ft. (15 m), which substantially exceeds the reported sound level (60-83 dB) of traffic on the existing highway. Should owls attempt to nest at the site on Oil Well Hill, this level of disturbance could lead to behavioral modifications, such as flushing from the nest, and injury to owls.

Highway noise levels are not anticipated to increase significantly in the future, and the existing cut banks absorb sound and contribute no more than a minimal echo effect. Therefore, Caltrans anticipates that the transmission of highway traffic noise eastward into potential NSO habitat east of Oil Well Hill would not be significantly higher than existing levels (K. Pommerenck, pers. comm.).

Interrelated and Interdependent Activities

Regulations implementing the Act require the Service to consider the effect of activities which are interrelated and interdependent to the proposed action (50 CFR 402.02). The Act defines interrelated activities as those which are part of a larger action and depend upon the larger action for their justification, and interdependent activities as those projects which have no independent utility apart from the action that is under consideration. This proposed action does not include any interrelated and interdependent activities.

Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur within the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Within the Action Area, the only foreseeable action with known construction dates which potentially would have cumulative effects associated with the Willits Bypass is the proposed wastewater treatment facility for the City of Willits. This action would include the construction of new wastewater treatment facilities, including the construction of expanded oxidation ponds, treatment wetlands, mitigation areas for wetland use, and a public trail around these facilities. This project does not occur within or near suitable spotted owl habitat, and is not expected to have any effects on the species.

Other potential activities in or near the Action Area include: a second access road to the Brooktrails subdivision, which may be routed in or near Wild Oat Canyon; a third access road to Brooktrails, connecting to Highway 20 west of Willits; the expansion of public transit and

bicycle/pedestrian facilities near Baechtel Road/Railroad Avenue; repairs to the existing Northwest Pacific Railroad, including its route through the Outlet Creek Canyon; the build-out of the Brooktrails subdivision; the build-out of the City of Willits and adjacent unincorporated Mendocino County lands; and, future timber harvest plans (THPs) in the Action Area. However, none of these activities are currently designed or planned to a level where effects to listed species or their habitats can be reasonably considered at this time, and so do not contribute to cumulative effects for the project considered in this consultation.

The CDF has records of six THPs within, or partially within, the 2.6 km (1.6-mile) radius circle around Oil Well Hill that have been recorded since 1990. These are 1-90-364 MEN (50 acres [20 ha]); 1-90-631 MEN (665 acres [370 ha]); 1-94-155 MEN (20 acres [8 ha]); 1-94-591 MEN (238 acres [96 ha]); 1-95-487 MEN (50 acres [20 ha]); and 1-99-051 MEN (11 acres 4.5 ha]). Portions of two THPs, 1-90-631 and 1-94-591 extend outside the 2.6 km (1.6-mile) radius. The majority of these logging activities involved seed tree and shelterwood cuts.

Because of the existing market the current value of timber is low, there are no immediate future plans to harvest timber within the Oil Well Hill area. Hence, it is not possible to predict future logging activities. All of the land within the 1.6-mile radius is privately owned, and logging on the areas encompassed by these THPs has occurred in the past, and could occur in the future if timber prices are more favorable.

No other actions likely to result in cumulative effects to listed species are currently being implemented or planned in the action area at this time.

CONCLUSION

After reviewing the current status of the northern spotted owl, the environmental baseline for the action area, the effects of implementing the proposed construction of the Willits Bypass project in Mendocino County, and its cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the northern spotted owl. The Service reached this non-jeopardy conclusion based on the following factors:

1. The proposed action will remove suitable spotted owl nesting, roosting and foraging habitat. Most of this loss of habitat will be permanent. That is, those portions of the habitat that will be permanently maintained as roadway, cut banks, fill slopes, and other areas permanently unvegetated or maintained as low vegetation will never recover its function as suitable spotted owl habitat. Despite this loss, the removal of suitable habitat has been reasonably minimized, in regards to the purpose and need of the action, through implementation of minimization measures identified in the project description. After completion of the proposed action, the known active spotted owl site will still encompass more than 40 percent suitable habitat within the provincial home range (1.3 mile radius of the known nest), and will contain more than 50 percent suitable habitat within the 0.7 mile radius area.

2. One owl site will be affected by the loss of up to 32.4 acres of suitable habitat. Only a small portion of this 32.4 acres occurs within the 70-acre owl core area, likely to be less

than 10 acres. All of these acres to be removed are across the highway from the known site center. However, some of the acres to be removed are the better quality habitat remaining available to this already compromised site center. Despite the potential loss of this site center, the regional scale of the effect is small, affecting only a single known site within this province.

3. One spotted owl nest site is known to occur within a distance of the borrow site such that it may be adversely affected by noise disturbance resulting from construction activities, under the proposed minimization measures. However, this site was not occupied when last surveyed in 1999 and 2000. Surveys will be conducted during the two years prior to the start of construction, to confirm occupancy of this site at that time. Surveys are anticipated to occur during the years 2007 and 2008. Should this spotted owl site, or another new site within one-quarter mile of the borrow site, be found to be occupied at that time, FHWA and Caltrans will consult with the Service at that time to address new information and consider minimization measures appropriate to the exact location of any known spotted owls.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under that Act provided that such taking is in compliance with this Incidental Take Statement.

Any Reasonable and Prudent Measures described below are non-discretionary, and must be undertaken by the FHWA so that it becomes a binding condition of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. FHWA has a continuing duty to regulate the activity covered by this incidental take statement. If FHWA (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, FHWA must report the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement [50 CFR §402.12(I)(3)].

AMOUNT OR EXTENT OF INCIDENTAL TAKE

The Service anticipates that up to one pair of northern spotted owls associated with the site center on Oil Well Hill will be taken as a result of this proposed action. Implementing the proposed action would result in the removal of suitable habitat, and would adversely affect the species. This removal of suitable habitat would occur within a known northern spotted owl site center, and would harm the species as a result of loss of suitable habitat around an historically occupied and successfully nest. The removal of up to 32.4 acres of suitable habitat would occur within the provincial home range of an known owl site, but would not remove sufficient habitat to result in harm to the species at the home range scale. Finally, should blasting occur at the excavation site, the sound level generated by such subsurface explosives would harass the species as a result of substantially elevated sound levels at a potentially occupied nest site. Up to one pair of northern spotted owls would be harassed by this elevated sound level.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the northern spotted owl.

REASONABLE AND PRUDENT MEASURES

No reasonable and prudent measures are necessary to minimize impacts of incidental take of northern spotted owls. Minimization measures agreed to by Caltrans and incorporated into the project description would sufficiently reduce the amount of take.

TERMS AND CONDITIONS

No terms and conditions are necessary because reasonable and prudent measures are deemed unnecessary.

MONITORING REQUIREMENTS

No monitoring requirements are necessary.

REPORTING REQUIREMENTS

Upon locating a dead or injured northern spotted owl, initial notification must be made to the Service's Division of Law Enforcement in Chico, California at (530) 342-8724 and Michael Long, Field Supervisor, Arcata Fish and Wildlife Office at (707) 822-7201 immediately, and in writing within three (3) working days. Notification must include the date, time, and location of the carcass; cause of death or injury, if known; and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state for later analysis of cause of death. The finder has the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed, unless to remove it from the path of further harm or destruction. Should any treated listed species survive, the Service should be contacted regarding the disposition of the animal. In the case of take or suspected take of northern spotted owl not exempted in this

biological opinion, the Arcata Fish and Wildlife Office and the Division of Law Enforcement shall be notified within 24 hours.

COORDINATION OF INCIDENTAL TAKE WITH OTHER LAWS

The Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), of the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service provides Caltrans with the following conservation recommendations:

1. Portions of the habitat disturbed during construction of the Willits Bypass may be appropriate to restore to conditions that promote the future growth of suitable habitat conditions. These conditions include limiting the extent of tree removal to that necessary for completing the construction work, replanting disturbed areas as appropriate to local, native conifer and hardwood tree species, and retention of large woody debris within planted areas.

2. To minimize the permanent loss of suitable habitat, Caltrans should consider ways to minimize the width of the extraction area to that necessary for future highway alignment and right-of-way, avoiding creation of broad areas will little habitat value in the future. This approach would reduce overall habitat loss in the long term, and retain habitat that exists farther from the existing and future highway alignment.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in your September 27, 2005, request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat is designated that may

be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Please contact staff biologist Ray Bosch at (707) 822-7201 should you have further questions regarding this consultation.

Sincerely,

for Andrea Bricker

Michael M. Long
Field Supervisor

cc:
Federal Highway Administration, Sacramento, California (Attn: Lanh Phan)
California Department of Transportation, Eureka (Attn: John Bulinski)
California Department of Transportation, Sacramento (Attn: Don Schmoldt)
National Marine Fisheries Service, Santa Rosa (Attn: Tom Daugherty)
California Department of Fish and Game, Yountville (Attn: Corinne Gray)

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802- 4213

SEP 1 1 2006

In response refer to:
2005/07370:TKD

Gene K. Fong
Division Administrator
U.S. Department of Transportation
Federal Highway Administration
California Division
650 Capitol Mall, Suite 4-100
Sacramento, California 95814

Dear Mr. Fong:

This document transmits NOAA's National Marine Fisheries Service's (NMFS) biological opinion (Enclosure 1) based on NMFS' review of the U.S. Federal Highway Administration's (FHWA) and California Department of Transportation's (Caltrans) proposed construction of the Route 101 Willits Bypass, in Mendocino County, California. FHWA and Caltrans have proposed the Willits Bypass Project to reduce delays, improve safety, and improve conditions for interregional traffic. The primary feature of the proposed project is a new segment of U.S. 101 that would bypass the City of Willits in Mendocino County, California.

The enclosed biological opinion is based on NMFS' review of information provided with FHWA's request of October 18, 2005, for formal consultation and other documents, meetings, telephone conferences, site visits, and analyses provided during consultation. It addresses potential adverse effects on the following listed species (Evolutionarily Significant Unit or Distinct Population Segment) and designated critical habitat, in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §1531 *et seq.*):

California Coastal Chinook salmon (*Oncorhynchus tshawytscha*)
threatened (June 28, 2005, 70 FR 37160)
critical habitat (September 2, 2005, 70 FR 52488)
Southern Oregon/Northern California Coasts coho salmon (*O. kisutch*)
threatened (June 28, 2005, 70 FR 37160)
critical habitat (May 5, 1999, 64 FR 24049)
Northern California steelhead (*O. mykiss*)
threatened (January 5, 2006, 71 FR 834)
critical habitat (September 2, 2005, 70 FR 52488)

Based on the best available information, the enclosed biological opinion concludes the proposed Willits Bypass Project is not likely to jeopardize the continued existence of California Coastal Chinook salmon, Southern Oregon/Northern California Coasts coho salmon, or North Coast steelhead, or result in the destruction or adverse modification of designated critical habitat for these species. However, NMFS expects the action is likely to result in take of listed anadromous

salmonids. An incidental take statement is included with the enclosed biological opinion. The incidental take statement includes non-discretionary terms and conditions that are expected to minimize the impacts of incidental take of listed salmonids as a result of the Willits Bypass Project road and bridge building activities. In addition, a conservation recommendation is included in the enclosed biological opinion.

Regarding the project's Conceptual Mitigation Plan, Caltrans has proposed creation/restoration, enhancement and preservation of salmonid habitat and riparian areas within Little Lake Valley. Due to the preliminary nature of future in-channel mitigation proposals, NMFS was unable to analyze the impacts of these projects. NMFS staff will work with FHWA and Caltrans to design these future mitigation actions. If these actions may affect listed species or their critical habitats, reinitiation of consultation would be needed.

This letter also transmits NMFS' Essential Fish Habitat (EFH) Conservation Recommendations pursuant to section 305(b) of the Magnuson-Stevens Fisheries Conservation and Management Act (MSFCMA) (Enclosure 2). The Willits Bypass project site includes areas identified as EFH for various life stages of species managed under the Pacific Coast Salmon Fishery Management Plan. Based on our review, NMFS concludes that the Willits Bypass Project has the potential to adversely affect EFH. The enclosed EFH Conservation Recommendations are designed to minimize potential adverse effects on EFH.

Mr. Thomas Daugherty is the lead biologist for this project. If you have any questions regarding the enclosed documents, please contact Mr. Thomas Daugherty at (707) 468-4057.

Sincerely,

for Rodney R. McInnis
Regional Administrator

Enclosures

cc: Russell Strach, NMFS Sacramento
Jeremy Ketchum, Caltrans Sacramento

Enclosure 1

BIOLOGICAL OPINION

ACTION AGENCY:	U.S. Department of Transportation, Federal Highway Administration, California Division
ACTION:	Funding and Construction of the Highway 101 Willits Bypass Project
CONSULTATION CONDUCTED BY:	National Marine Fisheries Service, Southwest Region
PCTS TRACKING NUMBER:	2005/07370
DATE ISSUED:	_____

I. CONSULTATION HISTORY

In 1994, the U.S. Army Corps of Engineers (ACOE), U.S. Environmental Protection Agency (USEPA), U.S. Department of Transportation Federal Highway Administration (FHWA), U.S. Fish and Wildlife Service (USFWS), NOAA's National Marine Fisheries Service (NMFS), and California Department of Transportation (Caltrans) signed a formal Memorandum of Understanding (MOU) that would integrate the National Environmental Policy Act (NEPA) process and Clean Water Act Section 404 procedures, as well as improve coordination among stakeholder agencies. The NEPA/404 integration process was designed to implement Section 404 more effectively to preserve wetlands and the plants and animals that depend on this type of habitat. Under the guidelines of the MOU, signatory agencies (NEPA/404 Resource Agencies) are to agree to a project's Purpose and Need Statement, which sets forth the criteria for selecting project alternatives. The guidelines also specify that signatory agencies are to agree to the alternatives to be studied, early in the environmental review process.

Shortly after the MOU was signed, Caltrans and FHWA initiated the NEPA/404 integration process for the Route 101 Willits Bypass project with USEPA, ACOE, USFWS, and NMFS, and invited these agencies to join the Project Development Team (PDT). In 1995, the participating agencies approved the alternatives that would be studied and the Purpose and Need Statement that would guide the project design and operation.

In 1997, Jones and Stokes Associates Inc. prepared a Natural Environmental Study for the Highway 101/Willits Bypass Project Area that was submitted to Caltrans, Eureka, California (Jones and Stokes 1997).

On June 1, 1998, NMFS received a letter from Caltrans stating that studies on the Highway 101 Willits Bypass would be resuming and six distinct four-lane corridor alignments were to be evaluated. This correspondence also formally invited NMFS to take part in the PDT and to bring forth any concerns regarding the potential effects of the proposed action on threatened Northern California (NC) steelhead (*Oncorhynchus mykiss*), threatened California Coastal (CC) Chinook salmon (*O. tshawytscha*), and threatened Southern Oregon/Northern California Coasts (SONCC) coho salmon (*O. kisutch*) and designated critical habitat for these species.

NMFS participated in ten PDT meetings from June 1998 to October 2003. During this time, a number of major decisions were made with respect to the project. Caltrans determined that two alternatives (Alternatives K and K2) were no longer prudent or feasible, and a third alternative (Alternative TSM) did not meet the project's purpose and need. NMFS brought forth concerns with one of the remaining alternatives (Alternative E3) due to the potential impacts to high-quality stream habitats located in the upper reaches of Baechtel, Broaddus, and Mill creeks. In addition, NMFS expressed concern with an alternative (Alternative C1) due to potential effects to salmonid spawning and rearing habitat in reaches of Outlet Creek.

Alternatives C1T, J1T, LT, E3, and No Build were considered in the draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS). In addition, the NEPA/404 Resource Agencies agreed that Caltrans would examine the remaining alternatives using a nodal approach, whereby each segment of the remaining alternatives would be evaluated in the draft EIR/EIS. During development of these alternatives, NMFS participated in a number of site visits and meetings regarding the effects of the project and possible mitigation actions to reduce the overall effect to the environment.

On August 22, 2002, NMFS provided Caltrans with comments on the draft EIR/EIS. In that letter, NMFS raised various issues, including potential effects of proposed alternatives on water quality, salmonid habitat, and specific life stages of Federally-protected salmonids. Caltrans conducted alternatives analysis based on public and agency comments on the draft EIR/EIS, and identified the Modified J1T Alternative as the least environmentally damaging practical alternative (LEDPA). NMFS provided Caltrans with a letter on January 23, 2004, which supported the Modified J1T Alternative as the LEDPA, yet provided Caltrans with concerns related to riparian removal and sediment delivery associated with the Modified J1T Alternative. Once FHWA and Caltrans received concurrence from the NEPA/Section 404 agencies on the LEDPA, they initiated formal section 7 consultation with NMFS on October 17, 2005.

During late May and June 2006, Caltrans and NMFS discussed potential changes to the project's construction techniques including dewatering of bridge construction sites and sound monitoring during pile driving. On June 1, 2006, NMFS provided to Caltrans a preliminary draft of the Incidental Take Statement (ITS) attached to the NMFS internal draft biological opinion. Caltrans provided comments on the draft ITS on June 9, and June 22, 2006. Caltrans suggested that dewatering and relocation of salmonids not occur unless sound levels during pile driving exceeded 187 dB_{SEL} or 208 dB peak. The September 2005 biological assessment for the project proposed that NMFS would establish the sound threshold which would trigger dewatering of the project sites.

NMFS and Caltrans then met in Sacramento, California, on June 26, 2006, to discuss sound monitoring, project site dewatering, and sound level impacts on fish. During the meeting, Caltrans continued to propose that dewatering of the stream area near a pile driving work site not occur unless injurious levels of sound were detected. NMFS expressed concern that waiting until injury occurred does not minimize impacts. NMFS proposed that measures be implemented to protect the fish prior to the onset of injury.

To resolve this issue, Caltrans proposed to dewater stream reaches in advance of pile driving to ensure listed salmonids would not be exposed to unsafe levels of sound. An electronic mail message from Sarah Allred (Caltrans) to Thomas Daugherty (NMFS) on June 30, 2006, confirmed that Caltrans would remove fish and de-water stream areas in the vicinity of pile driving and would not rely on sound monitoring thresholds to determine if dewatering is needed. Above and below each dewatered reach, Caltrans proposed to conduct hydroacoustic monitoring during pile driving to assess sound levels.

By letter dated July 13, 2006, to NMFS, Caltrans expressed concern with the delay in issuance of the NMFS biological opinion for the Willits Bypass Project. Caltrans' letter suggested the sound threshold issues associated with pile driving be set aside for this project, because they agreed to dewater all wetted stream crossings prior to pile driving.

On July 19, 2006, Caltrans and NMFS exchanged additional information by electronic mail regarding the hydroacoustic monitoring above and below dewatered areas of the stream.

A complete administrative record for this consultation is on file at the NMFS Ukiah, California field office.

II. DESCRIPTION OF THE PROPOSED ACTION

A. General Description

Caltrans and FHWA propose the Highway 101 Willits Bypass to reduce delays on U.S. Route 101. Currently Highway 101 runs through the City of Willits, California. The bypass project will re-route Highway 101 around the City of Willits, providing a stable flow of traffic at 65 miles per hour. The proposal includes the construction of a four-lane freeway that crosses the Little Lake Valley east of Willits. The bypass would begin 3.3 kilometers (km) south of Willits, where the existing Highway 101 becomes a two-lane road, and extend to about 2.2 km north of Willits, where the new alignment would merge with the existing two-lane Highway 101. Construction would begin in 2009 and likely take four years to complete.

The southern end of the proposed bypass project begins at the Haehl Creek Interchange, where future traffic will be able to remain on the freeway by taking the bypass, or exit to the south end of Willits. The freeway bypass project will continue from the Haehl Creek interchange approximately five km along existing and new imported fill to a proposed viaduct structure. The viaduct structure begins near Center Valley Road and crosses Haehl, Baechtel, Broaddus, and Mill creeks for a distance of 1.7 km. The proposed freeway bypass then continues on new fill for approximately 0.4 km, crosses the railroad grade before reaching the Quail Meadows Interchange

1.5 km to the north of Willits. The proposed freeway bypass continues for approximately one additional km after crossing Upp Creek before re-joining the existing route of Highway 101. The overall length of the proposed freeway bypass will be approximately 9.3 km.

North and southbound lanes of the new alignment will be 3.6 meters wide. A 13.8-meter median will separate the northbound and southbound lanes. Inside shoulder width, nearest the medium, will be 1.5 meters and 3.0 meters on the outside shoulder. Cut slopes will vary from 1:1 (vertical: horizontal) to a 1:4 ratio. Fill slopes generally will vary between 1:2 and 1:4 ratios.

Interchange ramps will have single lanes. Some local roads will be improved or constructed, and these roads will be two lanes with 2.4 meter shoulders. Private access roads will be improved or constructed to meet Mendocino County Standards.

The proposed bypass will cross Haehl Creek at three locations (hereafter termed upper, middle and lower), Baechtel Creek, Broaddus Creek, Mill Creek, and Upp Creek. The crossings at upper Haehl Creek will consist of the southbound and northbound freeway bridge structures; one bridge each for the southbound off-ramp and the northbound on-ramp associated with the southern interchange; and replacement of an existing culvert for the Schmidbauer (private landowner access) access road with a natural bottom culvert. The crossings at middle Haehl Creek would consist of bridges for the north- and south-bound lanes, south of Shell Lane. The crossing at Upp Creek, at the northern end of the project, will consist of a natural bottom culvert for the north-and southbound lanes. The crossings at lower Haehl, Baechtel, Broaddus, and Mill creeks will consist of the north and southbound viaduct structures.

B. Specific Construction Actions

1. Staging Areas

The first phase of construction is the establishment of three staging areas, one each in the southern, central, and northern portions of the project corridor. The "southern" staging area will be located south of East Hill Road and east of the railroad tracks, and is approximately 365 meters east of Haehl Creek. The "central" staging area is located between Center Valley Road and East Commercial Street (Hearst-Willits Road), and borders Baechtel Creek, just upstream and downstream of the confluence with Haehl Creek. The northern staging area will be located near the proposed Quail Meadows interchange.

The staging areas may be used by the contractor(s) to store equipment and materials, and will be located where the contractor can gain easy access to the project corridor. Access roads from the staging areas to the project corridor will be constructed where necessary. It is anticipated that work will begin at several areas at the same time. Where staging areas are located adjacent to salmonid bearing creeks, a sufficient buffer will be maintained along with appropriate best management practices (BMPs) to ensure storm runoff from these areas does not directly flow into any natural drainage. No riparian vegetation would be removed within the staging areas.

2. Road Construction

Caltrans will lay out the new alignment and the contractor will demolish structures and clear the area to be worked. Excavated material from a permitted borrow site, such as Oil Well Hill, will be transported to the alignment where it is placed and compacted to support the pavement section. A maximum of 1.9 million cubic meters of earthen material will be excavated, transported, and compacted to build the project. A haul road will constructed within the limits of the alignment, and it will be used to transport material from the borrow site to the areas of new construction.

Once the material is transported to its desired location, heavy equipment including bulldozers, graders, scrapers, and large trucks will shape the freeway embankment. Compaction occurs simultaneously during this process. Drainage facilities will be installed during this phase of the project.

When the embankment is completed, aggregate will be brought in with belly dump trucks and spread on the roadbed surface. The roadbed will then be watered, shaped and compacted to design specifications. Trucks will then haul in asphalt concrete, spread it with specialized paving equipment, and compact it to specified dimensions.

3. Borrow of Earthen Fill from Oil Well Hill

Up to 1.9 million cubic meters of earthen material may be excavated from the borrow site at Oil Well Hill. Up to 16.2 hectares will be excavated. This activity will occur on the east side of Highway 101, beginning approximately 425 meters north of the Highway 101 bridge over Outlet Creek. Material would be transported to the project corridor via trucks using existing Highway 101, and from Highway 101, material will be transported along haul roads within the limits of the new alignment. Sediment basins and other BMPs will be used to minimize and avoid sediment entering Outlet Creek.

If the contractor selected by Caltrans opts to use an alternative borrow site, the contractor will be required to submit a new borrow site plan to the Caltrans Resident Engineer. All borrow sites, whether designated by Caltrans or the contractor must comply with the project contract and environmental laws and regulations.

4. Concrete Batch Plant

It may be necessary to supplement the current commercial production of concrete and to minimize specified haul time, by allowing contractors to construct a temporary plant(s) near the project site. Caltrans has indicated a likely site for a batch plant is the existing Schusters Transportation site, located north of East Valley Street, and between Haehl Creek and Baechtel Creek. This biological opinion assumes one concrete batch plant will be constructed at the Schusters Transportation site. If an alternative site is selected or additional temporary concrete plants are constructed, additional review by NMFS and reinitiation of section 7 consultation may be necessary.

5. Retaining Walls

Three retaining walls will be constructed for this project. Two retaining walls will be located near Haehl Creek, at the southern freeway interchange. At this site, one will be located along the west side of the northbound on-ramp. The second retaining wall will be located on the east side of the northbound mainline lanes just south of the new crossing over upper Haehl Creek. Rock slope protection may be needed for a distance of up to 15 meters along the south bank of Haehl Creek. The third retaining wall will be located on the west side of the southbound lanes south of the viaduct, and east of Baechtel Creek.

To construct the two retaining walls at the southern interchange, removal of riparian vegetation will be required. A portion of these walls may require rock slope protection. The wall foundation will require the installation of "H" piles by pile driving. Equipment may need to enter the Haehl Creek channel at this location for construction activities. However, because this reach of Haehl Creek is normally dry during the summer months, work in this area will likely occur when the channel is dry.

The third retaining wall south of the viaduct will be constructed on grassland. This site will not require the removal of riparian vegetation.

6. Permanent Bridge Construction

At the upper Haehl Creek crossing location, the proposed bridges will consist of the two freeway structures (northbound and southbound lanes); the southbound off-ramp; and the northbound on-ramp. Rock slope protection may be required along both banks at the southbound off-ramp and northbound on-ramp for a distance of approximately 8 meters above and below each structure.

The proposed new Schmidbauer Ranch access road will be located off the east side of the interchange and will connect with an existing dirt road that crosses over Haehl Creek. The reconstruction of this access road will require removal of an existing culvert. This culvert will be replaced with an appropriately sized culvert that provides flood flow conveyance and anadromous fish passage.

At the middle Haehl Creek crossing, the proposed bridges will consist of two freeway structures (northbound and southbound lanes). The proposed bridge sites will be cleared of vegetation prior to construction. Rock slope protection may be required along the south bank for a distance of approximately 8 meters above and below each structure.

At lower Haehl Creek, Baechtel Creek, Broaddus Creek, and Mill Creek, permanent stream crossings will consist of two freeway structures (northbound and southbound lanes) for the viaduct. These viaduct crossings and construction methods are described in detail below.

Permanent bridge building will begin with construction of approaches, where necessary, followed by construction of the abutments. The abutment work will include excavation for the footings, pile driving, or drilling for the foundations (which will occur outside the creek channels), formwork for concrete placement, steel reinforcement bar placement, concrete pouring, finishing, and curing. Each of the permanent bridge abutments may require 20 or more

35 centimeter to 51 centimeter "H" piles, which will be placed by pile drivers, at or near the top of bank.

The temporary false work at each permanent bridge site will be constructed between June 15 and October 15. The false work substructure will consist of steel beams supported by the piles or wood pads and will span the creek channel, thus eliminating the need to place piles in the streambed below ordinary high water mark. False work supports will consist of hollow, 61 centimeter to 76 centimeter diameter steel piles, "H" piles, or wood pads. Installation of these supports may require pile driving. The permanent bridge superstructure forms would then be erected and concrete poured, finished, and cured. After a suitable time to allow the concrete to set and strengthen, the falsework would be removed and other work, including bridge rail and approach work, would be completed.

The use of temporary culverts for construction of the structures crossing salmonid bearing streams is not anticipated. If dewatering is required at any of these stream crossings, cofferdams will be used to divert stream flow around the work area. Any salmonids in work areas will be collected prior to and during dewatering for relocation to other suitable habitats nearby in the same sub-basin.

7. Temporary Bridge Construction

Temporary bridges may be required to access portions of the project site at the initial stages of construction. The temporary bridges will likely consist of Bailey Bridges, railroad flatcars, or similar type of structures. These bridges would not require placing any piers in the stream channels or banks. No access into the live stream channels would be required.

Temporary bridges may be located at Haehl, Baechtel, Broaddus, Upp and Mill creeks, or at several (5 or less) other non-fish bearing streams, as necessary. If the placement of these bridges is outside of areas already proposed for temporary riparian removal areas, an additional distance of three meters of riparian vegetation will be removed on both sides of the structure. The bridges would be installed during the dry season between June 15 through October 15.

8. Viaduct Construction

The proposed viaduct crossings will be located on lower Haehl Creek, Baechtel Creek, Broaddus Creek, and Mill Creek. The proposed viaduct crossings would consist of separate northbound and southbound elevated structures. These viaducts would be elevated above the valley floor for their full lengths of approximately 1730 meters. The viaducts will span the Little Lake Valley and allow for runoff in the valley floodway. Each of the elevated viaduct structures would be approximately 12.5 meters wide. The viaduct superstructures will be supported by piles with a maximum diameter of 2.1 meters. The size and number of columns and the distance between the sets of columns has yet to be determined. The installation of the columns and deck construction would require a 30.5-meter wide temporary work area on the east side of the viaduct, and a 17-meter wide temporary work area on the west side of the viaduct.

Permanent fill in the floodway would be limited to the total surface area encompassed by the columns (estimated to be approximately one percent of the area under the viaduct). It is likely

that the northbound and southbound viaduct structures will be constructed simultaneously. When each frame (consisting of multiple spans) is completed, work would begin on the next frame, where material and equipment would be located. One of the viaduct spans would require support columns at the site of the existing aeration ponds at the Willits Wastewater Treatment Plant. These ponds will be decommissioned or relocated prior to construction of the viaduct.

The viaduct crossing over Baechtel Creek may require rock slope protection. Rock slope protection may be installed on both banks under the structures and for a maximum distance of 8 meters upstream and downstream of the structures.

9. Pile Driving Associated with Bridge and Viaduct Construction

Pile driving will be required to construct the bridge abutments and piers, the columns for the viaduct, and installation of the temporary falsework supports. The exact number and size of the piles for each of the structures have not been determined. However, there will be no permanent or temporary piles in any stream channel below ordinary high water. For the proposed viaduct, piles could be as large as 2 meters in diameter. Falsework supports may be piles approximately 61 centimeters to 76 centimeters in diameter on wood pads. Where necessary, benches will be excavated on the stream bank above ordinary high water to provide temporary footings for the false work. Each permanent bridge abutment may require approximately 20, 36-centimeter to 51-centimeter "H" piles. All permanent bridge abutments would be located above the top-of-bank. The approximate number of piers and columns within 15 meters of the stream channels are summarized below:

- Upper Haehl Creek: 455, 30-centimeter "H" piles would be driven within 15 meters of the top-of-banks for the upper Haehl Creek crossings for the bridge abutments and retaining walls; and 69, 61 to 76 centimeter falsework piles would be driven, with 12 of these piles, within 15 meters of the top-of-banks and 28 below the top-of-banks (but above the ordinary high water mark).

- Middle Haehl Creek: 186, 30-centimeter "H", piles would be driven within 15 meters of the top-of-banks for the middle Haehl Creek crossing for the bridge abutments; one 2-meter diameter cast in steel shell (CISS) pile would be located below the top-of-bank; and 50, 61- to 76-centimeter diameter falsework piles would be driven, with 20 of these piles within 15 meters of the top-of-banks and 30 piles below the top-of-banks.

- Lower Haehl Creek: 4, 2-meter diameter CISS piles would be driven within 15 meters above the top-of-banks at Haehl Creek, near it's confluence with Baechtel Creek; and 25, 61 to 76-centimeter falsework piles would be driven, with 20 of these piles within 15 meters of the top-of-banks, and 5 piles below the top-of-banks.

- Baechtel Creek: 12, 2-meter diameter, CISS piles would be driven, with 6 of these piles within 15 meters of the top-of-banks, and 6 piles below the top-of-banks; and 70, 61- to 76-centimeter falsework piles would be driven, with 25 of these piles within 15 meters of the top-of-banks and 45 piles below the top-of-banks.

- Broaddus Creek: 6, 2-meter diameter, CISS piles would be driven within 15 meters of the top-of-banks, with no large piles being driven below the top-of-banks; 30, 61 to 76-centimeter falsework piles would be driven, with 20 of these piles located within 15 meters of the top-of-banks, and 10 piles located below the top-of-banks.

- Mill Creek: 6, 2-meter diameter, CISS piles would be driven within 15 meters above the banks at Mill Creek; and 20, 61 to 76-centimeter falsework piles would be driven, with 10 of these piles within 15 meters of the top-of-banks and 10 piles below the top-of-banks.

All temporary and permanent piles will be installed with an impact or vibratory hammer. It is anticipated that the time required to drive each 2-meter diameter pile could be approximately 10 to 20 hours, but may take longer. The time required to drive typical small diameter piles may be one hour. Pile driving activities within 15 meters of the top-of-bank may require up to a week, or more, at each crossing.

Prior to the driving of piles in or near the stream banks of Haehl, Baechtel, Broaddus, or Upp creek, Caltrans proposes to dewater the adjacent reach of wetted streams for a distance up to 150 meters. Fish including anadromous salmonids will be collected prior to and during dewatering for relocation to suitable and unaffected aquatic habitat nearby. Cofferdams will be constructed and water diverted through appropriately sized pipes. The cofferdams will likely be constructed with impermeable liners placed over clean, washed, commercially available river gravel, ranging in size from approximately 2.5 centimeters to 7.5 centimeters, or by use of sand bags or rubber bladders. No native streambed material or angular rock material would be used. Water will be diverted into the upstream entrance of a diversion pipe and around the construction site.

A qualified fisheries biologist who has authorization from NMFS will be on-site to capture and relocate salmonids trapped in dewatered areas and pools. The biologist would relocate fish to suitable habitat outside of the construction area. The methods of fish removal will be selected in coordination with NMFS and California Department of Fish and Game (CDFG). Upon completion of construction at each crossing, material used for the cofferdams and water diversion will be removed from the channel. Any imported washed gravel used for cofferdams would be spread out within the stream channel. Cofferdams and diversion facilities will be removed from the channel no later than October 15 of each year.

10. Stream Realignment

The project will require the realignment of approximately 915 meters of an unnamed ephemeral watercourse, located east of the existing roadbed fill near the Schmidbauer Ranch, north the proposed southern freeway interchange. The 915-meter reach affected occurs south of East Hill Road, and averages approximately 3 meters wide. This watercourse has a small watershed, consisting of a small portion of the Schmidbauer Ranch. A new channel may be constructed east of the existing watercourse, and would be completed in one construction season while the watercourse is dry.

11. Culvert Construction, Removal, and Replacement

An existing culvert on Upp creek, under existing Highway 101, will be replaced to improve fish passage. The culvert will be either a steel arch design or a cast-in-place box culvert with a natural bottom. The culvert that spans the creek will be constructed in a manner that maintains the original channel configuration and gradient. If a cast-in-place design is used, temporary construction formwork will require supports in multiple locations within the creek channel. If a steel arch design is selected, no temporary false work will be used in the creek. Removal of vegetation up to a distance of 23 meters above and below the Upp Creek culvert site may be required for construction. The new culvert site may also require placement of rock slope protection on the banks for a maximum distance of 8 meters above and below the culvert

An existing culvert in upper Haehl Creek will be replaced during the improvement of the Schmidbauer Ranch access road. The existing culvert will be replaced with a natural bottom arch or box culvert. Construction will occur during the summer months when this reach of Haehl Creek is normally dry. However, flows through the existing culvert have created an outfall pool that can retain water throughout the year. If water is present, a qualified fisheries biologist will survey the pool for the presence of salmonids. If present, the fish would be removed prior to removal and replacement of the culvert.

A second culvert located in upper Haehl Creek under the proposed freeway bridge will be removed to improve fish passage. Stabilization of the creek channel following removal of the culvert may consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Stream channel stabilization would follow guidelines provided in the *California Salmonid Stream Habitat Restoration* Manual (CDFG 1998). Guidance from NMFS and CDFG will be used in development of appropriate stream stabilization structures at this site.

12. Freeway Maintenance and Use

Long-term maintenance for the completed bypass will include mowing, ditch and culvert cleaning, vegetation pruning, pavement sweeping, applying sand, and repair. These normal maintenance activities are conducted using Caltrans BMPs as described in the Storm Water Quality Handbook Maintenance Staff Guide (Caltrans 2003). Caltrans estimates that the freeway bypass will be used by 14,400 vehicles per day (average annual daily traffic estimated for 2008).

C. Proposed Measures to Minimize and Avoid Impacts

In addition to the impact minimization measures described above, the following measures are proposed by Caltrans and FHWA to further minimize impacts to salmonids during implementation of the project:

- Construction at each of creek crossings will be limited to the period between June 15 and October 15 of each year, unless earlier and/or later dates for construction activities at the creek crossings are approved by NMFS. This work window is intended to minimize the impacts to migrating salmon and steelhead that utilize Haehl, Baechtel, Broaddus, Mill, and Upp creeks.

- If a rain event occurs between June 15 and October 15, and rock slope protection or other erosion control measures have not been completed, non-rainy season BMPs would be implemented in accordance with the Storm Water pollution Prevention Plan (SWPPP), including inspection, maintenance and repair, to minimize delivery of soil to the stream channels.

- The use of vehicles and heavy equipment may not occur in areas below the top-of-bank when standing or flowing water is present with the exception of establishing a flow diversion around a work site.

- BMPs will be used to prevent the discharge of equipment fluids to the stream channel.

- Equipment will not be stored in the channel when not in use. All equipment will be removed from the channel at the end of each workday. All equipment will be fueled, maintained, and repaired at sites well away from the stream banks.

- Caltrans will monitor underwater sound pressure levels in the wetted stream habitats immediately above and below dewatered areas. A minimum of 10 blows per pile will be monitored for underwater sound levels. If in-stream peak sound pressure levels exceed 187 dB_{SEL} or 208 dB peak (Caltrans 2006), Caltrans will immediately contact NMFS for recommendations to reduce the potential for harm to listed salmonids. Possible measures to reduce harm could include dewatering additional areas and fish relocation. The length of channel that would be dewatered would be determined through consultation with NMFS and CDFG fisheries biologists. If the streambed is dry for a distance of approximately 75 meters upstream and downstream of the piles/columns, such that no cofferdams or dewatering is required, no underwater sound monitoring is proposed by Caltrans.

- Appropriate BMPs will be developed and implemented in accordance with the Statewide National Pollutant Discharge Elimination System (NPDES) permit for all soil disturbance activities. These BMPs will be submitted by the contractor to Caltrans for approval as a SWPPP prior to engaging in any construction activities related to the proposed Willits Bypass Project.

- Caltrans/FHWA will have a qualified biologist monitor construction activities in sensitive biological resource areas (*e.g.*, stream crossings) as necessary, to ensure permit conditions and mitigation requirements are implemented and enforced.

D. Proposed Willits Bypass Conceptual Mitigation Plan

Pursuant to the NEPA/404 MOU, Caltrans has prepared a conceptual mitigation plan to serve as a guide in the preparation of the final mitigation and monitoring plan and as a basis for further negotiations with resource agencies. Mitigation for impacts to riparian vegetation would occur both on-site and off-site. Appropriate, local native plant species would be used for the revegetation of impacted riparian areas within the project limits as well as in off-site mitigation areas. Riparian trees are proposed for planting at the ratio of five new trees for each tree lost with the goal of four living trees after five years of monitoring. Associated shrubs, herbaceous

perennial plants and annuals would be seeded or planted along with riparian trees. Planting methods would include the installation of stem (pole) cuttings from plants such as willow (*Salix spp.*), cottonwood (*Populus spp.*), thimbleberry (*Rubus parviflorus*), California blackberry (*Rubus ursinus*), coyote bush (*Baccharis spp.*), or other species capable of easy rooting from cuttings.

Pole cuttings will also be utilized to revegetate areas where riprap is installed. Cuttings would be planted in openings between the rock riprap. As part of the mitigation, pole cuttings may be utilized to armor active erosion headcuts, eroding gully banks, and unstable stream banks in the project area and its vicinity. Installation of container grown or bare rootstock plants, such as alder, Oregon ash, valley oak, or box elder would also be utilized in areas at or above ordinary high water. Selected sensitive plants growing in areas impacted by the project could be relocated.

Mitigation for permanently impacted project area riparian habitats would be implemented as creation/restoration, enhancement, and preservation of stream bank. All temporarily impacted riparian areas would be restored to their original condition in addition to compensatory mitigation elsewhere in Little Lake Valley. The purpose of the compensatory mitigation in addition to restoration of impacted project areas is to offset the temporal loss of the riparian habitat functions in the impacted areas.

In addition to re-planting of native vegetation, Caltrans may pursue a program to remove invasive exotic vegetation. Invasive exotic vegetation would be removed in compliance with the California Invasive Plant Council's *Invasive Plants of California's Wildlands* manual. Areas where invasive exotic plants are removed would be closely monitored for several years for the plant's re-emergence.

For compensation of impacts to anadromous salmonid habitat, Caltrans may construct instream structures such as opposing wing deflectors, anchored large woody debris, or stepped pool systems in project streams or elsewhere in the Willits Valley. Another possible mitigation activity could be the removal of fish passage barriers on primary salmonid streams in Little Lake Valley. Fish passage barriers within Caltrans right-of-way areas would be prioritized. These projects have not been designed and were not analyzed in this biological opinion. Reinitiation of consultation with NMFS may be necessary for these projects if one or more of them may affect listed salmonids or their critical habitat.

In coordination with state and federal agencies, Caltrans will develop a final mitigation and monitoring plan prior to project construction to ensure project impacts to listed species will be fully mitigated. By separate memorandum with the CDFG, Caltrans will ensure adequate funding to implement mitigation and monitoring measures for purposes of obtaining a consistency determination pursuant to CDFG Code Section 2080.1.

E. Action Area

The action area for a consultation includes all areas affected directly and indirectly by the project. For the purposes of this consultation, the action area consists of stream segments of Haehl,

Baechtel, Broaddus, Mill, Outlet, and Upp creeks within the Willits Bypass Project footprint. Indirect effects could extend to reaches of Outlet Creek below the confluence of Baechtel and Broaddus creeks, a reach of Mill Creek, and reaches of Haehl Creek between the construction sites. All of the action area stream reaches eventually flow to Outlet Creek, which flows north out of the Little Lake Valley.

Impacts from direct, indirect, and beneficial effects by this project vary between streams. The extent of the potential impacts by stream length will be greatest along Haehl and Outlet creeks. Baechtel, Broaddus, and Upp creeks will be exposed to less impact by stream length, with one proposed freeway crossing (north and south lanes) at each of them. The Outlet Creek stream reach included in the action area is located downstream of the of the freeway construction project. Table 1 summarizes the length of each stream that is included as in the action area for this biological opinion.

Table 1. Streams and expected lengths of impacted areas for the Willits Bypass Project.

Stream Name	Number of Crossings	Type of Crossings	Action Area Length
Haehl Creek	6	6 bridges, 1 culvert, 1 culvert removal, 2 viaduct crossings	5 kilometers
Baechtel Creek	1	2 viaduct crossings	1250 meters
Broaddus Creek	1	2 viaduct crossings	150 meters
Mill Creek	1	2 viaduct crossing	2 kilometers
Upp Creek	1	1 culvert	400 meters
Outlet Creek	None		5 kilometers
			Total = 13.8 kilometers

* All action area lengths are approximate.

III. STATUS OF THE SPECIES AND CRITICAL HABITAT

This biological opinion analyzes the effects of the proposed action on the following listed salmonids and their designated critical habitat:

Threatened Southern Oregon/Northern California Coasts coho salmon. (*Oncorhynchus kisutch*)
Listing determination (70 FR 37160; June 28, 2005)
Critical habitat designation (64 FR 24049; May 5, 1999);

Threatened California Coastal Chinook salmon (*Oncorhynchus tshawytscha*)
Listing determination (70 FR 37160; June 28, 2005)
Critical habitat designation (70 FR 52488; September 2, 2005);

Threatened Northern California steelhead (*Oncorhynchus mykiss*)
Listing determination (71 FR 834; January 5, 2006).
Critical habitat designation (70 FR 52488; September 2, 2005).

A. Species Description and Life History

Coho salmon, Chinook salmon, and steelhead are anadromous fish, spending some time in both fresh- and saltwater. The older juvenile and adult life stages occur in the ocean, until the adults ascend freshwater streams to spawn. Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles all rear in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults. Juveniles migrating to the ocean are called smolts. Both smolts and adults go through physiological changes as they emigrate from fresh- to saltwater (smolts) and immigrate from salt- to freshwater (adults). The timing of migrations, freshwater habitat preferences for spawning and rearing, the duration of freshwater and ocean rearing, distribution in the ocean, age at maturity, and other traits vary by species. Coho salmon and Chinook salmon die after spawning, whereas steelhead can sometimes survive to spawn again (Shapovalov and Taft 1954, Sandercock 1991, Healy 1991, Busby *et al.* 1996).

1. Coho Salmon

The life history of the coho salmon in California has been well documented (Shapovalov and Taft 1954, Hassler 1987, Weitkamp *et al.* 1995). In contrast to the life history patterns of other anadromous salmonids, coho salmon in California generally exhibit a relatively simple 3-year life cycle. Adult salmon typically begin the immigration from the ocean to their natal streams after heavy late-fall or winter rains breach the sand bars at the mouths of coastal streams (Sandercock 1991). Coho salmon are typically associated with small to moderately-sized coastal streams characterized by heavily forested watersheds; perennially-flowing reaches of cool, high-quality water; dense riparian canopy; deep pools with abundant overhead cover; instream cover consisting of large, stable woody debris and undercut banks; and gravel or cobble substrates (Sandercock 1991). Immigration continues into March, generally peaking in December and January, with spawning occurring shortly after arrival at the spawning ground (Shapovalov and Taft 1954). The timing of adult coho salmon migration to the Eel River watershed is October through February, peaking in November and December (Fukushima and Lesh 1998).

The eggs generally hatch after four to eight weeks, depending on water temperature. Survival and development rates depend, in part, on fine sediment levels within the redd. Under optimum conditions, mortality during this period can be as low as 10 percent; under adverse conditions of high scouring flows or heavy siltation, mortality may be close to 100 percent (Baker and Reynolds 1986). McMahon (1983) found that egg and fry survival drops sharply when fines make up 15 percent or more of the substrate. The newly-hatched fry remain in the redd from two to seven weeks before emerging from the gravel (Shapovalov and Taft 1954). Upon emergence, fry seek out shallow water, usually along stream margins. As they grow, juvenile coho salmon often occupy habitat at the heads of pools, which generally provide an optimum mix of high food availability and good cover with low swimming cost (Nielsen 1992). Chapman and Bjornn (1969) determined that larger juveniles tend to occupy the head of pools, whereas smaller juveniles are found further down the pools. As the fish continue to grow, they move into deeper water and expand their territories until, by July and August, they reside exclusively in deep pool habitat. Preferred rearing habitat has little or no turbidity and high sustained invertebrate forage production. Juvenile coho salmon feed primarily on drifting terrestrial insects, much of which

are produced in the riparian canopy, and on aquatic invertebrates growing within the interstices of the substrate and in leaf litter in pools. Juvenile coho salmon prefer well shaded pools at least 1 meter deep with dense overhead cover; abundant submerged cover composed of undercut banks, logs, roots, and other woody debris; and preferred water temperatures of 12-15° Celsius (C) (Brett 1952, Bell 1991, Reiser and Bjornn 1979, McMahon 1983), but not exceeding 22-25°C (Brungs and Jones 1977) for extended time periods. Growth is slowed considerably at 18°C and ceases at 20°C (Stein *et al.* 1972, Bell 1991).

In the spring, as yearlings, juvenile coho salmon undergo a physiological process, or smoltification, which prepares them for living in the marine environment. In the Eel River watershed, coho salmon smolts migrate to the ocean from May through July, peaking in April, May, and June (Fukushima and Lesh 1998). Emigration timing is correlated with precipitation events and peak upwelling currents along the coast. Entry into the ocean at this time facilitates more growth and, therefore, greater marine survival (Holtby *et al.* 1990).

2. Chinook Salmon

Chinook salmon are the largest anadromous member of Oncorhynchus; adults weighing more than 120 pounds have been reported from North American waters (Scott and Crossman 1973, Page and Burr 1991). Chinook salmon exhibit two main life history strategies: ocean-type fish and river-type fish (Healy 1991). Ocean-type fish typically are fall- or winter-run fish that spawn shortly after entering freshwater and their offspring emigrate shortly after emergence from the redd. River-type fish are typically spring- or summer-run fish that have a protracted adult freshwater residency, sometimes spawning several months after entering freshwater. Progeny of river-type fish frequently spend one or more years in freshwater before emigrating. The Chinook salmon in the Eel River watershed and Outlet Creek sub-basin are ocean-type fish.

Chinook salmon in the CC Chinook salmon ESU generally remains in the ocean for two to five years (reviewed in Myers *et al.* 1998 – Appendix B). In the ocean, Chinook salmon from California tend to stay along the California and Oregon coasts, but migration may continue to higher latitudes if oceanographic conditions are appropriate (Allen and Hassler 1986). Some Chinook salmon return from the ocean to spawn one or more years before full sized adults return, and are referred to as jacks (males) and jills (females). Fall-run Chinook salmon enter the Eel River from October through January (Fukushima and Lesh 1998). These fish typically enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas on the mainstem or lower tributaries of rivers, and spawn within a few weeks of freshwater entry. Fall-run Chinook salmon typically spawn in the lower reaches of rivers and tributaries at elevations of 200 to 1,000 feet. Run timing is also, in part, a response to stream flow characteristics.

Egg deposition must be timed to ensure that fry emerge during the following spring at a time when the river or estuary productivity is sufficient for juvenile survival and growth. Adult female Chinook salmon prepare redds in stream areas with suitable gravel composition, water depth, and velocity. Spawning generally occurs in swift, relatively shallow riffles or along the edges of fast runs at depths greater than 24 centimeters (cm). Optimal spawning temperatures range between 5.6 and 13.9°C. Redds vary widely in size and location within the river. Preferred spawning substrate is clean, loose gravel, mostly sized between 1.3 and 10.2 cm, with no more than 5 percent fines. Gravels are unsuitable when they have been cemented with clay or fines or

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when sediments settle out onto redds, reducing intergravel percolation. Minimum intergravel percolation rate depends on flow rate, water depth, and water quality. The percolation rate must be adequate to maintain oxygen delivery to the eggs and remove metabolic wastes. The Chinook salmon's need for a strong, constant level of subsurface flow may indicate that suitable spawning habitat is more limited in most rivers than superficial observation would suggest. After depositing eggs in redds, adult Chinook salmon guard the redd from 4 to 25 days before dying.

Chinook salmon eggs incubate for 90 to 150 days, depending on water temperature. Successful incubation depends on several factors including dissolved oxygen levels, temperature, substrate size, amount of fine sediment, and water velocity. Maximum survival of incubating eggs and pre emergent fry occurs at water temperatures between 5.6 and 13.3°C with a preferred temperature of 11.1°C. Fry emergence begins in December and continues into mid April (Leidy and Leidy 1984). Emergence can be hindered if the interstitial spaces in the redd are not large enough to permit passage of the fry. In laboratory studies, Bjornn and Reiser (1991) observed that Chinook salmon and steelhead fry had difficulty emerging from gravel when fine sediments (6.4 millimeters or less) exceeded 30 to 40 percent by volume.

After emergence, Chinook salmon fry seek out areas behind fallen trees, back eddies, undercut banks, and other areas of bank cover (Everest and Chapman 1972). As they grow larger, their habitat preferences change. Juveniles move away from stream margins and begin to use deeper water areas with slightly faster water velocities, but continue to use available cover to minimize the risk of predation and reduce energy expenditure. Fish size appears to be positively correlated with water velocity and depth (Chapman and Bjornn 1969, Everest and Chapman 1972). Optimal temperatures for both Chinook salmon fry and fingerlings range from 12 to 14°C, with maximum growth rates at 12.8°C (Boles 1988). Chinook salmon feed on small terrestrial and aquatic insects and aquatic crustaceans. Cover, in the form of rocks, submerged aquatic vegetation, logs, riparian vegetation, and undercut banks provide food, shade, and protect juveniles from predation.

The low flows, high temperatures, and sand bars that develop in smaller coastal rivers during the summer months favor an ocean-type life history (Kostow 1995). With this life history, smolts typically emigrate as subyearlings during April through July (Myers *et al.* 1998). The ocean-type Chinook salmon in California tend to use estuaries and coastal areas for rearing more extensively than stream type Chinook salmon. The brackish water areas in estuaries moderate the physiological stress that occurs during parr smolt transitions.

3. Steelhead

General reviews for steelhead in California document much variation in life history (Shapovalov and Taft 1954, Barnhart 1986, Busby *et al.* 1996, McEwan and Jackson 1996). Juvenile steelhead live 1 to 4 years in freshwater before smolting and emigrating, then spend 1 to 4 years maturing in the ocean. Steelhead spawn at 2 to 8 years, and may spawn 1 to 4 times over their life. Although variation occurs, in coastal California, steelhead usually live in freshwater for 2 years, then spend 1 or 2 years in ocean before returning to their natal stream to spawn. Steelhead exhibit much variation in migration timing too. Steelhead can be divided into two reproductive ecotypes, based upon their state of sexual maturity at the time of river immigration and the duration of their spawning migration: stream maturing and ocean maturing. Stream maturing

steelhead enter freshwater in a sexually immature condition and require several months to mature and spawn; whereas, ocean maturing steelhead enter freshwater with well developed gonads and spawn shortly after river entry. These two reproductive ecotypes are more commonly referred to by their season of freshwater entry (*i.e.*, summer [stream maturing] and winter steelhead [ocean maturing]). Summer steelhead typically immigrate between May and October and spawn in January and February; winter steelhead typically immigrate between November and April spawning soon after reaching the spawning grounds. Both summer and winter steelhead are reported from the South Fork Eel River, but only winter steelhead are likely found in the action area.

Survival to emergence of steelhead embryos is inversely related to the proportion of fine sediment in the spawning gravels. However, steelhead are slightly more tolerant than other salmonids, with significant reductions in survival when fines of less than 6.4 millimeters (mm) comprise 20-25 percent of the substrate. Fry typically emerge from the gravel two to three weeks after hatching (Barnhart 1986). Upon emerging from the gravel, fry rear in edgewater habitats and move gradually into pools and riffles as they grow larger. Older fry establish territories which they defend. Cover is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation (Shirvell 1990, Meehan and Bjornn 1991). Steelhead, however, tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids. Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. In winter, juvenile steelhead become inactive and hide in available cover, including gravel or woody debris. Rearing steelhead juveniles prefer water temperatures of 7.2-14.4°C and have an upper lethal limit of 23.9°C (Barnhart 1986, Bjornn and Reiser 1991). They can survive in water up to 27°C with saturated dissolved oxygen conditions and a plentiful food supply. Fluctuating diurnal water temperatures also aid in survivability of salmonids (Busby *et al.* 1996).

In Waddell Creek, in Santa Cruz County, Shapovalov and Taft (1954) found steelhead juveniles migrating downstream at all times of the year, with the most juvenile steelhead emigrating during spring and summer. Fukushima and Lesh (1998) report the steelhead emigrate from the Eel River watershed from April through July.

B. Status of Species and Critical Habitat

In this opinion, NMFS assesses the status of each species by examining four types of information, all of which help us understand a population's ability to survive. These population viability parameters are: abundance, population growth rate, spatial structure, and diversity (McElhany *et al.* 2000). While there is insufficient information to evaluate these population viability parameters in a quantitative sense, NMFS has used existing information to determine the general condition of populations in each ESU and factors responsible for the current status of each ESU.

1. SONCC Coho Salmon

A comprehensive review of estimates of historic abundance, decline, and present status of coho salmon in California is provided by Brown *et al.* (1994). They estimated that the coho salmon annual spawning population in California ranged between 200,000 and 500,000 fish in the 1940s,

which declined to about 100,000 fish by the 1960s, followed by a further decline to about 31,000 fish by 1991. Brown *et al.* (1994) concluded that the California coho salmon population had declined more than 94 percent since the 1940s, with the greatest decline occurring since the 1960s. More recent population estimates vary from approximately 600 to 5,500 adults (Brown *et al.* 1994). Available information suggests that SONCC coho salmon abundance is very low, and the ESU is not able to produce enough offspring to maintain itself (population growth rates are negative) and has experienced many local extirpations (NMFS 2001, Good *et al.* 2005). In addition, SONCC coho salmon have experienced range constriction, fragmentation, and a loss genetic diversity. Many subpopulations that may have acted to support the species' overall numbers and geographic distribution, have likely been lost. While the amount of data supporting these conclusions is not extensive, NMFS is unaware of information that suggests a more positive assessment of the condition of the SONCC coho salmon ESU and its critical habitat. Recent status reviews for SONCC coho salmon conclude that this ESU is presently "likely to become endangered" (NMFS 2001, Good *et al.* 2005). Recently NMFS evaluated the listing status of SONCC coho salmon and maintained the threatened status of SONCC coho salmon (70 FR 37160).

2. CC Chinook Salmon

Rigorous population estimates for the CC Chinook salmon are lacking. Myers *et al.* (1998) reviewed early estimates and reported estimated historic (prior to 1965) Chinook salmon escapement for the Eel River as 55,500. Recent estimates of abundance within the Eel River exceeds 4,000 Chinook salmon and show a -29.7 percent trend in abundance from 1987-1997 (Myers *et al.* 1998). Evidence suggests that CC Chinook salmon populations have been extirpated or nearly extirpated in the southern part of the ESU, or are extremely low in abundance – Chinook salmon in the Russian River are an exception. In addition, an apparent loss of the spring-run Chinook life history in the Eel River Basin and elsewhere in the ESU indicates risks to the diversity of the ESU. Although there are few data available, recent status reviews for CC Chinook salmon conclude that population abundance levels remain depressed relative to historical levels and that this ESU is presently "likely to become endangered" (NMFS 2001, Good *et al.* 2005). Recently NMFS evaluated the listing status of CC Chinook salmon and maintained the threatened status of SONCC coho salmon (70 FR 37160). Chinook salmon runs observed in the South Fork Eel River and the Van Duzen River in 1992/93 through 1994/95 indicated a slight increase in numbers (CDFG 1997).

3. NC Steelhead

Based on the limited data available (dam counts of portions of stocks in several rivers), NMFS' initial status review of NC steelhead (Busby *et al.* 1996) determined that population abundance was very low relative to historical estimates (1930s and 1960s dam counts), and recent trends were downward in most stocks. Overall, population numbers are severely reduced from pre-1960s levels, when approximately 198,000 adult steelhead migrated upstream to spawn in the major rivers of this Distinct Population Segment (DPS) (Busby *et al.* 1996, 65 FR 36074). Updated status reviews reach the same conclusion, and noted the poor amount of data available, especially for winter run steelhead (NMFS 1997, Adams 2000, Good *et al.* 2005). The information available suggests that the population growth rate is negative. Comprehensive geographic distribution information is not available for this DPS, but steelhead are considered to

remain widely distributed (NMFS 1997). It is known that dams on the Mad River and Eel River block large amounts of habitat historically used by NC steelhead (Busby *et al.* 1996). Hatchery practices in this DPS have exposed the wild population to genetic introgression and the potential for deleterious interactions between native stock and introduced steelhead. Historical hatchery practices at the Mad River hatchery are of particular concern, and included out-planting of non-native Mad River hatchery fish to other streams in the DPS and the production of non-native summer steelhead (65 FR 36074). The conclusion of the most recent status review (Good *et al.* 2005) echoes that of previous reviews. Abundance and productivity in this DPS are of most concern, relative to NC steelhead spatial structure (distribution on the landscape) and diversity (level of genetic introgression). The lack of data available also remains a risk because of uncertainty regarding the condition of some stream populations. Recently, NMFS evaluated the listing status of NC steelhead and proposed maintaining the threatened listing determination (71 FR 834). NMFS is unaware of recent population status information specific to steelhead in the mainstem Eel River, or more specific to the Outlet Creek subbasin.

4. Critical Habitat

Critical habitat is defined in section 3(5)(A) of the Endangered Species Act (ESA) as "(i) the specific areas within the geographical area occupied by the species . . . on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species . . . upon a determination by the Secretary of Commerce (Secretary) that such areas are essential for the conservation of the species" (see 16 U.S.C. 1532(5)(A)). The term 'conservation', as defined in section 3(3) of the ESA, means ". . . to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary" (see 16 U.S.C. 1532(3)). Therefore, critical habitat is the geographic area and habitat functions necessary for the recovery of the species.

The condition of critical habitat, for all the Chinook and coho salmon ESUs and the steelhead DPS, has been degraded from conditions known to support viable salmonid populations. These conditions are, in part, the result of the following human-induced factors affecting critical habitat[1]: logging, agricultural and mining activities, urbanization, stream channelization, dams, wetland loss, and water withdrawals, including unscreened diversions for irrigation (reviewed in Good *et al.* 2005). Impacts of concern include alteration of stream bank and channel morphology, reduced surface flow, alteration of water temperatures, loss of spawning and rearing habitat, fragmentation of habitat, loss of downstream recruitment of spawning gravels and large woody debris, degradation of water quality, removal of riparian vegetation resulting in increased stream bank erosion, increases in erosion entry to streams from upland areas, loss of shade (higher water temperatures), and loss of nutrient inputs. Depletion and storage of natural river and stream flows have drastically altered natural hydrologic cycles in many of the streams in the ESUs and the DPS.

[1]Other factors, such as over fishing and artificial propagation have also contributed to the current population status of these species. All these human induced factors have exacerbated the adverse effects of natural environmental variability from such factors as drought and poor ocean conditions.

Assessment of the CC Chinook and NC steelhead designated critical habitat is included in NMFS (2005), which addresses critical habitat for seven salmon and steelhead ESUs/DPSs. The NMFS Southwest Region established Critical Habitat Analytical Review Teams (CHARTs) consisting of NMFS fishery biologists that assessed the habitat conservation value of Hydrologic Subareas (HSAs) within the ESUs/DPSs. Conservation values of "high", "medium", and "low", were determined from a variety of data sources on quality, quantity, and distribution of physical or biological features associated with spawning, rearing, and migration in each HSA.

For CC Chinook salmon, the CHART identified 45 occupied HSAs within the freshwater and estuarine range of the ESU. Eight HSAs were rated low in conservation value, 14 were rated medium, and 27 were rated high in conservation value (NMFS 2005). Essential features for spawning, rearing and migration are contained in approximately 5,036 km of occupied habitat within these HSAs. The proposed project is located within the Outlet Creek HSA, which contains 96 km of spawning, 65 km of rearing, and 72 miles of migration habitat for Chinook salmon. The Outlet Creek HSA was considered by the CHART to have high conservation value for CC Chinook critical habitat (NMFS 2005).

The CHART identified 50 occupied HSAs within the freshwater and estuarine range for the NC steelhead DPS. Nine HSAs were rated as low conservation value, 10 were rated medium, and 27 were rated high in conservation value (NMFS 2005). Essential features for spawning, rearing, and migration are contained in approximately 2,931 km of occupied stream habitat within the HSAs. The Outlet Creek HSA contains 133 km of spawning, rearing and migration habitat, which represents 4.5 percent of the total habitat of the DPS occupied habitat. A high conservation value was given to the Outlet Creek HSA for NC steelhead critical habitat (NMFS 2005).

IV. ENVIRONMENTAL BASELINE

This biological opinion analyses the areas affected directly and indirectly by the proposed Willits Bypass construction project. The action area evaluated in this biological opinion includes stream segments of Haehl, Baechtel, Broaddus, Mill, Outlet and Upp creeks identified above.

A. Status of the Species in the Action Area

All of the stream segments identified in the action area are located within the Outlet Creek watershed, sub-basin within the Eel River watershed. This basin currently provides habitat for populations of CC Chinook, SONCC coho salmon, and NC steelhead. Chinook salmon, coho salmon, and steelhead utilize the low gradient reaches of the action area streams as migration corridors during adult spawning and smolt migrations (LeDoux-Bloom 2006).

Chinook and coho salmon spawning and rearing are known to occur in upstream areas of Baechtel, Broaddus, and Mill creeks (S. Harris, CDFG, personal communication, 2005). Coho salmon spawning and rearing is not expected to occur in the action areas of Haehl, Upp, or Outlet creeks. There is some potential for straying of adult coho salmon into these streams (S. Harris,

CDFG, personal communication, 2006). Some Chinook salmon spawning does occur in reaches of Outlet, and Haehl creeks. Juvenile Chinook and coho may rear for short periods of time during their outmigration during the spring, but are not expected to utilize any stream reaches identified in action area for summer rearing.

Juvenile steelhead have been found to utilize all stream segments that are within the project action area (LeDoux-Bloom 2006). Although many of the reaches within the action area either have very low (less than 1 cfs) flow, are intermittent, or dry during the summer months, juvenile steelhead are expected to be found in aquatic habitat present during the summer low flow period. CDFG observed low numbers of juvenile steelhead in Baechtel and Broaddus creeks during 1995 habitat typing surveys. CDFG (2004) conducted spring stream surveys of proposed project crossings and visually observed juvenile steelhead in Baechtel, Broaddus, Mill, lower Haehl, but did not observe salmonid juveniles in Upp or upper Haehl creeks.

B. Habitat Conditions in the Action Area

The majority of the action area is located on the valley floor area of the Willits Valley that has a history of intermittent flow from July to September in most years. LeDoux-Bloom (2006) reports that in 1920 the U.S. Department of Agriculture Soil Survey for the Willits area stated that all streams entering the valley are intermittent, including Baechtel, Broaddus, Haehl, Davis, and Berry creeks. CDFG conducted habitat typing in twenty reaches of the Outlet Creek basin. The following is summary of the habitat conditions for stream segments within the action area.

1. Baechtel Creek

The action area stream reach is located in the valley bottom where several tributaries meet to form Outlet Creek. This lower reach of Baechtel Creek characterized by an F3 channel type which are characterized by low gradients (< 2%), are well entrenched, and have gravel/cobble substrates (Rosgen 1994). CDFG (1995) surveys found that pools in Baechtel Creek are relatively shallow in the summer with only 174 of 463 pools having a maximum depth of greater than two-feet. Pool shelter ratings for Baechtel Creek indicate that habitat complexity is low. Pool tail-outs, or areas where adult fish spawn, had high embeddedness ratings during the 1995 CDFG surveys, indicating poor gravel quality for salmonid spawning. Surveys conducted by CDFG in the spring of 2004 characterized the Baechtel Creek crossing site as having a high proportion of run habitat, high levels of silt and sand substrate and very low gradient, less than 0.5% (CDFG 2004). The lower reach of Baechtel also has poor water temperature conditions, with stream temperatures up to 29° C in late July and August (CDFG 1995).

2. Broaddus Creek

Surveys of Broaddus Creek by CDFG in 1995 and 2004 characterize this reach as well entrenched, low gradient, and with fine substrates of sand and silt. CDFG's 2004 survey of the stream reach at the proposed crossing indicates a high number of run and riffle habitats with few pools. Spawning habitat is rated as very poor in the CDFG 1995 survey results, with seventy-five percent of the pool tail-outs having high embeddedness ratings (>50% fine sediment). Stream temperatures during July of 1995 ranged from 14.5°C to 24°C in Broaddus Creek. The

action area considered in this biological opinion is located at the lower end of Broaddus Creek where stream temperatures are likely in the upper end of the documented range.

3. Haehl Creek

Haehl Creek is a well entrenched, low gradient stream with gravel as the dominant substrate (CDFG 1995). Stream temperatures measured by CDFG habitat inventory crews in 1995 ranged from 15.5°C to 24°C in the summer. CDFG reports poor spawning conditions at all three of the proposed Haehl Creek crossing locations (S. Harris, CDFG, personal communication, 2005). Elevated percentages (estimated > 90%) of fine-grained sediment are present within Haehl Creek (CDFG 2004). Riparian canopy cover averaged 80 percent along the total length of Haehl Creek (CDFG 1995). Based on site visits by NMFS in 2005, the proposed crossings areas along Haehl Creek have areas that are sparse or have no riparian vegetation. CDFG characterizes Haehl Creek as having degraded conditions from past land use practices and low potential as summer rearing habitat for salmonids (S. Harris, CDFG, personal communication, 2005).

4. Mill Creek

Current habitat conditions for Mill Creek have not been well documented. A general stream survey conducted by CDFG in 2004 evaluated stream conditions at the proposed crossing location (CDFG 2004). This area of Mill Creek is also a very low gradient valley reach characterized by intermittent flows during the summer months. The portion of the action area in Mill Creek consists of a high proportion of pool habitat (85 percent), and substrates dominated by fine sand sized material (CDFG 2004). This area of Mill Creek has a riparian canopy that consists of red alder (*Alnus rubra*), willow (*Salix spp.*), Himalayan blackberry (*Rubus discolor*), and poison oak (*Toxicodendron diversilobum*).

5. Outlet Creek

The portion of the action area in Outlet Creek was created by local ranchers to maintain transport of accumulated sediment where Baechtel, Broaddus and Mill Creek join. The original channel that drained these streams is located to the west, and is currently known as the Outlet overflow channel. This newer channel, created in the 1950s, is a "U" shaped channel that provides marginal salmonid rearing habitat, but does function as a migration corridor for all three listed salmonid species (C. LeDoux-Bloom, CDFG, personal communication, 2005). The Outlet Creek channel provides little in the way of rearing habitat during the summer months. Intermittent pools having high temperature and stagnant conditions characterize the channel during this time (C. LeDoux-Bloom, CDFG, personal communication, 2005).

6. Upp Creek

The segment of stream that makes up the Upp Creek action area is considered to be very degraded habitat for salmonids, and is typically dry during the summer months. Migration conditions at the existing Highway 101 culvert limit adult salmonids passage to the upper segments of Upp Creek that provides spawning and rearing habitat. Spring surveys at the culvert replacement site by CDFG (2004) did not document the presence of salmonids. These surveys

also noted that flow was intermittent and the dominant substrate was fine sand sized sediment mixed with gravel.

C. Value of the Action Area as Critical Habitat for Salmonids

Outlet, Haehl, Baechtel, Broaddus, Mill and Upp creeks in the action area are designated critical habitat for CC Chinook salmon, SONCC coho salmon, and NC steelhead. These streams are part of the Outlet Creek hydrologic sub-area, which has a high conservation value as determined by NMFS (NMFS 2005). Conservation Value was determined by the CHARTs by evaluating the quantity and quality of habitat features, the relationship of the area (HSA) to other areas within the ESU/DPS, and the significance to the ESU/DPS of the population occupying that area (NMFS 2005). Because quality of habitat was only one of the rating factors used to determine conservation value, and habitat quality was considered at the geographic scale of an HSA, specific stream reaches within an HSA may, or may not, contain high quality of habitat, regardless of the HSA's overall rating for conservation value.

The longest stream reaches included in the action area are Haehl Creek and Outlet Creek. Both of these stream reaches currently have marginal salmonid rearing habitat during the summer due to intermittent flow and lack of riparian canopy to maintain suitable salmonid stream temperature conditions. During 2004, CDFG conducted stream temperature monitoring in nine streams located within the southern subbasin (action area) of the Outlet Creek basin and all nine had maximum weekly average temperatures (MWATs) considered unsuitable for salmonid rearing (LeDoux-Bloom 2006).

Spawning habitat in the Outlet Creek reach of the action area is limited due to its very low gradient and is typically inundated during the winter by the "Little Lake" for which the valley was named. This reach of Outlet Creek serves as primarily as migration corridor for adult salmon and steelhead during the fall and winter months, as well as smolts as they migrate out of tributaries to the Eel River. Chinook salmon and steelhead spawn in Haehl Creek, but it is only used by Chinook salmon in years when high adult escapement occurs (S. Harris, CDFG, personal communication, 2005).

The action areas of Baechtel, Broaddus, Mill, and Upp Creek represent much shorter stream reaches (150-1250 meters) of habitat, which are located on the valley floor in the most downstream area of each named stream. These valley segments currently have low quality habitat for juvenile steelhead summer rearing; steelhead have been found at low densities in these areas. Some reaches such as Outlet Creek may not be occupied by salmonids during the late summer months (C. LeDoux-Bloom, CDFG, personal communication, 2005). For the most part these segments provide migration passage for adult and smolts to and from higher quality habitat, which is upstream and outside of the action area. Some limited spawning and rearing use by steelhead is likely to occur in the lower reaches of Baechtel, Broaddus, Mill, and Outlet creeks, but is not expected to occur in Upp Creek.

D. Factors Affecting the Species and Critical Habitat in the action Area

Pomo Native Americans occupied the Outlet Creek sub-basin when the first European settlers arrived in the early 1840s. In 1855, Sam and Harry Baechtel drove cattle to the valley from Marin County and settled in the Little Lake Valley (LeDoux-Bloom 2006). In 1892, the California Northwestern Railroad Company began scouting locations along their routes for an egg taking station and hatchery under the direction of Colonel LaMotte. By 1897, fish facilities were open on Gibson Creek in the Russian River Basin and Outlet Creek. Steelhead eggs collected from the Little Lake Valley were grown in the Gibson Creek Hatchery and planted throughout the Outlet Creek Basin, parts of Big River, Russian River, and possibly Lagunitas Creek (LeDoux-Bloom 2006). LeDoux-Bloom (2006) also reports that trout eggs from the Shasta or McCloud rivers were grown out and planted in Outlet Creek and other Mendocino County watersheds until the facility was closed in 1920.

During the late 1800s and early 1900s many of the creeks in the Outlet Creek basin were relocated for the building of railroads. Today in several areas one can observe where Outlet Creek was moved by cutting off the meander and straightening the stream to build the existing Highway 101 alignment (C. LeDoux-Bloom, CDFG, personal communication, 2005). Beginning in 1910, channels were created with oxen and plows to facilitate draining of the Little Lake Valley to lower Outlet Creek for agricultural purposes such as potato production and cattle grazing (DWR 1965, as cited in Le-Doux Bloom 2006). The largest channel, according to longtime landowner John Ford, was constructed to form a straight channel that drains flow from Baechtel, Broaddus, and Haehl creeks, this is what is currently know as Outlet Creek. The original Outlet Creek, as reported in Le-Doux Bloom (2006), is located to the west and is referred to as the Outlet overflow channel.

By the 1950s and 1960s, many of the upper areas of the Outlet Creek Basin had been logged with little attention to erosion control. According to LeDoux-Bloom (2006), many of the valley floor stream reaches such as Baechtel, Broaddus, and Haehl became aggraded during the winter storms of 1955 and 1964. These same stream reaches went through additional aggradation in the 1980s and in some areas the adjacent meadows were lower in elevation than the streams. Juvenile steelhead and coho were found rearing in some of the meadow areas only to perish when water temperatures reached lethal levels (W. Jones, private consultant, personal communication, 2006). In order to maintain passage in the aggraded reaches along the valley floor, CDFG funded barrier and sediment removal projects to define channels for adult salmonid migration (LeDoux-Bloom 2006).

Currently reaches within the action area are affected by cattle grazing, which occurs on Haehl, Baechtel, Outlet, and Upp creeks. Based on field observations by NMFS during site visits of the action area, the current grazing practices continue to impact the riparian areas along streams located on the valley floor. The current riparian zone consists of a narrow strip of riparian vegetation including alder, willow, oak, Himalayan blackberry, and poison oak. Much of the riparian zone is inconsistent in forming a functional riparian community, which does not provide adequate protection for salmonid habitat. Evidence of inadequate riparian zones within the action area were found during 2004 temperature monitoring, which documented unsuitable stream temperature conditions for salmonids (LeDoux-Bloom 2006).

Planwest Partners (2002) reports that localized flooding in upstream areas has resulted in efforts to reduce the amount of brush and debris in these valley streams that are part of the action area. An existing water treatment plant releases treated wastewater in Outlet Creek near the confluence with Baechtel Creek. Releases occur during the winter period and are reported to have no impact on spawning salmonids other than providing slightly more flow (Planwest Partners 2002).

Non-native fish have been introduced to some of the streams located within the action area. Bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), and smallmouth bass (*Micropterus dolomieu*) have been reported to inhabit reaches of Haehl, Mill, and Outlet Creek (S. Harris, CDFG, personal communication, 2005). Introduction of these non-native species is believed to be from farm ponds and local reservoirs from which they escape. Presence of these warm water species effects salmonids in a number of ways, including competition for habitat space, and predation, elimination of natives, reduced growth and survival, and changes in community structure (Spence *et al.* 1996).

V. EFFECTS OF THE ACTION

Pursuant to section 7(a)(2) of the ESA (16 U.S.C. § 1536), Federal agencies are directed to ensure that their activities are not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat. This biological opinion assesses the effects of the proposed Willits Bypass Project on listed salmonids, and the designated critical habitats for SONCC coho salmon, CC Chinook salmon, and NC steelhead. The proposed freeway construction project is likely to adversely affect listed salmonids and critical habitats. An overview of the action is provided in the *Description of the Proposed Action* section of this opinion. In the *Status of the Species and Critical Habitat* and *Environmental Baseline* sections of this Opinion, NMFS provided an overview of the threatened and endangered species and critical habitat that are likely to be affected by the activity under consultation.

Regulations that implement section 7(a)(2) of the ESA require NMFS to evaluate the direct and indirect effects of Federal actions and actions that are interrelated with or interdependent to the Federal action to determine if these actions appreciably reduce listed species' likelihood of surviving and recovering in the wild by reducing their reproduction, numbers, or distribution (16 U.S.C. §1536, 50 CFR 402). Section 7 of the ESA also requires NMFS to determine if Federal actions would destroy or adversely modify critical habitat (16 U.S.C. §1536). This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR §402.2. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

The purpose of this consultation is to examine the total range of potential beneficial and detrimental effects to the ESA listed salmonids and their critical habitats that may occur as a result of constructing the proposed Willits Bypass over a four-year period, and to ascertain the likelihood that construction activities and proposed mitigations would jeopardize the survival and recovery of the subject species and or destroy or adversely modify their critical habitats.

A. NMFS Assumptions Regarding the Effects Analysis in this Biological Opinion

To date, Caltrans proposed plans for the construction of the Willits Bypass are at a 30 percent design level. SWPPP BMPs will be developed once the contractor(s) have acquired contracts from Caltrans. In addition, the mitigation plan is at a "Conceptual" level and few specific mitigation areas or plans have been developed to date. In order to facilitate the development of this biological opinion, NMFS has had to make certain assumptions regarding the effectiveness of the conceptual BMPs and the mitigation plans. NMFS assumes that the BMPs, SWPPP, and mitigation actions will be effective with regard to minimizing impacts of the proposed construction and mitigating and improving habitat over time. NMFS expects that Caltrans will provide proposed plans for the SWPPP, mitigation, and final project design prior to implementing these actions. Furthermore, NMFS must review these plans to determine if they are sufficient to meet the effectiveness assumptions in this biological opinion regarding potential project impacts.

B. Direct and Indirect Effects to Salmon and Steelhead or Their Critical Habitats

1. Effects of Dewatering the Project Areas

Construction of bridges at four locations (six bridges), construction of viaduct crossings at four locations (eight viaduct bridges), two culvert crossings, and one culvert removal will require in-channel work and pile driving. To minimize effects of the proposed construction and pile driving, Caltrans proposes to dewater stream construction areas and relocate fish to other appropriate streams within the Outlet Creek sub-basin. By removing fish from the stream reaches in and adjacent to construction areas, the project is expected to significantly reduce the number of juvenile anadromous salmonids injured or killed during the summer work season. In the absence of fish relocation, juvenile steelhead, coho and Chinook salmon would be exposed to dewatering, thermal stress, desiccation, physical injury from construction equipment and elevated sound levels during pile driving.

Although fish relocation avoids significant impacts to fish in the project area, the fish relocation activities themselves are expected to result in some stress and mortality. Direct effects to juvenile salmonids from this dewatering and relocation will occur in action areas at Haehl, Baechtel, Broaddus, and Mill creeks. The action area for Upp Creek is expected to be dry during the construction phase of the project.

The actual distance that may need to be dewatered will vary with actual summer flow conditions. Summer flows in the Outlet Creek sub-basin are dependant on precipitation levels during the winter and spring preceding construction. Haehl Creek has five stream crossing locations that can vary from dry channel condition to wetted surface flow conditions in the summer depending the previous winter and spring rains. For evaluation purposes in this biological opinion NMFS assumes that all stream crossings except for Upp Creek, will have surface flow at the beginning of the proposed construction period (June 15). Upp Creek is expected to be dry by June 15 of each year at this location.

Nine stream crossings will have up to 150 meters dewatered at each site with the use of cofferdams for up to six weeks during the summer months. The Haehl Creek culvert replacement for the Schmidbauer Ranch road access and the Haehl Creek culvert removal may require dewatering of intermittent pools. Caltrans proposes to allow the contractor to choose various methods of cofferdam construction, including the use of rubber bladders, clean gravel, or sand bags to block stream flow and divert water around the construction sites. During dewatering of each stream crossing area, juvenile fish, including listed salmonids, will be relocated to other appropriate stream reaches. Capture and relocation efforts will result in stress and potential mortality of some juvenile steelhead and salmon. These activities may occur at each construction site over two construction seasons.

During the dewatering and fish relocation phase, juvenile steelhead are expected to be present at each stream crossing site. Juvenile steelhead densities are expected to be low based on habitat quality and prior survey work by fishery biologists. The likelihood of juvenile Chinook salmon and coho salmon being present during the construction/dewatering phase of the proposed project is very low (S. Harris, CDFG, personal communication, 2005). Juvenile coho salmon may be present in low numbers at Baechtel Creek, Broaddus Creek, and Mill Creek project locations, but not present at the four Haehl Creek project sites. Because ocean-type Chinook salmon can reside within streams for up to a year it is possible that juvenile Chinook salmon could be present at the lower Haehl, Baechtel, Broaddus, and Mill creek project areas during the dewatering and relocation activities. Ocean-type juvenile Chinook salmon normally migrate out of their natal stream from 60-150 day post-hatching, but under some conditions may remain in freshwater their first year (Myers *et al.* 1998).

Fish relocation at the proposed project sites will be conducted with electroshocking gear, seining gear, or dip nets by qualified biologists. Once cofferdams are in place, water in pool habitats may be removed using screened pumps. When stream habitats have been sufficiently dewatered, relocation efforts will continue until all fish have been removed from the dewatered reach. Despite these measures, some mortality of fish is likely at each stream crossing construction due to injury from relocation equipment (seining or electrofishing), stress related to handling, and individual fish eluding capture. These latter fish will die when the work areas are dewatered.

Mortality associated with fish relocation activities is expected to be low. To minimize impacts during fish collection and relocation, Caltrans proposes to use only experienced biologists, approved by NMFS and the CDFG. Fish will be relocated to suitable habitats outside of the construction area. Based on review of up-to-date fish relocation techniques and protocols, unintentional mortality of juvenile anadromous salmonids is expected to not exceed three percent of the fish collected. Biologists with electrofishing experience and skill can reduce injury and mortality rates to near one percent. Juvenile NC steelhead will comprise most or all of the salmonids collected at the stream crossing project sites. Due to the very low densities of juvenile Chinook and coho salmon in the project area, few are likely to be present and, thus, very few coho and Chinook salmon mortalities are expected. Juvenile salmonids that avoid capture in the project work area are not likely to survive within the construction sites once they are dewatered. Due to the poor habitat conditions (lack of hiding cover) at the construction sites, NMFS expects that relocation efforts will be effective and mortalities from dewatering and fish relocation will be less than three percent of the total number of fish present in the affected reach of stream.

2. Effects of Pile Driving During Project Construction

Pile driving will be required at eight of the ten proposed stream crossings, requiring combinations of smaller piles ("H" piles) and large CISS piles. All piles are proposed to be driven above ordinary high water levels of each stream channel. The majority of the piles at stream crossings will be located outside of the stream channel all together, but will be within 15 meters of the top-of-bank. Piles that will be located within the channel, yet above ordinary high water will be smaller, measuring from 61 to 76 centimeters. Caltrans has not specified whether pile driving will be performed with an impact hammer or vibratory hammer. The analysis below assumes either hammer type could be used to install the project's temporary and permanent piles. As described above, Caltrans has proposed to dewater construction areas and relocate fish to minimize the potential impacts of high sound pressure waves from the pile driving.

Available information indicates that fish may be injured or killed when exposed to elevated underwater sound pressure waves generated from driving steel piles with impact hammers (Abbott and Bing-Sawyer 2002, Abbott and Reyff 2004, Abbott *et al* 2005, Caltrans 2001, Caltrans 2003, Caltrans 2004, Nedwell *et al.* 2003, Vagle 2003). Pathologies associated with very high sound levels are collectively know as barotraumas. These include hemorrhage and rupture of internal organs, including the swimbladder and kidneys in fish. Death can be instantaneous, occur within minutes after exposure, or occur several days later. High sound pressure levels can also result in hearing damage and elicit stress responses in fish (Popper et al. 2003/2004).

Based on data collected during the installation of piles with a vibratory hammer in Richmond Inner Harbor (Reyff 2003), the adverse effects described above are not expected with the use of a vibratory hammer. Sound levels produced by pile driving with a vibratory hammers are not only lower, but generate different sound wave forms and lower sound frequencies that are less injurious than those produced by an impact hammer. Therefore, it is expected that underwater sound produced during the driving of the project's permanent piles and temporary piles with a vibratory hammer will not exceed levels that result in injury or mortality of listed anadromous salmonids.

If an impact hammer is used for construction in combination with timber piles, no physical injuries or mortality of salmonids are expected. Similar to a vibratory hammer, the driving of wooden and concrete piles with an impact hammer generates sound wave forms that are less injurious to fish (Reyff and Anderson 2005).

Alternatively, when steel piles are used in combination with an impact hammer at the stream crossing locations, high sound levels are likely to be generated during construction. However, all pile driving will be performed on the stream bank or further upland with adjacent stream areas either naturally dry or dewatered by a constructed flow diversion. Elevated sound levels generated by pile driving are expected to travel through the ground and streambed. Although below the level of physical injury, juvenile steelhead could be exposed to high sound pressure waves traveling through the streambed. Juvenile steelhead, coho, and Chinook salmon will be present in wetted habitats immediately upstream and downstream of the dewatered stream reaches. The degree to which an individual salmonid may be affected by high sound pressure

waves is dependent on many variables including size of fish, peak sound pressure, frequency, *etc.* Depending on these factors, effects on juvenile salmonids during the driving of steel piles with an impact hammer will range from a stress response to no response.

Juvenile salmonids are expected to be present upstream and downstream of the dewatered reaches during pile driving. Given what is currently known about the effects on salmonids from pile driving and conditions at the project site, NMFS expects that dewatering of each crossing site (up to 150 meters) will be a sufficient distance to reduce sound exposure in nearby wetted habitats to safe levels. Since fish will likely be at least 75 meters from the sound source, decibel levels during pile driving are not expected to cause mortality or injury of juvenile salmonids. Decibel levels may cause juvenile fish to become startled and abandon preferred habitats, which are adjacent to the dewatered areas. Caltrans has proposed to monitor underwater sound pressure in the wetted aquatic areas immediately above and below dewatered reaches. This information will allow for evaluation of sound exposure levels to fish rearing upstream and downstream of the stream crossing construction sites.

In the event that hydroacoustic monitoring in areas above and below the dewatered stream reach reveals excessively high sound levels, Caltrans can dewater additional areas and relocate fish to increase the distance between listed salmonids and the pile driving sound source. Based on the results of the hydroacoustic monitoring program, NMFS may recommend additional areas be dewatered. If additional dewatering is performed, numbers of juvenile salmonids collected and handled would increase, but the numbers will likely be small.

3. Effects of Riparian Vegetation Removal

Removal of riparian vegetation along banks of proposed construction areas is expected to adversely affect designated critical habitat for listed anadromous salmonids and impact juvenile steelhead within the action area. When streamside vegetation is removed, summer water temperatures typically increase in proportion to the increase in sunlight that reaches the stream surface (Chamberlain *et al.* 1991). Increases in solar radiation to stream reaches may also change aquatic species composition, increase algal biomass and alter invertebrate communities (Beschta *et al.*1987). Primary elements of salmonid habitat such as large woody debris, pool and riffle formation, and food inputs are likely to be impacted by the riparian vegetation removal (Caltrans, 2005a). In addition, removal of riparian vegetation can change local microclimate, soil moisture, groundcover, and susceptibility to bank erosion, and influence the re-establishment of vegetation (Spence *et al.* 1996).

Removal of riparian vegetation will be performed with heavy equipment and hand crews. Permanent and temporary removal of vegetation will be conducted along upper Haehl Creek (southern interchange), the Schmidbauer culvert replacement near Haehl Creek, middle Haehl Creek crossing, lower Haehl Creek viaduct crossing, Baechtel Creek viaduct crossing, Broaddus Creek viaduct crossing, Mill Creek viaduct crossing, and the Upp Creek culvert replacement location. Riparian vegetation removal is proposed from the edge of ordinary high water to areas above the top of bank that encompass most of the existing riparian zone. Table 2 presents the amount of bank length of permanent and temporary riparian vegetation removal at each stream crossing on the salmonid bearing streams.

Table 2. Permanent and temporary (replanted) riparian removal at proposed stream crossings and construction sites along the Willits Bypass.

Stream Name	Permanent Removal in meters	Temporary Removal in meters	Total Bank Length Affected in meters	Total Stream Reach Length Affected in meters
Upper Haehl Creek	772	12	784	392
Middle Haehl Creek	105	92	197	98.5
Lower Haehl Creek	34	161	195	97.5
Baechtel Creek	300	370	670	335
Broaddus Creek	33	157	190	95
Mill Creek	37	170	207	103.5
Upp Creek	179	4.6	184	92

With three distinct construction areas, Haehl Creek will require the most extensive amount of permanent riparian vegetation removal. Construction of the north and southbound viaduct crossings at Baechtel, Broaddus, and Mill creeks requires both permanent and temporary removal of riparian bank vegetation. Approximately 92 meters of channel will be affected by the permanent removal of riparian vegetation at the Upp Creek culvert crossing.

Impacts associated with the riparian vegetation removal vary within the action area depending on removal type (permanent or temporary), stream flow (absent, intermittent, surface flow present) during the summer, and presence of salmonids. The current condition of riparian habitat also influences the potential impact to salmonid habitat.

a. Removal of Riparian Vegetation along Salmonid Streams

The proposed removal of riparian vegetation at stream crossings is expected to adversely affect water temperature on the salmonid streams in the project action area. Water temperature is a critical environmental factor in most aquatic ecosystems. Chemical and biological processes in aquatic environments ultimately are regulated by temperature. As cold-blooded animals, the metabolism, reproduction, development, and scope of activity of anadromous salmonids are largely controlled by environmental temperature (Marcus *et al.* 1990). The Willits Bypass Project's proposed temporary and permanent removal of riparian vegetation is expected to result in increased solar radiation input and increase summer/fall water temperatures on the five salmonid-bearing streams in the action area.

Gillies (2000) conducted a focused study of the effects of riparian canopy removal on stream water temperature in the Little Lake Valley. Using local stream habitat inventory data, Gillies (2000) concluded that in the Willits Bypass Project area there is a direct relationship between percent canopy cover and elevated water temperatures in streams. Based on this study's results,

the riparian vegetation removal associated with the proposed Willits Bypass Project is likely to result in severe consequences to habitat quality by increasing water temperatures in the action area.

The preferred temperature range for *Oncorhynchus* spp. is generally between 6 and 15° C (Reiser and Bjornn 1979). In the Eel River Basin, stream water temperature is recognized as a critical habitat parameter (Gillies 2000), particularly during the summer months for juvenile rearing salmonids. Summer and fall water temperatures influence growth rates, swimming ability, availability of dissolved oxygen, ability to capture and use food, and ability to withstand disease outbreaks. Steelhead and coho salmon juveniles are known to rear during the summer months in the five salmonid-bearing streams of the action area. Chinook salmon juveniles typically outmigrate to the ocean as smolts during the spring months in their first year and are generally not expected to be within the streams of the action area over summer.

Due to riparian vegetation losses, additional solar inputs at the project's riparian removal sites will increase summer water temperature and degrade salmonid habitat. Summer stream temperatures are expected to increase as a result of project construction in wetted areas of Haehl, Baechtel, Broaddus, and Mill creeks. In areas where riparian vegetation is re-planted post-construction, the canopy will likely be restored in five to ten years and these additional solar radiation inputs will be reduced or eliminated. In areas of permanent vegetation losses, salmonid habitat including designated critical habitat will be permanently impacted due to the effects of increased water temperature.

Since Haehl Creek contains the largest linear extent of permanent vegetation removal, thermal impacts are expected to be more extensive and may convey the warmed water into downstream reaches of Baechtel Creek, and Outlet Creek below the confluence with Haehl Creek. However, during the summer and fall months of most water years, portions of the creek bed of Haehl, Baechtel, and Outlet creeks may be naturally dry in the action area. These intermittent flow conditions could help reduce the thermal effects of riparian removal, because subsurface flow through the project area will not be subject to direct solar radiation. The extent of this amelioration due to dry and intermittent stream flows in the action area is unknown. Juvenile steelhead that reside in thermally impacted reaches of Haehl, Baechtel, and Outlet creek are likely to experience reduced survival rates due to increases in water temperatures in portions of the action area. These effects are expected to last for at least a five year period, until mitigation actions ameliorate the impacts of the project riparian vegetation removal. The few areas that permanently lose riparian vegetation may become uninhabitable to listed salmonids.

CDFG (1995) reports existing stream temperature conditions are marginal for salmonid rearing in most of Haehl Creek. Gillies (2000) estimates reduced canopy cover in the action area due to construction of the Willits Bypass Project could increase water temperatures to levels in excess of 30° C. Although existing summer habitat conditions are marginal due to elevated temperatures, the suitability of salmonid rearing habitat within Haehl Creek and Baechtel Creek is expected to further decrease due to the project's extensive removal of riparian vegetation.

Riparian vegetation removal and the associated effects at Broaddus and Mill creeks are similar, but less extensive than Haehl and Baechtel creeks. At both Broaddus and Mill creeks it is

estimated that approximately 100 meters of stream will be affected by the viaduct construction at each site. Marginal stream temperature conditions in lower reaches of Broaddus and Mill Creeks will become less suitable for salmonid rearing during the summer months due to increased solar radiation.

Approximately 92 meters of channel will be affected by the permanent removal of riparian vegetation at the Upp Creek culvert crossing. Upp Creek typically has dry channel conditions from early spring to late fall. Therefore, riparian vegetation removal along Upp Creek is not expected to effect stream temperatures due to the lack of summer flow at the site.

b. Removal of Riparian Vegetation on Non-Salmonid Streams

Non-salmonid bearing streams located within 305 meters of salmonid streams were designated at Category II streams due to their potential influence to fish bearing streams. Other stream courses which are located beyond 305 meters of a salmonid stream, and have less potential to impact salmonid streams, were categorized as Category III streams.

Category II streams are typically important sources of water, nutrients, wood, and other vegetative material for streams inhabited by fish and other aquatic organisms (FEMAT 1993). Removal of riparian vegetation in these channels has the potential to increase stream temperatures of salmonid streams, and to deliver sediment and increase turbidity in fish bearing streams. The Willits Bypass Project proposes to permanently remove 1,090 meters of riparian vegetation along five Category II stream reaches. Temporary riparian removal is proposed on 726 meters of Category II streams.

Category III streams are small ephemeral streams, which are more than 305 meters (1000 feet used in California Forest Practice Rules) from fish bearing streams. These streams typically have no flow or aquatic life during the summer months, but are capable of transporting sediment, woody debris, and nutrients during winter rainstorms. Riparian vegetation removal for permanent and temporary impacts to these channels totals 967 meters and 21 meters, respectively.

Riparian vegetation removal is expected to create increased in surface erosion, and bank erosion, which results in increased turbidity and sediment (sand sized particles) to fish bearing channels. The majority of the Category II and III stream channel reaches impacted by the Willits Bypass Project will be placed in culverts. By placing these stream types in culverts, they are not expected to increase stream temperatures of fish bearing streams. Losses of aquatic macro invertebrate food producing areas in Category II channels will likely decrease food delivery to fish bearing channels. Loss of these food-producing areas is not expected to reach levels that would adversely affect fish bearing streams because the length of Class II stream that will be placed in culverts less than 500 meters combined. In addition, there may be some minor reduction in nutrients, woody debris, and vegetative material because of the culvert installations. Response of salmonid lifestages to increased sediment levels, including Category II and Category III streams, will be discussed in the effects section below titled *Effects of Riparian Vegetation Removal on Salmonids*.

Category II channels which are not within constructed culverts may experience stream temperature increases due to vegetation removed from the riparian zone. These streams typically have very low flow, intermittent flow, or are dry by early summer. Thus, the small contribution of flow from Category II drainages is generally not enough to result in stream temperature changes to fish bearing streams during the summer months.

4. Mobilization of Sediment from Construction Activities

Suspended and deposited fine sediment can adversely affect salmonid rearing and spawning habitat if present in excessive amounts. High levels of suspended solids may abrade and clog fish gills, reduce feeding, and cause fish to avoid some areas (Cordone and Kelly 1961). Several activities associated with construction of the Willits Bypass Project may result in an increase delivery of sediment to streams in the action area. These include construction of the roadbed, operation of staging areas, riparian vegetation removal, channel realignment, in-channel work such as rock slope protection and bridge construction, culvert replacements, excavation activities at the southern interchange, and construction and removal of cofferdams. An estimated 1.9 million cubic meters of earthen material will be excavated, transported, and compacted to build the project. Caltrans estimates the total ground disturbance for all project areas will total 93 hectares (D. Schmoldt, Caltrans, personal communication, 2006). In addition to road and bridge construction activities, Caltrans construction of fish enhancement/mitigation projects could result in short-term increases in turbidity during the placement of instream structures.

Barret *et al.* (1995) reviewed various highway construction projects on an ephemeral stream in Texas and concluded that several projects built in the 1970's resulted in a 50 percent increase in sediment delivery as a result of highway construction. Other studies reviewed by Barret *et al.* (1995) showed short term and minor inputs of sediment to streams from highway construction.

Caltrans currently requires contractors implement soil stabilization and sediment control BMPs. These actions are designed to contain the majority of erodible material. Proper implementation of the BMPs is expected to reduce the mobilization and delivery of sediments to nearby streams. However, the large quantity of earthen material used in this project over a broad area is expected to result in some level of increased delivery of sediment to salmonid bearing streams in the action area. For the Willits Bypass Project, current BMPs are expected to provide more effective sediment control than that reviewed by Barret et al. (1995).

Although increased amounts of sediment input to salmonid bearing streams are expect during project construction, sediment quantities have not been estimated by Caltrans or in this biological opinion. Fine grain sediment will likely enter streams from soil disturbed by construction along stream banks and from upland areas. Staging areas, roadbeds, vegetation removal sites, excavation and compaction areas area likely sources of sediment to the stream channels of the action area. Soils disturbed during construction will provide a source of sediment that can be mobilized by rain events during the subsequent winter/spring. Sediment will travel along gullies and ravines to stream channels and then to the bottom of the creek bed. Once in the creek channel, sediment can increase turbidity levels in the water column, fill-in gravel interstices in the creek bed, and coat the bottom of the channel with layers of fine materials.

Within the action area, sediment originating from construction activities may be deposited in Haehl, Baechtel, Broaddus, Mill, and Upp creeks. In addition, a five kilometer reach Outlet Creek downstream of the construction sites was included in the action due the potential for increased rates of sediment delivery. Increased levels of fine sediment can adversely affect salmonid spawning habitat, various life stages of salmonids, and other instream habitat features within the action area.

a. Effects on Salmonid Spawning Habitat

Spawning habitat for Chinook salmon occurs within the action area; although existing conditions are poor. Surveys performed by CDFG in 2005 identified high percentages of sand which reduces the quality of the creek bed for spawning. CDFG reports that during a normal water year, up to 20 Chinook salmon redds may be constructed in creek areas adjacent to the Willits Bypass Project (S. Harris, CDFG, personal communication, 2006). Additional Chinook salmon spawning occurs in creeks both upstream and downstream of the action area. Adult coho salmon and steelhead entering the Little Lake Valley area spawn primarily upstream of the action area. CDFG estimates over 90 percent of the adult coho salmon and steelhead migrate to areas upstream of the project site to spawn (S. Harris, CDFG, personal communication, 2006). Therefore, few coho salmon and steelhead are expected to spawn within the action area.

Sediment input by project construction is expected to further degrade existing spawning habitat conditions in the action area. Fine sediments input associated with project construction will reduce the permeability of gravels, intergravel flow, and the availability of dissolved oxygen for developing embryos, and interfere with emergence success by occluding interstitial pore space (Everest *et al.*1987). Laboratory studies have found an inverse relationship between fine sediment and fry survival, with decreases of 3.4 percent survival for each one percent increase in fine sediment (Everest *et al.* 1987). Fine sediment originating from project during the four year construction period is expected to further decrease the survival of salmonid embryos and reduce the ability of fry to emerge from redds in the creeks of the action area. However, sediment delivery levels associated with project construction should diminish significantly after project construction is completed.

b. Effects on Salmonid Life Stages

Construction activities are known to cause temporary increases in water turbidity (reviewed in Furniss *et al.* 1991, Reeves *et al.* 1991, and Spence *et al.* 1996). Short-term increases in turbidity could occur during construction, but reach dewatering will generally avoid this problem because work will be performed in the dry. Post construction winter rains will likely result in short-term increases in turbidity as runoff occurs in areas of exposed soil and removed riparian vegetation. High levels of turbidity and suspended sediment in the action area may affect adult and juvenile anadromous salmonids by a variety of mechanisms. High concentrations of suspended sediment can disrupt normal feeding behavior and efficiency (Cordone and Kelly 1961; Bjornn *et al.* 1977, Berg and Northcote 1985), reduce growth rates (Crouse *et al.* 1981), and increase plasma cortisol levels (Servizi and Martens 1992). Even small pulses of turbid water will cause salmonids to disperse from established territories (Waters 1995), which can displace fish into less suitable habitat and/or increase competition and predation, decreasing chances of survival. Increased

sediment deposition can fill pools and reduce the amount of cover available to fish, decreasing the survival of juveniles (Alexander and Hansen 1986).

Increased turbidity levels associated with the Willits Bypass Project are not expected to physically injure listed salmonids or result in adverse behavioral effects. Moderate, but temporary increases in turbidity during the summer construction season and during the winter months are expected. These levels will likely result in some limited behavioral effects, such as temporarily reduced feeding efficiency of juvenile salmon or steelhead in the action area. These behavioral changes are not expected to cause mortality or decrease the probability of individual juvenile or adult salmonid survival within the action area.

5. Mobilization of Sediment from Oil Well Hill

Oil Well Hill is the proposed borrow site identified by Caltrans. Project construction could result in the excavation of 1.9 million cubic meters of material from this location. The borrow area will likely encompasses 12 to 16 hectares. This site is east of Highway 101 and approximately 425 meters from Outlet Creek.

Sediment delivery reduction measures have been proposed to prevent sediment from reaching Outlet Creek. Sediment detention basins will be located at key drainage areas to capture material that is mobilized. Proper construction and operation of these detention .basins are expected to intercept all mobilized sediments prior to reaching Outlet Creek. The detention basin design appears to be adequate to avoid adversely affecting salmonid habitat in Outlet Creek and other streams within the action area.

Caltrans has indicated that alternative borrow site areas may be selected by the contractor, but selection of an alternative site will require submittal of a borrow site plan. Alternative borrow site plans have not been evaluated in this biological opinion. Further review by NMFS may be required if an alternative non-commercial borrow site is proposed.

6. Effects of Rock Slope Protection

Rock slope protection or riprap is proposed in at several stream crossings in combination with retaining walls for protection of bridge columns and banks. A total of 140 meters of stream length will be impacted by placement of riprap along three sites on upper Haehl Creek: one site on middle Haehl Creek, and one site each on Baechtel, and Upp creeks. Use of riprap to protect banks is expected to result in effects to designated critical habitat for Chinook salmon, coho salmon, and steelhead.

General effects of riprap on salmonid habitat include, elimination of lateral bank erosion, which prevents development of undercut banks, and cover for fish (Schmetterling *et al.* 2001). Placement of large rock can change the sediment transport capacity of a stream reach and affect the natural distribution of particle sizes in a stream (Beschta and Platts 1986). Sediment size changes can affect spawning substrate and food production for salmonids and cover requirements provided by certain substrate (Platts 1979). The loss of riparian vegetation due to the placement of riprap can reduce or eliminate recruitment of new riparian vegetation, reduce habitat complexity, reduce shade to streams which maintain cold water habitat, and reduce recruitment

of large woody debris (LWD) (Schmetterling *et al.* 2001).

At each stream crossing on Haehl, Baechtel, and Upp creeks, approximately 15 meters of riprap will be placed along one or both banks. Rock will extend from the channel bed to an area approximately two-thirds up the bank. Top of bank areas will be planted with willow. Riprap is expected to reduce habitat complexity and riparian shade adjacent to stream crossings. This action is expected to have long-term adverse effects on designated critical habitat for CC Chinook salmon, SONCC coho salmon and NC steelhead. Existing habitat at the stream crossing sites is in moderate to poor condition. The proposed placement of riprap will further degrade stream habitat for salmonids. Reduced cover, LWD, shade, and changes in stream bed substrate are expected to decrease rearing habitat quality for juvenile Chinook salmon and steelhead, and to a lesser extent coho salmon. Juvenile coho are not expected to utilize the action area during the summer month due to unsuitable stream temperature conditions.

7. Toxic Chemicals

Equipment refueling, fluid leakage, and maintenance activities within and near the stream channel pose some risk of contamination of aquatic habitat and subsequent injury or death to listed salmonids. Caltrans has proposed measures which are designed to prevent the spill of contaminants into the waterways of the action area. Measures include: maintaining fuel storage and refueling sites in upland locations at an appropriate distance from the stream channel; maintaining vehicles and construction equipment be in good working condition; and servicing of equipment in an upland location.

Caltrans may use bentonite as a lubricant for pile placement and an accidental release of bentonite may occur. Bentonite is potentially lethal to fish. Sigler *et al.* (1984) reported that steelhead and coho salmon show reduced growth rates or increased emigration rates when exposed to 125 to 175 mg/l bentonite. In addition to toxic chemicals associated with construction equipment, stream water that comes into contact with wet cement can adversely affect water quality by raising the pH of water, which may result in injury or death to listed salmonids. However, these water quality impacts are not anticipated, because the stream will be dewatered around the construction work sites. Measures should minimize the potential for a spill. In addition, Caltrans and its contractors will have ample opportunity to attend to any spill prior to toxic chemicals reaching the waters of the action area.

8. Long-term Maintenance and Use

NMFS believes it unlikely that long-term maintenance actions, including mowing of vegetation, cleaning of ditches, pruning vegetation near bridges, and repairing pavement, will result in adverse affects. Post construction maintenance actions implemented with the use of appropriate BMPs are likely to minimize and avoid any sediment and turbidity entering streams in the action area. This includes any sediment generated from infrequent sand applications conducted for icy freeway conditions. BMPs are included in the Caltrans Storm Water Quality Handbook Maintenance-Planning and Design Staff Guide (P&DSG) (Caltrans 2003b), and will be used during maintenance of the Bypass. NMFS believes that in general, these BMPs are likely to be effective at avoiding maintenance impacts on listed species and critical habitats. However, a

complete maintenance plan is unavailable for the project, and maintenance actions expected to result in sediment and turbidity entering streams would require reinitiation of consultation.

Use of the freeway bypass is expected to generate grease and oil as well as other contaminants along the freeway corridor. Also, accidental spills are expected from freeway related traffic accidents. These contaminants may be washed into nearby streams during the rainy season. Caltrans has developed a standard Hazardous Waste and Spill Response Plan (HW&SRP) which would be implemented during the operation of the project. NMFS believes that hazardous waste and spill response practices contained in the HW&SRP and BMPs contained in the P&DSG are likely to be effective in minimizing the amount of contaminants entering streams. Adverse effects to salmonids and their habitat from introduced chemicals, oils, grease, or accidental spills are not expected.

The existence of the freeway bypass may cause increased runoff from impervious surfaces that could cause adverse effects to salmonids and their habitat within the action area. For example, increased runoff can scour redds and destroy salmonid eggs and alevins. To address the potential for increased runoff from the impervious freeway surfaces, Caltrans designed permanent BMPs into the design, construction, and maintenance of the project to minimize increased runoff potential (Caltrans 2000). The P&DSG requires the Caltrans design team to account for hydrologic impacts of the project, and provide measures to minimize impacts to stream stability. Based on the information provided in Caltrans' Water Quality Assessment (Caltrans 2000), NMFS concludes that design features, and permanent BMPs, will avoid adverse effects to salmonids and their habitat related to potential increased runoff from the completed project.

C. Interdependent and Interrelated Actions

NMFS does not anticipate any interdependent or interrelated actions associated with the proposed action.

D. Actions with Beneficial Effects to Salmonids or their Habitat

1. Haehl Creek and Upp Creek Culvert Replacements

Existing culverts on Haehl and Upp creeks are impediments to fish anadromous passage (Caltrans 2005a). The Willits Bypass Project proposes to replace both these culverts with new structures that improve passage for both adult and juvenile lifestages of salmonids. At Upp Creek the existing culvert will be replaced with a new culvert. On upper Haehl Creek, the existing culvert under the new propoposed Highway 101 alignment will be removed and not replaced. A second culvert on Haehl Creek will be replaced for improvement of the new Schmidbauer Ranch access road.

These culvert removals and replacements are expected to improve adult anadromous fish passage on Upp and Haehl creeks. Recent assessments of the existing culvert on upper Haehl Creek by CDFG and NMFS staff biologists have determined that the culvert is a barrier to adult salmon and steelhead. A fish passage assessment study conducted by Caltrans ranked Upp Creek as one of the top ten locations for restoration of passage conditions in Mendocino County (Caltrans

2005b). Habitat surveys on upper reaches of Upp Creek have documented the presence of approximately 2,300 meters of available anadromous habitat. Replacement of the Upp Creek culvert on existing Highway 101 would be most beneficial for NC steelhead due to the higher gradient that exists upstream of the culvert (S. Harris, CDFG, personal communication, 2006). Coho and Chinook salmon are not known to use high gradient stream habitat, and are less likely to use the newly accessible upper reaches of Upp Creek for spawning and rearing. Increased rearing opportunities would be available for juvenile NC steelhead, which, over time, would likely result in increased steelhead production in the Outlet Creek watershed.

The replacement of the culvert on upper Haehl Creek is expected to provide a lesser benefit to anadromous fisheries. Upper Haehl Creek is near the upstream end of anadromous habitat in the streams headwaters. Replacement of the culvert with one that improves fish passage is not expected to increase levels of salmonid productivity. The habitat may provide for some additional spawning of Chinook salmon and steelhead adults, and some use during the winter by juvenile Chinook and steelhead. This reach of upper Haehl Creek is usually dry during the summer months and is not expected to provide juvenile rearing habitat for steelhead or salmon.

2. Riparian Vegetation Mitigation

Caltrans proposes to restore and mitigate temporary and permanent impacts to riparian vegetation on anadromous streams, Category II streams, and Category III streams. The general extent and nature of the project's mitigation plantings are described in the "*Conceptual Mitigation Plan for the Willits Bypass Project*", dated August 19, 2006. The riparian mitigation plan is "conceptual", because it is based on early and limited level of project design. Therefore, Caltrans and FHWA have not ascertained the specific compensatory mitigation sites for this project.

The Conceptual Plan proposes replanting of riparian vegetation on anadromous stream at a 3:1 ratio. Based on the existing project design, this ratio will result in the creation/restoration of 22.2 acres of riparian area mitigation for permanent and temporary impacts. Mitigation of Category II and III stream types will result in riparian creation/enhancement of 13.6 and 1.95 acres of riparian revegetation, respectively.

Riparian vegetation mitigation by Caltrans will be designed to restore the ecosystem to its natural pre-disturbance riparian community structure and function. In order to accomplish this goal, Caltrans proposes to plant five riparian trees for every tree that has been removed. Anadromous reaches will be planted to achieve a 30-meter riparian zone, Category II streams will be re-vegetated to achieve a 15-meter riparian zone, and Category III stream will be re-vegetated to create an 8-meter riparian zone. In addition, native shrubs and herbaceous perennial plants are proposed to be planted along with riparian trees.

Proposed riparian restoration/creation is expected to compensate for project impacts in some areas and improve existing conditions in other areas. Evaluation of past riparian replanting projects in California generally shows improvement in anadromous salmonid habitat conditions. Opperman and Merenlender (2004) found positive responses in salmonid habitat to riparian restoration actions conducted 10-20 years earlier. Factors that may affect success or failure of a riparian planting project may be due to one or more reasons, including aspect, slope, existing

vegetation, upland drainage, soil moisture conditions, competing vegetation, use of imported soil, native soil conditions, and stock quality (Anderson and Welton 2005). Caltrans has proposed specific success criteria in order to provide a level of certainty for riparian mitigation success. Caltrans has estimated that after a five-year period, riparian tree canopies would provide a ten-foot strip of shade from restored vegetation, at a minimum. Other success criteria such as absolute vegetative cover, woody plant survival, and floristic composition, *etc.*, are proposed per the Conceptual Mitigation Plan.

Success of the proposed revegetation of riparian areas may take several decades to produce a riparian forest (Manci 1989). Faster growing species, such as willow (*Salix spp*), and white alder (*Alnus rhombifolia*), are expected to provide shade and bank protection within the first 5-10 years. Restoration of functional riparian areas may take 20-40 years dependent on the growth of species such as big leaf maple (*Acer macrophyllum*), cottonwood (*Populus spp*), California bay laurel (*Umbellularia californica*), and other riparian species proposed for planting. Riparian vegetation is generally in poor condition within the Little Lake Valley due to effects of grazing and urbanization over the last one-hundred years. Therefore, the proposed plan to provide restoration/creation at the proposed levels is a benefit, but this benefit to aquatic habitat may not be fully realized for 10 to 40 years. Beneficial effects will include improvement of stream temperatures, increased bank stability (5-10 years), and over a longer period, introduction of LWD and improved cover for fisheries habitat (10-40 years).

3. Instream Habitat Mitigation

Caltrans may propose to construct instream structures (such as opposing wing deflectors), anchor LWD, or contract to have other stream enhancement/restoration structures placed in stream mitigation reaches. As described previously, these projects are uncertain to occur and are not analyzed in this biological opinion. If these projects are designed and proposed, and may adversely affect listed salmonids or their critical habitats, reinitiation of consultation with NMFS will be needed.

VI. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

A variety of cumulative effects are occurring to salmonid fisheries resources within the Outlet Creek sub-basin. Following are the activities that are reasonably certain to occur within these watersheds that will likely result in cumulative effects in the future:

A. Rural Development

BLM *et al.* (1996) reports that many 64.7 hectare parcels within the South Fork Eel River watershed will continue to undergo subdivision down to 16.2 hectare parcels. Since the Outlet

Creek watershed is part of the South Fork Eel River watershed, it is reasonable to assume that similar subdivision activities are and will continue to occur within the Outlet Creek watershed. Impacts to salmonid habitat from rural development include loss of riparian vegetation, changes in channel morphology and dynamics, altered watershed hydrology, increased sediment delivery from roads, elevated water temperatures and increased water demand within the action area.

B. Chemical Use

It is anticipated that chemicals such as pesticides, herbicides, fertilizers, and fire retardants will continue to be used in the action area. Impacts to salmonids may include changes to riparian vegetation and associated organic input into aquatic systems, changes in aquatic invertebrate communities, and increased algae production. Due to the lack of specific information, we are unable to determine the effects of chemical applications in the action area. Due to the undeveloped nature of the action area, the use of chemicals is not expected to be conducted under applicable State and Federal laws.

C. California Streambed Alteration Agreements

CDFG has strengthened the permitting process for activities taking place in, or near, rivers and streams by requiring environmental review. Henceforth, streambed alteration agreements will be reviewed in accordance with the California Environmental Quality Act. This program is expected to result in lessened impacts to salmonids from projects such as temporary summer dams, and stream bank stabilization projects within the action area.

D. Illegal Marijuana Cultivation

Beginning in the 1960's a new significant land use activity arose in the South Fork Eel River watershed. The "back to the land movement" as it is known consisted of individuals leaving urban centers in an attempt to "get back to nature" (BLM *et al.* 1996). Many areas that had been logged were subdivided and real estate activities became very prominent within southern Humboldt and northern Mendocino counties. Many of the "back to the land" individuals could not find employment and turned to illegal marijuana cultivation as a means of economic support (BLM *et al.* 1996). These activities are expected to continue into the future. According to BLM *et al.* 1996 this activity has significant impacts on the ecosystem through runoff of fertilizers, poisons to control rodents, and water diversions which some have suggested may rival impacts of logging and grazing. Water withdrawal in Baechtel and Broaddus creeks has been reported to degrade summer rearing conditions for juvenile steelhead and coho salmon; these impacts are expected to continue (C. LeDoux-Bloom, CDFG, personal communication, 2005).

VII. INTEGRATION AND SYNTHESIS OF EFFECTS

The construction of the Willits Bypass Project is anticipated to affect five salmonid-bearing streams in the Outlet Creek sub-basin of the Eel River watershed over a four-year period. An estimated 1.9 million cubic meters of material will be excavated, transported and compacted to build a four-lane freeway, crossing the Little Lake Valley, beginning approximately 3.3

kilometers south of Willits to 2.2 kilometers north of Willits. New freeway stream crossings will be construction over Haehl Creek at three locations, and one crossing each at Baechtel, Broaddus, Mill, and Upp creeks. Construction is expected to adversely affect threatened NC steelhead, threatened CC Chinook salmon and threatened SONCC coho salmon by dewatering/fish relocation, temporary and permanent riparian vegetation removal, mobilization of sediment, and placement of rock slope protection. Maintenance and use of the bypass is not expected to adversely affect salmonids or their critical habitats, as described above.

Direct effects to listed salmonids associated with construction activities will be limited to the summer months when juvenile NC steelhead are likely to be present at the stream crossing sites. Construction in channels will be limited to the period between June 15 and October 15. CC Chinook are unlikely to be present during construction, because juveniles will have emigrated from the watershed as smolts during the spring months. Juvenile SONCC coho salmon are unlikely to be present in the action area due to unsuitable water temperature conditions during the summer and early fall months. Dewatering and fish collection activities prior to in-water construction are expected to result in the safe relocation of over 97 percent of the juvenile steelhead residing at the stream crossings.

Effects to salmonid habitat, including designated critical habitat, include loss of riparian vegetation, increased water temperatures, increased levels of sediment delivery to the creek, and placement of rock slope protection. These actions are expected to reduce instream cover, reduce recruitment of LWD, reduce canopy cover and associated shade (increasing water temperatures), degrade spawning habitat, and generally decrease juvenile rearing habitat diversity and complexity. A small number of listed salmonids may be injured or killed as a result. Most of these impacts to habitat are temporary. Impacts to critical habitat caused by reductions in riparian vegetation may persist for a number of years after project construction.

Riparian mitigation is expected to ameliorate impacts to stream temperatures and associated salmonid summer rearing habitat within five years of the completion of the project, and ultimately to improve habitat conditions in certain reaches of the creeks in the action area. More habitat will be improved by riparian mitigation than will be permanently lost. BMPs implemented by Caltrans to control sediment during construction are expected to be sufficient to avoid long-term adverse effects to spawning and rearing habitat in the action area. Culvert removal and replacement are expected to improve fish passage conditions for both adult and juvenile salmonids in Upp and Haehl creeks.

The project is likely to incrementally degrade critical habitat in the action area until mitigation actions are complete and riparian vegetation has re-established. This degradation is unlikely to affect the conservation value of critical habitat as a whole for these species because the degradation in the action area is minimal and short term, and therefore unlikely to adversely affect the conservation of salmonid species in the Haehl Creek HSA. Early coordination between CDFG, NMFS, and Caltrans during development of project alternatives resulted in selection of a roadway alignment that is least damaging and avoids impacts to the highest quality habitat in the Outlet Creek sub-basin. Reaches of streams that currently provide the best quality of habitat for listed salmonids in the sub-basin will not be affected by the project. Stream crossings proposed in the Willits Bypass Project are at locations that frequently dry out in the summer. In addition,

existing conditions at the proposed stream crossings are currently lacking well-developed riparian vegetation and contain high percentages of fine sediment in the streambed. Bypass alignment alternatives that traveled through the western hills of Willits had the potential to impact the highest quality spawning and rearing habitat of Baechtel, Broaddus and Mill creeks. These areas with well-developed riparian vegetation, high quality spawning gravels and perennial flow conditions for summer rearing are not affected by the proposed project. Thus, by design, the selected project alternative avoids and minimizes impacts to listed anadromous salmonids and designated critical habitat in the Outlet Creek sub-basin.

Although incidental take of NC steelhead, CC Chinook salmon, and SONCC coho salmon is anticipated, impacts within the action area are not expected to reduce the probability of these populations surviving and recovering in the wild. NMFS reasons that low numbers of individual steelhead are currently produced in the action area and very low numbers of CC Chinook salmon and SONCC coho salmon are produced in the action area. Low reproductive productivity from the action area is due to baseline habitat conditions of high levels of fine sediment and low embryo/fry survival rates.

For NC steelhead, few of the fish originating from the action area are likely to contribute to the adult population given the poor rearing conditions that currently exist. During the summer and fall months, intermittent to dry conditions in stream channels, high stream temperatures, and poor to moderate habitat diversity currently limits summer habitat conditions and juvenile survival. NC steelhead are sufficiently distributed throughout the Eel River watershed to ameliorate the small losses expected in the action area from the project during the four year construction period, and for the five to ten years required for restored riparian vegetation to provide shade over streams.

CC Chinook salmon primarily use the action area during adult and smolt migrations, although some juvenile rearing occurs prior to emigration from the basin in the spring months[2]. The majority of Chinook salmon spawn and rear in Baechtel, Broaddus, and Mill creeks upstream of the action area (S. Harris, CDFG, personal communication, 2006). A small amount of spawning annually occurs in the action area and it is anticipated sediment from the project will result in a decreased level of embryonic survival. These decreases in survival of embryos within redds are expected to occur after each of the four construction seasons and should diminish to baseline conditions a few years after construction is completed. It is anticipated that adverse affects associated with this project will not decrease the probability of survival and recovery of CC Chinook salmon at the ESU level. CC Chinook salmon are sufficiently distributed throughout the Eel River watershed to ameliorate the small losses expected in the action area during this project's 4-year implementation period.

A small population of threatened SONCC coho salmon is thought to remain in the Outlet Creek sub-basin (S. Harris, CDFG, personal communication, 2006). Due to warm water temperature conditions and poor habitat complexity, low potential for juvenile coho salmon summer rearing currently exists in the action area. For similar reasons of poor habitat quality, few adult fish are

[2] Because these juveniles rear and outmigrate in the spring, adverse effects from elevated summer water temperatures are not anticipated.

likely to spawn in the reaches of the creeks in the action area. Thus, the proposed project has minimal impact on SONCC coho salmon or their habitat in the Outlet Creek sub-basin. Upstream reaches of these creeks in the Outlet Creek sub-basin, and other streams in the Eel River Basin, provide sufficient habitat and population productivity to maintain the SONCC coho salmon ESU during and after construction of the Willits Bypass Project. NMFS expects the small impact to coho salmon associated with this project is unlikely to affect the SONCC coho ESU population trend.

The proposed Willits Bypass Project is not expected to appreciably diminish the value of designated critical habitat for NC steelhead, CC Chinook salmon or SONCC coho salmon. Habitat impacts from the project in the action area are mostly temporary and/or minor. These impacts will be ameliorated, *i.e.*, critical habitat will return to its current condition, within 5-10 years, by the proposed riparian mitigation. Proposed riparian mitigation, as well as fish passage improvements in Haehl and Upp creeks, are likely to result in improvements to the current value of critical habitat for listed anadromous salmonids throughout the action area, and Outlet Creek sub-basin, although these improvements may take as long as 40 years.

VIII. CONCLUSION

After reviewing the best available scientific and commercial information, the current status of the species and critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion that the construction of the Willits Bypass Project by FHWA and Caltrans, in Mendocino County, California is not likely to jeopardize the continued existence of SONCC coho salmon, CC Chinook salmon, or NC steelhead.

After reviewing the best available scientific and commercial information, the current status of critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS biological opinion that the construction of the Willits Bypass Project by FHWA and Caltrans, in Mendocino County, California is not likely to adversely modify or destroy designated critical habitat for SONCC coho salmon, CC Chinook salmon, or NC steelhead.

IX. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by NMFS as an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to

and not the purpose of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are nondiscretionary, and must be undertaken by the FHWA, Caltrans, and their designees for the exemption in section 7(o)(2) to apply. The FHWA and Caltrans have a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA and Caltrans: (1) fail to assume and implement the terms and conditions, or (2) fail to require any designee to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to any permit, grant document, or contract, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the FHWA and Caltrans must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement (50 CFR §402.14(i)(3)).

A. Amount or Extent of Take

The Willits Bypass Project is expected to result in the incidental take of NC steelhead, CC Chinook salmon, and SONCC coho salmon. The majority of take is associated with the de-watering and fish relocation activities at the stream crossing construction sites. Caltrans proposes to implement dewatering and fish relocation to minimize take of juvenile salmonids associated with pile driving and other instream construction activities. Dewatering and fish relocation is proposed at all stream crossings except when the stream is dry and no water is present.

Based on summer electrofishing surveys conducted by the CDFG in 1993, NC steelhead are expected to comprise the vast majority of juvenile salmonids collected during fish relocation. Few to no juvenile Chinook and coho salmon are expected to be present during reach de-watering. No adult salmonids are expected to be present or taken by this project.

The majority of take during de-watering and relocation will be non-lethal take. Qualified biologists will relocate all fish, including salmonids from the dewatered stream channel areas (as much as 150 lineal meters) at each stream crossing. Some mortality of juvenile steelhead is anticipated during seining, electrofishing and other relocation related activities. Up to three percent of the juvenile steelhead, Chinook salmon, or coho salmon could be injured or killed because of relocation efforts. Therefore, the death or injury of no more than three percent of the total number of juvenile steelhead, Chinook salmon, and coho salmon relocated is anticipated at each stream crossing site during each year of construction.

During construction, Caltrans and its construction contractor will implement a SWPPP, to reduce the mobilization of sediment to the action area. It is likely the project construction will mobilize fine-grained (sand sized) sediment and this material will eventually be deposited in the stream channels during the winter months. Increased rates of fine sediment input may decrease the survival of embryos and the emergence of fry from spawning sites (redds) within the Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet creeks within the action area (13.8 km total). It is unlikely that sediment delivery will reach levels in the action area that result in complete loss of spawning success within redds. Some incremental loss is anticipated, but due to many factors,

the loss is unquantifiable.

Similarly, loss of riparian vegetation is expected to result in injury or death to juvenile steelhead due to elevated water temperatures. The number of steelhead affected cannot be precisely quantified but is expected to be very small based on the current condition of habitat in the affected areas, which limits steelhead use of these areas for rearing. The extent of take to juvenile steelhead is likely to persist in the action area for at least a five year period. Elevated water temperatures may persist for as long as ten years, depending upon how quickly proposed revegetation provides shade to the affected streams.

Anticipated take will have been exceeded if construction activities, construction of stream crossings, culvert removal, and replacement, or related construction activities are conducted in a manner inconsistent with the proposed project description (including project minimization and avoidance measures) or do not adhere to the terms and conditions of this biological opinion.

B. Effect of the Take

In the accompanying opinion, NMFS determined that this level of anticipated take is not likely to result in jeopardy to the species.

C. Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the impacts of the incidental take of NC steelhead, CC Chinook salmon, and SONCC coho salmon:

1. Measures shall be taken to ensure that fish relocation efforts are carried out in a manner that minimizes effects to Federally-listed salmonids.

2. Measure shall be taken to minimize harm to listed salmonids resulting from bridge and roadway construction and maintenance.

3. Measures shall be taken to minimize impacts to stream water quality.

4. Measures shall be taken to monitor the effects of pile driving on listed species.

5. Measures shall be taken to ensure the final mitigation plan adequately compensates for project impacts.

6. Measures shall be taken to monitor take of salmonids.

D. Terms and Conditions

FHWA and Caltrans must comply with the following terms and conditions, which implement the reasonable and prudent measures, described above and define the reporting and monitoring requirements. These terms and conditions are non-discretionary.

The following terms and conditions implement **Reasonable and Prudent Measure 1** to ensure that any fish relocation efforts are carried out in a manner that minimizes effects to federally listed salmonids:

1. FHWA and Caltrans shall provide NMFS with a Fish Relocation and Dewatering Plan at least 30 days prior to the start of dewatering for fish relocation activities, and shall receive written approval for this plan from NMFS prior to beginning any dewatering for fish relocation in streams where federally listed salmonids are present. This plan shall outline cofferdam construction, dewatering methods, and fish relocation methods. If the plan meets NMFS' approval, NMFS shall provide approval and any comments within 30 days of plan submittal. If the plan does not meet NMFS' approval, NMFS shall provide a list of changes needed within 30 days of plan submittal.

2. The FHWA and Caltrans shall retain a qualified biologist with expertise in the areas of anadromous salmonid biology, including handling, collecting, and relocating salmonids; salmonid/habitat relationships; and biological monitoring of salmonids. The FHWA and Caltrans shall ensure that all fisheries biologists working on this project be qualified to conduct fish collections in a manner which minimizes all potential risks to ESA-listed salmonids. Electrofishing, if used, shall be performed by a qualified biologist and conducted according to the *NOAA Fisheries Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act*, June 2000.

3. The fisheries biologist shall monitor the construction site during placement and removal of cofferdams to ensure that any adverse effects to salmonids are minimized. The biologist shall be on site during all dewatering events in anadromous fish streams to ensure that all ESA-listed salmonids are captured, handled, and relocated safely. The fisheries biologist shall notify NMFS biologist Thomas Daugherty at (707) 468-4057 or tom.daugherty@noaa.gov, or other NMFS staff at (707) 575-6062 one week prior to capture activities in order to provide an opportunity for NMFS staff to observe the activities. During fish relocation activities the fisheries biologist shall contact Thomas Daugherty (or other NMFS staff) at the above numbers, if mortality of federally listed salmonids exceeds 3 percent, at which time NMFS will stipulate measures to reduce the take of salmonids.

4. If ESA-listed fish are handled, it shall be with extreme care and they shall be kept in water to the maximum extent possible during rescue activities. All captured fish shall be kept in cool, shaded, aerated water protected from excessive noise, jostling, or overcrowding any time they are not in the stream and fish shall not be removed from this water except when released. To avoid predation the biologist shall have at least two containers and segregate young-of-year fish from larger age-classes and other potential aquatic predators. Captured salmonids will be relocated as soon as possible to a suitable instream location (pre-approved by NMFS) where suitable habitat conditions are present to allow for survival of transported fish and fish already present.

5. Non-native fish that are captured during fish relocation activities shall not be relocated to anadromous streams, or areas where they could access anadromous habitat.

6. Pumps used to dewater the work area shall be equipped with screens that meet the following NMFS fish screening criteria:

- Perforated plate: screen openings shall not exceed 3/32 inches (2.38mm), measured in diameter.
- Woven Wire: screen openings shall not exceed 3/32 inches (2.38 mm measured diagonally).
- Screen material shall provide a minimum of 27% open area.
- Approach velocity shall not exceed 0.33 feet per second.

The following terms and conditions implement **Reasonable and Prudent Measure 2** to minimize impacts of bridge and roadway construction.

7. The FHWA or Caltrans shall notify the NMFS Santa Rosa Area Office, by letter stating the project commencement date, at least fourteen days prior to implementation. The letter shall be sent to the NMFS Santa Rosa Area Office, Attention: Supervisor of Protected Resources Division 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528.

8. The FHWA or Caltrans shall allow any NMFS employee(s) or any other person(s) designated by NMFS, to accompany field personnel to visit the construction sites during activities provided for in this opinion. NMFS will notify the Caltrans Resident Engineer at least 48 hours prior to the planned site visits and will contact Caltrans personnel prior to entering the construction site.

9. Representatives from NMFS and CDFG shall be notified two weeks in advance of any FHWA or Caltrans pre-construction meetings for the Willits Bypass Project.

10. Prior to commencement of work on the Upp Creek and Haehl Creek fish passage improvement components, FHWA or Caltrans shall submit the engineering design for the structures related to fish passage to NMFS for evaluation and concurrence prior to implementation. Fish passage design at these two structures shall follow the March 2000, *NMFS Guidelines for Salmonid Passage at Stream Crossings*. NMFS shall provide evaluation within 30 days of design submittal. If passage design meets the NMFS guidelines above, NMFS shall provide evaluation and concurrence within 30 days of design submittal. The designs should be sent to the NMFS Santa Rosa Area Office, Attention: Supervisor of Protected Resources Division, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528.

The following terms and conditions implement **Reasonable and Prudent Measure 3** to minimize impacts to stream water quality.

11. Water that comes in contact with wet concrete and has a pH greater than 9.0 must not be allowed to enter the ground or stream but shall be either: (1) pumped to a separate, lined basin, and then pumped to a truck or upland for disposal or treatment (not within the bank to bank of any waterway); or (2) pumped directly to a truck for disposal at a site that is not within the top of bank to top of bank of any waterway.

12. Construction equipment used within the creek channel will be checked each day prior to work within the creek channel (top of bank to top of bank) and if necessary action will be taken to prevent fluid leaks. If leaks occur during work in the channel (top of bank to top of bank), FHWA, Caltrans, or their contractor will contain the spill and remove the affected soils.

13. Water drafting must not be acquired from any source that may affect salmonid habitat. Water drafting from the action area is not permitted.

14. Working waters from the project area shall not be discharged to the live stream, unless Caltrans can demonstrate that no impact to stream water temperature or other water quality parameters will occur as a result of the discharge.

15. A biologist shall monitor in-channel activities and performance of sediment control or detention devices for the purpose of identifying and reconciling any condition that could adversely affect salmonids or their habitat. If sediment run-off does occur, work activities that are the cause of the sediment shall be halted and corrective measures implemented until the sediment source is eliminated.

16. When updates to the SWPPP occur, Caltrans shall notify NMFS of these changes. Caltrans will submit a re-certified SWPPP annually to NMFS, and indicate any substantial changes within the SWPPP.

17. All necessary erosion control BMPs shall be in place by October 31 of each construction season. FHWA and Caltrans shall provide NMFS with a site tour to view the BMPs during the month of November.

18. FHWA and Caltrans shall provide NMFS with a detailed description of any proposed contractor-constructed concrete batch plant, including the location and measures to avoid impacts to stream water quality.

19. Construction work conducted outside of the June 15 to October 15 work window shall not create conditions that mobilize sediment or concentrate over-land flow from construction areas into the stream-channel network.

20. FHWA and Caltrans shall provide NMFS with the detailed plan for non-fish bearing stream realignments that are proposed. The channel realignment plan will include a detailed map of channel(s) to be realigned, methods of construction, restoration, and BMPs to be implemented to minimize sediment delivery to downstream stream reaches.

21. Prior to the completion of Willits Bypass construction, FHWA and Caltrans shall provide NMFS with a maintenance plan for the project that includes description of specific maintenance activities and the specific BMPs that will be used to avoid impacts to listed salmonids and their critical habitats.

The following terms and conditions implement **Reasonable and Prudent Measure 4** to reduce effects of pile driving on listed species.

22. Caltrans shall submit a hydroacoustic monitoring plan to NMFS that provides details of the sound monitoring that is proposed in the project proposal. The hydroacoustic monitoring plan shall be submitted for NMFS review 30 days prior to the start of pile driving actions. If the plan meets NMFS' approval, NMFS shall provide written approval and any comments within 30 days of plan submittal. If the plan does not meet NMFS' approval, NMFS shall provide a list of changes needed within 30 days of plan submittal.

23. Caltrans shall conduct hydroacoustic monitoring during pile driving events in wetted aquatic habitats upstream and downstream of de-watered stream areas .

The following terms and conditions implement **Reasonable and Prudent Measure 5** to ensure the final mitigation plan adequately compensates for potential impacts.

24. FHWA and Caltrans shall provide the NMFS with a final mitigation plan. This plan shall include specific mitigation work that Caltrans proposes to conduct. For those mitigation efforts that Caltrans is unable to propose at this time, the plan shall provide a mechanism (such as a review committee, *etc.*) for developing and approving final mitigation efforts.

The following terms and conditions implement **Reasonable and Prudent Measure 6** to provide a monitoring take of salmonids.

25. FHWA and Caltrans shall provide NMFS with a summary report within 90 days of the completion of fish relocation activities each year. The report shall include the methods used during the fish relocation efforts, location, number and species captured, number of mortalities by species, and other pertinent information related to the fish relocation activities.

26. FHWA and Caltrans shall monitor stream temperatures associated with riparian vegetation removal, and provide the data to NMFS no later than 120 days after the last day of data collection.

27. All reports or plans required for the above terms and conditions shall be sent to:

Santa Rosa Field Office Supervisor, Protected Resources Division
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404.

X. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. One or more years in advance of construction of stream crossings, FHWA and Caltrans should plant riparian vegetation along the banks of on Haehl, Baechtel, Broaddus, Mill, and Upp creeks to enhance the riparian corridor prior to the project's vegetation removal. By increasing the canopy cover in areas with sparse or no existing riparian vegetation, the project can minimize the effects of increased solar radiation on stream water temperature.

XI. REINITIATION NOTICE

This concludes formal consultation for the proposed FHWA and Caltrans Highway 101 Willits Bypass Project in Mendocino County, California. As provided in 50 CFR §402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

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Enclosure 2

Highway 101 Willits Bypass Project

DRAFT

ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS
(Magnuson-Stevens Fishery Conservation and Management Act - EFH Consultation)

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) set forth new mandates for the National Marine Fisheries Service (NMFS), regional fishery management councils, and Federal action agencies to identify and protect important marine and anadromous fish habitat. The regional fishery management councils, with assistance from NMFS, are required to delineate essential fish habitat (EFH) in fishery management plans (FMPs) or FMP amendments for all managed species. Federal action agencies, which fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to NMFS conservation recommendations. In addition, NMFS is required to comment on any state agency activities that would impact EFH. Although the concept of EFH is similar to that of critical habitat under the Endangered Species Act, measures recommended to protect EFH are advisory, not proscriptive. The Pacific Fisheries Management Council has delineated EFH for Pacific coast salmon (PFMC 1999).

I. IDENTIFICATION OF ESSENTIAL FISH HABITAT

EFH is defined in the MSFCMA as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. NMFS regulations further define waters to include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate to include sediment, hard bottom, structures underlying the waters, and associated biological communities necessary to mean the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem; and spawning, breeding, feeding, or growth to maturity to cover a species full life cycle.

For Pacific coast salmon, the geographic extent of EFH currently being considered includes both marine and freshwater habitat. For purposes of this consultation, Pacific coast salmon EFH corresponds closely to Critical Habitat designated under the Endangered Species Act for Southern Oregon-Northern California Coasts Coast coho salmon (*Oncorhynchus kisutch*) and California Coastal Chinook salmon (*O. tshawytscha*) (64 FR 24049 and 70 FR 52488).

II. PROPOSED ACTION

The California Department of Transportation (Caltrans) and Federal Highway Administration (FHWA) propose the Highway 101 Willits Bypass to reduce delays on U.S. Route 101. Currently Highway 101 runs through the City of Willits, California. The bypass project will re-route Highway 101 around the City of Willits, providing a stable flow of traffic at 65 miles per

hour. The proposal includes the construction of a four-lane freeway that crosses the Little Lake Valley east of Willits. The bypass would begin 3.2 kilometers (km) south of Willits, where the existing Highway 101 becomes a two-lane road, and extend to about 0.6 km north of the Willits, where the new alignment would merge with the existing two-lane Highway 101. Construction would begin in 2009 and likely take four years to complete.

III. EFFECTS OF THE PROJECT ACTION

The associated biological opinion has a general description of the non-fishing related activities that directly or cumulatively, temporarily or permanently may threaten the physical, chemical, and biological properties of the habitat utilized by Pacific coast salmon and their prey within the proposed project area. The direct result of these threats is that the function of EFH may be eliminated, diminished or disrupted.

Potential impacts to salmonid habitat are described in the preceding biological opinion. Adverse effects of the proposed action on salmonid EFH may occur through dewatering and in-channel construction activities, riparian vegetation removal, and associated freeway construction work within Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet creeks, which are tributaries to the Eel River.

IV. CONCLUSION

Upon review of the anticipated effects, NMFS believes that proposed freeway construction actions are likely to cause adverse effects to Pacific coast salmon EFH.

V. EFH CONSERVATION RECOMMENDATIONS

Pursuant to Section 305(b)(4)(A) of the Magnuson-Stevens Act, NMFS recommends that the terms and conditions 7 through 21 of the preceding biological opinion's Incidental Take Statement be adopted as EFH conservation recommendations for Pacific coast salmon habitat.

VI. FEDERAL AGENCY STATUTORY REQUIREMENTS

The Magnuson-Stevens Act (Section 305(b)(4)(B)) and Federal regulations (50 CFR Section 600.920(j)) to implement the EFH provisions of the MSFCMA require Federal action agencies to provide a written response to EFH Conservation Recommendations within 30 days of its receipt. The Federal action agency included in this consultation is the Federal Highway Administration. A preliminary response is acceptable if final action cannot be completed within 30 days. The final response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on delineated EFH. If the response is inconsistent with our EFH Conservation Recommendations, it must provide an explanation of the reasons for not implementing them.

Attachment 6: Names and Addresses of Adjoining Property Owners/Lessees

Adjoining Property Owners and Lessees

APN	OWNER	PROPERTY OWNER ADDRESS	CITY	STATE	ZIP	PROPERTY ADDRESS	CITY
00701002	WILLITS CITY OF			CA	00000		
00701003	WILLITS CITY OF			CA	00000		
00701004	BENBOW CHARLES 1/2	40 E BRANCH RD	GARBERVILLE	CA	95542		
00702003	BENBOW CHARLES 1/2	40 E BRANCH RD	GARBERVILLE	CA	95542	998 HEARST WILLITS RD	WI
00703204	SHUSTERS TRANSPORTATION INC	750 E VALLEY ST	WILLITS	CA	95490	750 CENTER VALLEY RD	WI
00703205	WILLITS HORSEMAN ASSOCIATION I	PO BOX 906	WILLITS	CA	95490		
00703210	JENSEN MARJORIE L C 1/9	507 W MILL ST	UKIAH	CA	95482		
00703211	HARMS GEORGE M TTEE	392 REDWOOD AVE	WILLITS	CA	95490		
00703213	HARMS GEORGE M TTEE	392 REDWOOD AVE	WILLITS	CA	95490		
00704006	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502	701 CENTER VALLEY RD	WI
00704007	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502	731 EA VALLEY ST	WI
00704008	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490	801 EA VALLEY ST	WI
00704009	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490		
00704010	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490	801 EA VALLEY ST	WI
00704014	WINDSOR MILL PROPERTIES LLC	7950 REDWOOD DR STE 4	COTATI	CA	94931		
00704017	TWEDDELL APRIL TTEE	651 E VALLEY ST	WILLITS	CA	95490	651 CENTER VALLEY RD	WI
00705002	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490		
00705007	GRIGGS MICHAEL A JR & KERRI M	511 E VALLEY ST	WILLITS	CA	95490		
00707001	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490	500 SHELL LN	WI
00710008	SEIBERLICH JEANETTE SUCCTTEE	40 ST TERESA CT	DANVILLE	CA	94526	311 SHELL LN	WI
00710009	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490		
00710011	FORD DELMAN & DONNA R TTEES	1750 HEARST RD	WILLITS	CA	95490		
00710029	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
00716017	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
00716018	HANDLEY MARGIE LEE TTEE 1/2	PO BOX 1329	WILLITS	CA	95490		
03802009	BURTON BRUCE EDWARD 1/2	220 FRANKLIN AVE	WILLITS	CA	95490	24850 NO HWY 101	WI
03802011	BROOKE CLIFFORD ALLEN & CARLA	2409 PINE KNOLL DR #1	WALNUT CREEK	CA	94595		
03802021	GARMAN BEDA H JR & SHARON A TT	389 N MAIN ST	WILLITS	CA	95490	24900 NO HWY 101	WI
03804009	BROOKE CLIFFORD A & CARLA R	2409 PINE KNOLL DR #1	WALNUT CREEK	CA	94595		
03806007	ANDERSON CHARLES & SYLVIA	PO BOX 302	WILLITS	CA	95490	24200 NO HWY 101	WI
03806008	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD #166-K	SEAL BEACH	CA	90740	24201 NO HWY 101	WI
03806010	WAGENET GORDON M & CATHARINE S	PO BOX 345	WILLITS	CA	95490		

APN	OWNER	PROPERTY OWNER ADDRESS	CITY	STATE	ZIP	PROPERTY ADDRESS	CITY
03808009	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD 116-K	SEAL BEACH	CA	90740		
03808031	WAGENET GORDON M & CATHARINE S	PO BOX 345	WILLITS	CA	95490		
10315011	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10403018	MORRIS LAUREL A TTEE 1/4	801 E HILL RD	WILLITS	CA	95490	801 EAST HILL RD	WI
10403022	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10403023	HANDLEY MARGIE LEE TTEE	PO BOX 1329	WILLITS	CA	95490	701 EAST HILL RD	WI
10405010	MORRIS LAUREL A TTEE 1/4	801 E HILL RD	WILLITS	CA	95490		
10405015	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10405016	HANDLEY MARGIE LEE TTEE	PO BOX 1329	WILLITS	CA	95490		
10409004	SCHMIDBAUER EDWARD J & ERLYNE	19921 N HWY 101	WILLITS	CA	95490		
10411012	OCHOA LYNDA & MANUEL R	19873 N HWY 101	WILLITS	CA	95490	19873 NO HWY 101	WI
10412002	SCHMIDBAUER EDWARD J & ERLYNE	19921 N HWY 101	WILLITS	CA	95490		
10803003	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD 116-K	SEAL BEACH	CA	90740		
10804002	NIESEN WALTER A	24001 N HWY 101	WILLITS	CA	95490	24001 NO HWY 101	WI
10804003	CITY OF WILLITS THE	111 E COMMERCIAL	WILLITS	CA	95490	23731 NO HWY 101	WI
10804008	HUFFMAN RODNEY G 1/9	PO BOX 551	UKIAH	CA	95482	23731 NO HWY 101	WI
10804014	CITY OF WILLITS	111 E COMMERCIAL ST	WILLITS	CA	95490		

Attachment 7: Copies of Permit Applications

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 **EXPIRES: 31 August 2012**

Public reporting burden for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This Information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME:	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
First - Jason Middle - Last – Meigs	First - Middle - Last –
Company – State of California, Department of Transportation (Caltrans) District 3	Company –
E-mail Address – Jason_Meigs@dot.ca.gov	E-mail Address –
6. APPLICANT'S ADDRESS. Address - 2800 Gateway Oaks Drive	9. AGENT'S ADDRESS Address -
City – Sacramento State – CA Zip – 95833 Country – USA	City – State – Zip – Country –
7. APPLICANT'S PHONE NOs. W/AREA CODE	10. AGENT'S PHONE NOs. W/AREA CODE
a. Residence b. Business (916) 274-0564 c. Fax (916) 274-0602	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____

APPLICANT'S SIGNATURE DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

U.S. Highway 101 Willits Bypass Project

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Refer to Attachment 1, Block 13 (Name of Waterbody)	Address N/A
15. LOCATION OF PROJECT	
Latitude: °N Refer to Attachment 1, Block 15 (Location of Project). Longitude: °W	City - Willits State – CA Zip -

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID N/A Municipality Mendocino County, near the City of Willits

Section – 32 Township – 18N Range – 13W

17. DIRECTIONS TO THE SITE

From San Francisco, take U.S. Highway 101 north approximately 140 miles to Willits, California. The project site begins at the south of the Haehl Overhead and ends approximately 1.9 miles south of Reynolds Highway. Refer to Attachment 1, Block 15, for additional location details.

18. Nature of Activity (Description of project, include all features)

Refer to Attachment 1, Block 18 (Nature of Activity)

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

Refer to Attachment 1, Block 19 (Project Purpose), for details regarding the purpose of the proposed project.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Refer to Attachment 1, Block 20 (Reason(s) for Discharge).

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
Refer to Attachment 1, Block 21		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres Refer to Attachment 1, Block 22 (Surface Area in Acres of Wetlands or Other Waters Filled).
Or
Liner Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Refer to Attachment 1, Block 23 (Description of Avoidance, Minimization, and Compensation).

24. Is Any Portion of the Work Already Complete? Yes ☐ No ☑ IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

Address – Refer to Attachment 1, Block 25 (Addresses of Adjoining Property Owners, Lesses, Ect.)

City – State – Zip –

26. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
Refer to Attachment 1, Block 26					

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT _____ DATE _____ SIGNATURE OF AGENT _____ DATE _____

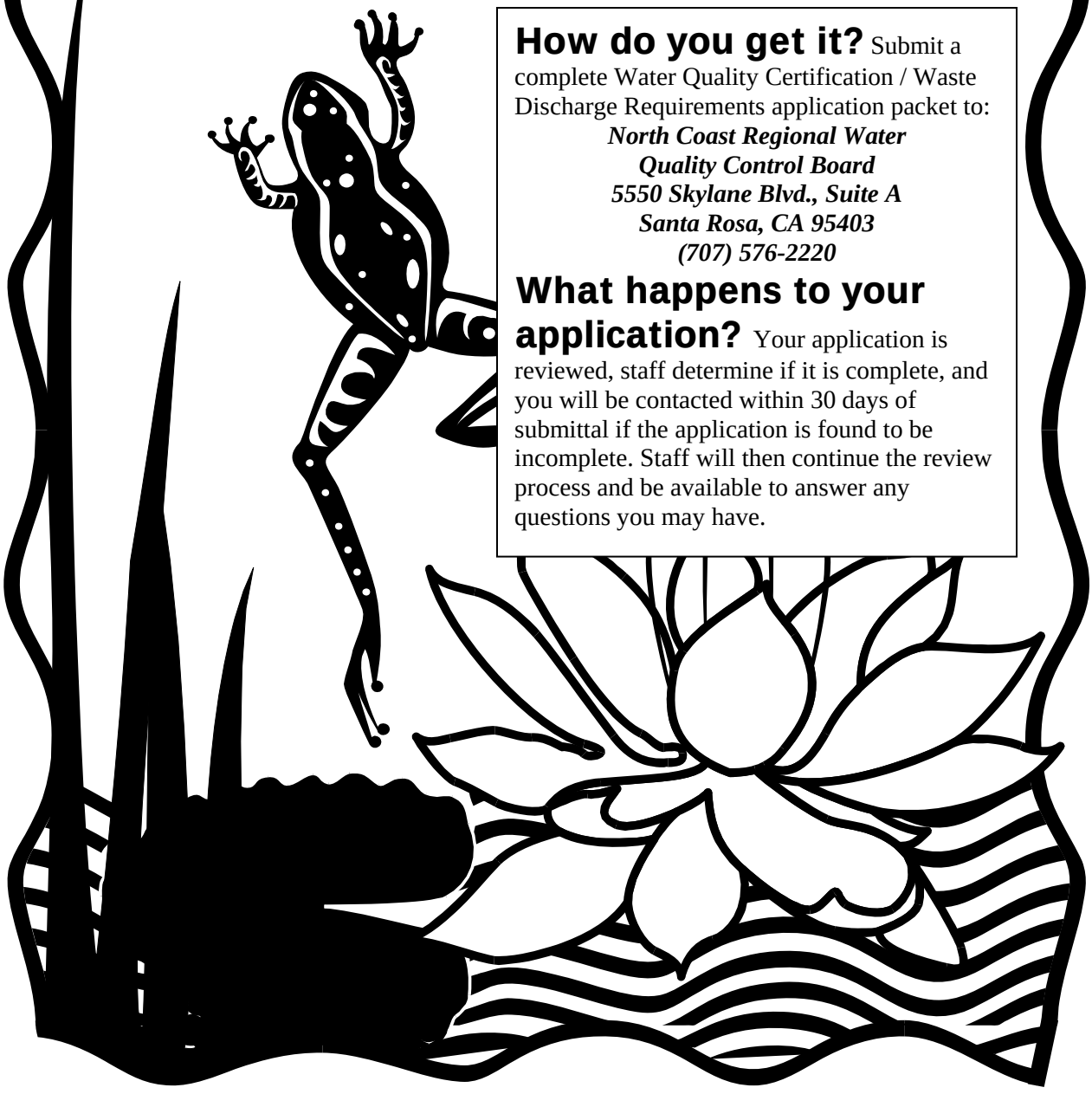
The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

WATER QUALITY CERTIFICATION AND/OR WASTE DISCHARGE REQUIREMENTS (Dredge/Fill Projects)

What is it? A Clean Water Act (CWA) Section 401 Permit (Water Quality Certification) is a finding from the Regional Water Quality Control Board that the proposed project will comply with CWA Sections 301, 302, 303, 306 and 307, State laws, and will be protective of beneficial uses. At a minimum, any beneficial uses lost must be replaced by a mitigation project of at least equal function, value and area. Waste Discharge Requirements Permits are required pursuant to California Water Code Section 13260 for any persons discharging or proposing to discharge waste, including Dredge/Fill, that could affect the quality of the Waters of the State.

Who Needs It? Anyone proposing to conduct a project that requires a federal permit or may result in a discharge to U.S. surface waters and/or "Waters of the State", including wetlands (all types), year round and seasonal streams, lakes and all other surface waters.



How do you get it? Submit a complete Water Quality Certification / Waste Discharge Requirements application packet to:

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403
(707) 576-2220

What happens to your application? Your application is reviewed, staff determine if it is complete, and you will be contacted within 30 days of submittal if the application is found to be incomplete. Staff will then continue the review process and be available to answer any questions you may have.

Application for 401 Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill)

The following application must be submitted to the Regional Water Quality Control Board for dredge/fill projects that require Water Quality Certification and/or Waste Discharge Requirements. Submit this application and the appropriate documentation*, along with a check for $640.00 (Base Price) plus additional fees, if applicable, as required according to the CCR 23 Section 2200 (a)(2) Fee Schedule** to:

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403
(Make checks payable to: State Water Resources Control Board)

*Clarification of information may be requested by Regional Water Quality staff during application review.
**Additional fees may be imposed upon application review.
Fee calculator and additional information are available at
http://www.waterboards.ca.gov/northcoast/water_issues/programs/water_quality_certification.shtml

SECTION ONE – Applicant Information & Authorization

APPLICANT/PROPERTY OWNER(S) NAME Jason Meigs, California Department of Transportation (Caltrans)	AUTHORIZED AGENT NAME AND TITLE (an agent is not required)
APPLICANT/PROPERTY OWNER(S) MAILING ADDRESS Caltrans District 3 2800 Gateway Oaks Drive Sacramento, CA 95833	AUTHORIZED AGENT MAILING ADDRESS
APPLICANT/PROPERTY OWNER(S) PHONE & FAX NUMBERS (email optional) (916) 274-0564; FAX (916) 274-0602; Jason_Meigs@dot.ca.gov	AUTHORIZED AGENT PHONE & FAX NUMBERS (email optional)

STATEMENT OF AUTHORIZATION (if designating a specific agent)

I hereby authorize _____ to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

X_____ _____
APPLICANT'S SIGNATURE (not the authorized agent) DATE

SECTION TWO – Project Information

Please refer to the provided Project Plan Checklist for guidance and attach additional supporting documentation as necessary. Supplying detailed information will aid in expediting the review process. **Including an electronic copy of the required information will expedite the review process.**

<table>
<tr><td colspan="2">PROJECT NAME OR TITLE
U.S. Highway 101 Willits Bypass Project</td></tr>
<tr><td>PROJECT STREET ADDRESS (if applicable)

U.S. Highway 101</td><td>PROJECT LOCATION (Attach a topographic map and site map clearly indicating affected waters)
COUNTY CITY/TOWN

Mendocino Near Willits</td></tr>
<tr><td>CITY/STATE/ZIP

Willits, CA</td><td>LATITUDE LONGITUDE

See Attachment A (Supplemental Information)</td></tr>
<tr><td>ASSESSORS PARCEL NUMBER(S)

See Attachment B (Adjoining Property Owners)</td><td>SECTION, TOWNSHIP, RANGE, USGS QUADRANGLE MAP

Section 32, Township 18N, Range 13W, Willits & Laughlin Range USGS 7.5-minute Quadrangles</td></tr>
<tr><td colspan="2">DIRECTIONS TO THE SITE

From Santa Rosa, take U.S. Highway 101 north approximately 80 miles to Willits, California. The project site begins at the south of the Haehl Overhead and ends approximately 1.9 miles south of Reynolds Highway. The optional proposed borrow site at Oil Well Hill is located on the east side of Highway 101 approximately 0.85-mile north of the intersection of Reynolds Highway and Highway 101. Refer to See Attachment 1 (Supplemental Information) for additional location details.</td></tr>
<tr><td colspan="2">PROJECT PURPOSE (See attached checklist for guidance. Attach additional information as necessary.)

See Attachment 1 (Supplemental Information)</td></tr>
</table>

PROJECT DESCRIPTION (See attached checklist for guidance. Provide a full, technically accurate description of the entire activity and associated environmental impacts. Attach additional pages as necessary.)

See Attachment 1 (Supplemental Information)

PROPOSED START AND END DATES	**ESTIMATED DURATION**	Will the project take place during the wet season months of October 15 through May 15? X YES ☐ NO If YES, please discuss the proposed winterization strategies on Page 5, Non-compensatory Mitigation.
January 2011 – November 2015	Four full construction seasons	

FEDERAL PERMIT(S) (applied for or approved, i.e. Army Corps of Engineers 404 Permit – Individual or Nationwide)

PERMIT TITLE	FILE DATE	FILE NUMBER
USACE 404 Individual Permit	Concurrent with this application	194741N; 1991-194740N
PERMIT TITLE	FILE DATE	FILE NUMBER

STATE PERMIT(S) (applied for or approved, i.e. Streambed Alteration Agreement (1600-1608) from the California Department of Fish and Game)

PERMIT TITLE	FILE DATE	FILE NUMBER
Streambed Alteration Agreement	Concurrent with this application	Pending
PERMIT TITLE	FILE DATE	FILE NUMBER

CEQA COMPLIANCE (Submittal of completed, approved and/or signed CEQA documentation is required prior to approval of Water Quality Certification.)

TYPE OF DOCUMENT (EIR, Negative Declaration, etc.)	LEAD AGENCY INFORMATION
EIR/EIS	Caltrans/FHWA

STATE CLEARING HOUSE NUMBER	STATUS (pending, complete, etc.)	DATE COMPLETED (or expected to be complete)
1990030006	Complete	October 25, 2006

SECTION THREE – Affected Waters

Please refer to the provided Project Plan Checklist for guidance and attach additional supporting documentation as necessary. Supplying detailed information will aid in expediting the review process.

DREDGE AND FILL INFORMATION (The following must be completed for each action where fill or other material will be temporarily or permanently discharged to a wetland or other waterbody, and where material will be dredged from a waterway. Attach additional pages as necessary. Provide a map showing the location of all impacts. Provide all temporary and permanent impacts to waters of the U.S. and waters of the State.)

Types of Material Being Discharged and Amount of Each Type in Cubic Yards

The proposed project will affect 5.50 acres of "other waters" of the United States (streams, ditches, and ponds) by placing approximately 13,745. 79 cubic yards of fill along 10,608.45 linear feet (LF) of "other waters" of the United States " during project construction and mitigation activities. The fills include 8306.39 cubic yards of permanent fill along 8047.10 LF of other waters" of the United States and 5439.40 cubic yards of temporary fill along 2561.35 LF of other waters" of the United States. The surface area (in acres) of "other waters" of the United States are summarized in Table 2 below. Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 1, below, lists the volume (temporary and permanent) and types of fill material that will be discharged to "other waters" of the United States as a result of the proposed project. Maps depicting impacted wetlands and "other waters" of the United States" are included in Appendix a and Appendix B of this permit application.

Table 1: Willits Bypass "Other Waters" of the US - Locations of features

Map Sheet	LF Perm	LF Temp	Feature Type	Comment/Location	Fill Volume Perm	Fill Volume Temp	Fill Type	Roadway Work	Structure Work
					(cu-yards)	(cu-yards)			
B-04	400.8	0	EPH	South of haehl Interchange, parallels west side of 101	9.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), Rock Slope Protection (RSP), RSP Fabric	Roadway fill, roadside ditch, Drainage System No. 5 (STA "A" 102+43.645) & Drainage Basin No. 1 (STA "A" 102+61.854)	
B-04	155.3	0	EPH	South of haehl Interchange, on east side of 101 (across from FID 0)	14.7	0	Imported borrow (fill), concrete (DI), Alternative Pipe Culvert (APC), Alternative Flared End Section (AFES), RSP, RSP Fabric	Roadway fill & Drainage System No. 6 (STA "A" 102+67.835)	
B-06	605.5	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101	8.7	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 13 (STA "U1" 106+30.000) & 14 (STA "U1" 105+50.000)	

B-08	309.3	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101, east of FID 4	3.1	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), Concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 8 (STA "H" 97+61.686)	
B-08*	8.6	3.4	EPH	Trib To Haehl Creek from Roadway Ditch culvert, north side of hwy 101	0.2	0.1	Import borrow (fill)	Roadway fill Drainage System No. 9 (STA "H" 97+96.641)	
B-06	144.9	0	EPH	Trib To Haehl Creek, north side of hwy 101	4.1	0	Cut	Roadway excavation, Begin STA "H" 99+13.723 - End STA "H" 99+32.816 & Drainage System No. 11 ("H" 99+31.464)	
B-06	99.5	0	EPH	Trib To Haehl Creek, north side of hwy 101. extension of FID 7	3.4	0	Import borrow (fill)	Roadway fill, Begin STA "A" 106+77.199 - End STA "A" 106+97.700	
B-06	96.4	3.4	EPH	Trib To Haehl Creek, conflunecing with Haehl Cr from NE	80.5	2.8	Import borrow (fill), roadway excavation, concrete (headwall), APC, RSP, RSP Fabric	Roadway fill, roadway excavation, Drainage System No. 18 (STA "U4" 106+35.000)	
B-06	577.6	0	EPH	Trib To Haehl Creek, parallels dirt road on north side of hwy 101	71.2	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (bridge abutment), RSP, RSP Fabric, Turf Reinforcement Mat (TRM)	Roadway fill, Begin STA "A" 105+35.903 - End STA "A" 107+46.190	
B-12	1006.6	0	EPH	On NE side of J1T align, NW of haehl interchange, “Schmidbauer”	362.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 30 ("A" 110+71.840)	
B-12	12.6	12.6	EPH	On Nw side of J1T align, NW of haehl interchange	3.2	3.2	Imported borrow (fill), APC, AFES, RSP, RSP Fabric	Roadway fill & Drainage System No. 30 ("A" 110+71.840)	
B-12	0	74.5	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 13, “Schmidbauer”	0	36.7	Import borrow (fill)	Roadside ditch	

B-14	920.3	0	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 15, “Schmidbauer”	274.5	0	Imported borrow (fill), RSP, RSP Fabric	Roadside ditch & Drainage System No. 33 ("A" 114+44.741)	
B-14	77	3.4	EPH	Trib runs to the NE, to “Schmidbauer”	8.1	0.4	Cut	Median ditch	
B-34	149.2	3.4	EPH	Ditches in Log Yard	11.9	0.3	Import borrow (fill)	Roadway fill	
B-34	118.6	3.4	EPH	Ditches in Log Yard	9.4	0.3	Import borrow (fill)	Roadway fill	
B-34	71.7	3.4	EPH	Ditches in Log Yard	5.7	0.3	Import borrow (fill)	Roadway fill	
B-34	55.9	3.4	EPH	Ditches in Log Yard	4.5	0.3	Import borrow (fill)	Roadway fill	
B-34	58.7	3.4	EPH	Ditches in Log Yard	4.7	0.3	Import borrow (fill)	Roadway fill	
B-34	74.3	3.4	EPH	Ditches in Log Yard	5.9	0.3	Import borrow (fill)	Roadway fill	
B-34	41.8	3.4	EPH	Ditches in Log Yard	3.3	0.3	Import borrow (fill)	Roadway fill	

B-34	90.9	3.4	EPH	Ditches in Log Yard	7.2	0.3	Import borrow (fill)	Roadway fill	
B-34	17.2	3.4	EPH	Ditches in Log Yard	1.4	0.3	Import borrow (fill)	Roadway fill	
B-34	123.2	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	11.8	3.4	EPH	Ditches in Log Yard	0.9	0.3	Import borrow (fill)	Roadway fill	
B-34	122.6	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	153.7	3.4	EPH	Ditches in Log Yard	12.2	0.3	Import borrow (fill)	Roadway fill	
B-06	59.3	1027.1	INT	Haehl Creek (Main Fork) – Re-Align	221.3	3832.6	Import borrow (fill), Concrete (headwall & wingwall), APC, RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (9402.7 m^3) 2. Sand & Gravel (1559.3 m^3) **Above OHW:** 1. RSP(4161.5 m^3) 2. Sand & Gravel (2611.3 m^3)	**Haehl Creek Bridges: Br No.** **10-0129F, 10-0129G & 10-0129RL** 1. Potential Temp. stream crossing (1 trestle bent in channel) at bridge 10-0129RL. 2. Potential Falsework (1 falsework bent in channel) at each structure . 3. Potential stream Diversion/temporary culvert.

B-18	188.6	160.25	INT	"Schmidbauer"	53.3	47	Import borrow (fill)	Roadway fill	
B-24	401	6.8	INT	Crosses align north of east Hill road	404.7	6.9	Imported borrow (fill), roadway excavation & concrete (headwall)	Roadway fill & Drainage Basin No. 3 ("A" 127+50.000)	
B-57	433	6.8	INT	RR Ditch at RR x-ing, east side of tracks	262.2	4.1	Import borrow (fill)	Abutment fill, new ditch (to be design by Design) & temp. culvert	**Quail Meadows OH (Br No. 10-0171)** 1. Temp. dirt road across RR tracks (Temp Haul Road) 2. Temp. Culvert crossing
B-26	514.1	6.8	INT	East Fork Haehl Creek, Handley parcel, south of Shell rd.	2324.5	30.7	Imported borrow (fill), roadway excavation, APC, AFES, RSP, RSP Fabric	Roadway fill, Drainage Basin No. 4 ("A" 132+00.000), Drainage System No. 45 ("A" 132+52.219)	
B-40	65.13	26.3	INT	Heahl Creek, Near Baechtel Confluence – Under Viaduct, Just north of East valley Street	260.0 (culvert work)	105.0 (culvert work)	Trestle/falsework construction		**Haehl Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-49	7	10	INT	Broadus, Baechtel, Outlet Confluence - Under Viaduct, NE of WWTP	54.0 (footing for bents)	77.2 (falsework)	Concrete (Bent 24), RSP, RSP Fabric, Trestle/falsework construction		**Confluence of Broaddus/Baechtel Creek** 1. Footing Impact (329.9 m3) 2. Potential temp. stream crosssing (Baechtel Creek - 2 falsework bents in channel, Broaddus Creek - 1 falsework bent in channel, & Outlet Creek- 2 trestle bents in channel)

B-51	0	429.8	INT	Mill Creek - Under Viaduct	0	0 (access and veg removal only, no temp fills below OHWM)	Trestle/falsework construction		**Mill Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-37	0	403.1	INT	Baechtel Creek, south of center valley road, west side of J1T align	0	595.7		Current Design does not show any impact at this location.	
B-26	0	270.5	INT	West (Main) Fork Haehl Creek, along west side of handley parcel	0	692.6	RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (2857.9 m^3) 2. Sand & Gravel (348.1 m^3) **Above OHW:** 1. RSP(3444.9 m^3) 2. Sand & Gravel (2309.7 m^3)	**Haehl Creek (Br No. 10-0159)** 1. potential temp. stream crossing (4 trestle bents in channel). 2. potential temp. falsework (4 trestle bents in channel).
B-57	1172.6	82.4	INT	Upp Creek and RR ditch on west side of RR x-ing, and Mill Creek on the east side of RR x-ing	1817.5	127.7	Import borrow (fill), roadside ditch (RR), Concrete (bridge structures), APC, RSP (Fish Passage Design at Upp Creek)	**Upp Creek** **Below OHW:** 1. RSP (5848.5 m^3) 2. Sand & Gravel (1258.3 m^3) **Above OHW:** 1. RSP(3100.0 m^3) 2. Sand & Gravel (1325.1 m^3)	**Quail Meadows OH** **Br No. 10-0171** 1. Potential Temp. culvert crossing 2. Potential dirt road crossing over RR tracks (temp haul road) **Upp Creek Bridges** **Br No. 10-0305, 10-0174, 10-0174K & 10-0174S** 1. Potential Temp. stream crossing (1 trestle bent in channel) at Quail Meadows I.C. 2. Potential Falsework (1 falsework bent in channel) at each structure 3. Potential Stream Diversion at each structure

B-31 and B-34	139.8	3.4	POND	Rutledge Pond	2263.1	55	Class 3 Permeable Material Filter Fabric Embankment	Class 3 Permeable Material (3213 m^3) Filter Fabric (6802 m^2) Embankment (3505 m^3)	
C-86	**375.95**	288.16	EPH	Stream Entering Watson East Mitigation Parcel	29.59	0	Grading for wetland creation		
Totals:	**8860.48**	**2862.91**			**8306.39 yd^3**	**5439.40 yd^3**			

Surface Areas of Wetlands and Other Waters Filled

The proposed project will directly affect a total of 89.12 acres of wetlands and other waters of the United States, of which 56.23 acres will be permanently filled and 32.89 acres will be temporarily disturbed during project construction and mitigation activities. Fill types affecting wetlands include those listed in Table 1 for "other waters of the United States" (permanent fills consisting of roadway and structures fill, asphalt concrete, RSP, TRM and RECP, new culverts, culvert end and treatments; temporary fills consisting of temporary falsework and falsework supports, cofferdams, temporary roadway fills, stream re-alignments, and temporary access routes). Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 2 shows the surface area (acres) of the resources that will be affected by the bypass. Maps depicting impacted wetlands and "other waters" of the United States are included in Appendix A and Appendix B of this permit application.

Table 2. Summary of Project Construction Impacts on Wetlands and Other Waters of the United States

Wetland Type / Other Waters	Project Impacts on Wetlands and Other Waters (acres)			Mitigation Impacts on Wetlands and Other Waters (acres)			Total Impacts on Wetlands and Other Waters (acres)
	Temporary	Permanent	Total	Temporary	Permanent	Total	Total
Marsh	1.38	8.15	9.53	0.49	0.00	0.49	**10.02**
Riparian Scrub	0.17	0.21	0.38	0.00	0.00	0.00	**0.38**
Riparian Woodland	1.61	3.21	4.82	0.07	0.02	0.09	**4.91**
Swale	0.03	0.00	0.03	0.26	0.05	0.31	**0.34**
Vernal Pool	0.05	0.16	0.21	0.00	0.00	0.00	**0.21**
Wet Meadow	20.69	41.64	62.33	4.98	0.45	5.43	**67.76**
Subtotal Wetlands	**23.93**	**53.37**	**77.30**	**5.80**	**0.52**	**6.32**	**83.62**
Other Waters	3.10	2.25	5.35	0.06	0.09	0.15	**5.50**
Total	**27.03**	**55.62**	**82.65**	**5.86**	**0.61**	**6.47**	**89.12**

DELINEATION INFORMATION	
NAME OF PERSON DELINEATING EXTENT OF WATERS OF U.S. Jason Meigs, Caltrans; URS Corporation; IFC Jones and Stokes	DATE(S) OF WETLAND DELINEATION See Below
TITLE and DATE OF WETLAND VERIFICATION BY U.S. ARMY CORPS The U.S. Army Corps of Engineers (USACE) verified the U.S. Highway 101 Willits Bypass Project's (proposed project) delineation of waters of the United States on March 1, 2005 (File 194741N). This verification was for the Modified Alternative J1T Alignment study area. In January 2007 and April 2008, a request to amend the previously verified delineation was submitted to the USACE to include minor changes to the footprint of the proposed Haehl Creek interchange, the road alignment to the north, and the proposed borrow area at Oil Well Hill. The USACE confirmed the requested changes to the delineation on August 15, 2008 (File 191-19470N). In December 1, 2008, a request to verify a delineation was submitted to include the revision of the project footprint to avoid the expansion of the Willits wastewater treatment Plant (WWTP). The USACE provided a verification for this area on December 2, 2009. In addition to the delineations of waters of the United States associated with the bypass alignment, Caltrans also submitted delineations for various parcels that will be part of the project's mitigation plan. The USACE jurisdictional determinations are located in Attachment 3.	
AFFILIATION Caltrans	If a wetland delineation has been verified by the U.S. Army Corps, please submit the verification letter as well as a verified wetland delineation map. If the Corps did not assume jurisdiction over the wetlands present, please submit the denial letter.

AVOIDANCE OF INDIRECT IMPACTS

(Describe efforts to avoid and minimize indirect impacts to waters of the State such as upland impacts which might affect water quality. See checklist for guidance. Attach additional pages as necessary.)

Please refer to Attachment 1 "Supplemental Information"

Sections: "Avoidance and Minimization of Direct and Indirect Impacts" and "Non Compensatory Mitigation"

AVOIDANCE OF DIRECT IMPACTS (Describe efforts to **avoid** and **minimize direct impacts** to waters of the State. See checklist for guidance. Attach additional pages as necessary.)

Please refer to Attachment 1 "Supplemental Information"

Sections: "Avoidance and Minimization of Direct and Indirect Impacts" and "Non Compensatory Mitigation"

COMPENSATORY MITIGATION (Required when permanent and temporal impacts to Waters of the State occur. Describe the location, size, type, functions, and values of the proposed mitigation. Describe success criteria, monitoring, long-term funding, management, and protection of the mitigation site. Attach a Mitigation Plan if needed. Attach Mitigation Bank Bills-of-Sale for purchase credits if needed. See attached checklist for guidance.)

Caltrans has developed a Mitigation and Monitoring Proposal (MMP) that proposes compensatory mitigation for effects of the bypass on jurisdictional wetlands, other waters of the United States, riparian habitat, oak woodlands, and State-listed plants. In addition to compliance with Clean Water Act (CWA) Section 401, the MMP will be used to support compliance with CWA Section 404, Section 1602 of the California Fish and Game Code, and Section 2081 of the California Endangered Species Act (CESA). The overall goal of the MMP is to successfully compensate for impacts on sensitive biological resources resulting from bypass project construction by improving ecological functions and values to habitat in Little Lake Valley through a combination of restoration, creation, enhancement, and preservation. However, beyond this compensation, the MMP aims to restore and enhance many previously lost or degraded wetland functions and values, and to help offset past damage to parts of the Outlet Creek Basin. The table below presents the total amount of jurisdictional wetlands and other waters of the U.S. and/or State that would be created, enhanced, or preserved as compensation for the proposed project's impacts on jurisdictional waters and wetlands.

Resource	Mitigation Actions (acres)				Restoration
	Creation	Enhancement	Preservation	Total Mitigation Acres	
Wetlands	33.44	1,032.90	1,122.11	**2,188.45**	5.96
Other Waters	none	17.32	24.70	**42.02**	0.06
Total	**33.44**	**1,050.22**	**1,146.81**	**2,230.47**	**6.02**

The proposed project's MMP will be provided in its entirety in a separate transmission.

ALTERNATIVES ANALYSIS

Has an Alternatives Analysis been prepared? ☑ YES ☐ NO If you marked YES, please submit the appropriate documentation.

NON-COMPENSATORY MITIGATION (Required by all construction projects and projects which impact riparian vegetation.)

PROPOSED MINIMUM EROSION CONTROL MEASURES (Describe the methods proposed for erosion control, including winterization strategies to stabilize all bare soils and re-vegetation proposals. Please submit a map indicating the approximate locations of each method.)

Temporary Construction Site BMPs to be used on Project (info from SWDR and WPC SPI Plans)

Construction of the bypass is anticipated to last 5 construction seasons total, with four rainy seasons. The North Coast Regional Water Quality Control Board (NCRWQCB) has defined the rainy season as October 15th through May 15th.

Temporary Construction BMPs will be deployed as detailed in the Contractor prepared SWPPP approved by the Resident Engineer, in accordance with Standard Special Provision (SSP) 07-345 Water Pollution Control. The SWPPP would include appropriate Caltrans Construction Site Best Management Practices (BMPs) to reduce the potential for sediments and contaminants from entering the creeks.

Temporary Bid Line Items BMP's identified and include in the Contract Items are:

- Temporary Fence (Type ESA) & (Type ESA-Floodway)
- Temporary Erosion Control Blanket
- Temporary Fiber Roll
- Temporary Gravel Bag Berm
- Temporary Construction Entrance
- Temporary Cover
- Temporary Check Dam
- Temporary Hydraulic Mulch (BFM)
- Street Sweeping
- Temporary Concrete Washout (Portable)
- Move-in/Move-out (Temporary Erosion Control)
- Temporary Drainage Inlet Protection
- Construction Site Management

The WPC Contract items and strategy are as shown in the WPC handout to be included the Supplemental Project Information handout and available for the Contractor during project Advertisement.

Temporary Impacted areas will be revegetated to their pre-construction plant community type. They will be seeded and planted with plants native to Little Lake Valley. Temporary Hydraulic Mulch (Bonded Fiber Matrix) will be applied to temporary slopes and disturbed areas where necessary and prior to placement of final Erosion Control.

Contractor's work schedule will dictate the amount of soil disturbance and work activities that may take into affect at any particular time during the construction phase of the project. Bid item Move-in/Move-out (Temporary Erosion Control) will account for allowing the multiple mobilizations of the Contractor to stabilize the work area as portions of the work is completed.

Final Erosion Control (see Erosion Control Plans):

Non structural slopes will be stabilized with revegetation and erosion control measures. Disturbed slopes will be re-vegetated in accordance with plans developed by the District Landscape Architect or otherwise stabilized.

Permanently impacted areas such as cut and fill slopes adjacent to the roadway along interchange ramps, as well as median between the inside roadway shoulders will be revegetated with native plants appropriate to Little Lake Valley. Steeper embankment slopes located at structures approaches will be protected with Rolled Erosion Control Product (Netting) blanketing materials and all final slopes will be stabilized and revegetated with Duff and Erosion Control (Bonded Fiber Matrix) (Seed Type 1). In addition, finished slopes and ditches constructed greater than 1;3 (V:H) will be stabilized with Erosion Control (Rolled Erosion Control Product (Netting). Upon completion of construction of the Floodway Viaduct structure, the entire disturbed area will be regarded to pre-construction conditions and revegetated with Erosion Control (Bonded Fiber Matrix) (Seed Type 2). Bioswales will be constructed and revegetated with final Erosion Control (Rolled Erosion Control Product (Netting), Compost, and Erosion Control (Bonded Fiber Matrix) as part of Treatment BMPs at drainage outlet areas prior to run-off off site of the project. Turf Reinforcement Mat (TRM) will be utilized to line the inlet channel of Drainage System 54 at Center Valley Rd.

The Roundabout will include hardscape features, and plantings and irrigation & sprinkler system as a center for aesthetics and as revegetation around the pedestrian walkways. Final Erosion Control includes Mulch, Imported Topsoil, Boulder Placement, and Gravel (Miscellaneous Areas).

Oil Well Hill Optional Borrow Site:

During each construction season, the Contractor will limit the removal of vegetation to those portions of Oil Well Hill site necessary to provide fill material for that season's construction needs. The excavation activities at Oil Well Hill could result in long-term erosion of disturbed soils. Upon completion of excavation activities at the site, appropriate Temporary Construction Site BMPs will be employed by the Contractor for each season's use. And upon final completion of material excavation from the site, permanent erosion control and revegetation will be required as specified by the Caltrans Landscape Architect and as shown in the SPI handout WPC and Landscape Architecture plans.

PROPOSED POST-CONSTRUCTION STORM WATER TREATMENT MEASURES (Describe the methods proposed to treat storm water runoff from the project site prior to entering the storm drainage system, wetlands, streams, etc. Please include proper design calculations to indicate that the proposed methods will treat runoff from the 85th percentile/24-hour storm event. See SUSMP Guidelines available at: http://ci.santa-rosa.ca.us/doclib/Documents/SUSUMP.pdf, or upon request.

Refer to the Storm Water Calculations and Downstream Discharges informational handouts provided by Scott Foster by e-mail to Jeremiah Puget on 11/24/09 and in person in a meeting on 11/19/09, and included as Attachments 8 and 9 of this application

PROPOSED CONSTRUCTION AND POST-CONSTRUCTION POLLUTANT SOURCE CONTROLS (Describe the methods proposed to reduce sources of pollutants, fertilizers, pesticides, sediment, etc., from entering the water system.)

All remaining water pollution control related items will be deployed under SSP 07-346 Construction Site Management bid item, which will account for the miscellaneous "housekeeping" BMPs, such as *Spill Prevention and Control Management, Material Storage and Stockpile Management, Waste Management.* and *Non-Storm Water Management),* that would be implemented during construction activities. Additionally:

Construction Pollution Source Controls:

- Construction dewatering may be required for this project for structure footings at the Floodway Viaduct, concrete-contact water, accumulated storm water, and uncontaminated groundwater. Disposal methods may consider pumping into holding tanks for site reuse and as a water source for use in construction activities in embankment construction or dust control, discharge into ground (upland) infiltration, discharge into receiving waters, or off-site disposal, as determined by the Contractor. Dewatering activities will need to comply with the North Coast RWQCB Basin Plan, 401 Certification, and Caltrans NPDES permits.
- Landslide mitigation will be required at Abutment 1 of the proposed S101-W20 Connector Bridge (Br No 10-129F) at the Haehl Creek Interchange. Caltrans Office of Geotechnical Services has recommended the existing slide area be stabilized during the construction of Abutment 1. A Stabilization Trench is to be constructed and a portion of the slide material will be removed as unsuitable material and be replaced with suitable embankment material which will include a layer of permeable material and a subsurface drain collection system
- Petroleum Contaminated Material (No SSP No) has been identified at the Shuster's Transportation Trucking facility (located adjacent to the Floodway Viaduct on East Valley Rd) in the form of soil material and/or groundwater due to existing conditions of petroleum contamination due to former underground storage tanks. The material has a potential to be encountered at the excavations of Bent 2 and 3 and a worker Health and Safety Plan on the testing, work stockpiling, dewatering, and handling plan is required, and disposition of the material will be included in the Contract. Currently, Site Remediation is in progress at the property by the property owner and monitoring and reporting compliance with the NCRWQCB.

- The new deck surface of the Floodway Viaduct structure (Br No 10-165),will be ground and the resulting Portland Cement Concrete (PCC) grooving and grinding residues will be disposed of by the Contractor in accordance with the Contract specifications [SSP 42-600 Disposal of Portland Cement Concrete (PCC) Pavement and Bridge Deck Grooving and Grinding Residues] and RWQCB requirements.

Post Construction Pollution Source Controls:

- Post construction flows will be captured, routed into earthen ditches and channels, and detained prior to entering local waterways where feasible. Channel erosion control measures, such as willow cuttings, erosion control blankets, and rock lined channels will be deployed within the project limits. Energy dissipation devices such as flared ends and Rock Slope Protection (RSP) at culvert outlets are deployed where appropriate. The transition between culvert outlets/headwalls/wingwalls and channels will be smooth to reduce turbulence and scour. Detention facilities will be deployed as feasible to reduce peak discharges
- Cut and fill slopes are to be as flat as feasible, and concentrated flow will be collected in stabilized drains and channels whenever possible. The slope and surface protection systems deployed include; slope rounding, seeding and planting, temporary erosion control, fiber rolls, Rolled Erosion Control Protection (RECP), Bonded Fiber Matrix (BFM), and Rock Slope Protection (RSP). Hard surfaces are expected to be required, particularly at the bridge abutments and roundabout. The hard surfaces that will be used are rock slope protection and slope paving. Retaining walls will have RSP placed as scour protection

- Additional information regarding ditches, berms, dikes, and swales utilized on this project is contained in the project stormwater data report and hydro-modification report (attached).

SECTION FOUR – Additional Information

POTENTIAL FOR IMPACTS TO THREATENED AND ENDANGERED SPECIES (Please attach all Biological Assessments, Surveys, Formal Consultation Determination letters, and Mitigation Proposals as necessary.)

SPECIES AND/OR HABITAT	BIOLOGICAL ASSESSMENT (Y/N)	SURVEY CONDUCTED (Y/N)	DATES OF SURVEY CONDUCTED
Chinook salmon—California Coastal ESU	Y	Y	2004 (CDFG)
Steelhead—Northern California DPS	Y	Y	2004 (CDFG)
Coho salmon—Northern California/ Southern Oregon Coasts ESU	Y	Y	2004 (CDFG)
Northern spotted owl	Y	Y	2008, 2009 (Caltrans)
White-tailed kite	Y	N	
North Coast semaphore grass	Y	Y	2008, 2009 Caltrans (URS)
Baker's meadowfoam	Y	Y	1997 (Jones & Stokes); 2007 (URS); 2009 (Caltrans)

HAS ANY PORTION OF THE WORK BEEN INITIATED? ☐ YES ☑ NO If YES, describe the initiated work, and explain why it was initiated prior to obtaining a permit. Indicate whether any enforcement action has been taken against the project.

CUMULATIVE IMPACTS (List and describe other projects implemented or planned that are related to the proposed project, or that may impact the same waterbody. Attach additional pages as necessary.)

PROJECT NAME	DESCRIPTION	DATE IMPLEMENTED/PLANNED
Willits WWTP expansion	To accommodate projected growth in Willits & Brooktrails subdivision	2006
Brooktrails subdiv. 2nd access	Near Wild Oat Canyon	Unknown
Traffic signal at Holly & Main (US 101) Street	(self-explanatory)	2003
Northwestern Pacific Railroad improvements	Includes slide restoration to open railroad north of Willits	Unknown
Willits land use & zoning changes	SE from residential (estate) to manufacturing; downtown Specific Plan	1997; 2003
Enhanced pedestrian, bicycle & hiking trails	Within city limits	Unknown
Medocino County Museum Expansion	(at Commercial St.) 3 acres wetland creation for same acreage filled	2001

Application is hereby made for a permit or permits to authorize the work described in this application. I certify, under penalty of perjury, that this application is complete and accurate to the best of my knowledge. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT (OR AGENT) DATE

PRINT NAME OF APPLICANT (OR AGENT)

NCRWQCB Revised February 10, 2008. Questions, contact the 401 Certification Unit Supervisor at (707) 576-2220.
To download this form in Microsoft Word visit http://www.waterboards.ca.gov/northcoast/water_issues/programs/wqc_docs/060215-401-Application.doc

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT (33 CFR 325)

CALIFORNIA DEPARTMENT OF TRANSPORTATION U.S. HIGHWAY 101 WILLITS BYPASS PROJECT MENDOCINO COUNTY, CALIFORNIA

SUBMITTED TO:

U.S. Army Corps of Engineers
San Francisco District
1455 Market Street
San Francisco, CA 94103
Contact: Peter Straub
415/503-6774

APPLICANT:

California Department of Transportation
District 3—Office of Environmental Management
2800 Gateway Oaks Drive
Sacramento, CA 95833
Contact: Jason Meigs
916/274-0564

February 2010

For individuals with sensory disabilities, this document is available in alternate formats. Please write to Jason Meigs, California Department of Transportation, District 3—North Region Environmental Division, 2800 Gateway Oaks Drive, Sacramento, CA 95833, or call (916) 274-0564 or use the CA Relay Service TTY number (800) 735-2929.

APPLICATION FOR
DEPARTMENT OF THE ARMY
PERMIT (33 CFR 325)

CALIFORNIA DEPARTMENT OF TRANSPORTATION
U.S. HIGHWAY 101 WILLITS BYPASS PROJECT
MENDOCINO COUNTY, CALIFORNIA

Prepared by: _____ Date: _____

Jason Meigs, Biologist
D-3 North Region Environmental Division
California Department of Transportation, District 3
916/274-0564

Approved by: _____ Date: _____

Jeremy Ketchum, Senior Environmental Planner
Office of Environmental Management S-3
California Department of Transportation, District 3
916/264-0621

Contents

Application for Department of the Army Permit (33 CFR 325)

Appendix 1: Jurisdictional Wetland Impacts Maps (Bypass Alignement) From MMP

Appendix 2: Mitigation Imapcts Maps From MMP

Attachment 1

- Block 13: Name of Water Bodies
  - Jurisdictional Determinations
  - Name and Description of Affected Water Bodies
- Block 15: Location of Project
  - Bypass Alignment
  - Bypass Vertical Alignment
  - Latitude/Longitude of Key Project Components (Approximate)
- Block 18: Nature of Activity
  - Background and Changes Since the Final EIS/EIR
  - Description of Specific Design Elements
  - Description of Specific Construction Elements
- Block 19: Project Purpose
- Block 20: Reasons for Discharge
- Block 21: Types of Material Being Discharged and Amount of Each Type in Cubic Yards
- Block 22: Surface Areas of Wetlands or Other Waters Filled
- Block 23: Description of Avoidance, Mitigation, and Compensation
  - Habitat Mitigation and Monitoring Plan
  - Avoidance and Minimization Measures
- Block 25: Addresses of Adjoining Property Owners and Lessees
- Block 26: List of Other Certifications or Approvals and Denials Received
  - Agency Coordination and Compliance
  - Additional Information

Attachment 2 Figures

Attachment 3 Jurisdictional Determinations

Attachment 4 Record of Decision, and Notice of Determination

Attachment 5 Section 7 Concurrence Documents

Attachment 6 Section 106 Final Concurrence Documentation

Attachment 7 Section 404(b)1 Alternatives Analysis

Attachment 8 Names and Addresses of Adjoining Property Owners/Lessees

Attachment 9 Copies of FG Code Section 1602 Agreement Application and CWA Section 401 Water Quality Certification Application

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 **EXPIRES: 31 August 2012**

Public reporting burden for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This Information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME:	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
First - Jason Middle - Last – Meigs	First - Middle - Last –
Company – State of California, Department of Transportation (Caltrans) District 3	Company –
E-mail Address – Jason_Meigs@dot.ca.gov	E-mail Address –
6. APPLICANT'S ADDRESS. Address - 2800 Gateway Oaks Drive	9. AGENT'S ADDRESS Address -
City – Sacramento State – CA Zip – 95833 Country – USA	City – State – Zip – Country –
7. APPLICANT'S PHONE NOs. W/AREA CODE	10. AGENT'S PHONE NOs. W/AREA CODE
a. Residence b. Business (916) 274-0564 c. Fax (916) 274-0602	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____

APPLICANT'S SIGNATURE DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

U.S. Highway 101 Willits Bypass Project

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Refer to Attachment 1, Block 13 (Name of Waterbody)	Address N/A
15. LOCATION OF PROJECT	
Latitude: °N Refer to Attachment 1, Block 15 (Location of Project). Longitude: °W	City - Willits State – CA Zip -

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID N/A Municipality Mendocino County, near the City of Willits

Section – 32 Township – 18N Range – 13W

17. DIRECTIONS TO THE SITE

From San Francisco, take U.S. Highway 101 north approximately 140 miles to Willits, California. The project site begins at the south of the Haehl Overhead and ends approximately 1.9 miles south of Reynolds Highway. Refer to Attachment 1, Block 15, for additional location details.

18. Nature of Activity (Description of project, include all features)

Refer to Attachment 1, Block 18 (Nature of Activity)

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

Refer to Attachment 1, Block 19 (Project Purpose), for details regarding the purpose of the proposed project.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Refer to Attachment 1, Block 20 (Reason(s) for Discharge).

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
Refer to Attachment 1, Block 21		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres Refer to Attachment 1, Block 22 (Surface Area in Acres of Wetlands or Other Waters Filled).
Or
Liner Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Refer to Attachment 1, Block 23 (Description of Avoidance, Minimization, and Compensation).

24. Is Any Portion of the Work Already Complete? Yes ☐ No ☑ IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

Address – Refer to Attachment 1, Block 25 (Addresses of Adjoining Property Owners, Lesses, Ect.)

City – State – Zip –

26. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
Refer to Attachment 1, Block 26					

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT _____ DATE _____ SIGNATURE OF AGENT _____ DATE _____

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Appendix A: Bypass Impact Maps - Waters and Wetland (From Appendix B of the Willits Bypass Mitigation and Monitoring Plan)

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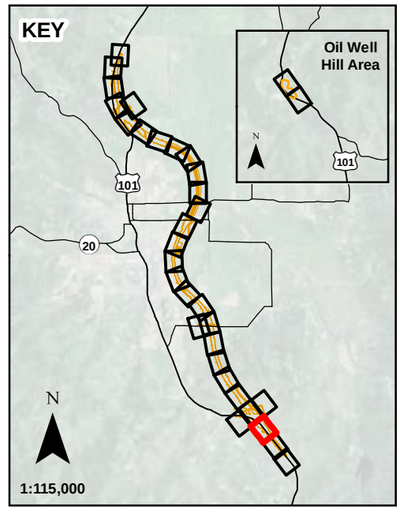
Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-4

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

FENOLIO
104-110-13

FENOLIO
104-120-01

OCHOA
104-110-12

101

104-110-RW

SCHMIDBAUER
104-090-04

104-120-RW

SCHMIDBAUER
104-090-03

SCHMIDBAUER 104-100-03

SCHMIDBAUER
104-120-02

Legend

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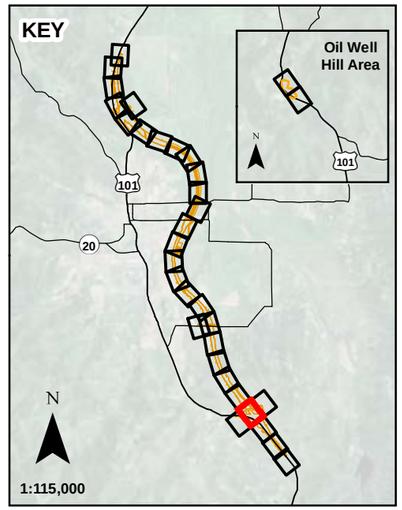

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Sheet B-6

Jurisdictional Wetland Impacts
Proposed Willits Bypass
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CADGENE
104-130-10

CADGENE
104-110-14

104-110-RW

104-120-RW

FENOLIO
104-130-04

FENOLIO
104-110-13

104-110-RW

101

OCHOA
104-110-12

FENOLIO
104-120-01

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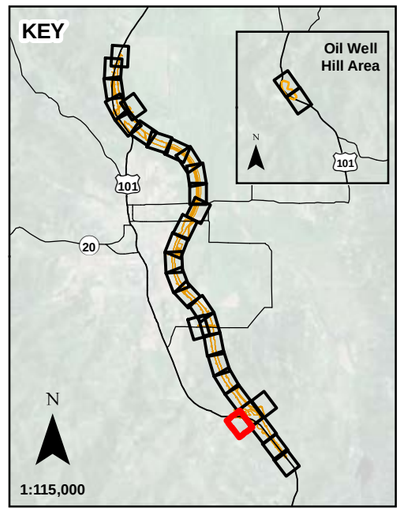

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Sheet B-8

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104-120-RW

SCHMIDBAUER 104-120-02

SCHMIDBAUER
104-100-03

SCHMIDBAUER 104-100-04

SCHMIDBAUER
104-100-02

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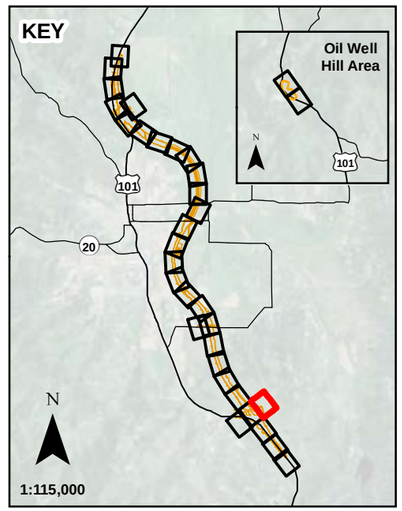

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Sheet B-10

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OCHOA
104-110-12

HARWOOD
104-090-06

SCHMIDBAUER 104-090-04

104-120-RW

SCHMIDBAUER
104-090-03

BURGESS
104-070-05

SCHMIDBAUER
104-100-03

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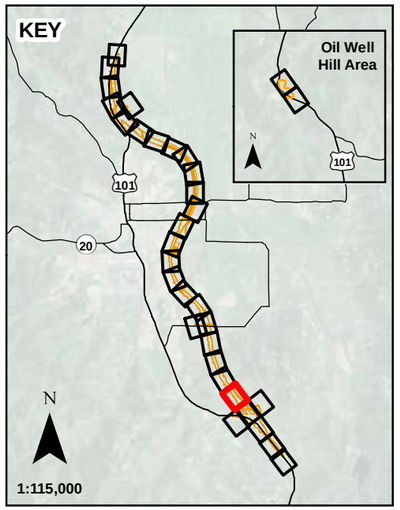

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Sheet B-12

Jurisdictional Wetland Impacts
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HARWOOD 104-090-06

HARWOOD
104-070-06

SCHMIDBAUER
104-090-04

104-120-RW

SCHMIDBAUER
104-090-03

BURGESS 104-070-05

MORRIS
104-070-03

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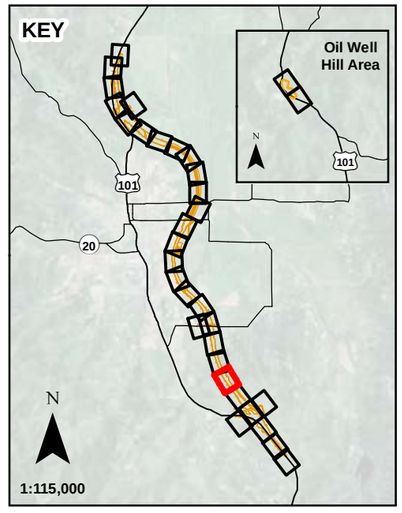

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Scale in Feet

Sheet B-14

Jurisdictional Wetland Impacts

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Impact Maps

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HARWOOD 104-070-06

HARWOOD 104-050-02

108-010-RW

HANDLEY 104-050-16

STATE 104-050-15

104-120-RW

Ditch

MORRIS 104-050-10

MORRIS 104-070-03

MORRIS 104-050-11

BURGESS 104-070-05

Legend

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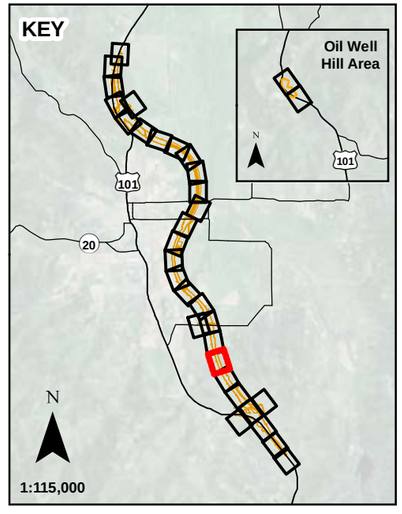

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Sheet B-16

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

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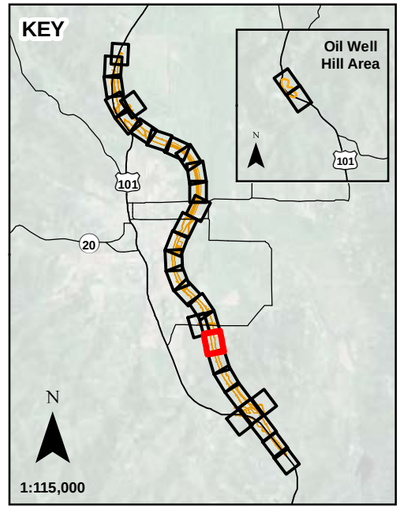
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-18

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

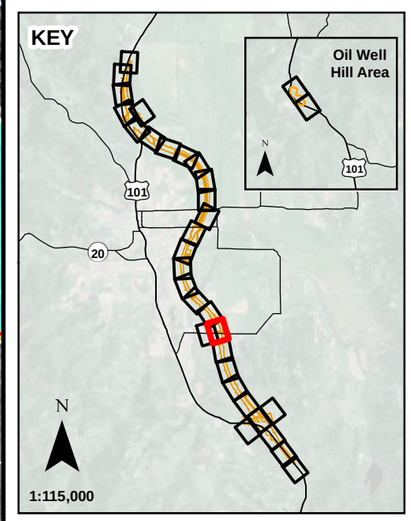
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-20

Jurisdictional Wetland Impacts

Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

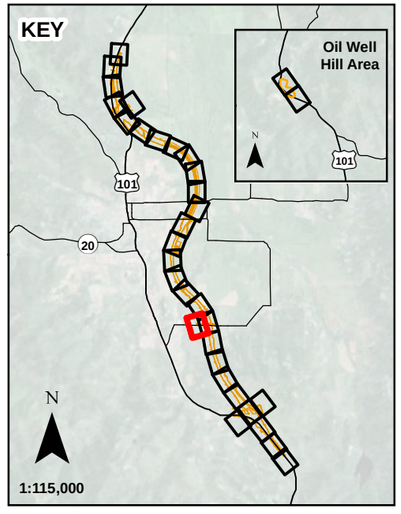
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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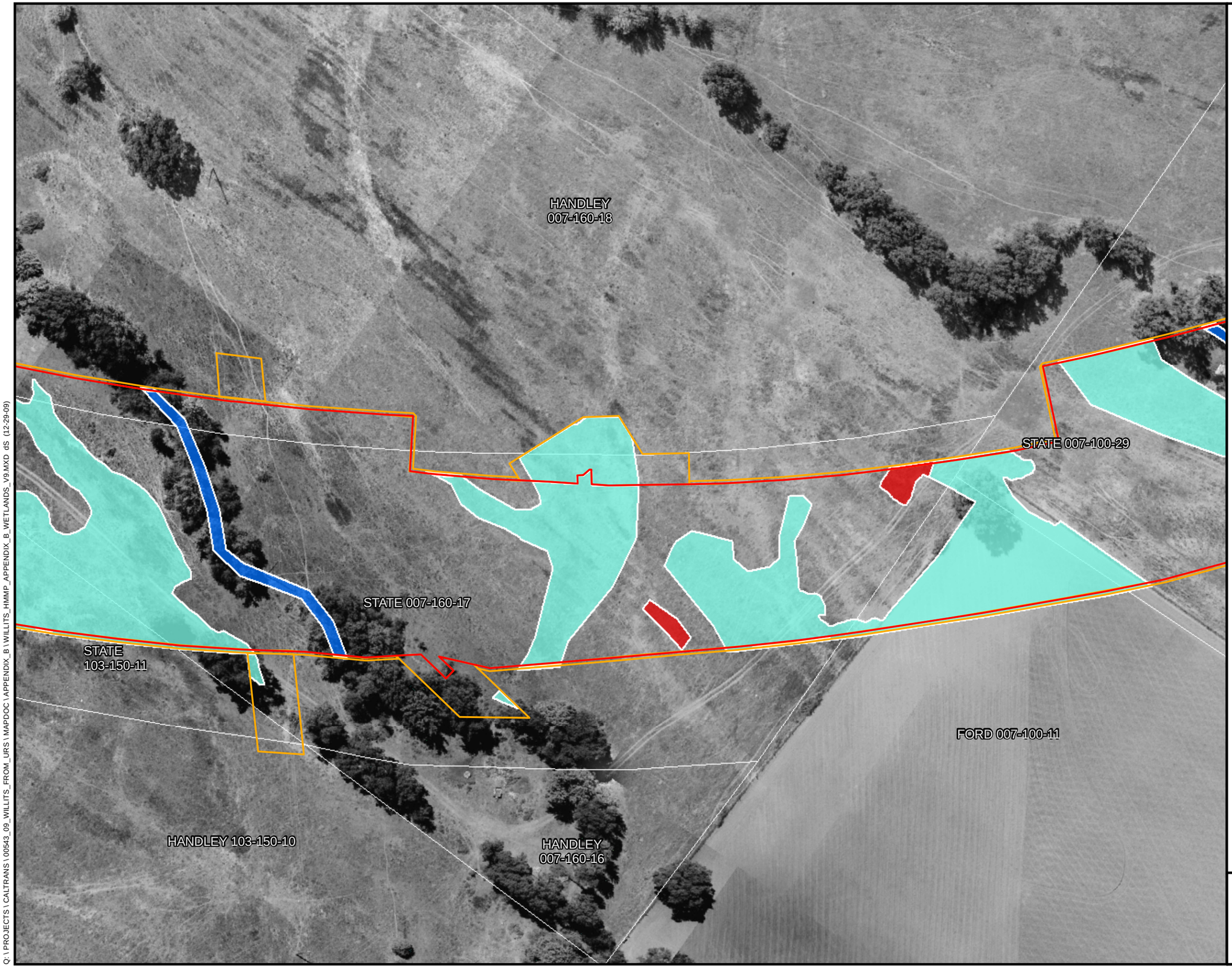
Scale in Feet

Sheet B-22

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

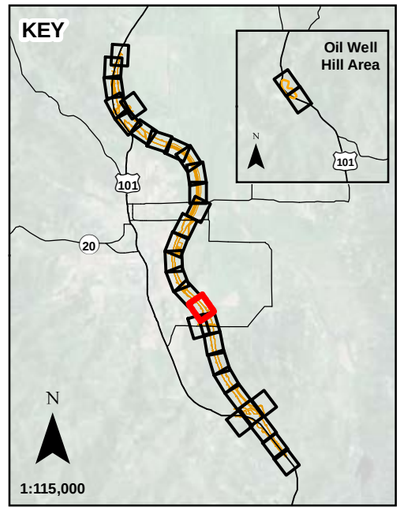


Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-24

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

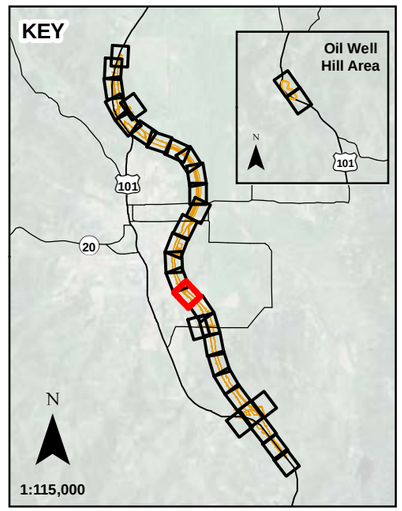
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-26

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

BOWEN 007-100-21

PETERS 007-060-07

PETERS 007-060-06

NORCAL 007-100-20

PERSICO
007-060-08

STATE 007-100-16

108-010-RW

SEIBERLICH
007-100-08

RUTLEDGE 007-070-01

RUTLEDGE
007-100-09

STATE
007-100-29

Haehl Creek

Shell Ln

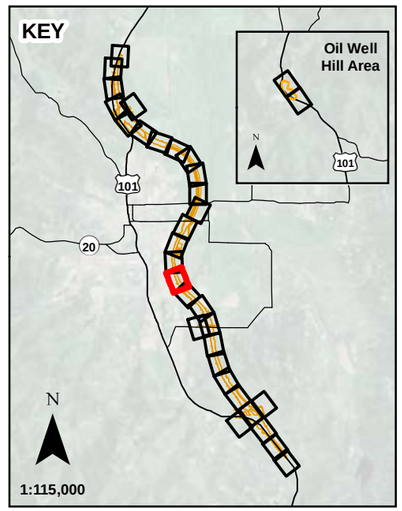
HANDLEY
007-100-30

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-28

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

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PETERS 007-060-06
PETERS 007-060-12
PETERS 007-060-11
PETERS 007-060-07
108-010-RW
GRIGGS 007-060-13
GRIGGS 006-143-04
GRIGGS 007-050-06
GRIGGS 007-050-07
RUTLEDGE 007-070-01
RUTLEDGE 007-050-02

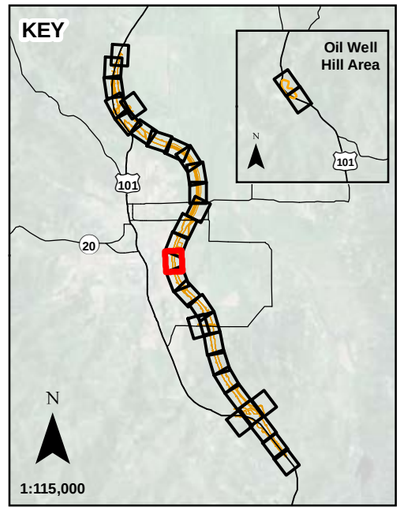
Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel

KEY



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Scale in Feet

Sheet B-31

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

GRIGGS
006-143-04

WINDSOR
007-050-05

WINDSOR 007-040-16

Baechtel Creek

108-010-RW

GRIGGS
007-050-06

WINDSOR 007-040-14

GRIGGS 007-050-07

STATE
007-040-06

STATE
007-040-07

RUTLEDGE
007-050-02

GILSTRAP
007-040-08

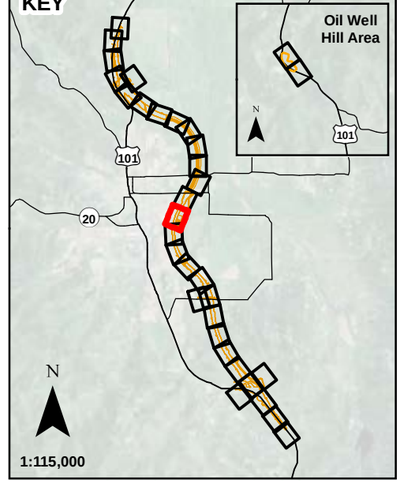
Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel

KEY



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Scale in Feet

Sheet B-34

Jurisdictional Wetland Impacts

Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\PROJECTS\CALTRANS\00543_09_WILLITS_FROM_URS\MAPDOC\APPENDIX_B\WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

WINDSOR
007-040-16

GRIGGS
007-040-15

108-010-RW

HATHAWAY
007-031-13

TWEDDELL 007-040-17

HATHAWAY
007-032-03

WINDSOR
007-040-14

Baechtel Creek

STATE 007-040-06

Center Valley Rd

SHUSTERS
007-032-04

STATE
007-040-07

GILSTRAP 007-040-09

GILSTRAP 007-040-08

WILLITS
007-032-05

GILSTRAP 007-040-10

Haehl Creek

WILLITS
007-040-11

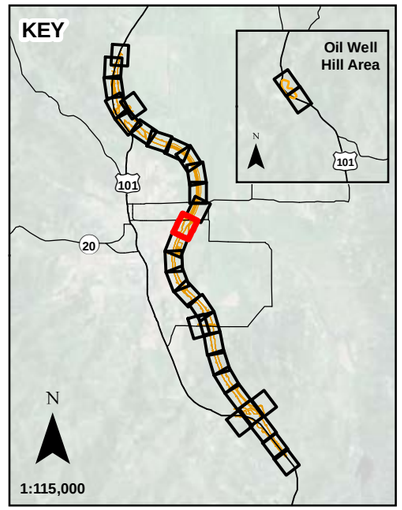
Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel

KEY



N

0 100

Scale in Feet

Sheet B-37

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

HATHAWAY
007-032-03

COUNTY
007-032-02

Baechtel Creek

Haehl Creek

SHUSTERS
007-032-04

JENSEN 007-032-10

007-030-RW

East Commercial St

BENBOW 007-020-03

WILLITS 007-032-05

007-030-RW

HARMS
007-032-13

HARMS
007-032-11

108-010-RW

007-030-RW

007-030-RW

Center Valley Rd

WILLITS
007-040-11

SHUSTERS
007-032-12

007-030-RW

SHORT
007-040-12

007-030-RW

GRASSE
103-050-03

OLEARY
103-050-15

Bray Rd

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel

KEY

Oil Well Hill Area

101

20

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Scale in Feet

Sheet B-40

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

COUNTY
007-032-01

WILLITS
007-020-02

JENSEN
007-032-10

Baechtel Creek

007-030-RW

East Commercial St

HARMS
007-032-13

BENBOW 007-020-03

108-010-RW

007-030-RW

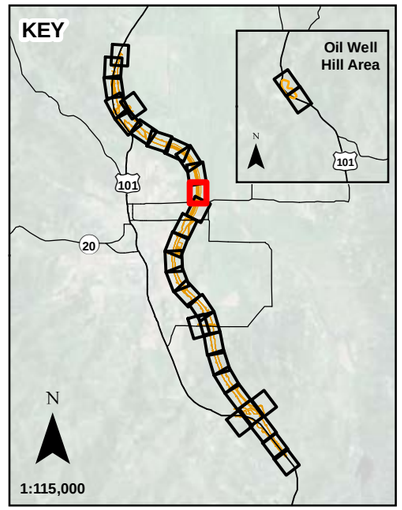
Q:\PROJECTS\CALTRANS\00543_09_WILLITS_FROM_URS\MAPDOC\APPENDIX_B\WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-43

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

WILLITS
007-020-02

WILLITS 007-010-03

Baechtel Creek

Baechtel Creek

BENBOW 007-020-03

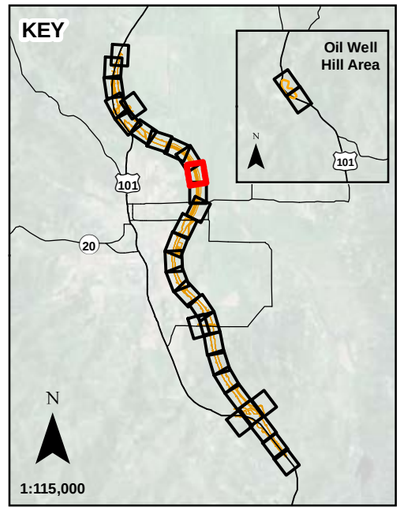
BENBOW 007-010-04

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-46

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

WILLITS 007-010-03

Broaddus Creek

WILLITS 007-010-02

WILLITS 007-010-01

Mill Creek

Baechtel Creek

CITY 108-040-03

Outlet Creek

BENBOW 007-010-04

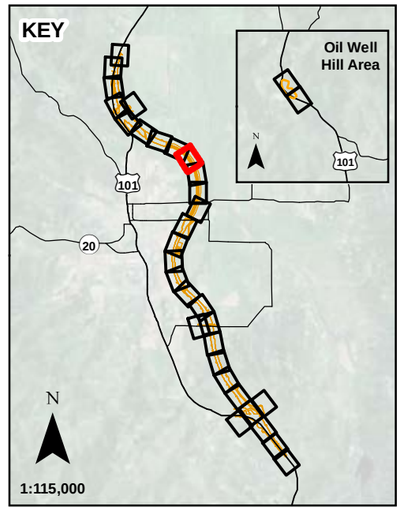
CITY 108-040-14

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-49

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

WILLITS
007-010-01

WILLITS
007-010-02

HUFFMAN
108-040-08

CITY 108-040-03

CITY
108-040-14

Outlet Creek

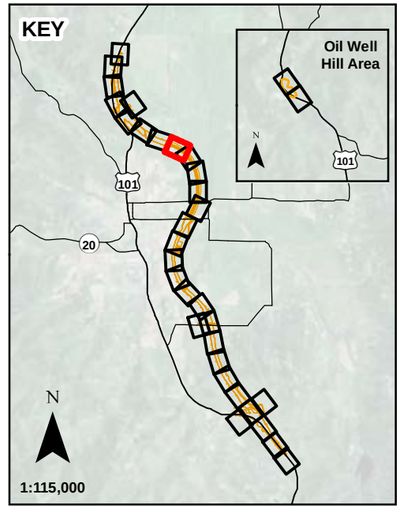
Mill Creek

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-51

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

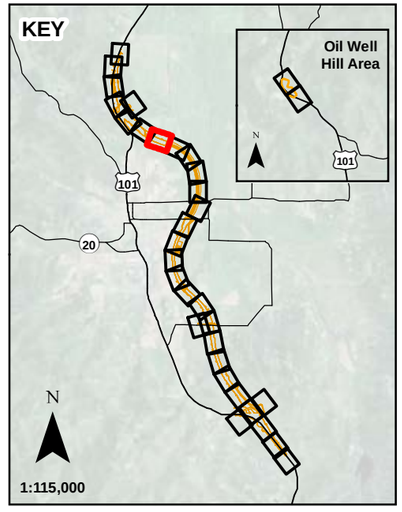
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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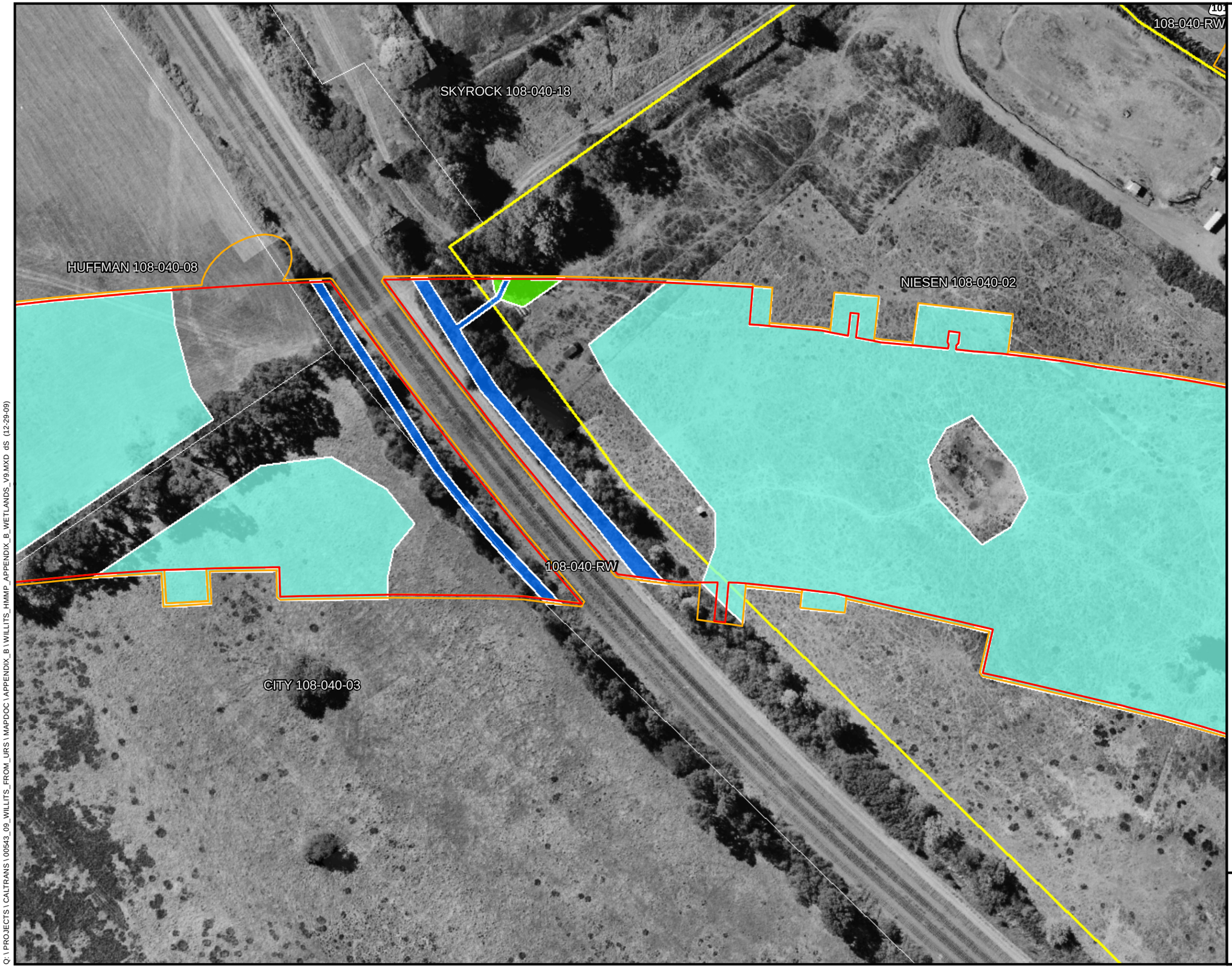
Scale in Feet

Sheet B-54

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource Impact Maps



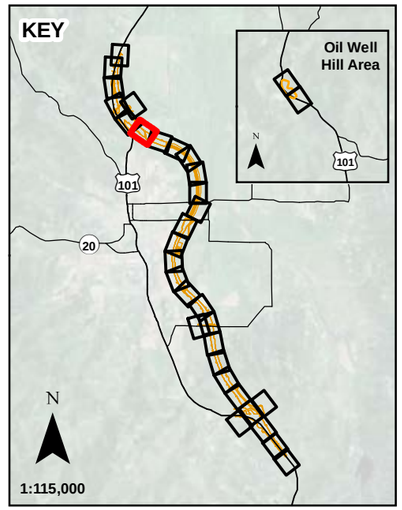
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-57

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

WAGENET
038-080-31

SNYDER
038-080-30

108-010-RW

LUSHER 038-080-09

LUSHER
038-060-08

SNYDER
108-040-12

Redwood
Hwy

108-040-RW

101

NIESEN 108-040-02

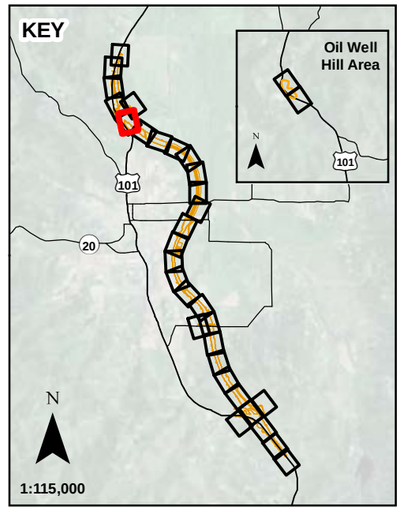
LUSHER 108-030-03

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-60

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

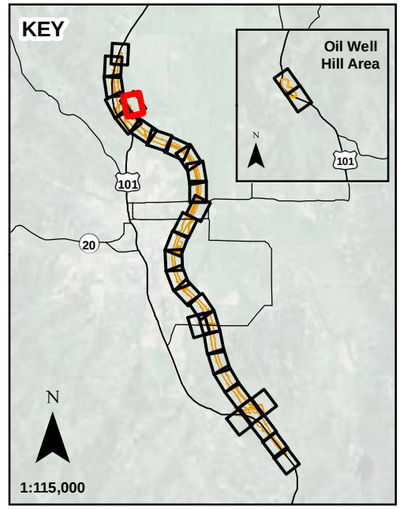
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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Scale in Feet

Sheet B-63

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

WAGENET
038-080-31

WAGENET
038-060-10

Upp Creek

ANDERSON 038-060-07

Redwood Hwy

PADULA 038-060-09

LUSHER
038-080-09

108-010-RW

101

LUSHER 038-060-08

LUSHER
108-030-03

BROOKE
038-040-09

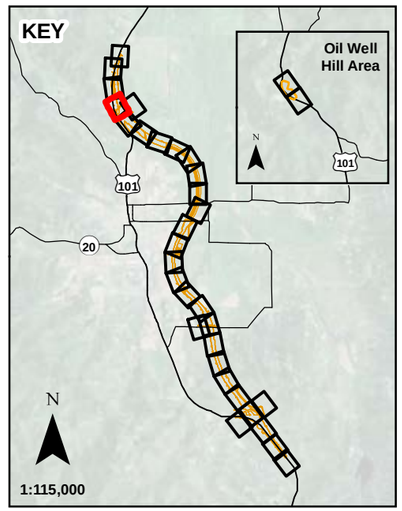
Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel

KEY



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Scale in Feet

Sheet B-66

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

PADULA
038-060-09

KING 038-040-08

LAMB
038-040-05

PELLEGRI
038-040-07

Redwood Hwy

LUSHER
038-060-08

108-010-RW

101

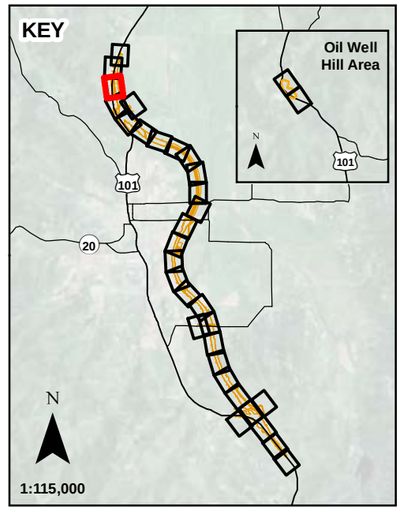
BROOKE 038-040-09

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

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Scale in Feet

Sheet B-69

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

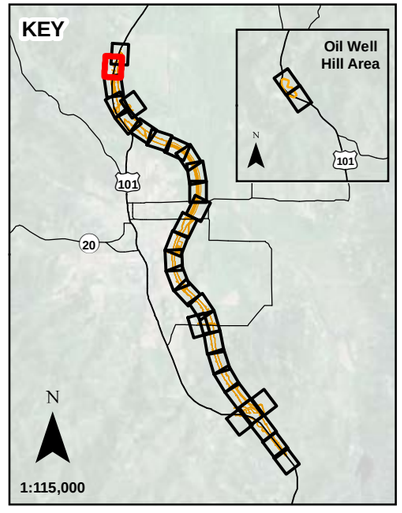
Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



N

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Scale in Feet

Sheet B-71

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

BURTON
038-020-09

GARMAN 038-020-21

101

108-010-RW

Redwood
Hwy

BROOKE 038-020-11

Mill Creek

BROOKE 108-020-03

Old Outlet Creek

FORD 108-020-04

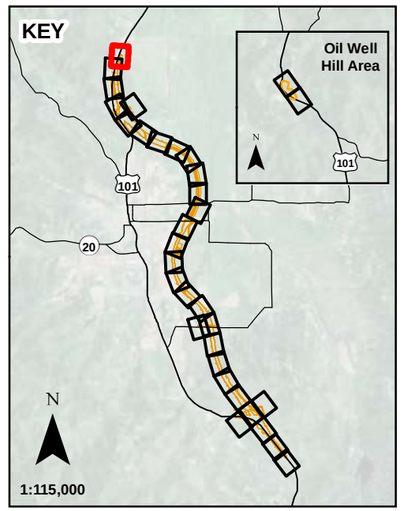
Old Outlet Creek

Legend

- Permanent Impact Boundary
- New Power Pole Location
- Temporary Impact Boundary

Jurisdictional Wetlands

- Marsh
- Other Water
- Riparian Woodland
- Riparian Scrub
- Swale
- Vernal Pool
- Wet meadow
- Mitigation Parcel
- Parcel



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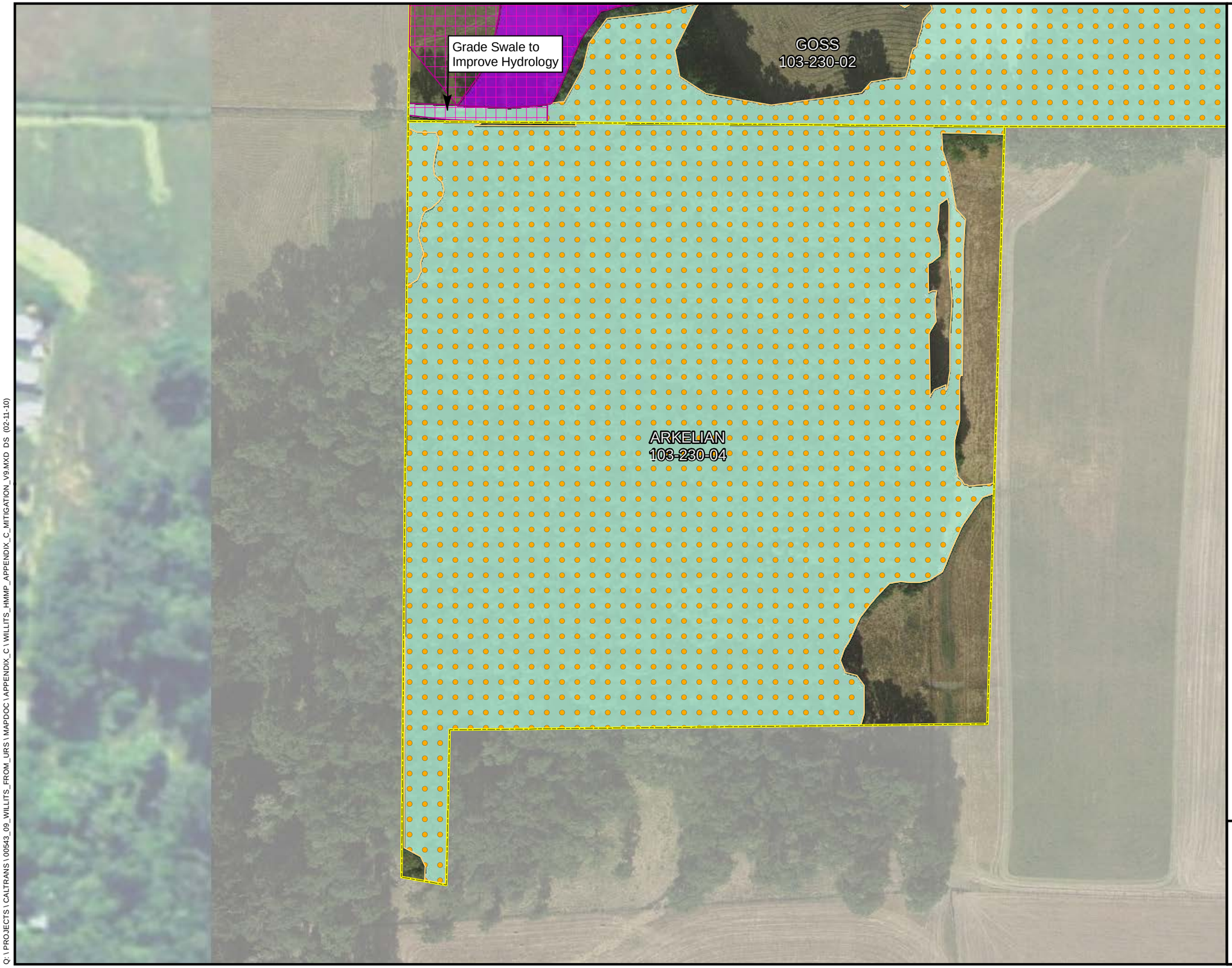
Scale in Feet

Sheet B-73

Jurisdictional Wetland Impacts
Proposed Willits Bypass
Sensitive Biological Resource
Impact Maps

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_B \ WILLITS_HMMP_APPENDIX_B_WETLANDS_V9.MXD dS (12-29-09)

Appendix B: Mitigation Actions Impact Maps (From Appendix C of the Willits Bypass Mitigation and Monitoring Plan)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

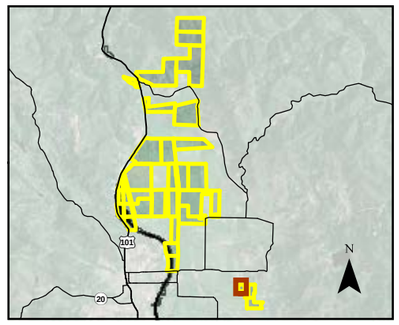
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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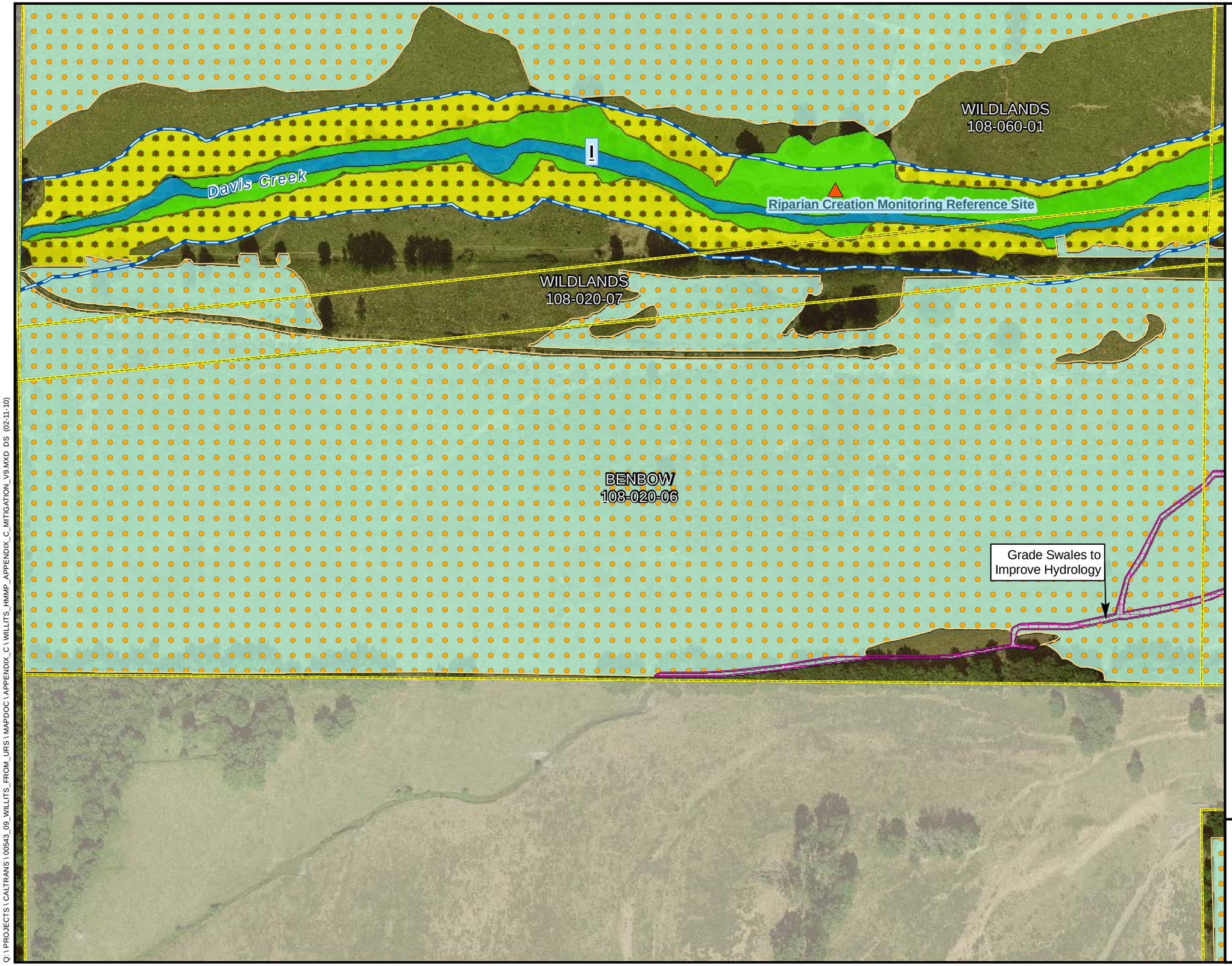
Scale in Feet

Sheet C-4
Mitigation Actions
Arkelian
APN 103-230-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

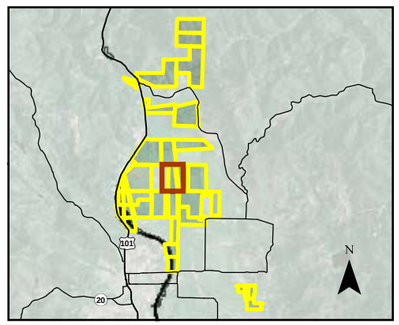
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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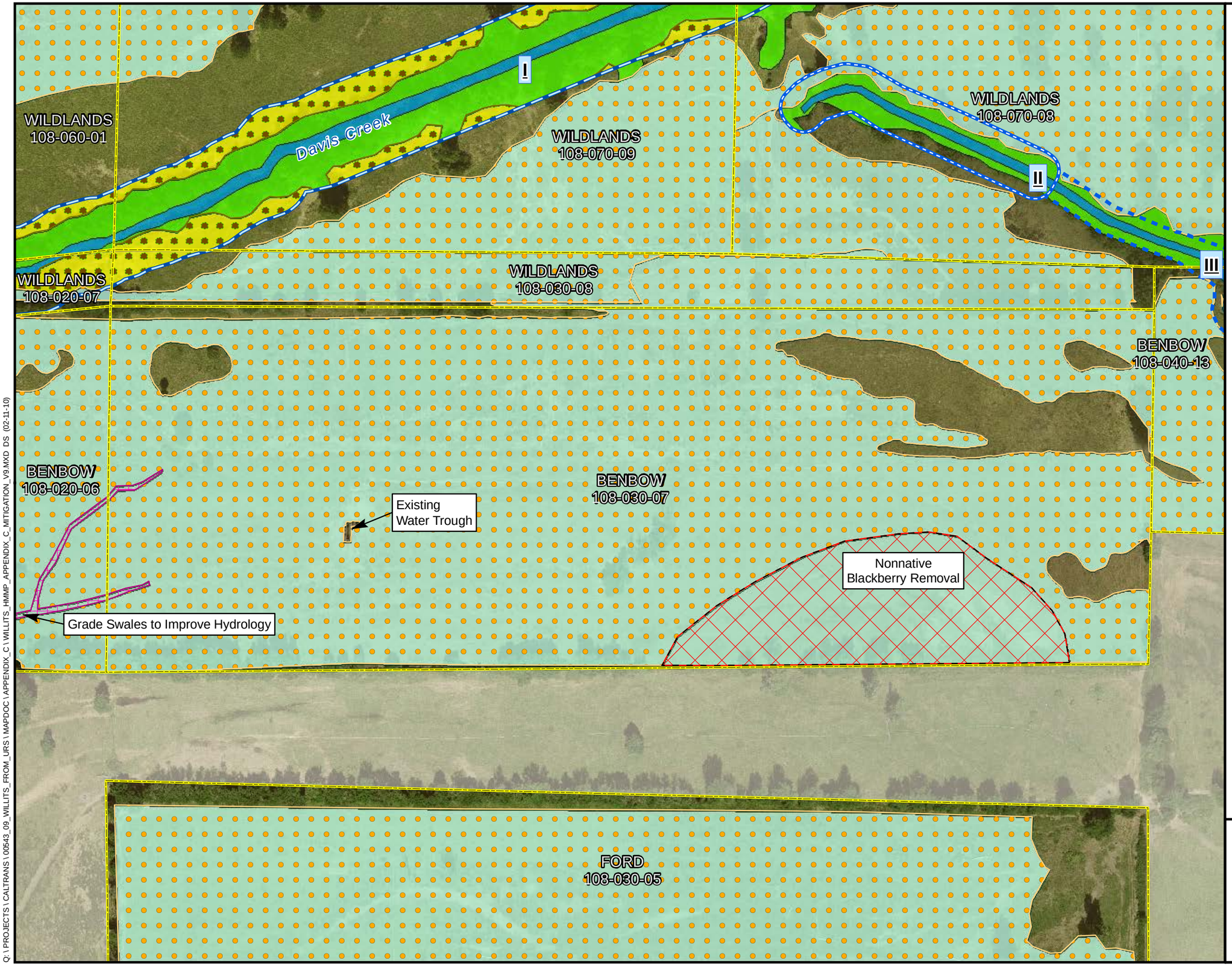
Scale in Feet

Sheet C-8
Mitigation Actions
Benbow
APN 108-020-06

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

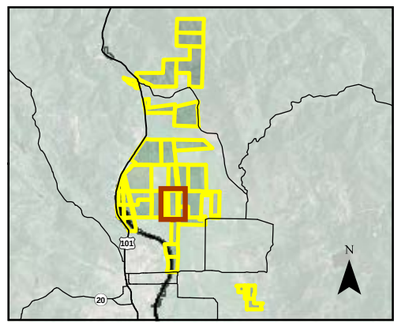
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-12
Mitigation Actions
Benbow
APN 108-030-07

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

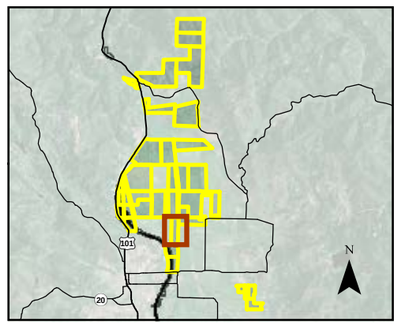
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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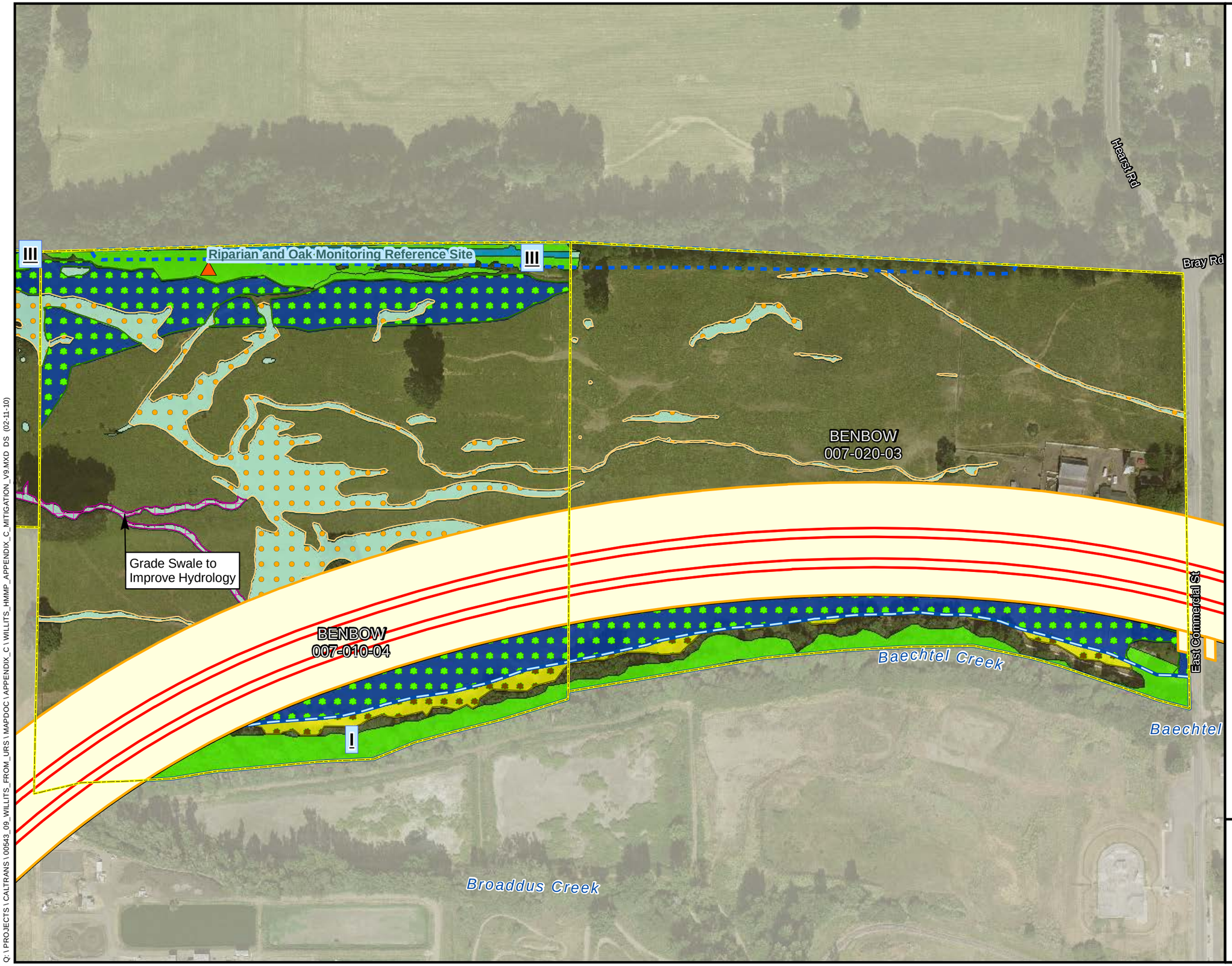
Scale in Feet

Sheet C-16
Mitigation Actions
Benbow
APN 108-040-13

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

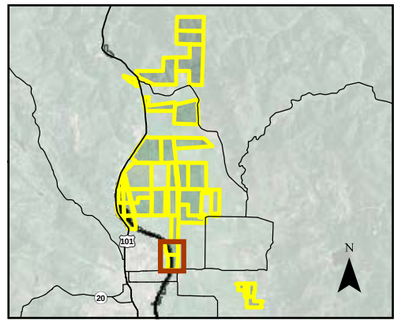
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



0 200

Scale in Feet

Sheet C-20
Mitigation Actions
Benbow
APNs 007-010-04 & 007-020-03

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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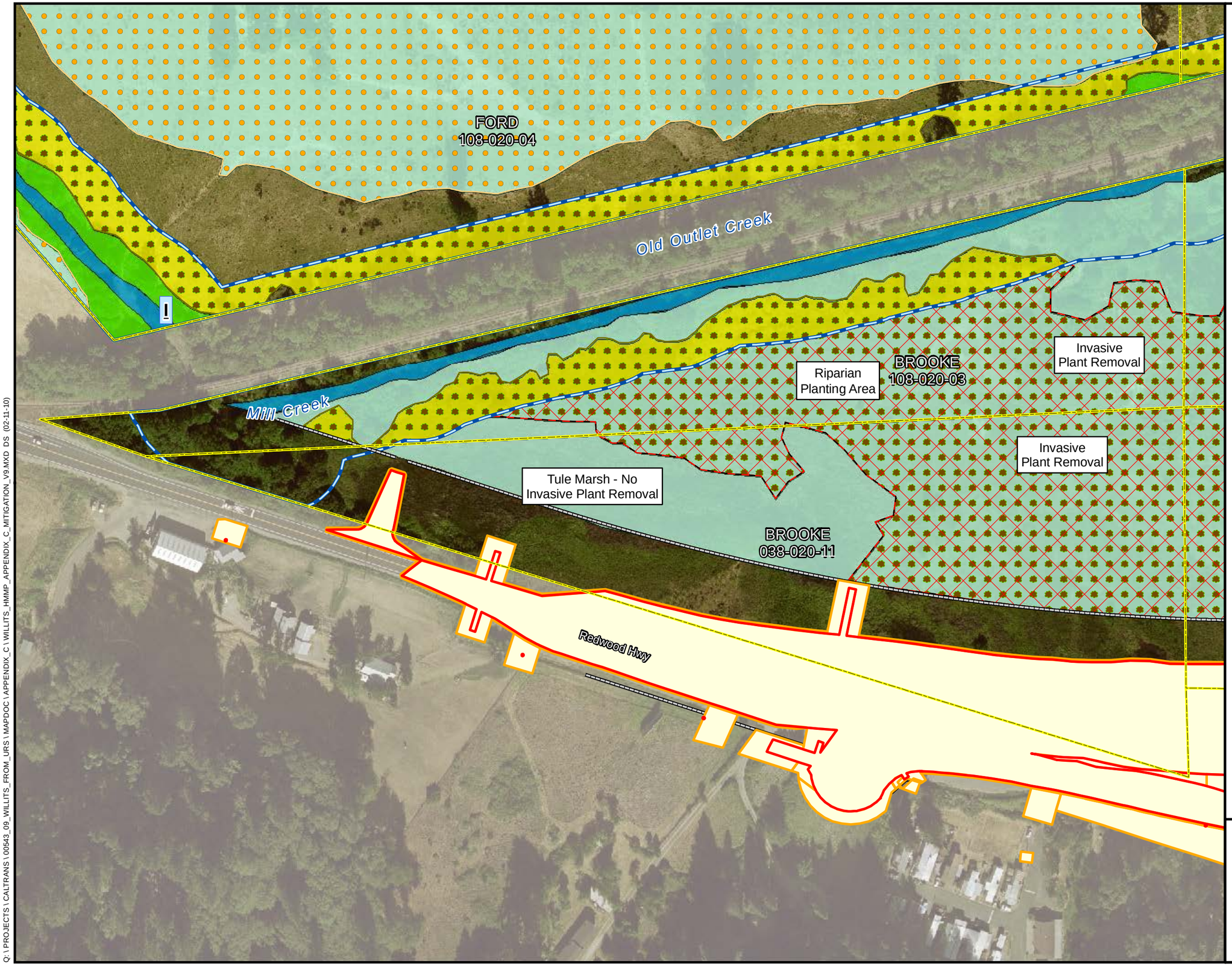


Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

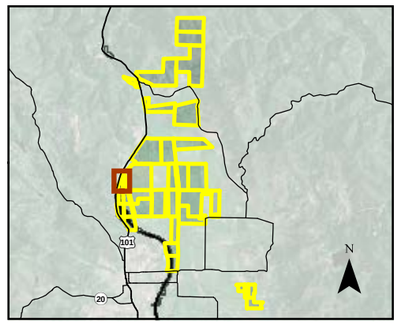
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



0 200

Scale in Feet

Sheet C-23
Mitigation Actions
Brooke
APNs 108-020-03 & 038-020-11

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

FORD
108-020-04

FORD
108-030-02

Old Outlet Creek

Mill Creek

Upp Creek

LUSHER
108-030-03

BROOKE
108-030-01

Riparian Creation Monitoring Reference Site

Invasive
Plant Removal

Riparian
Planting Area

BROOKE
108-020-03

Riparian
Planting Area

Invasive
Plant Removal

BROOKE
038-040-09

BROOKE
038-020-11

LUSHER
038-060-08

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

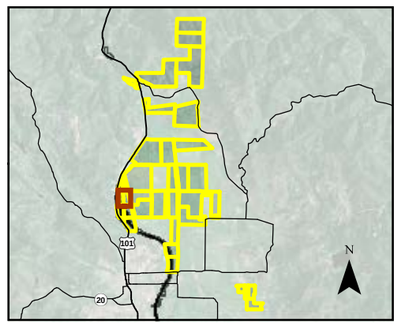
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-26
Mitigation Actions
Brooke
APNs 108-030-01 & 038-040-09

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

Wetland Creation Monitoring Reference Site

Riparian Creation Monitoring Reference Site

Redwood Hwy

Wild Oat Canyon Creek

Old Outlet Creek

Outlet Creek

FORD
108-010-06

FORD
108-020-04

I

II

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

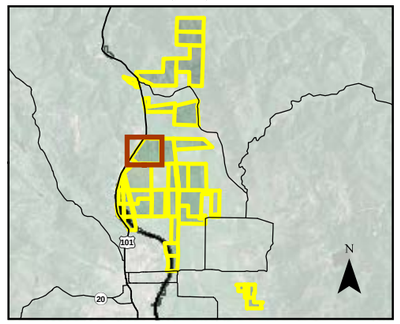
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-30
Mitigation Actions
Ford
APN 108-010-06

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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FORD
108-010-06

Redwood Hwy

Mill Creek

BROOKE
038-020-11

FORD
108-020-04

Grade Swale to
Improve Hydrology

Tule Marsh - No
Invasive Plant Removal

Riparian
Planting Area

Old Outlet Creek

BROOKE
108-020-03

Invasive
Plant Removal

Invasive
Plant Removal

BROOKE
038-040-09

BROOKE
108-030-01

FORD
108-030-02

Outlet Creek

FORD
108-030-05

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N

0 200

Scale in Feet

Sheet C-34
Mitigation Actions
Ford
APN 108-020-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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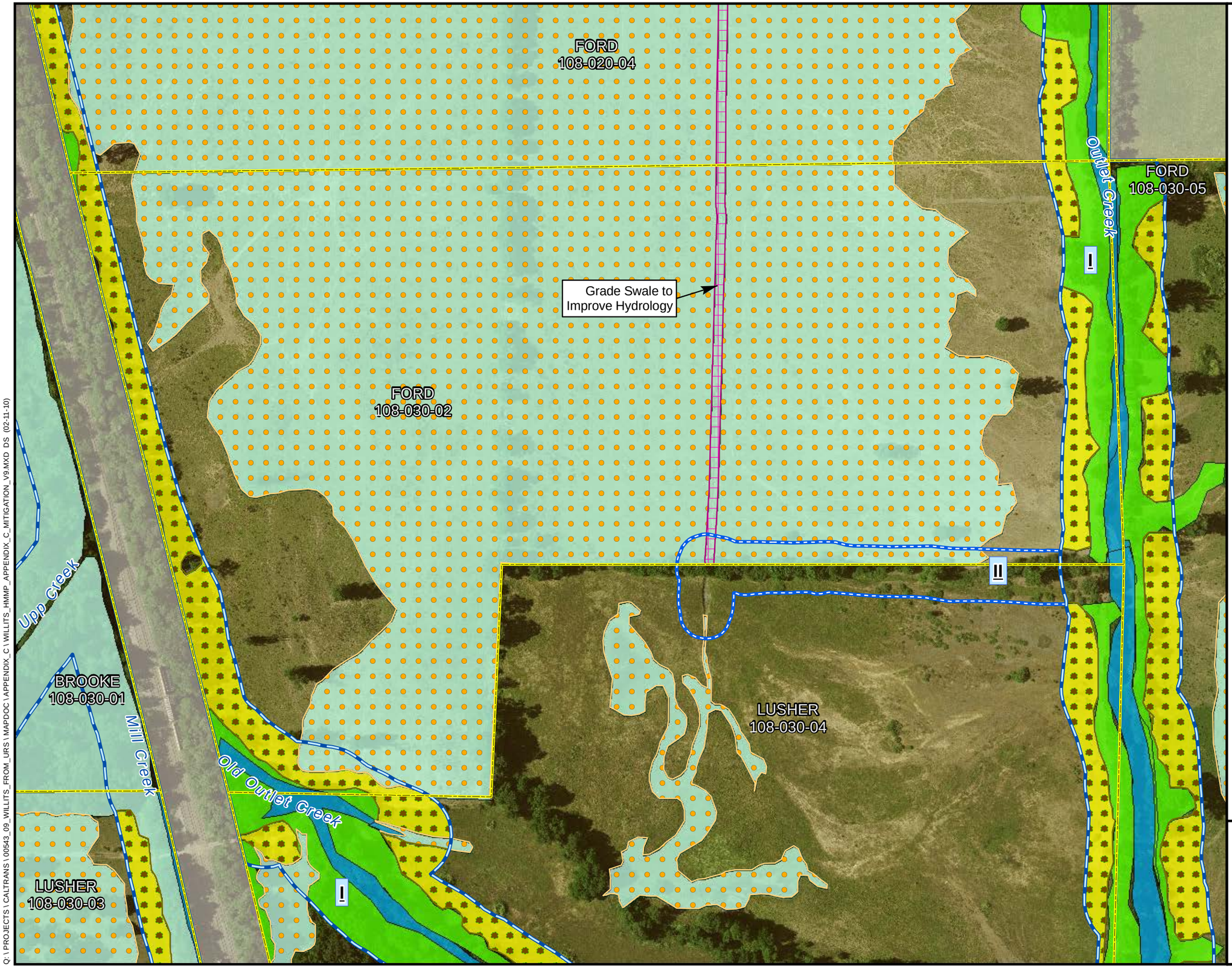


Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

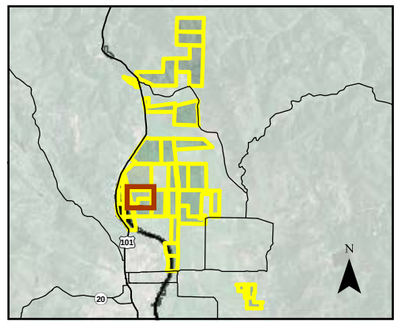
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-38
Mitigation Actions
Ford
APN 108-030-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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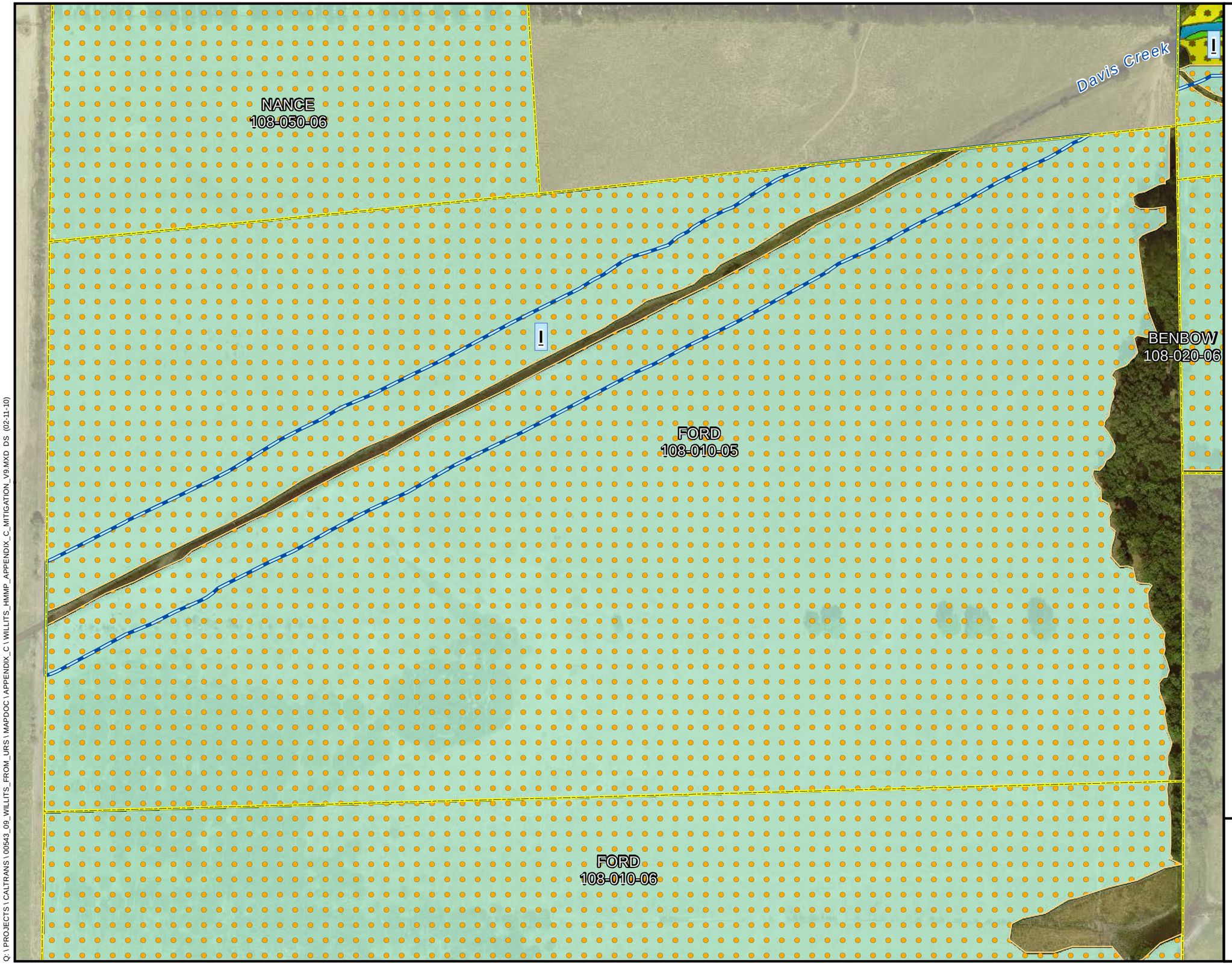


Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

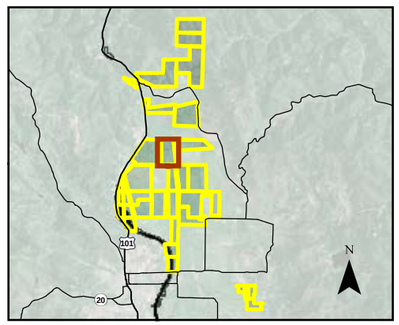
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



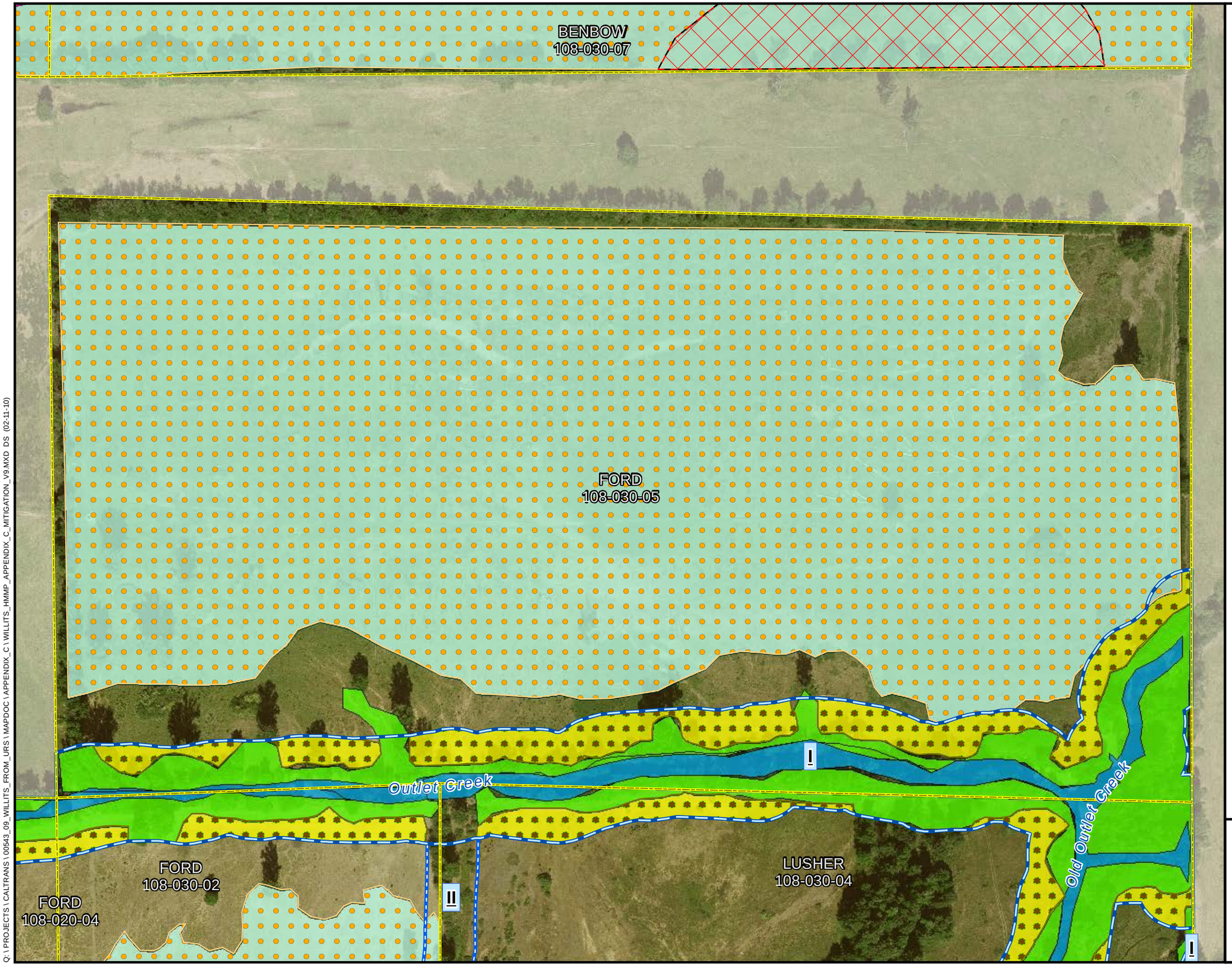
0 200

Scale in Feet

Sheet C-42
Mitigation Actions
Ford
APN 108-010-05

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

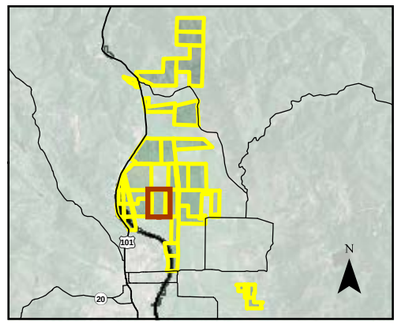
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



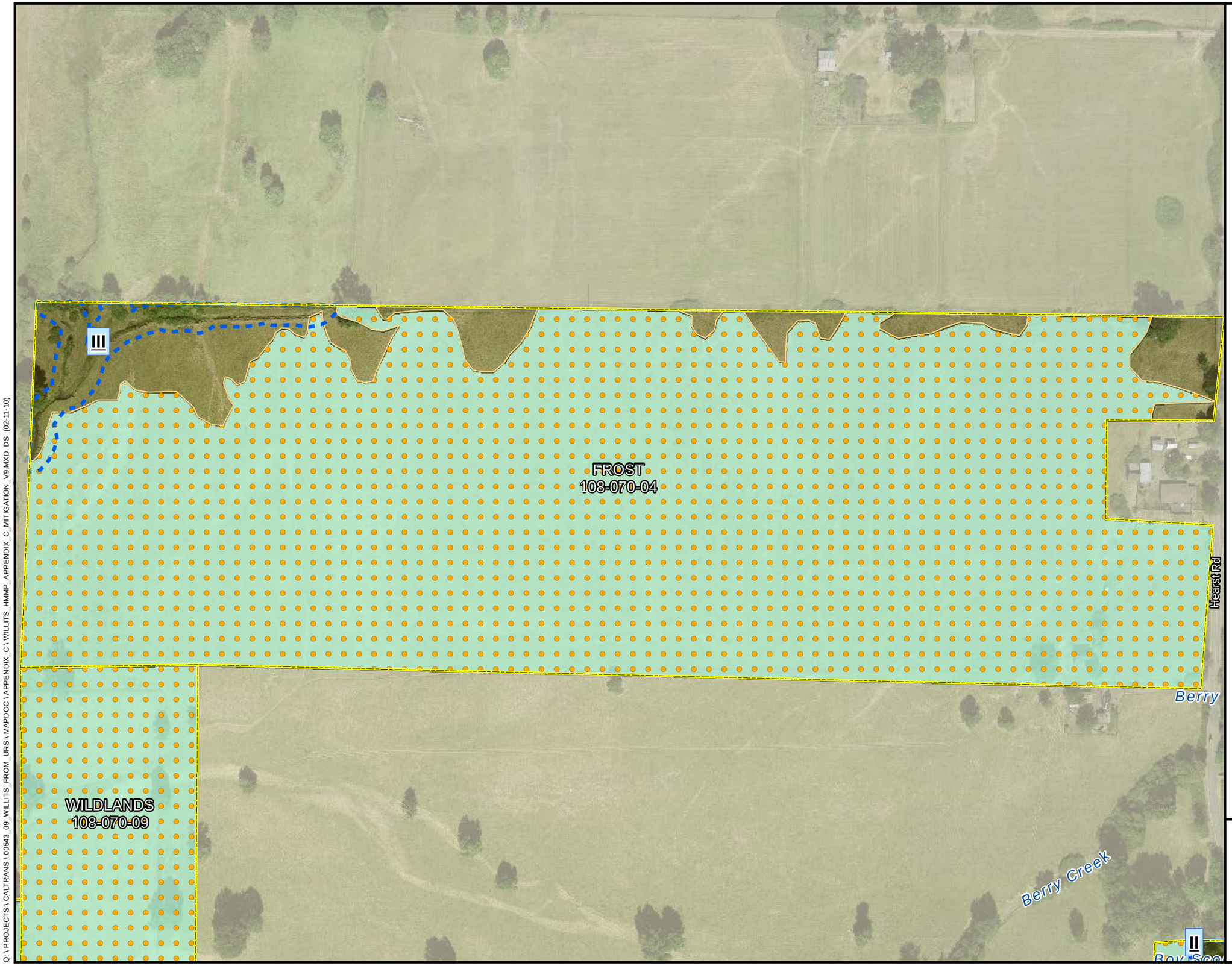
0 200

Scale in Feet

Sheet C-46
Mitigation Actions
Ford
APN 108-030-05

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)



Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

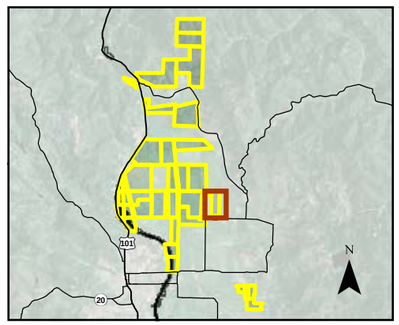
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



0 200

Scale in Feet

Sheet C-50
Mitigation Actions
Frost
APN 108-070-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

Q:\ PROJECTS \ CALTRANS \ 00543_09_WILLITS_FROM_URS \ MAPDOC \ APPENDIX_C \ WILLITS_HMMP_APPENDIX_C_MITIGATION_V9.MXD DS (02-11-10)

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

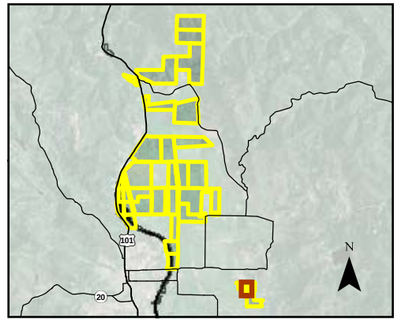
- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way



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Scale in Feet

Sheet C-54
Mitigation Actions
Goss
APN 103-230-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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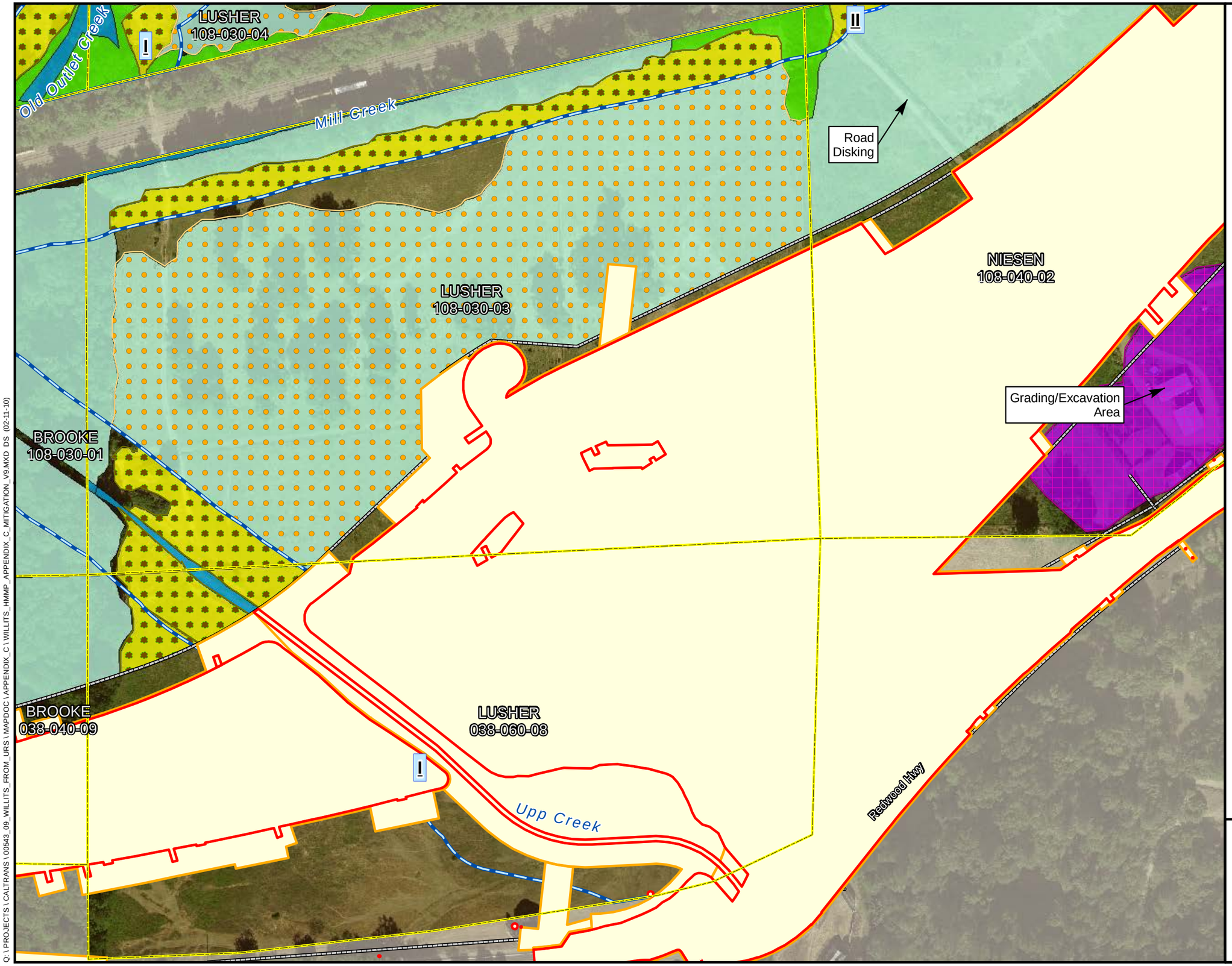


Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
- Plant Oaks
- Plant Riparian
- Implement Grazing Plan
- Monitoring Reference Site

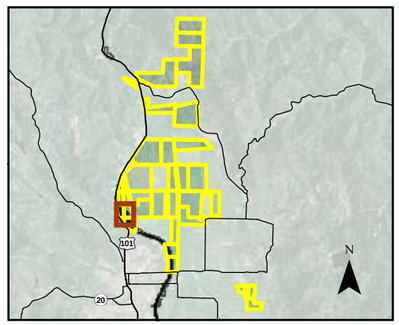
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-61
Mitigation Actions
Lusher
APNs 108-030-03 & 038-060-08

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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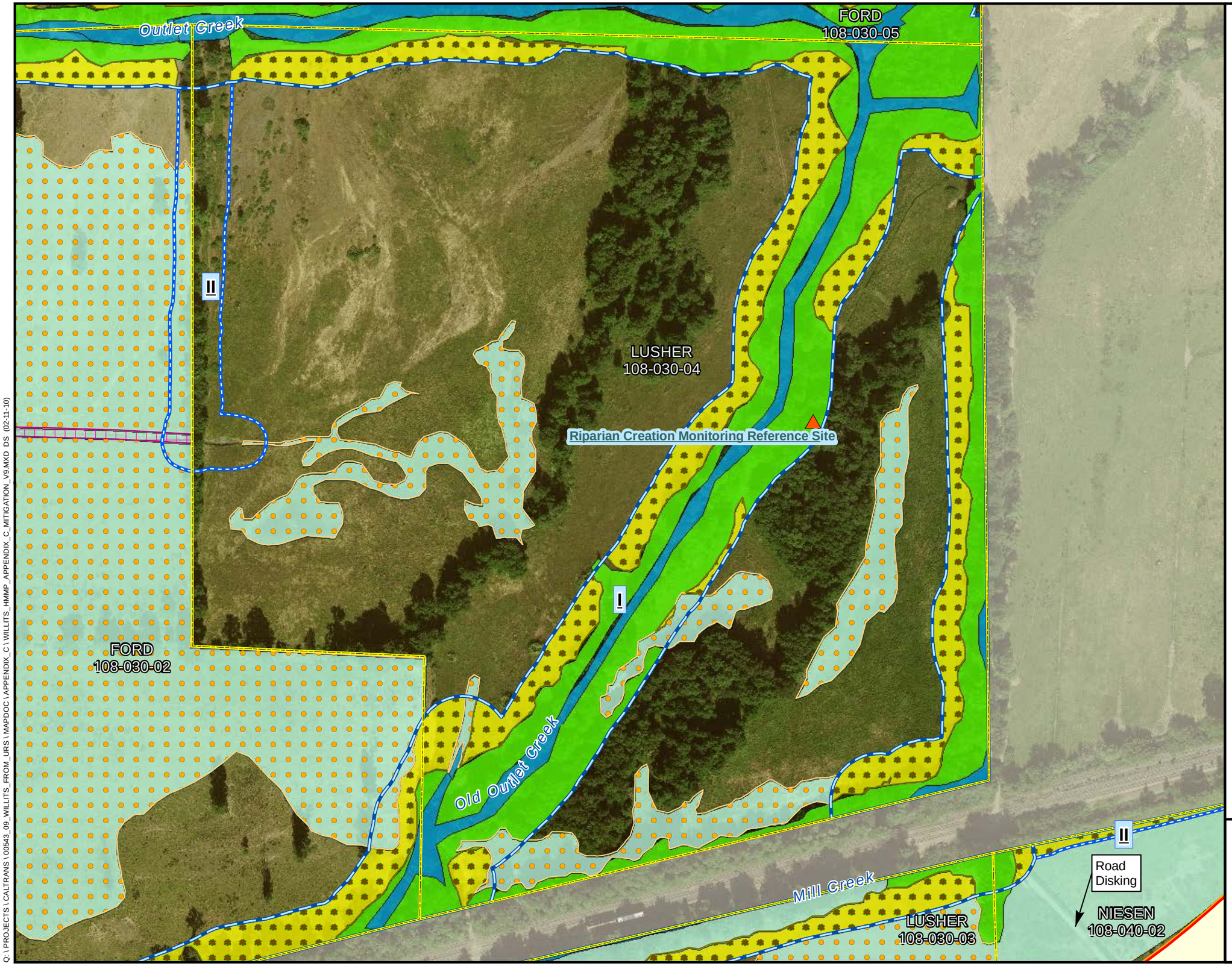

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

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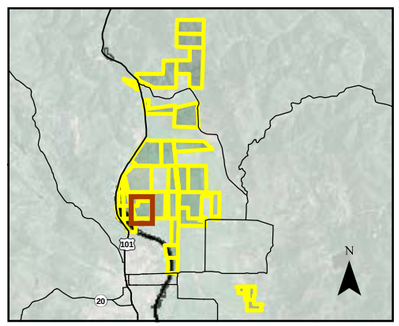
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-64
Mitigation Actions
Lusher
APN 108-030-04

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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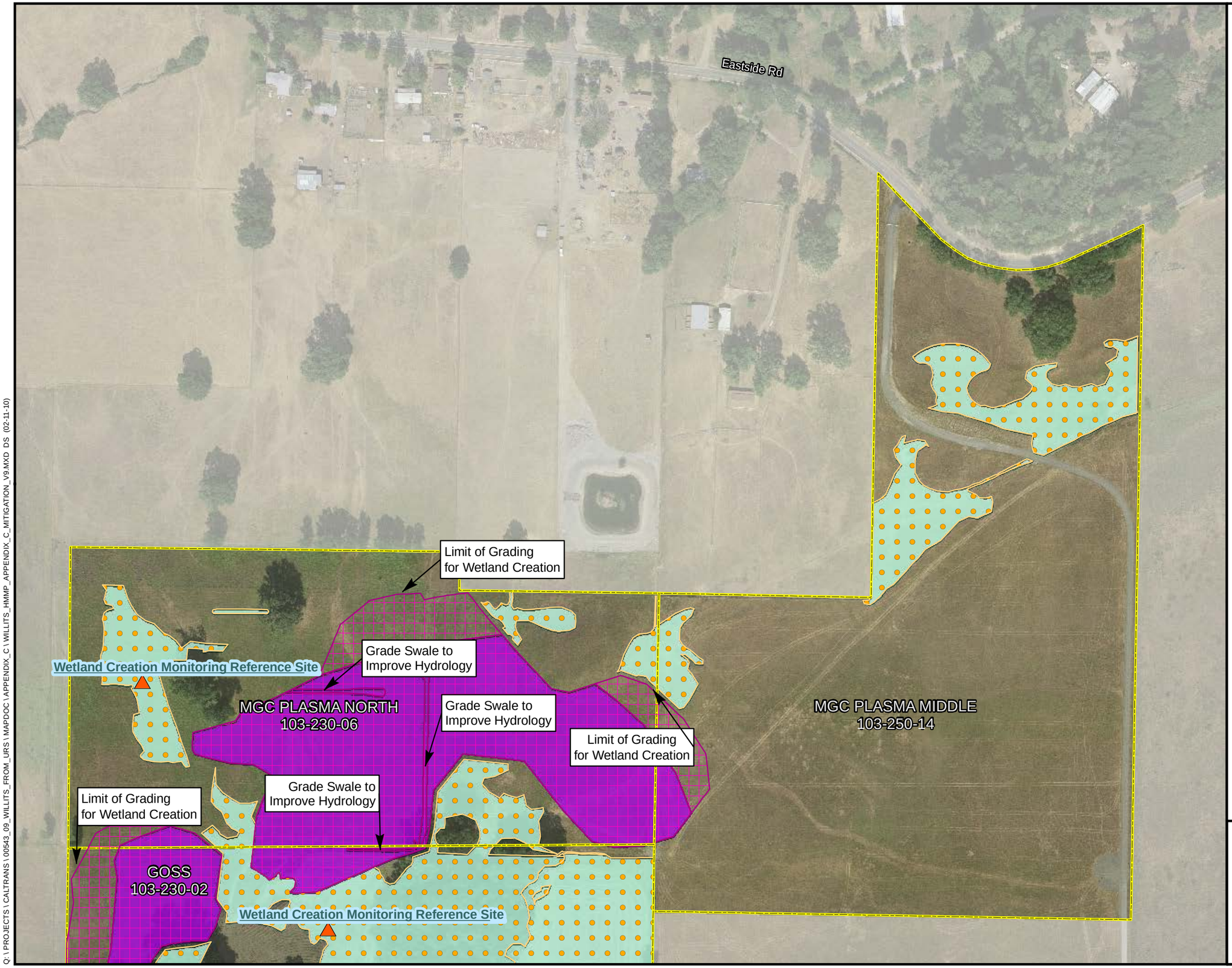

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

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Riparian Corridors

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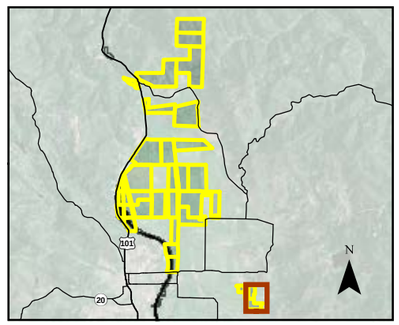
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-68
Mitigation Actions
MGC Plasma-North & Middle
APNs 103-230-06 & 103-250-14

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

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- Monitoring Reference Site

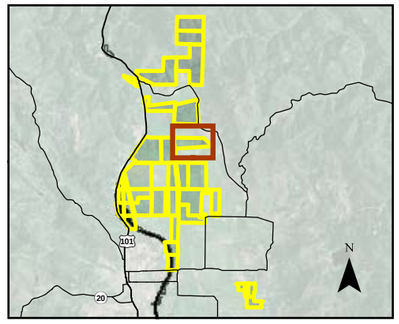
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-72
Mitigation Actions
Nance
APN 108-050-06

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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LUSHER
038-060-08

LUSHER
108-030-03

LUSHER
108-030-04

I

Mill Creek

II

Road
Disking

NIESEN
108-040-02

Grading/Excavation
Area

Redwood Hwy

Wetland Creation Monitoring Reference Site

Limit of Grading
for Wetland Creation

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
- Control Invasive Plants
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Riparian Corridors

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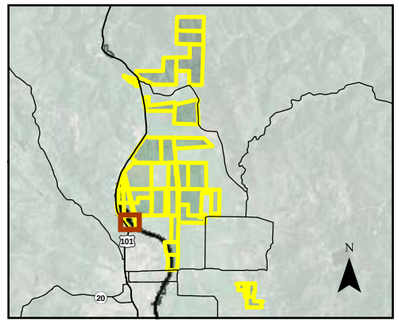
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-76
Mitigation Actions
Niesen
APN 108-040-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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WATSON
037-250-05

Berry Creek

Wetland Creation Monitoring Reference Site

Oak Creation Monitoring Reference Site

WATSON
037-221-30

Permanent Impacts to Other Waters from Mitigation Construction

Limit of Grading for Wetland Creation

Reynolds Hwy

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

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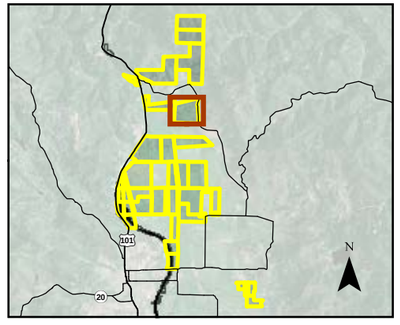
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-86
Mitigation Actions
Watson
APN 037-221-30

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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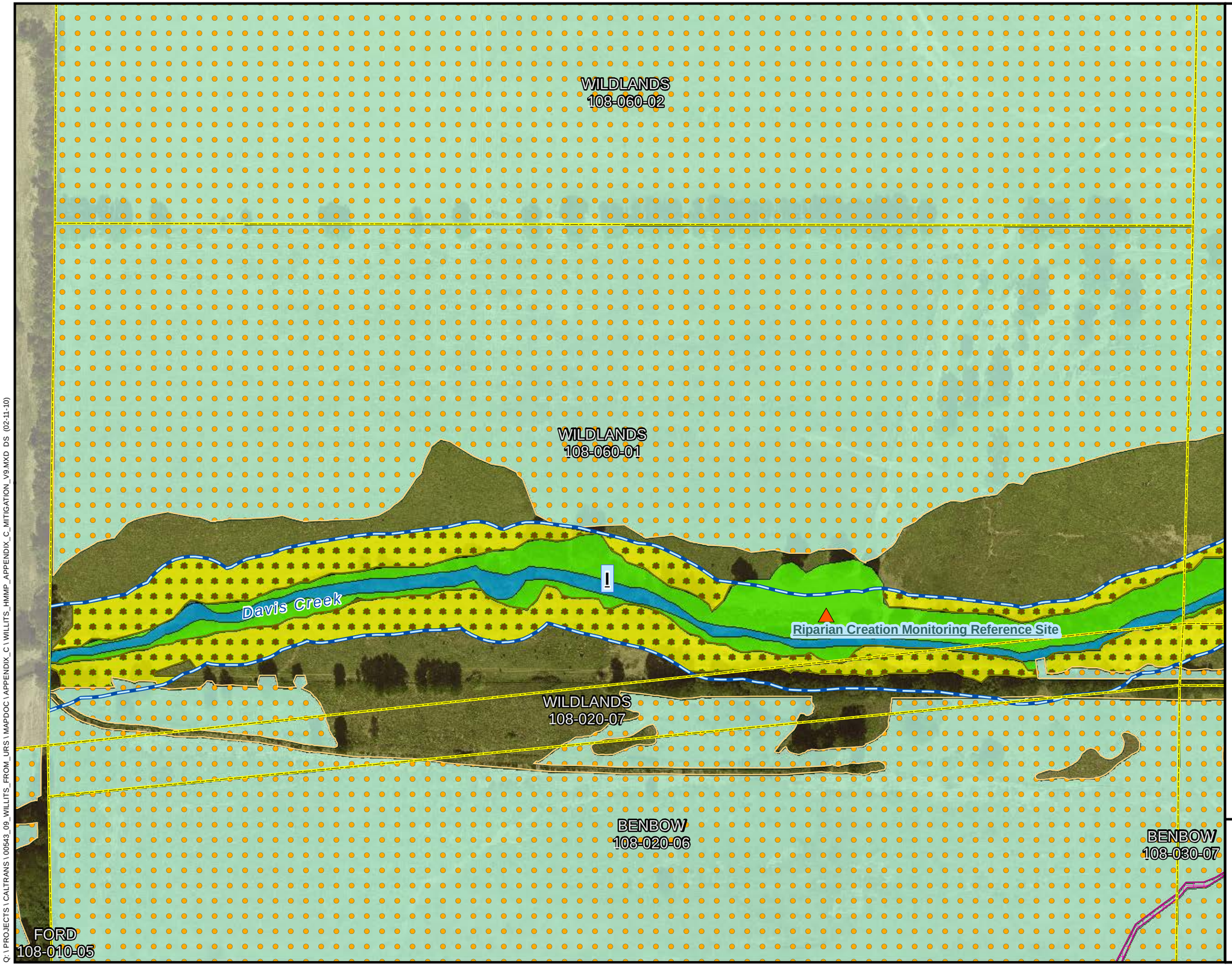

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

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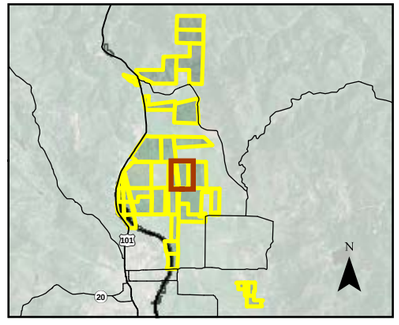
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-90
Mitigation Actions
Wildlands
APNs 108-060-01 & 108-020-07

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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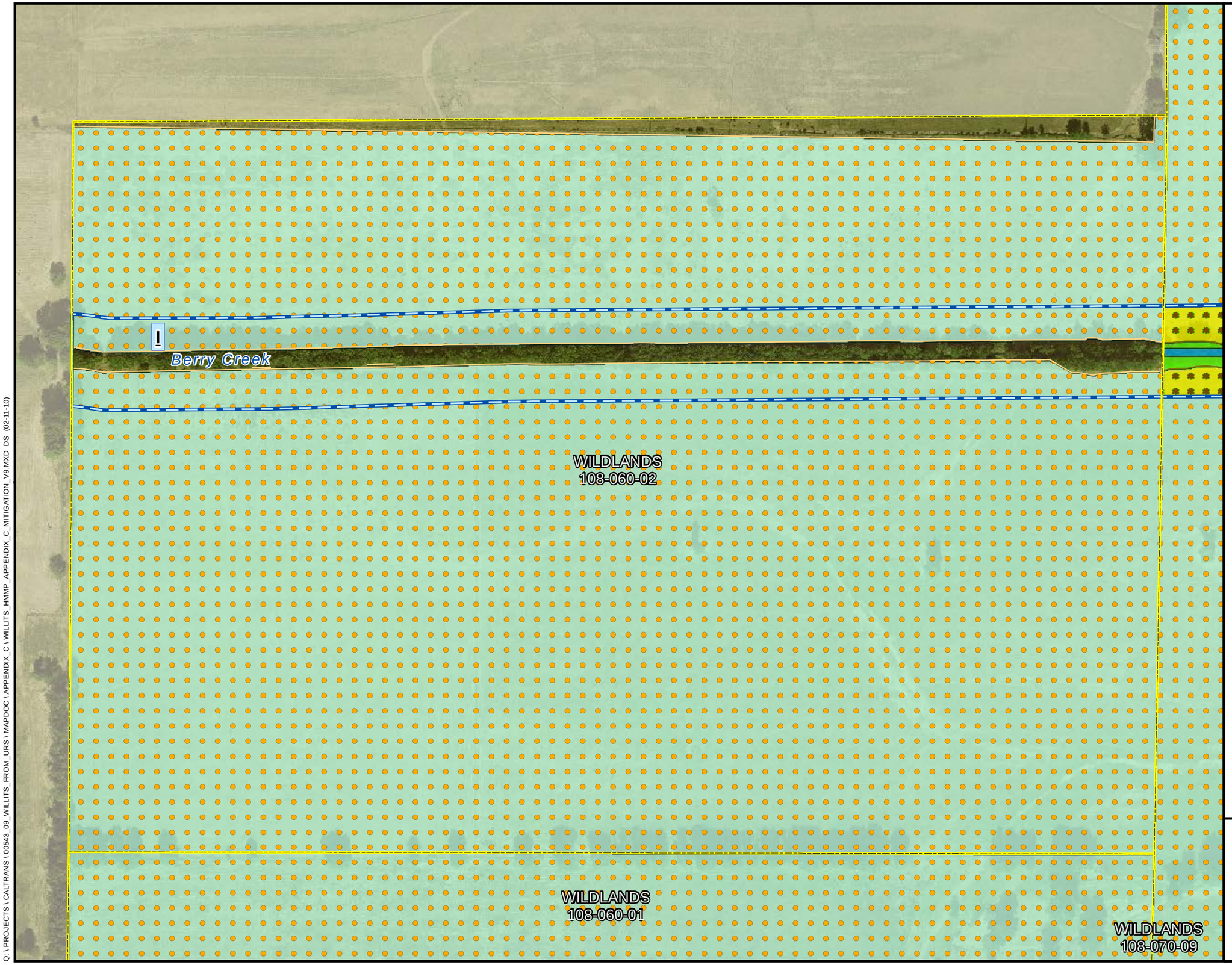

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

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Riparian Corridors

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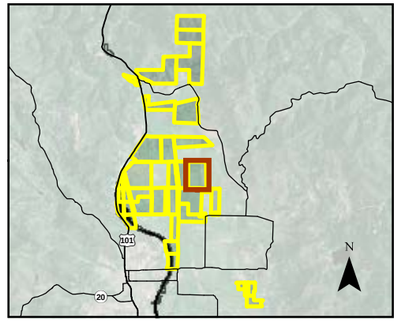
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-94
Mitigation Actions
Wildlands
APN 108-060-02

Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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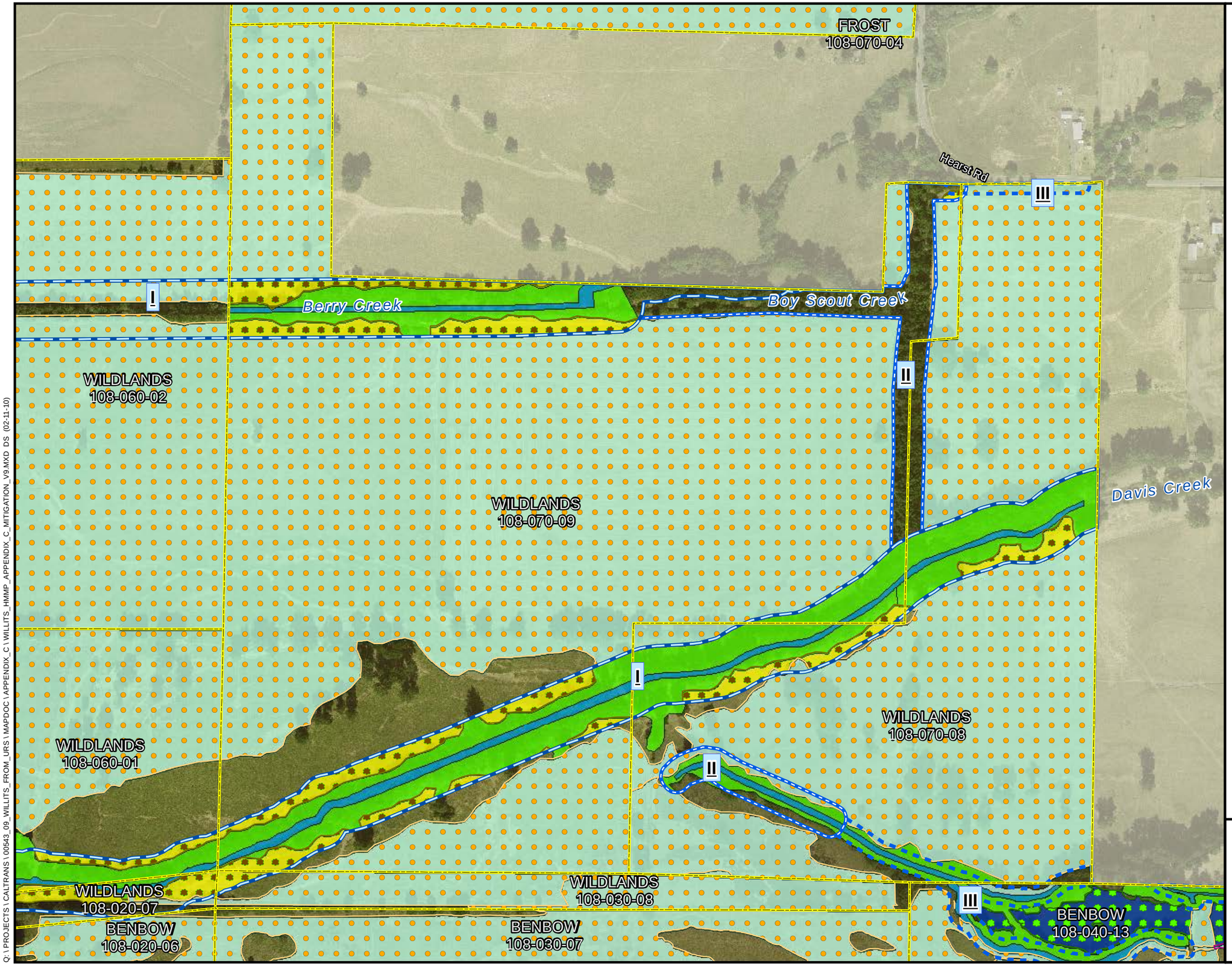

Offsite Mitigation Parcel

Habitat Mitigation Type

- Riparian Creation
- Wetland Creation
- Oak Woodland Creation
- Riparian Enhancement
- Wetland Enhancement
- Other Waters Enhancement

Mitigation Actions

- Improve Hydrology (Grading)
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- Implement Grazing Plan
- Monitoring Reference Site

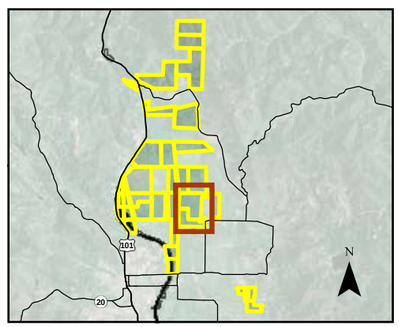
Riparian Corridors

- Category I Riparian Corridor
- Category II Riparian Corridor
- Category III Riparian Corridor

Project Bypass Footprint

- Permanent Impact Area
- Temporary Impact Area
- Right of Way

N



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Scale in Feet

Sheet C-98
Mitigation Actions
Wildlands
APNs 108-030-08, 108-070-08, & 108-070-09
Proposed Willits Bypass
Riparian, Wetland, and Oak
Creation and Enhancement

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Attachment 1: Supplemental Information

Application for
Department of the Army Permit (33 CFR 325)
Clean Water Act Section 404
Attachment 1

Block 13: Name of Water Bodies

Jurisdictional Determinations

The U.S. Army Corps of Engineers (USACE) verified the U.S. Highway 101 Willits Bypass Project's (proposed project) delineation of waters of the United States on March 1, 2005 (File 194741N). This verification was for the Modified Alternative J1T Alignment study area. In January 2007 and April 2008, a request to amend the previously verified delineation was submitted to the USACE to include minor changes to the footprint of the proposed Haehl Creek interchange, the road alignment to the north, and the proposed borrow area at Oil Well Hill. The USACE confirmed the requested changes to the delineation on August 15, 2008 (File 191-19470N). In December 1, 2008, a request to verify a delineation was submitted to include the revision of the project footprint to avoid the expansion of the Willits wastewater treatment Plant (WWTP). The USACE provided a verification for this area on December 2, 2009. In addition to the delineations of waters of the United States associated with the bypass alignment, Caltrans also submitted delineations for various parcels that will be part of the project's mitigation plan. The USACE jurisdictional determinations are located in Attachment 3.

Name and Description of Affected Water Bodies

The project area includes numerous jurisdictional wetlands and other waters of the United States. Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks and their related tributaries and adjacent wetlands are considered waters of the United States given these waterways have connectivity to a traditional navigable water/territorial sea (Pacific Ocean). These waterways will be directly or indirectly affected by the bypass because they cross the bypass alignment as they convey water through the Little Lake Valley. Construction will also affect a number of smaller unnamed tributaries and ditches in the bypass area.

Wet meadows will be the most heavily affected jurisdictional waters, by area, within the bypass footprint**.** From south of East Hill Road to the second intersection with Haehl Creek, wet meadow, which includes some small vernal pool like features, is the dominant vegetation, occupying approximately 50% of the affected area. Wet meadows dominate the project area south of East Valley Road to the area north of Upp Creek, including the area near the Willits Wastewater Treatment Plant (WWTP). The Quail Meadows interchange at the northern end of the bypass will also affect wet meadows.

Marsh is the second-most widely affected wetland feature by area. A marsh area is located east of U.S. Highway 101 (U.S. 101) on the Brooke properties at the northern end of the bypass. A large area of riparian woodland is associated with this marsh area.

Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks are the major other waters of the United States affected by the bypass. All these creeks cross the bypass alignment as they convey water through Little Lake Valley. Construction will affect a number of smaller tributaries and ditches through the bypass area.

Block 15: Location of Project

The project will be located near the city limits of Willits in Mendocino County, California. The bypass will begin approximately 0.8 mile south the Haehl Overhead and end approximately 1.9 miles south of Reynolds Highway. The overall length of the bypass will be approximately 5.8 miles, starting near with post mile (PM)R43.1 and ending near R49.0 (Figure 1-1).

The optional proposed borrow site at Oil Well Hill is located on the east side of Highway 101 approximately 0.85-mile north of the intersection of Reynolds Highway and Highway 101.

Bypass Alignment

The proposed bypass will diverge from existing U.S. 101 at the Haehl Creek interchange and continue northwesterly on an embankment constructed with excess fill from a previous freeway project. The alignment would swing to the northeast and then travel back to the northwest, adjacent to the WWTP. Figures 1-2a to 1-2d illustrate the bypass alignment and locations of key project components. The purpose of the viaduct is to span regulatory floodway. Additional details regarding the viaduct are provided in the "Description of Specific Design Elements: section (Block 18) of this permit application attachment.

Bypass Vertical Alignment

The vertical alignment of the bypass will begin with a gentle downgrade at the south end of the project and proceed northwesterly from the existing freeway section to approximately 0.5 north mile of East Hill Road. From this point to the Quail Meadows interchange, the flat valley floor will allow grades that are nearly flat except at structure approaches and departures. Throughout the valley, the project lies in the 100-year floodplain elevation and the surface of the highway will be a 16.5-foot minimum clearance above the estimated 100-year floodwater surface elevation.

Location of Key Project Components (Approximate)

- **Haehl Creek interchange:** 39°22'28.48" N, 123°19'29.11" W; T18N, R13W, S32
- **Quail Meadows interchange:** 39°25'31.29" N, 123°21'10.33" W; T18N, R13W, S7
- **Viaduct structures:** 39°24'32.07" N, 123°20'21.36" W; T18N, R13W, S18

Block 18: Nature of Activity

The California Department of Transportation (Caltrans), in conjunction with the Federal Highway Administration (FHWA), proposes to construct a new segment of U.S. 101 that will bypass Willits in Mendocino County. The project will reduce delays, improve safety, and achieve a level of service (LOS) of "C" for interregional traffic on U.S. 101.

The FHWA is the federal lead agency under the National Environmental Policy Act (NEPA), with Caltrans acting as liaison and providing oversight for the NEPA process. Caltrans is the state lead agency under the California Environmental Quality Act (CEQA). A joint environmental impact statement/environmental impact report (EIS/EIR) has been prepared for the project.

The draft EIS/EIR was published in May 2002. According to regulations set forth in 23 Code of Federal Regulations (CFR) 771.129, a written evaluation of the draft EIS/EIR is required if the final EIS/EIR has not been submitted to the FHWA within 3 years of the date of the draft EIS/EIR circulation. Because 3 years have elapsed since circulation of the draft EIS/EIR, Caltrans submitted a written evaluation to the FHWA for review in April 2006. The purpose of this written evaluation was to determine whether it was necessary to circulate a new or supplemental EIS/EIR. Based on the information provided to the FHWA, it was determined that no new or supplemental EIS/EIR would be necessary for the project.

Caltrans approved the final EIS/EIR and filed a notice of determination on December 15, 2006. The FHWA approved the final NEPA document and filed a record of decision on December 18, 2006. A hard copy of the final EIS/EIR will be provided under separate cover. It can be also be viewed and downloaded at <http://www.dot.ca.gov/dist1/d1projects/willits/reports.feir.htm>. Copies of the record of decision and notice of determination are included as in the "Description of Specific Design Elements" section (Block of this permit application.

Background and Changes Since the Final EIS/EIR

Modified Alternative J1T (proposed project or bypass) was selected as the preferred alternative and evolved as a result of the NEPA/404 integration process. It was not specifically identified as an alternative in the draft EIS/EIR. Modified Alternative J1T shares similar project design elements of the J1T and LT alternatives discussed in the draft EIS/EIR and was proposed to further reduce community and environmental impacts.

Since publication of the final EIR/EIS in December 2006, Modified Alternative J1T has undergone several design revisions. The primary reasons for the design revisions were: 1) to avoid conflicts with the WWTP expansion project and 2) to accommodate phasing the construction of the bypass, as discussed below. Overall, the design revisions are relatively minor changes to Modified Alternative J1T as presented in the final EIR/EIS. The project remains a four-lane freeway bypass with several bridges spanning creeks and local roads, a viaduct spanning the regulatory floodway, and interchanges on either end of the bypass. The location and design elements of project revisions are described in more detail below.

Avoidance of the Willits Wastewater Treatment Plant Expansion Project

To avoid conflicts with the WWTP expansion project, the alignment was shifted slightly to the northeast around the WWTP using a triple compound curve instead of the single curve that was originally planned. The alignment returns nearly to the original alignment near the Northwestern Pacific Railroad (NWPRR) track crossing. The profile over the railroad has also been lowered, resulting in a significant reduction of the embankment footprint (and therefore a reduction in impacts on wetlands) between the end of the viaduct (Huffman/City of Willits property line) and the railroad crossing.

Phasing of Bypass Construction

Because of funding constraints, the decision was made to construct the bypass in two phases such that a functional interim two-lane facility will be constructed initially; when adequate funding becomes available in the future, the remaining lanes will be constructed to complete the four-lane bypass. The need to phase construction of the project has had design implications, resulting in the need to modify the Quail Meadows interchange. Phasing the construction of the original Quail Meadows interchange proved geometrically complex and wasteful of resources. Therefore, the interchange was shifted approximately 1,200 feet to the north and will be a two-lane interchange in Phase 1. In addition, a roundabout has been added to the west side of the interchange to connect two ramps to the local roads. An additional benefit of the roundabout is that an existing box culvert at Upp Creek can now be removed and, therefore, will allow for the restoration of this area. All crossings of Upp Creek, which were previously planned as box culverts, will now be bridges.

Although the project will be constructed in two phases, the ultimate project remains a four-lane freeway bypass. As funding allows during Phase 1, Caltrans intends to construct as much of the four-lane roadway embankment as possible to help facilitate the construction of Phase 2. The environmental study limits (ESL) and this Section 404 permit application encompass the full four-lane project area. Right-of-way purchased for the project will satisfy the requirements of the full four-lane project and will be access-controlled. Although only the two southbound lanes will be constructed initially in Phase 1, Caltrans will implement mitigation for the impacts of the ultimate four-lane project with implementation of Phase 1. The project description below discusses the ultimate four-lane facility.

Description of Specific Design Elements

Roadway Design

The proposed project is designed to accommodate the predicted interregional average annual daily traffic in 2028 at a LOS C or better. The bypass will be a four-lane freeway with a 45.3-foot median separating the northbound and southbound lanes. Each lane will be 12 feet wide. The inside shoulder width (nearest the median) will be 5 feet, while the outside shoulder width will be 10 feet. The freeway was designed for a maximum speed of 68 miles per hour (mph) and will meet the purpose of providing at least an LOS of C. Where local roads are to be improved or constructed, there will be two 12-foot lanes and shoulder width meeting local design standards.

Interchanges

Two interchanges will be constructed for the project. The Haehl Creek interchange will be located at the south end of the project near Haehl Creek and connect the existing highway into Willits with the new facility. The Quail Meadows interchange will be located near the north end of Little Lake Valley and connect the new facility to the existing highway north of Willits. Interchange ramps will be single-lane.

Bridges and Structures

The bypass will cross creeks, riparian corridors, streets, and railroad rights-of-way using 22 bridges. Three retaining walls will be built. The following structures will be constructed with this project:

- Six bridges in the Haehl Creek interchange area, one for each of the following:
  - Northbound freeway lanes separation over State Route (SR) 20
  - Southbound freeway lanes separation over SR 20
  - Southbound off-ramp over Haehl Creek
  - Northbound on-ramp over Haehl Creek
  - Northbound freeway lanes over Haehl Creek
  - Southbound freeway lanes over Haehl Creek
- Two retaining walls in the Haehl Creek interchange area adjacent to Haehl Creek:
  - East side of northbound lanes
  - West side of northbound on-ramp
- Two bridges to cross East Hill Road:
  - One bridge for the southbound roadway lanes (Phase 1)
  - One bridge for the northbound roadway lanes (Phase 2)
- Two bridges to cross the middle reach of Haehl Creek south of Shell Lane:
  - One bridge for the southbound roadway lanes (Phase 1)
  - One bridge for the northbound roadway lanes (Phase 2)
- One retaining wall on the west side of the southbound roadway lanes just south of Center Valley Road.
- Two viaduct structures to span the floodway:
  - Southbound (Phase 1)
  - Northbound (Phase 2)
- Two bridges to cross over the NWPRR tracks in the Quail Meadows interchange area, one for each of the following:
  - Southbound roadway lanes (Phase 1)
  - Northbound roadway lanes (Phase 2)

- Two bridges to cross the new connector road to existing U.S. 101 in the Quail Meadows interchange area
    - One for the southbound roadway lanes (Phase 1)
    - One for the northbound roadway lanes (Phase 2)
- Six bridges to cross Upp Creek directly north of the Quail Meadows interchange, one for each of the following:
    - Southbound roadway lanes (Phase 1)
    - Northbound roadway lanes (Phase 2)
    - Northbound on-ramp (Phase 1)
    - Northbound on-ramp (Phase 2)
    - Southbound off-ramp
    - Roundabout local intersection

    Note that the northbound on ramp bridge constructed in Phase 1 would be replaced in Phase 2 by a different bridge.

Viaduct

The proposed alignment encroaches upon the 100-year floodplain. The design includes two elevated structures, which make up the floodway viaduct. The purpose of this design feature is to span the floodway. The final floodplain evaluation report concludes that project will not increase the base flood elevation of the floodway, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q).

The viaduct s will be located in the central part of the project area and will span Center Valley Road, the lower reach of Haehl Creek just upstream of the confluence with Baechtel Creek, Hearst-Willits Road, Baechtel and Broaddus Creeks at their confluence (beginning of the Outlet Creek designation), the WWTP, and Mill Creek.

The approximately 6,000-foot-long structures will consist of a separate northbound and southbound elevated viaduct superstructure. The total area of both viaducts would be 11.6 acres. Each of the viaducts will be approximately 42.6 feet wide. The edge-to-edge distance between the structures will be approximately 31.2 feet, and each will have a 16.5-foot minimum clearance underneath. The viaducts will require supporting columns, ranging in size from 4.5 to 7 feet in diameter.

Reinforced Concrete Box Culverts

Three large reinforced concrete box (RCB) culverts will be built as part of the proposed project. The first RCB culvert will cross Haehl Creek near the Haehl Creek interchange to provide access to a ranch isolated by the new bypass; the second and third will cross under Center Valley Road, near Shuster's Trucking, and will mitigate floodplain impacts due to roadway embankment south of Center Valley Road.

The Haehl Creek culvert for the ranch access will be a natural bottom arch culvert or a partially buried box culvert. The two culverts crossing Center Valley Road will be concrete boxes and will use turf reinforcement mats in lieu of rock slope protection (RSP) at the inlets and outlets where feasible.

Retaining Walls

Three concrete retaining walls will be constructed: two at the Haehl Creek interchange, and one just before the south end of the viaduct near Baechtel Creek. One of the Haehl Creek interchange walls will be located along the west side of the northbound on-ramp. The other will be located along the east side of the northbound lanes between the separation structure over SR 20 and the Haehl Creek bridge. The third retaining wall, near Baechtel Creek, will prevent potential undermining of the roadway embankment to be undermined by Baechtel Creek.

Excavation (Cut), Embankment (Fill), and Imported Borrow

The estimated embankment requirement for Phase 1 of the proposed project is approximately 1.4 million cubic yards. Because all soil excavated on-site will be reused as embankment, no disposal sites will be required for the project. Beginning just north of the Haehl Creek interchange to the south abutment of the viaduct, and from the north abutment of the viaduct to the terminus of the project, the alignment will be constructed largely on embankment (created using excavated soil and imported fill material). Cut slopes will generally vary between a 1:2 (vertical: horizontal) and 1:2.5 ratio. Fill slopes will vary between a 1:2 and 1:4 ratio. The plans will call for slope rounding at appropriate locations.

The bypass will require imported borrow material from outside the project area in addition to material excavated on-site. The construction contractor will have the option to determine whether the source of material for earthwork fill will be a Caltrans-designated borrow site (at Oil Well Hill), a commercial borrow site, or another site.

Caltrans has designated the borrow site at Oil Well Hill, just north of Little Lake Valley, as an optional source of material that the contractor may use for the project. The material in this area is good-quality and suitable for use in embankment construction. The right-of-way for U.S. 101 at the designated borrow site is sufficient to provide the necessary embankment material for earthwork. Potential excavation at the proposed designated borrow site at Oil Well Hill could result in the removal of up to 1.3 million cubic yards of material. The State Geology and Mining Board granted an exception to the Surface Mining and Reclamation Act (SMARA) permitting requirement on March 13, 2008.

The contractor may also choose to use available commercial borrow sites in the vicinity to obtain the required fill. Typically, commercial borrow sites hold pre-approved operating permits and do not require any additional environmental permitting when soil is exported. Should the contractor select an alternative, non-commercial borrow site for this project, the contractor will be responsible for conducting a separate environmental review for the site.

Fish Passage

One existing culvert in the upper Haehl Creek channel, located under the proposed highway bridge 10-0129R/L, will be permanently removed and restored as a natural drainage feature. A second existing culvert in upper Haehl Creek will be replaced and the area restored during improvement of the proposed new Schmidbauer Ranch access road. An existing RCB culvert in the vicinity of the proposed Quail Meadows interchange and passing under US 101 will be permanently removed and the creek contoured, re-graded, stabilized, and replanted; local traffic will cross Upp Creek on the new bridge that will be on the north leg of the roundabout.

Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) will consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements will comply with guidelines established by National Marine Fisheries Service (NMFS) and California Department of Fish and Game (CDFG).

An existing access road to the Schmidbauer Ranch will be improved. This access will be from the east side of the southern interchange. The existing culvert in upper Haehl Creek will be replaced with a natural bottom arch or box culvert. The culvert replacement will occur during summer, when this reach of Haehl Creek is normally dry. However, flows through the existing culvert have created an outfall pool that can retain water throughout the year. If water is present, a qualified fisheries biologist will survey the pool for the presence of salmonids. If present, the fish will be removed and relocated before removal and replacement of the culvert.

Landscaping

Disturbed upland areas such as the cut and fill slopes adjacent to the roadway and along interchange ramps, as well as the median between the inside roadway shoulders, will be revegetated with plants native to Little Lake Valley. For drivers' safety and in compliance with Caltrans design standards, no trees will be planted within the clear recovery zone where errant vehicles could hit them. Only soft shrubby and herbaceous native species may be planted in these areas to prevent abrupt slowing, redirection, or launching of stray vehicles.

Temporarily impacted areas will be revegetated to their pre-construction plant community type. They will be seeded and planted with plants native to Little Lake Valley.

Lighting

Highway lighting will be provided at both the Haehl Creek and Quail Meadows interchanges. No lighting will be provided along the viaduct.

Fencing

Fencing will be erected along the Caltrans right-of-way where appropriate.

Stream Bank Stabilization

To prevent bank erosion and damage to the bypass facilities, RSP will be required along short lengths of creek banks. The use of RSP will be minimized through the substitution of "Rolled Erosion Control Product" (RECP; netting) or "Turf reinforcement Mat" (TRM) in appropriate locations.

At locations where Haehl and Upp Creeks pass through the right-of-way, the stream channel will be contoured, re-graded, and designed for fish passage following the guidelines set forth by NMFS and CDFG.

Mitigation Construction

Bypass construction will result in temporary and permanent impacts on riparian and wetland habitat and permanent impacts on other waters and oak habitat. Temporary impacts on riparian and wetland habitat will be mitigated on site through the use of restoration techniques. Permanent impacts on riparian and wetland habitat will be mitigated off site through the use of creation, enhancement, and/or preservation techniques.

On site mitigation implementation will focus primarily on restoring temporarily affected riparian and wetland habitat within the bypass project footprint. In addition, on site minimization efforts related to state-listed plant species (e.g., seed collection, and topsoil harvesting and stockpiling) will be required. On site mitigation actions with the potential to result in impacts on wetlands, other waters, riparian habitat, listed plant species and/or listed fish will entail the following activities, and are summarized below (a full description of proposed mitigation actions is presented in the MMP):

- **Site Preparation**. Site preparation of on site mitigation sites will entail vegetation clearing and seed, rhizome, and topsoil salvaging. Vegetation clearing will be conducted within the bypass project footprint and will entail the use of heavy equipment to strip the existing vegetation. Prior to the beginning of ground-disturbing project construction activities, known populations of listed plant species to be affected by construction either will be salvaged for transportation to adjacent on site locations or salvaged for relocation to offsite mitigation parcels, where the harvested material will be used to topdress created wetlands.

- **Grading**. Temporarily affected locations will be graded as necessary to reestablish appropriate topography and site drainage. The disturbed locations will be configured to replicated preproject conditions as closely as possible. Grading will be limited to the dry season (late spring through early fall). Erosion control seed mixes will be applied after grading is complete but prior to the onset of wet season rains to prevent loosened material/sediment from entering wetlands or waters near the bypass project footprint.

- **Seeding**. Temporarily affected riparian and wetland locations will be seeded with an erosion control mix or a wetland seed mix, depending on location in the bypass project footprint. The seed will be from locally collected seed or plants (i.e., within Little Lake Valley). All temporarily affected riparian locations and wetland locations outside the viaduct construction area will be seeded with an erosion control mix. Temporarily affected wetlands in the viaduct construction area will be seeded with a wet meadow seed mix.

- **Planting**. Temporarily affected riparian and wetland locations in the viaduct construction area will be restored using container stock grown from locally collected seed or cuttings (i.e., in Little Lake Valley). Container plants will be placed in a planting hole that will be hand excavated or augured.

Mitigation on individual offsite mitigation parcels may include a combination of habitat restoration, creation, enhancement, and/or preservation. Off site mitigation actions with the potential to result in impacts on wetlands, other waters, riparian habitat, listed plant species and/or listed fish will entail similar ground-disturbing activities (e.g., site preparation, grading, seeding, and planting) as those described above for on site mitigation areas. In addition, grazing management plans will be developed for each of the off site mitigation parcels. The plans will include strategies to promote the establishment and preservation of target wetland communities and associated plant species and to support and potentially increase the extent of currently occurring listed plant species. Enhancement actions for each parcel may include repairing and replacing existing fences and gates to control livestock; developing and implementing rotational grazing strategies to promote the establishment and preservation of target liste plant species and wetland communities; installing permanent and/or temporary exclusion fencing around sensitive areas; installing water troughs in each grazing management unit to spread grazing across the entire unit; and locating salt licks away from drainages and areas to be protected.

Utility Relocation

The relocation of overhead and underground utilities will be required to construct the Willits Bypass. Utility relocation activities are proposed at the following locations:

1. An access easement on the Schmidbauer property (104-090-03, 104-100-03, and 104-120-02) will be primarily used to access future aerial electrical utilities for both installation and maintenance purposes. The route occurs along an existing unpaved driveway and then links up to a permanent overhead easement that will be located adjacent to the new freeway R/W. Activities will include truck traffic and the installation of 18–inch diameter holes approximately every 400 feet. Following installation of poles, occasional truck traffic will occur for maintenance purposes. Temporary access will also occur along a paved road and will be necessary for topping and removing poles.
2. An access easement on the Margie Lee Handley property (103-150-10 and 007-160-18) will be used primarily to access existing aerial utilities and adjust height profile (PG&E) or to relocate underground utilities for AT&T. Activities include truck traffic and trenching and backfill operations related to relocating the AT&T utilities. Trenching depths typically are limited to 4 feet.
3. An access easement located on the Mickey (007-100-08), Rutledge (007-100-09) and Harwood (007-050-04) parcels will be used to access existing aerials for the purpose of relocating them to higher elevations along the current alignment. Activities include truck traffic, pole removal and pole installation.

4. A temporary access on the Gilstrap property (007-040-10, 007-040-09 and 007-040-08) is needed to remove service poles and relocate poles within a permanent easement to the south of Center Valley Road. Activities include truck traffic and holes drilled approximately every 250 feet. On the north side of Center Valley Road, a combination of permanent overhead and underground easements are required. Activities will include track traffic and trenching operations.
5. Permanent easements both north and south of Hearst–Willits Road are needed for relocating aerial utilities underground along existing alignments. Activities will include track traffic mainly along the paved road and trenching operations.
6. In and around the vicinity of the northern roundabout (Quail Meadows interchange) temporary easements are needed to top and remove poles. Activities include short duration truck traffic.
7. Along the north end of the project mainline, temporary easements for pole removal are needed. Activities will include removing and installing poles and short duration truck traffic. Permanent aerial easements are required for installation access and occasional maintenance. Activities include truck traffic and the installation of 18–inch diameter holes approximately every 300 feet. Permanent underground easement activities include truck traffic and trenching operations.

Description of Specific Construction Elements

Roadway Construction

Staging Areas

The first phase of construction is the establishment of staging areas. Three staging areas are proposed, located in the south-central, central, and northern portions of the project corridor. The south-central staging area is located on state-owned property (Assessor's Parcel Number [APN] 007-100-08). The central staging area is state-owned property (APN 007-040-09) located south of East Valley Street, east of the south abutment of the floodway viaduct, and west of Haehl Creek. The northern staging area is located on state-owned property (APN 108-040-02) east of existing U.S. 101, west of the Quail Meadows interchange, and south of the roundabout. In addition to the staging areas described, the contractor will have use of right-of-way not being actively used for highway purposes., except for those environmentally sensitive areas to be protected by temporary orange fencing, designated as TFESA on the construction plans enclosed with this permit application.

The staging areas will be used by the contractor to store equipment and materials and will provide the contractor easy access to the project corridor. Access roads from the staging areas to the project corridor will be constructed where necessary. It is anticipated that work will begin at several areas at the same time. Where staging areas are located adjacent to salmon-bearing creeks, a sufficient buffer will be maintained along with appropriate best management practices (BMPs) to ensure that no untreated storm runoff from these areas enters natural drainages. No riparian vegetation will be removed within the staging areas.

Access Roads

The construction of the bypass would require new access roads through some private properties near the project area. These private access roads would need to accommodate hay trucks, fire trucks, and other equipment. Roadway width for private access roads will be approximately 24 feet to allow for a two-lane roadway with no shoulders. It may be possible to reduce this width to about 20 feet; however, the design will need to conform to the Caltrans right-of-way requirement to "replace in kind or better" and be constructed to meet the California Department of Forestry's Fire Safe road standards as required by Mendocino County. Haul trucks delivering imported borrow from the Oil Well Site will utilize a haul road to reach the south end of the project area. The temporary haul road will begin near the Quail Meadows interchange and will be constructed adjacent to the floodway viaduct. The haul road will be removed after construction of the viaduct is complete and the footprint of the haul road has been restored to pre-construction condition.

Imported Borrow

Before the construction of the embankments, all environmentally sensitive areas will be fenced to prevent encroachment from the contractor's operations.

The proposed project will be constructed largely on fill material imported to the site. The bypass requires approximately 2.5 million cubic yards of fill (1.4 million cubic yards in Phase 1). The construction contractor will determine the source of material for earthwork.

Caltrans has designated a borrow site in the project area as a possible source of material that the contractor may use for the project. The site is located at Oil Well Hill, just north of Little Lake Valley and the U.S. 101 bridge over Outlet Creek. Material from the Oil Well Hill site could be transported to the project corridor by trucks, via U.S 101. Once the haul trucks reach the project site near the Quail Meadows interchange, they may travel on a haul road constructed within the ultimate roadway footprint.

Caltrans has prepared a site-specific reclamation plan that requires the borrow site be excavated by cutting the hillside back beginning at the toe and excavating back toward the top of the hill, creating a "cut slope." Prior to hillside excavation, all topsoil and duff will be harvested and stockpiled for reapplication on excavated areas. Once use of the borrow site is finished, cut slopes will be contour graded and stockpiled topsoil and duff will be reapplied. Soil will be amended with organic slow release fertilizer and compost as necessary. Cut slopes will be planted with native plants, propagated from local source material, to stabilize slopes and prevent erosion, and to protect water quality.

Wick Drains

Before any bridge or viaduct abutments can be constructed, the embankment for the abutments must settle. The estimated settling period ranges from 30 days to as long as 10 years. To accelerate the settling period, wick drains will be used.

Wick drains are vertical drains that provide an escape path for groundwater. The groundwater usually drains to a subsurface permeable layer, but some groundwater may reach the surface. Each drain is driven into the ground, and the surface ends of all the drains are connected with a strip drain that drains into a small catch basin. Any groundwater effluent collected in the catch basins will be pumped into holding tanks for disposal or used on the project for dust control.

Beginning with the north abutment of the floodway viaduct and continuing through the north abutments of the Upp Creek bridges, wick drains will be installed before the placement of embankment. Wick drains will be used for both the roadway embankment and the abutments.

Drainage

Highway drainage will be collected from the new impervious surfaces through the use of curbs and dikes, over-side drains, drop inlets, and culverts. This runoff is routed to detention basins, then treated and discharged.

Natural flows passing through the right-of-way that existed before the project will continue to flow through the right-of-way. Temporary cross culverts will be placed where they pass though embankments requiring settling periods. After the fill prism has finished settling, the permanent culvert will be jacked and bored through the embankment.

Pavement Construction

Pavement construction for the project consists primarily of placing and compacting layers of pavement materials consisting of aggregate base (AB), hot mix asphalt (HMA), and hot mix asphalt (open graded). The pavement will be placed sometime toward the end of construction, after all embankments have settled and structures have been completed. Aggregate for both the AB and HMA layers will most likely be obtained from a commercial rock quarry located near Ridgewood Grade south of Willits. The contractor may choose to construct a temporary HMA batch plant on-site to minimize haul time. The batch plant may be located on a property located south of East Valley Street, west of Haehl Creek.

Structures Construction

General Discussion

The permanent bridges will consist of separate southbound and northbound structures. Bridge sites will be cleared of vegetation before construction for a distance of approximately 75 feet upstream and 75 feet downstream of the structures. Removal of vegetation below the top of banks is required to provide access for large equipment, but will be minimized to the extent possible to maintain bank slope stability and to provide some shade for salmonids.

Bridge construction will begin with the approach fills, where necessary, followed by construction of the abutments. The abutment work will include excavation for the footings, pile driving or drilling for the foundations, formwork for concrete placement, steel reinforcement bar placement, concrete pouring, finishing, and curing. Each of the permanent bridge abutments may require 20 or more H piles, which will be placed by pile drivers, at or near the top of bank. After the concrete for the abutments has cured, the forms will be removed and construction of the superstructure falsework will begin. The temporary falsework will be constructed during the low-flow work window[1]. Falsework supports may consist of hollow steel pipe piles, H piles, or timber pads. Installation of these supports may require pile driving. The permanent bridge superstructure forms will then be erected and the concrete poured, finished, and cured. After the concrete has set and strengthened, the falsework will be removed, and other work, including bridge rail and approach work, will be completed.

The use of temporary culverts for construction of the viaduct and bridges crossing salmonid-bearing streams is not anticipated. If dewatering is required at any of these stream crossings, cofferdams may be constructed in the channel.

Erosion protection will be required on disturbed slopes where new stream crossings are constructed. RSP will be required where scour potential is higher: on the banks of upper Haehl Creek; at the southbound off-ramp; and for the northbound on-ramp (on both banks). RSP will also be required on the south bank at the highway crossing over the middle reach of Haehl Creek, south of Shell Lane.

Floodway Viaduct

The floodway viaduct has 32 two-column supports (bents[2]), which require the installation of two footings each. Each footing measures approximately 16 feet by 16 feet and requires eight or nine 2-foot-diameter steel pipe piles. The floodway viaduct bents will require 240-inch hollow steel pipe piles, typically with nine piles per footing or column. The installation of the columns and deck construction will require a 100-foot-wide work area on the east side of the viaduct, and a 55-foot-wide work area on the west side of the viaduct. Access will also be required underneath the viaduct structure. The larger work area on the east side of the viaduct is required for access by large cranes and other equipment. Constraining the work area to 55 feet on the west side of the viaduct will serve to minimize loss of riparian habitat along Baechtel Creek. The temporary work areas will be used for vehicle access and for storage of equipment and materials, as well as foundation, column, and falsework erection and removal. Permanent fill in the floodplain will be limited to the total surface area encompassed by the column footings (i.e., approximately 1% of the area under the viaduct). Each viaduct structure will be constructed in sections of several spans each; as soon as one section is complete, work will start on the next section.

Construction of the viaduct over lower Haehl Creek will require removal of vegetation for a distance of 100 feet upstream and 55 feet downstream of the viaduct overcrossings.

[1] The low-flow work window is typically the period from April 15th through October 30th; however, Caltrans is requesting that work be allowed outside of this period given favorable weather conditions.

[2] A bent is a substructure unit supporting each end of a bridge span (also called a pier) made up of two or more columns or column-like members connected at their topmost ends by a cap, strut, or other member holding them in their correct position.

The viaduct crossing over Baechtel and Broaddus Creeks will require the removal of vegetation for a distance of 100 feet downstream and 55 feet upstream of the viaduct structures. The top of the footing will be 8 feet below the bottom of the creek. This may require RSP that will be located on both banks under the structures and for a maximum distance of 25 feet upstream and 25 feet downstream of the structures. Placement of the RSP will require a toe trench below the ordinary high water mark (OHWM).

The viaduct crossing over Mill Creek will require vegetation removal only, for a distance of 100 feet downstream and 50 feet upstream of the structure. Piles could be located within 10 to 50 feet of top of bank, and RSP will not be required.

Depending on the time of year each footing is constructed, groundwater may be encountered during the excavation of the footings, requiring dewatering.

Dewatering

A single bent (two columns) will be constructed at the confluence of Baechtel and Broaddus Creeks ("Bent 24"). Dewatering will be necessary for installation. This will include the installation of a cofferdam for concrete footing construction, as described in the 2005 BA (Attachment E).

Installation of permanent and temporary piles during project construction may require stream dewatering. At each of the nine stream crossings, the maximum distance that streams will need to be dewatered at each site where piles are driven into creek channels will be 230 feet (70 meters).

The project will require that temporary H piles be driven into creek beds to support trestles associated with haul roads and falsework construction. Temporary piles may be driven in the creek bed at the middle and lower Haehl Creek, Baechtel Creek, Broaddus Creek, and Mill Creek crossings. Vibratory driving and proofing of temporary piles also may occur within the creek bed at Upp Creek; however, the Upp Creek channel is expected to be dry when pile-driving activities are initiated. Driving of temporary piles in creek beds may require that streams be dewatered 62 feet (19 meters) upstream and downstream of piles, based on results of sound level analyses undertaken for salmonid impact assessment. Because the actual distance that may need to be dewatered will vary with summer flow conditions at the time that pile driving is occurring, and the stream length requiring dewatering associated with driving of permanent piles will be reduced, it is not possible to accurately predict the total additional length of stream that may need to be dewatered during project construction. For stream segments requiring dewatering, cofferdams will be installed and water diverted through appropriately sized pipes. The cofferdams may be constructed with impermeable liners placed over clean, (i.e., washed) commercially available river gravel (i.e., rounded, not angular), ranging in size from approximately 1 to 3 inches (2.5 to 7.5 centimeters), or with sandbags, water filled rubber bladders, or other similar devices. Upon completion of construction at each crossing, material used for the cofferdams and water diversion will be removed from the channel and any imported washed river gravel will be spread over the channel..

The floodway viaduct has 32 two-column supports (bents) that require the installation of two footings each. Each footing is approximately 16 feet by 16 feet (4.88 meters by 4.88 meters) and encapsulates either eight or nine 2-foot-diameter steel pipe piles. Groundwater may be encountered and de-watering may be required during the excavation of footings for the viaduct structures depending on the time of year each footing is constructed.

Disposal methods may include pumping into holding tanks for site reuse and as a water source for use in construction activities in embankment construction or dust control, discharge into ground (upland) infiltration, discharge into receiving waters, or off-site disposal, as determined by the Contractor. Water that has come into contact with concrete must be pumped out of the cofferdam or other impoundment areas and disposed of outside the channel and away from the stream zone or any wetland area and in conformance with the North Coast RWQCB regulations.

Retaining Walls

To construct the retaining walls, some riparian vegetation will be removed and later replaced. A portion of these walls will require RSP. The RSP will be re-vegetated using a native seed mix for the establishment of riparian habitat and is included in the fish passage design. The wall foundation will require the installation of H piles by pile driving.

Concrete Batch Plant

The contractor may choose to minimize haul time by constructing a temporary Portland cement concrete plant near the project site. One possible site for a batch plant is state-owned property located south of East Valley Street, east of the south abutment of the floodway viaduct and west of Haehl Creek (APN 007-040-09). If a different location is selected, the contractor will be responsible for the environmental compliance associated with the establishment a batch plant.

Temporary Stream Crossings

Ten temporary bridges may be required to access portions of the project site at the initial stages of construction. The type and location of the temporary bridges would be determined by the contractor. Each temporary bridge would likely consist of a Bailey Bridge, railroad flatcar, or similar type of structure. Information on Bailey Bridges can be found at <http://www.baileybridge.com>[3]. Many of the crossings are too wide for a single structure and will require temporary trestle piles to support the spans . Once these temporary bridges are installed, the temporary piles and bridges will remain in place throughout the entire Phase 1 4-year construction period. There are projected to be 40 temporary H piles for trestle bents. The trestle crossings that will require installation of piles within the creek channels include:

- lower Haehl Creek (one bent consisting of five piles total),
- middle Haehl Creek (four bents consisting of 20 piles total),
- Baechtel Creek (two bents consisting of 10 piles total), and
- Mill Creek (one bent consisting of five piles total).

[3] Bailey bridges are built on site from a pre-engineered system of ready-to-assemble components. Utilizing standardized prefabricated components, Bailey bridges can be built to match a wide range of vehicular bridging applications.

Temporary bridges will be located where minimal removal of vegetation is be neccessary. Where riparian vegetation is present, placement of these bridges will require removal of vegetation for a distance of 10 feet on both sides of the structure. The bridges will be installed during the low-flow season, usually June 15 through October 15. All areas of disturbed soil will be stabilized at the end of each season through implementation of BMPs in the storm water pollution prevention plan (SWPPP) and National Pollutant Discharge Elimination System (NPDES) permit.

Pile Driving

Driven piles will support the bridge abutments, columns, and retaining walls, and will be used to support the temporary falsework. All the bridge abutments will be located above the top of the bank except for Bent 24, which will require 18 pipe piles within the OHWM of the confluence of Baechtel, Broaddus, and Outlet Creeks. All other proposed piles will be located below the tops of the stream banks but not within the OHWM.

The selected Caltrans contractors will use pre-formed concrete pads or timber-grade beams set on the earth, or driven piles to support falsework. Generally, when contractors use piles to support the falsework, the piles are relatively small (about 15 inches or smaller in diameter) or equivalently sized H piles.

Block 19: Project Purpose

U.S. 101 is an important route for interstate and interregional travel and is considered the economic lifeline of California's North Coast. It is the principal arterial route for people and goods between the San Francisco Bay Area and the greater Eureka/Arcata area. Travel times and costs of transporting goods to and from the communities along U.S. 101 are high. Travel times and transportation costs are exacerbated by congestion-related delays, such as those at Willits, where U.S. 101 passes through developed areas on surface streets.

Because U.S. 101 also serves as Main Street in Willits and is the only continuous north-south street through the city, U.S. 101 must accommodate nearly all local traffic traversing Willits as well as interregional traffic. Traffic congestion has been a concern in Willits for a number of years, and it is becoming worse as traffic volumes increase. The proposed project is needed to correct a number of deficiencies that exist on the current highway.

As a solution to these traffic problems, Caltrans and the FHWA propose to construct a new segment of U.S. 101 that will bypass Willits to reduce delays, improve safety, and achieve a minimum LOS of C for interregional traffic on U.S. 101 within the project area though a 20-year design period.

As a byproduct of the proposed project, the following benefits will occur:

- Improved traffic safety on Main Street in Willits.
- Reduced noise and vibration experienced by nearby homes, businesses, schools, and other community facilities in Willits due to interregional commercial truck and other through traffic.
- Improved conditions for bicyclists and pedestrians, as well as less mobile groups such as the young, disabled, and elderly. Removing interregional traffic from Willits will improve the existing conditions for bicyclists and pedestrians, provide new opportunities for non-motorized circulation improvements, and enhance the friendly small-town character of Willits.
- Improved conditions for local residents who use Main Street for routine trips to workplaces, shops, and schools. Removal of interregional traffic from Main Street will reduce congestion for local traffic.

Block 20: Reasons for Discharge

Implementation of the proposed project will require temporary and permanent fill of wetlands or other waters of the United States. The reason for the proposed fill is to allow construction activities associated with the project, as well as proposed mitigation for the project. Project components and activities that will result in the discharge of fill material into waters of the United States include the following:

- Bridges and retaining walls
- Roadway construction (e.g., bypass and on- and off-ramps)
- Haehl Creek interchange
- Quail Creek interchange
- Viaduct structures
- RCB culverts
- Excavation and construction of embankment
- Creek stabilization (e.g., RSP, TRM, RECP)
- Pile driving for bridge abutments, columns, and retaining walls
- Temporary access routes, haul roads, and stream crossings
- Creek re-alignment, restoration, and enhancement activities
- Wetland creation

Block 21: Types of Material Being Discharged and Amount of Each Type in Cubic Yards

The proposed project will affect 5.50 acres of "other waters" of the United States (streams, ditches, and ponds) by placing approximately 13,745. 79 cubic yards of fill along 10,608.45 linear feet (LF) of "other waters" of the United States " during project construction and mitigation activities. The fills include 8306.39 cubic yards of permanent fill along 8047.10 LF of other waters" of the United States and 5439.40 cubic yards of temporary fill along 2561.35 LF of other waters" of the United States. The surface area (in acres) of "other waters" of the United States are summarized in Table 2 below. Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 1, below, lists the volume (temporary and permanent) and types of fill material that will be discharged to "other waters" of the United States as a result of the proposed project. Maps depicting impacted wetlands and "other waters" of the United States" are included in Appendix A and Appendix B of this permit application.

Table 1: Willits Bypass "Other Waters" of the US - Locations of features

Map Sheet	LF Perm	LF Temp	Feature Type	Comment/Location	Fill Volume Perm	Fill Volume Temp	Fill Type	Roadway Work	Structure Work
					(cu-yards)	(cu-yards)			
B-04	400.8	0	EPH	South of haehl Interchange, parallels west side of 101	9.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), Rock Slope Protection (RSP), RSP Fabric	Roadway fill, roadside ditch, Drainage System No. 5 (STA "A" 102+43.645) & Drainage Basin No. 1 (STA "A" 102+61.854)	
B-04	155.3	0	EPH	South of haehl Interchange, on east side of 101 (across from FID 0)	14.7	0	Imported borrow (fill), concrete (DI), Alternative Pipe Culvert (APC), Alternative Flared End Section (AFES), RSP, RSP Fabric	Roadway fill & Drainage System No. 6 (STA "A" 102+67.835)	

B-06	605.5	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101	8.7	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 13 (STA "U1" 106+30.000) & 14 (STA "U1" 105+50.000)	
B-08	309.3	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101, east of FID 4	3.1	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), Concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 8 (STA "H" 97+61.686)	
B-08*	8.6	3.4	EPH	Trib To Haehl Creek from Roadway Ditch culvert, north side of hwy 101	0.2	0.1	Import borrow (fill)	Roadway fill Drainage System No. 9 (STA "H" 97+96.641)	
B-06	144.9	0	EPH	Trib To Haehl Creek, north side of hwy 101	4.1	0	Cut	Roadway excavation, Begin STA "H" 99+13.723 - End STA "H" 99+32.816 & Drainage System No. 11 ("H" 99+31.464)	
B-06	99.5	0	EPH	Trib To Haehl Creek, north side of hwy 101. extension of FID 7	3.4	0	Import borrow (fill)	Roadway fill, Begin STA "A" 106+77.199 - End STA "A" 106+97.700	
B-06	96.4	3.4	EPH	Trib To Haehl Creek, conflunecing with Haehl Cr from NE	80.5	2.8	Import borrow (fill), roadway excavation, concrete (headwall), APC, RSP, RSP Fabric	Roadway fill, roadway excavation, Drainage System No. 18 (STA "U4" 106+35.000)	
B-06	577.6	0	EPH	Trib To Haehl Creek, parallels dirt road on north side of hwy 101	71.2	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (bridge abutment), RSP, RSP Fabric, Turf Reinforcement Mat (TRM)	Roadway fill, Begin STA "A" 105+35.903 - End STA "A" 107+46.190	
B-12	1006.6	0	EPH	On NE side of J1T align, NW of haehl interchange, “Schmidbauer”	362.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 30 ("A" 110+71.840)	

B-12	12.6	12.6	EPH	On Nw side of J1T align, NW of haehl interchange	3.2	3.2	Imported borrow (fill), APC, AFES, RSP, RSP Fabric	Roadway fill & Drainage System No. 30 ("A" 110+71.840)	
B-12	0	74.5	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 13, “Schmidbauer”	0	36.7	Import borrow (fill)	Roadside ditch	
B-14	920.3	0	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 15, “Schmidbauer”	274.5	0	Imported borrow (fill), RSP, RSP Fabric	Roadside ditch & Drainage System No. 33 ("A" 114+44.741)	
B-14	77	3.4	EPH	Trib runs to the NE, to “Schmidbauer”	8.1	0.4	Cut	Median ditch	
B-34	149.2	3.4	EPH	Ditches in Log Yard	11.9	0.3	Import borrow (fill)	Roadway fill	
B-34	118.6	3.4	EPH	Ditches in Log Yard	9.4	0.3	Import borrow (fill)	Roadway fill	
B-34	71.7	3.4	EPH	Ditches in Log Yard	5.7	0.3	Import borrow (fill)	Roadway fill	
B-34	55.9	3.4	EPH	Ditches in Log Yard	4.5	0.3	Import borrow (fill)	Roadway fill	

B-34	58.7	3.4	EPH	Ditches in Log Yard	4.7	0.3	Import borrow (fill)	Roadway fill	
B-34	74.3	3.4	EPH	Ditches in Log Yard	5.9	0.3	Import borrow (fill)	Roadway fill	
B-34	41.8	3.4	EPH	Ditches in Log Yard	3.3	0.3	Import borrow (fill)	Roadway fill	
B-34	90.9	3.4	EPH	Ditches in Log Yard	7.2	0.3	Import borrow (fill)	Roadway fill	
B-34	17.2	3.4	EPH	Ditches in Log Yard	1.4	0.3	Import borrow (fill)	Roadway fill	
B-34	123.2	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	11.8	3.4	EPH	Ditches in Log Yard	0.9	0.3	Import borrow (fill)	Roadway fill	
B-34	122.6	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	

B-34	153.7	3.4	EPH	Ditches in Log Yard	12.2	0.3	Import borrow (fill)	Roadway fill	
B-06	59.3	1027.1	INT	Haehl Creek (Main Fork) – Re-Align	221.3	3832.6	Import borrow (fill), Concrete (headwall & wingwall), APC, RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (9402.7 m^3) 2. Sand & Gravel (1559.3 m^3) **Above OHW:** 1. RSP(4161.5 m^3) 2. Sand & Gravel (2611.3 m^3)	**Haehl Creek Bridges: Br No.** **10-0129F, 10-0129G & 10-0129RL** 1. Potential Temp. stream crossing (1 trestle bent in channel) at bridge 10-0129RL. 2. Potential Falsework (1 falsework bent in channel) at each structure . 3. Potential stream Diversion/temporary culvert.
B-18	188.6	160.25	INT	"Schmidbauer"	53.3	47	Import borrow (fill)	Roadway fill	
B-24	401	6.8	INT	Crosses align north of east Hill road	404.7	6.9	Imported borrow (fill), roadway excavation & concrete (headwall)	Roadway fill & Drainage Basin No. 3 ("A" 127+50.000)	
B-57	433	6.8	INT	RR Ditch at RR x-ing, east side of tracks	262.2	4.1	Import borrow (fill)	Abutment fill, new ditch (to be design by Design) & temp. culvert	**Quail Meadows OH (Br No. 10-0171)** 1. Temp. dirt road across RR tracks (Temp Haul Road) 2. Temp. Culvert crossing
B-26	514.1	6.8	INT	East Fork Haehl Creek, Handley parcel, south of Shell rd.	2324.5	30.7	Imported borrow (fill), roadway excavation, APC, AFES, RSP, RSP Fabric	Roadway fill, Drainage Basin No. 4 ("A" 132+00.000), Drainage System No. 45 ("A" 132+52.219)	

B-40	65.13	26.3	INT	Heahl Creek, Near Baechtel Confluence – Under Viaduct, Just north of East valley Street	260.0 (culvert work)	105.0 (culvert work)	Trestle/falsework construction		**Haehl Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-49	7	10	INT	Broadus, Baechtel, Outlet Confluence - Under Viaduct, NE of WWTP	54.0 (footing for bents?)	77.2 (falsework)	Concrete (Bent 24), RSP, RSP Fabric, Trestle/falsework construction		**Confluence of Broaddus/Baechtel Creek** 1. Footing Impact (329.9 m3) 2. Potential temp. stream crosssing (Baechtel Creek - 2 falsework bents in channel, Broaddus Creek - 1 falsework bent in channel, & Outlet Creek- 2 trestle bents in channel)
B-51	0	429.8	INT	Mill Creek - Under Viaduct	0	0 (access and veg removal only, no temp fills below OHWM)	Trestle/falsework construction		**Mill Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-37	0	403.1	INT	Baechtel Creek, south of center valley road, west side of J1T align	0	595.7		Current Design does not show any impact at this location.	

B-26	0	270.5	INT	West (Main) Fork Haehl Creek, along west side of handley parcel	0	692.6	RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (2857.9 m^3) 2. Sand & Gravel (348.1 m^3) **Above OHW:** 1. RSP(3444.9 m^3) 2. Sand & Gravel (2309.7 m^3)	**Haehl Creek (Br No. 10-0159)** 1. potential temp. stream crossing (4 trestle bents in channel). 2. potential temp. falsework (4 trestle bents in channel).
B-57	1172.6	82.4	INT	Upp Creek and RR ditch on west side of RR x-ing, and Mill Creek on the east side of RR x-ing	1817.5	127.7	Import borrow (fill), roadside ditch (RR), Concrete (bridge structures), APC, RSP (Fish Passage Design at Upp Creek)	**Upp Creek** **Below OHW:** 1. RSP (5848.5 m^3) 2. Sand & Gravel (1258.3 m^3) **Above OHW:** 1. RSP(3100.0 m^3) 2. Sand & Gravel (1325.1 m^3)	**Quail Meadows OH** **Br No. 10-0171** 1. Potential Temp. culvert crossing 2. Potential dirt road crossing over RR tracks (temp haul road) **Upp Creek Bridges** **Br No. 10-0305, 10-0174, 10-0174K & 10-0174S** 1. Potential Temp. stream crossing (1 trestle bent in channel) at Quail Meadows I.C. 2. Potential Falsework (1 falsework bent in channel) at each structure 3. Potential Stream Diversion at each structure
B-31 and B-34	139.8	3.4	POND	Rutledge Pond	2263.1	55	Class 3 Permeable Material Filter Fabric Embankment	Class 3 Permeable Material (3213 m^3) Filter Fabric (6802 m^2) Embankment (3505 m^3)	
C-86	**375.95**	288.16	EPH	Stream Entering Watson East Mitigation Parcel	29.59	0	Grading for wetland creation		
Totals:	**8860.48**	**2862.91**			**8306.39 yd^3**	**5439.40 yd^3**			

Block 22: Surface Areas of Wetlands or Other Waters Filled

The proposed project will directly affect a total of 89.12 acres of wetlands and other waters of the United States, of which 56.23 acres will be permanently filled and 32.89 acres will be temporarily disturbed during project construction and mitigation activities. Fill types affecting wetlands include those listed in Table 1 for "other waters of the United States" (permanent fills consisting of roadway and structures fill, asphalt concrete, RSP, TRM and RECP, new culverts, culvert end and treatments; temporary fills consisting of temporary falsework and falsework supports, cofferdams, temporary roadway fills, stream re-alignments, and temporary access routes). Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 2 shows the surface area (acres) of the resources that will be affected by the bypass. Maps depicting impacted wetlands and "other waters" of the United States" are included in Appendix A and Appendix B of this permit application.

Table 2. Summary of Project Construction Impacts on Wetlands and Other Waters of the United States

Wetland Type / Other Waters	Project Impacts on Wetlands and Other Waters (acres)			Mitigation Impacts on Wetlands and Other Waters (acres)			Total Impacts on Wetlands and Other Waters (acres)
	Temporary	Permanent	Total	Temporary	Permanent	Total	Total
Marsh	1.38	8.15	9.53	0.49	0.00	0.49	**10.02**
Riparian Scrub	0.17	0.21	0.38	0.00	0.00	0.00	**0.38**
Riparian Woodland	1.61	3.21	4.82	0.07	0.02	0.09	**4.91**
Swale	0.03	0.00	0.03	0.26	0.05	0.31	**0.34**
Vernal Pool	0.05	0.16	0.21	0.00	0.00	0.00	**0.21**
Wet Meadow	20.69	41.64	62.33	4.98	0.45	5.43	**67.76**
Subtotal Wetlands	**23.93**	**53.37**	**77.30**	**5.80**	**0.52**	**6.32**	**83.62**
Other Waters	3.10	2.25	5.35	0.06	0.09	0.15	**5.50**
Total	**27.03**	**55.62**	**82.65**	**5.86**	**0.61**	**6.47**	**89.12**

Block 23: Description of Avoidance, Mitigation, and Compensation

Mitigation and Monitoring Proposal

Caltrans developed a mitigation and monitoring proposal (MMP) for impacts of the bypass on jurisdictional wetlands, other waters of the United States, riparian habitat, state-listed plants, and oak woodlands. In addition to compliance with federal Clean Water Act (CWA) Section 404 permitting, the MMP will provide compliance with CWA Section 401, Section 1602 of the California Fish and Game Code (FGC), and Section 2081 of the California Endangered Species Act (CESA).

The overall goal of the MMP is to compensate successfully for impacts resulting from bypass construction on sensitive biological resources resulting from bypass construction by restoring some of the historical ecological functions and values to habitat in Little Lake Valley through a combination of habitat restoration, creation, enhancement, and preservation. Additionally, the MMP aims to restore and enhance many previously lost or degraded wetland functions and values and to help offset past damage to parts of the Outlet Creek Basin. As stated in Block 22, construction of the bypass will result in temporary and permanent impacts on wetlands and other waters of the United States. Table 3 shows the total amount of USACE jurisdictional habitat that will be created, enhanced, or preserved as compensation for the proposed project's impacts on waters of the United States.

Table 3. Mitigation Approach for USACE-Jurisdictional Habitat

Resource	Mitigation Acres			
	Creation	Enhancement	Preservation	Restoration
Wetlands	33.4	1032.90	1122.11	5.96
Other Waters of the United States	0	17.32	24.7	0.06
Total	**33.4**	**1,050.22**	**1,146.481**	**6.02**

The proposed project's MMP will be provided in its entirety in a separate transmission.

Avoidance and Minimization Measures

In addition to the creation, enhancement, and preservation strategies included in the MMP, Caltrans has incorporated numerous minimization measures into the project design. The following minimization measures have been incorporated into the design since the final EIS/EIR:

- The bypass re-alignment will avoid conflicts with the planned WWTP expansion project which will allow the WWTP to avoid impacts to waters of the United States; specifically, the profile over the railroad has been lowered, resulting in a significant reduction of the embankment footprint and corresponding reduction in wetlands impacts between the end of the viaduct and the railroad crossing;
- The bypass's profile over the railroad was lowered, resulting in a significant reduction of the embankment footprint and therefore a reduction in impacts on wetlands;
- An existing box culvert at Upp Creek can will be removed given the implementation of the roundabout and, therefore, will allow for the restoration of this area;
- The roundabout at the Quail Meadows interchange allows for an existing box culvert at Upp Creek to be removed, and all of the Upp Creek crossings will now be bridges rather than box culverts;
- Construction of the viaduct minimizes impacts to floodplain and special-status species (preserving connectivity);
- The project was redesigned to avoid direct impacts to park and recreation complex and a business park;
- The highway median was reduced to 45.3 feet which will reduce the project's area of impact;
- Omission of a second passing lane on the interchange ramps will reduce the project's area of impact; and
- The proposed Oil Well Hill borrow site has been reduced from approximately 40 ac to 12.17 ac (4.93 ha) and has been configured to avoid impacts on jurisdictional wetlands, and other waters of the United States, and riparian habitat including Category I– III riparian corridor .
- Environmental Sensitive Areas (ESA), such for wetlands and waters (State and U.S.) and to protect trees, is to be identified in the contract plans and to be delineated by Temporary Fence (Type ESA) through out the limits of the project. The locations of the ESAs will be determined by the Resident Engineer and Environmental Monitor and will be installed prior to commencement of ground disturbing activities.

In addition to preparation of a SWPPP, Caltrans will implement the following measures to minimize disturbances of aquatic resources:

- In-channel construction, including creek bank and channel-bed construction below the OHWM at each of the flowing creek crossings will be implemented between June 15 and October 15 of each year, unless earlier and/or later dates for construction activities at the creek crossings are approved by NMFS, the California Department of Fish and Game, and the North Coast Regional Water Quality Control Board,on a year-by-year basis;
- All construction-related materials will be stored in designated staging areas at least 100 feet from waterways and drainages.
- Refueling and vehicle maintenance will be performed at least 100 feet from creeks and other water bodies.
- Operation of heavy equipment will be minimized in waterways to the greatest extent possible.
- Temporary sedimentation barriers, such as sandbags or siltation fencing, will be installed to minimize the amount of silt entering the creeks and any ephemeral/intermittent drainages with water present in the channel. The locations of these barriers will be determined by the resident engineer and environmental monitor, and will be clearly marked in the field before construction activities begin.
- Additional BMPs will be implemented to prevent runoff from adjacent lands from flowing across construction areas, slow down the runoff traveling across construction sites, remove sediment from on-site runoff before it leaves the site, and provide soil stabilization.
- To address potential water quality impacts during construction, Caltrans will require the contractor to use a combination of BMPs to control potential erosion and sedimentation that could result from construction activities. Caltrans has developed a suite of construction site BMPs that will be implemented on the proposed project. The construction site BMP manual can be downloaded at: http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm
- Caltrans will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters. For example, on this project, equipment operating in water bodies will be required to be steam cleaned prior to arrival onsite, and be maintained in a clean condition during the length of activities.
- Following the construction process, the contractor will stabilize disturbed soil areas through permanent revegetation or other means. An appropriate design will be used that will allow all finished slopes to achieve stabilization, even under severe conditions, and also provide erosion control BMPs at all point source discharges of stormwater runoff. Treatment BMPs, such as biofiltration, will be incorporated where feasible.
- As part of standard operation and maintenance procedures, Caltrans has developed a standard Hazardous Waste and Spill Response Plan, which Caltrans will ensure is implemented during the project. These BMPs address water quality issues associated with accidental spills.

Measures designed to further control sedimentation and turbidity within waters of the U.S. and State, including BMPs for operation of heavy equipment in wetlands and waterways will include:

- Non-rainy season BMPs will be implemented in accordance with the SWPPP, including inspection, maintenance and repair, to minimize delivery of soil to the stream channels;
- The use of vehicles and heavy equipment in areas below the top of bank will be limited to the extent feasible; equipment may enter the stream reaches that are normally dry during the summer months (upper Haehl Creek and Upp Creek) to facilitate construction; however, no vehicles or heavy equipment will be allowed below the OHWM for the other crossings where flowing water is likely to occur, at any time, either for crossing the creeks or for construction activities (with the exception of installing a cofferdam to isolate work areas from flowing or standing water);
- The project's contractor will be required to implement appropriate BMPs to prevent the discharge of equipment fluids to the stream channel; the minimum requirements will include:
  - storing hazardous materials outside of the stream banks;
  - checking equipment for leaks and preventing equipment with leaks from accessing any areas below the top of bank or from going onto the falsework structures;
  - pressure washing equipment to remove fluid residue on any of its surfaces prior to its entering the live channel (if equipment is needed in the channel to establish a flow diversion);
  - maintaining spill response material and suitably trained personnel at the project site;
  - responding immediately to any fluid releases and applying containment booms and absorbent materials as appropriate; and
  - notifying the RWQCB of releases and discharges; or minor accidental releases of equipment fluid to the dewatered channel, the contractor will be required to remove and properly dispose of contaminated material;
- Equipment will not be stored in the channel when not in use; all equipment will be removed from the channel at the end of each work day; all equipment will be fueled, maintained, and repaired at sites well away from the streambanks;
- Where feasible, Rolled Erosion Control Product (RECP; netting) will be substituted in as many locations as possible that traditionally would receive RSP. Unlike RSP, RECP allows native riparian vegetation to grow through the mat structure while providing erosion protection for affected banks and bridge abutments; and
- Erosion control measures will be implemented at the end of each work window or completion of project activities to prevent material from entering watercourses.

Other non-compensatory measures include:

- Seed collection and topsoil harvesting to minimize impacts on state-listed plants;
- Salvage of North Coast semaphore grass populations for replanting onsite and relocation to offsite mitigation parcels; and

Block 25: Addresses of Adjoining Property Owners and Lessees

A complete list of the property owners whose property adjoins any project features is provided in Attachment 8 of this permit application.

Block 26: List of Other Certifications or Approvals and Denials Received

Table 4 below shows the approvals and consultations required before project implementation.

Table 4. List of Authorizations, Approvals, and Consultations That May Be Required

Agency	Type of Approval	Identification No.	Date Applied	Date Approved	Date Denied
U.S. Army Corps of Engineers	CWA Section 404 Individual Permit	–	March 2010	–	–
North Coast Regional Water Quality Control Board	CWA Section 401 Water Quality Certification (Attachment 9)	–	March 2010	–	–
California Department of Fish and Game	FGC Section 1602 lake and Streambed Alteration Agreement (Attachment 9)	–	March 2010	–	–
	FGC Section 2080.1 consistency determination	–	March 2010	–	–
	FGC Section 2081 CESA Incidental Take Permit	-	March 2010		
U.S. Fish and Wildlife Service	Federal Endangered Species Act (ESA) Section 7 consultation; biological opinion (Attachment 5)	1-14-1998-0095	September 2005	March 2005	–
National Marine Fisheries Service	ESA Section 7 consultation; Biological Opinion (Attachment 5)	2005/07370:TKD	October 2005	September 2006	–
National Marine Fisheries Service	ESA Section 7 consultation addendum; Biological Opinion		March 2010		
California State Office of Historic Preservation	Concurrence (Attachment 6)	FHWA000717A	November 2005	December 2005	–
Mendocino County	SMARA exception	–	–	March 2008	–

Agency Coordination and Compliance

Endangered Species Act

Formal consultation under Section 7 of the federal Endangered Species Act (ESA) between the FHWA and the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) resulted in the issuance of biological opinions in March 2005 and September 2006, respectively. However, Caltrans will be submitting a revised biological assessment to NMFS that will analyze impacts on federally listed endangered and threatened anadromous fish species caused by project design changes and implementation of the MMP. NMFS will need to amend the existing biological opinion to reflect these project changes. The project design changes and HMMP do not affect the biological opinion issued by the USFWS; therefore, no re-initiation of consultation is required.

National Historic Preservation Act

Cultural resources studies pursuant to National Historic Preservation Act (NHPA) Section 106 for the proposed project were performed as required by Caltrans and in accordance with the guidelines and recommended procedures outlined in Caltrans' *Environmental Handbook*, Volume 2, "Cultural Resources." Archeological sites were identified within the area of potential effect (APE) of the proposed project. Site CA-MEN-2645/H was determined to be eligible for listing on the National Register of Historic Places (NRHP), as well as site CA-MEN-3111H, the NWPRR. Details regarding the significance of cultural resources found within the APE and potential impacts on these resources are detailed in the draft EIS/EIR.

Caltrans requested State Historic Preservation Officer (SHPO) concurrence that responsibilities pursuant to 36 CFR 800.4(d) implementing Section 106 of the NHPA have been met. In a letter to the North Region Environmental Branch of Caltrans dated December 6, 2005, SHPO concurred (FHWA000717A). A copy of the final concurrence letter is attached as Attachment 6.

Additional Information

Section 404(b)(1) of the Clean Water Act

In 1994, Caltrans initiated the NEPA/404 integration process for the project; in 1995, Caltrans, the FHWA, and the NEPA/404 signatory agencies concurred with the purpose and need statement, modal choice, and range of alternatives to be studied. Engineering and environmental studies on several alternatives continued through 1994. Then, as a result of the 1994 Northridge earthquake and the 1995 winter storms, resources were redirected to seismic safety and storm damage restoration projects, and bypass project development was suspended until 1998. In 1998, with new funding and resources allocated to the project, studies resumed on the alternatives approved by the NEPA/404 signatory agencies.

A number of alternative routes to bypass Willits were originally considered. Approximately 30 alternatives, including a two-lane concept and additional interchange locations, were considered but later rejected because they were determined to be infeasible, to be not practicable, or to have severe environmental consequences. Seven alternatives were included in the final 404(b)(1) alternatives analysis, including six build alternatives and a no-build alternative. These alternatives were screened to identify the least environmentally damaging practicable alternative (LEPDA).

The 404(b)1 alternatives analysis identified the following screening criteria to evaluate project alternatives and the selection of the LEPDA. Practicable alternatives must do the following:

- Meet the basic project purpose and need
- Be capable of implementation after taking into consideration cost, existing technology, and logistics in light of overall project purposes
- Avoid or minimize impacts on wetlands and other regulated waters of the United States to the maximum extent practicable
- Avoid or minimize impacts on listed species and other sensitive biological resources, including habitats, to the maximum extent practicable
- Avoid or minimize impacts on the 100-year floodplain
- Be consistent with RWQCB's water quality control plan for the North Coast. Protect public parklands and recreational resources, wildlife and waterfowl refuges, and historic properties listed on or eligible for listing on the NRHP
- Protect human-use resources, including parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves, that consist of areas designated under federal and state laws or local ordinances to be managed for their aesthetic, educational, historical, recreational, or scientific value
- Minimize socioeconomic impacts and disproportionate impacts on low-income minority residents

Modified Alternative J1T (proposed project) meets the LEDPA criteria because it is a practicable alternative that minimizes impacts on jurisdictional wetlands and other waters of the United States, compared to the other viable alternatives, while minimizing impacts on sensitive species. Although Modified Alternative J1T will affect approximately 9.4 acres more wetlands than the original Alternative J1T, it avoids human-use characteristics/Section 4(f) resources and other environmental resources that would be affected by the other alternatives. The proposed project would not result in significant adverse impacts on human health and welfare, including effects on aesthetic, educational, historical, recreational, or scientific values. The proposed project will not reduce or eliminate the uses of the regional park and recreation complex, including the skate park. Caltrans and the FHWA coordinated extensively with local government and community representatives and the NEPA /404 integration process agencies to develop the proposed project to avoid the Section 4(f) resource and industrial park that would be affected by Alternative J1T. The proposed placement of fill will comply with the 404(b)(1) guidelines, to the extent practicable.

The Section 404(b)(1) alternatives analysis clearly demonstrates that the proposed project meets criteria for the LEDPA because it will result in the least overall environmental harm. A copy of the Section 404(b)1 alternatives analysis, as approved by is included in this permit application as Attachment 7.

Attachment 2: Figures

Figure 1-1
Regional Location

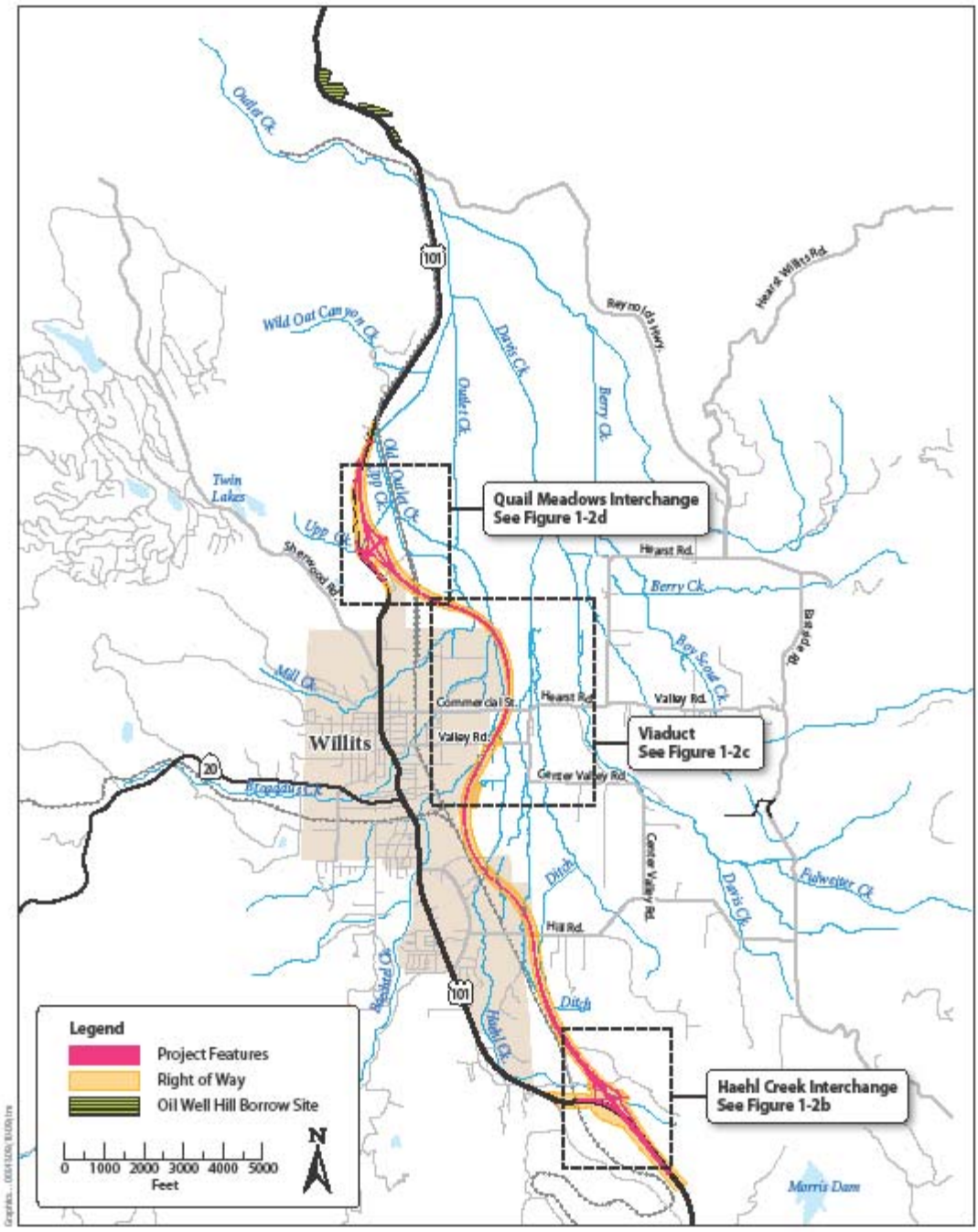

Figure 1-2a
Project Features—Overview Phase 1

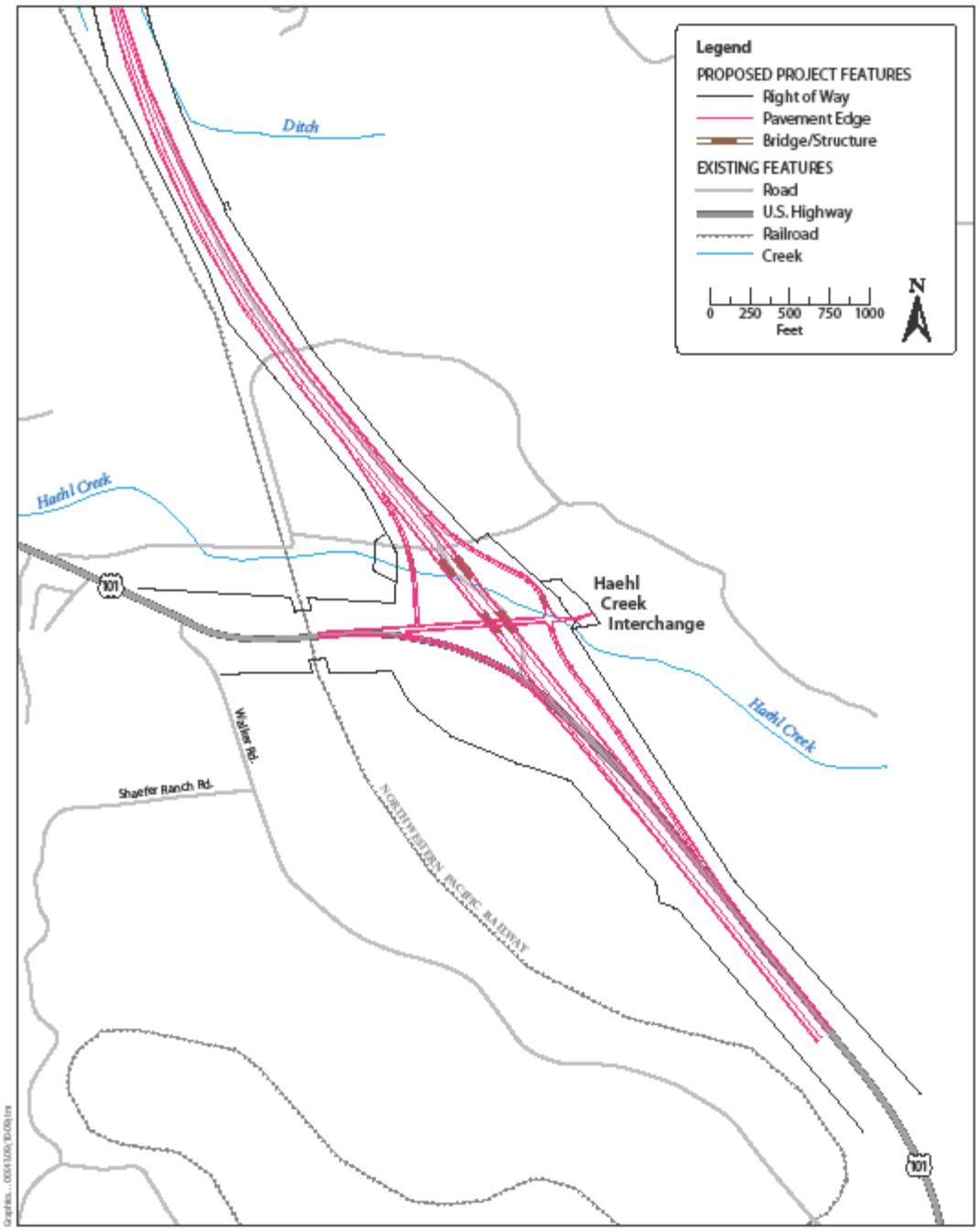

Figure 1-2b
Southern End Project Features—Haehl Creek Interchange Phase 1

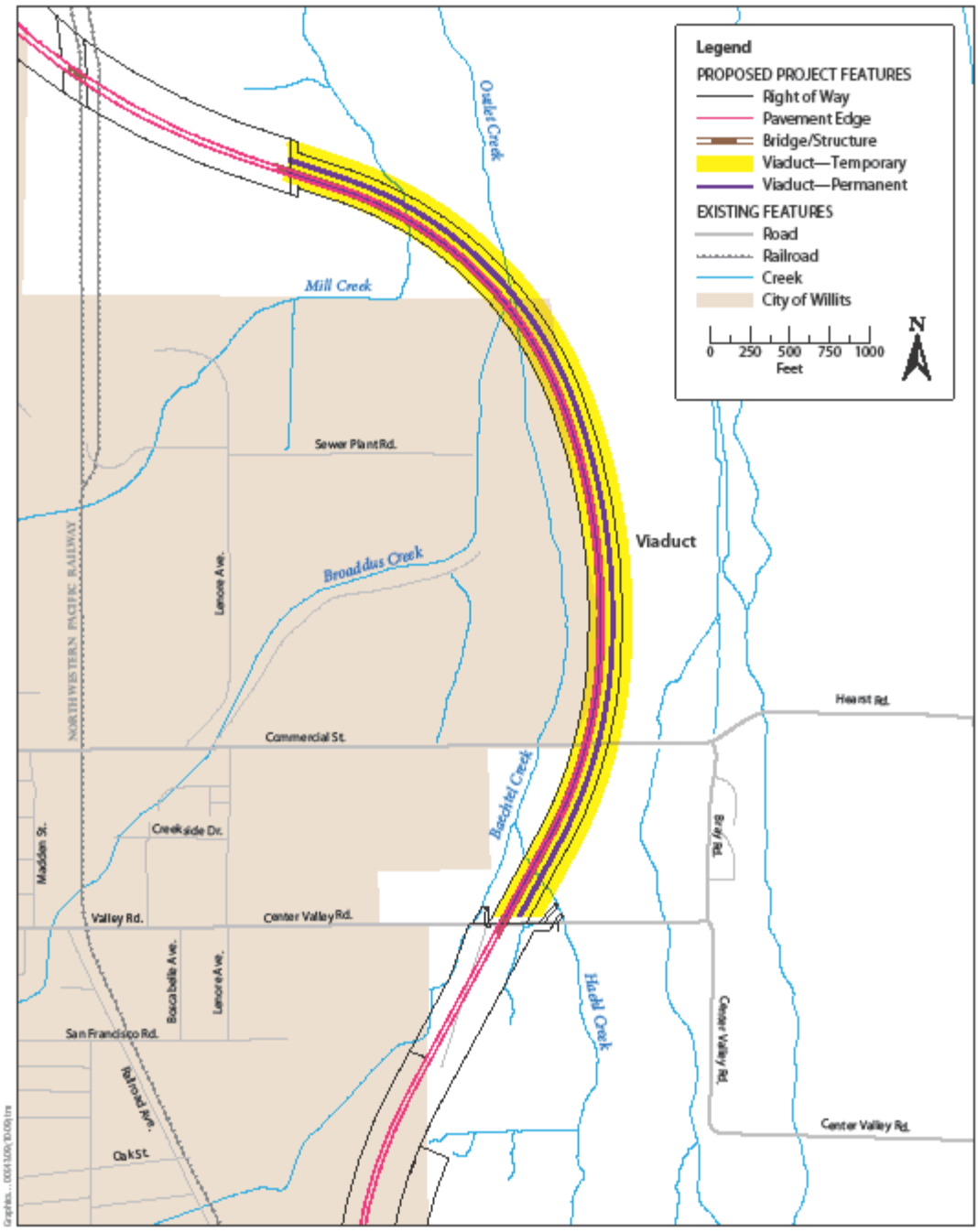

Figure 1-2c
Middle Project Features—Viaduct Phase 1

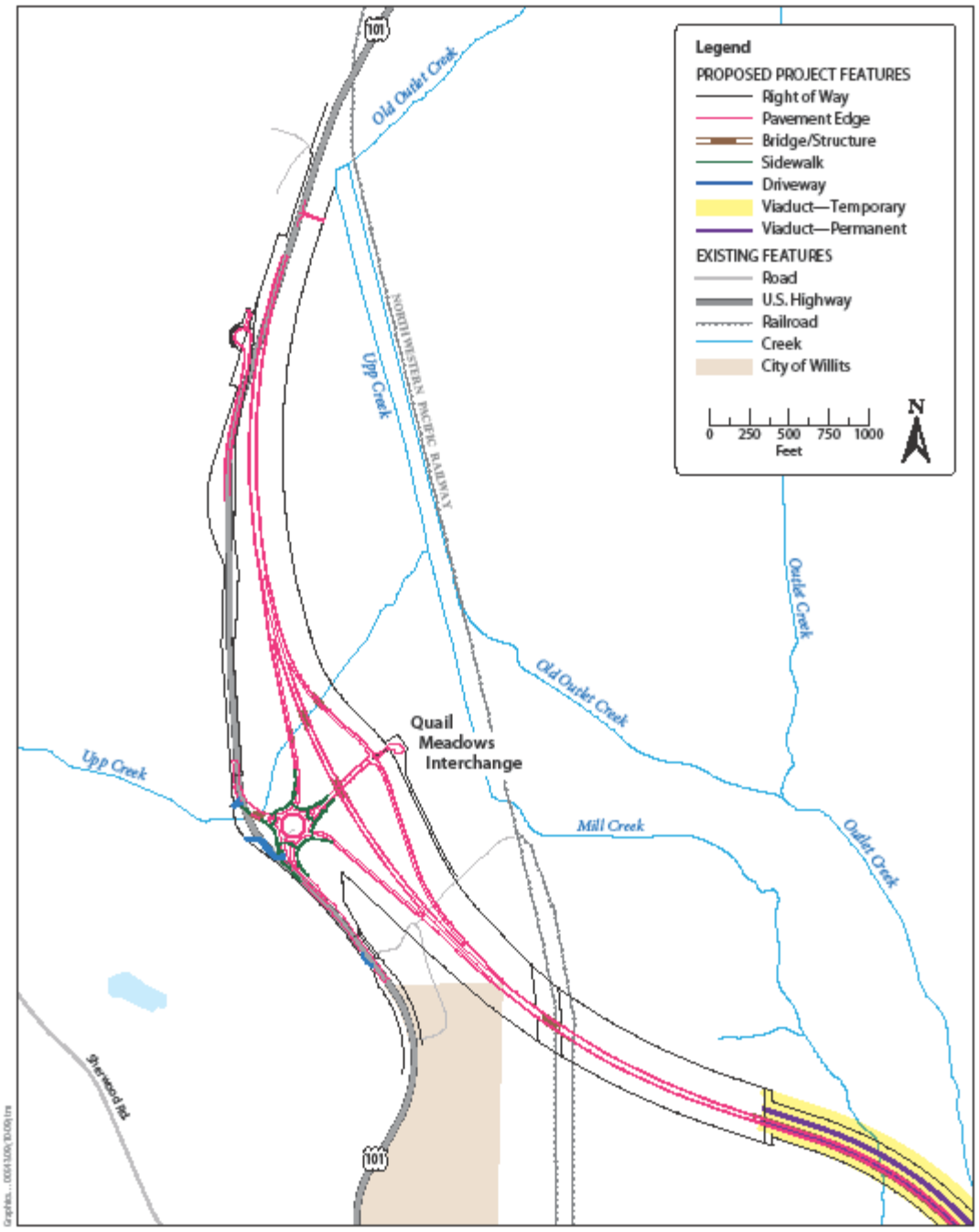

Figure 1-2d
North End Project Features—Quail Meadows Interchange Phase 1

Attachment 3: Jurisdictional Determinations

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
333 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94105-2197

REPLY TO

MAR 0 1 2005

Regulatory Branch

Subject: File No. 194741N

Mr. Jeremy Ketchum
California Department of Transportation
District 3-Sacramento Office
Office of Environmental Management, S-1
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letters of February 11, 2004, and February 6, 2005, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring within the Modified J1T Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California.

The enclosed map entitled, "Potential Jurisdictional Wetlands and Waters of the United States Within Alternative Modified J1T," in five (5) sheets date certified February 23, 2005, accurately depicts the extent and location of Corps jurisdiction within the project alignment study area. The jurisdictional delineation is based on the current conditions of the site, as verified during field investigations of April 20-22, June 1-3, and July 13, 2004, and January 19, 2005, and other data included with your submittals. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change in field conditions warrants a revision to the delineation map prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States and within the lateral extent of wetlands adjacent to these waters will require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters, and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce. Section 404 waters within the project alignment study area include both seasonal and perennial wetlands, and numerous intermittent and perennial drainages, including Haehl, Broaddus, Mill, and Upp Creeks, that are tributary waters to Outlet Creek and ultimately the Eel River. The wetland basins and swales are adjacent (neighboring or bordering) to these tributary waters, and their lateral extents are defined by the presence of hydrophytic vegetation,

hydrology, and hydric soils. The plane of ordinary high water of the tributary waters is defined by the presence of shelving, debris lines, and transitional vegetation on the banks.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 CFR Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. Peter Straub of my staff by telephone at 415-977-8443 or by e-mail at peter.s.straub@spd02.usace.army.mil. All correspondence should be addressed to the Regulatory Branch, North Section, referencing the file number at the head of this letter.

Sincerely,

Jane M. Hicks

Jane M. Hicks
Acting Chief, Regulatory Branch

Enclosures

Copy Furnished:

US EPA, San Francisco, CA (w/o encls)

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

AUG 15 2008

REPLY TO

Regulatory Division

Subject: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
District 3-Sacramento Office
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letters of January 26, 2007, and April 10, 2008, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring in portions of the Modified J1T Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California. This request is related to minor changes to the footprint of the proposed Haehl Creek Interchange and the road alignment to the north, and the inclusion of the proposed borrow area at Oil Well Hill.

The enclosed maps entitled, "Figures 3-4, Oil Well Hill Wetland Delineation," "Figure 5, Haehl Creek Interchange Expanded Area Wetland Delineation," "Figure 6, Existing Embankment Creek Expanded Area Wetland Delineation," in four (4) sheets date certified August 1, 2008, accurately depict the extent and location of Corps jurisdiction within the project boundary area. The jurisdictional determination is based on the current conditions of the site, as verified during a field investigation of February 13, 2008, and other data included with your submittal. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation maps prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States, or below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters, require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce.

Section 404 waters within the expanded project alignment study area include both seasonal and perennial wetlands, and several intermittent and perennial unnamed streams and drainages that are tributary waters to Outlet Creek and ultimately the Eel River and the Pacific Ocean. The additional wetland basins and swales are adjacent (abutting) to these tributary waters, and their lateral extents are defined by the presence of hydrophytic vegetation, hydrology, and hydric soils. The plane of ordinary high water of the tributary waters is defined by the presence of scouring, sediment deposits, shelving, debris lines, and transitional vegetation on the banks. This jurisdictional determination is presumed to be consistent with the official interagency guidance of June 5, 2007, interpreting the Supreme Court decision, *Rapanos v. United States*, 126 S. Ct. 2208 (2006).

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. Peter Straub of my Regulatory staff by telephone at 415-503-6774 or by e-mail at peter.s.straub@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

Peter S. Straub

for Jane M. Hicks
Chief, Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 02 2009

Regulatory Division

Subject: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letter of September 29, 2009, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring within the W-Line Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California.

The enclosed map entitled, "Potential Jurisdictional Wetlands and Waters of the United States Within the W-Line, " in seventeen (17) sheets date certified December 1, 2009, accurately depicts the extent and location of Corps jurisdiction within the project alignment study area. The jurisdictional determination is based on the current conditions of the site, as verified during field investigations of August 6, 2009, and other data included with your submittals. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation map prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States and within the lateral extent of wetlands adjacent to these waters will require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters, and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. David Wickens of my Regulatory staff by telephone at 415-503-6787 or by e-mail at david.m.wickens@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

Jane M. Hicks
Chief, Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 01 2009

Regulatory Division

Subject: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2389 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to your letter of September 29, 2009, requesting confirmation of the extent of Corps of Engineers (Corps) jurisdiction occurring within the following proposed mitigation sites for the State Highway 101 Willits By-Pass Project: MGC Plasma North Parcel, MGC Plasma South Parcel, and the Frost Parcel. The aforementioned study areas are located in Little Lake Valley, Mendocino County, California.

The enclosed map entitled, "Caltrans Willits Bypass Project Potential Mitigation Sites, Modifications for Verification," in eight (8) sheets updated by Jason Meigs, Caltrans District 3 on April 6, 2009, accurately depicts the extent and location of Corps jurisdiction within the project alignment study area. The jurisdictional determination is based on the current conditions of the site, as verified during field investigations of February 18, 2009, and other data included with your submittals. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation map prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States and within the lateral extent of wetlands adjacent to these waters will require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters, and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. David Wickens of my Regulatory staff by telephone at 415-503-6787 or by e-mail at david.m.wickens@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

for

Jane M. Hicks
Chief, Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
1455 MARKET STREET, 16th Floor
SAN FRANCISCO, CALIFORNIA 94103-1398

DEC 16 2009

Regulatory Division

SUBJECT: File No. 1991-194740N

Mr. Jeremy Ketchum
Office of Environmental Management, S-1
California Department of Transportation
Distrct 3-Sacramento Office
2800 Gateway Oaks Drive, Suite 100
Sacramento, California 95833

Dear Mr. Ketchum:

This is in reference to a previous Jurisdictional Determination letter you received from our office regarding your proposed "Modified J1T Alignment" dated March 1, 2005. The aforementioned letter confirmed the Corps jurisdiction within the Modified J1T Alignment Study Area for the State Highway 101 Willits By-Pass Project, located in Little Lake Valley, Mendocino County, California. This letter re-confirms the Corps jurisdiction within the Modified J1T Alignment Study Area.

Enclosed are five (5) sheets titled, "Potential Jurisdictional Wetlands and Waters of the US Within Alternative Modified J1T." These drawings were originally date certified by the Corps February 23, 2005. They continue to accurately depict the extent and location of the Corps jurisdiction. Therefore, the enclosed drawings have received a new certification date of November 19, 2009. The jurisdictional determination is based on the current conditions of the site as verified during field investigations of April 20-22, June 1-3, and July 13, 2004, and January 19, 2005. This jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change field conditions warrants a revision to the delineation maps prior to the expiration date.

Unless exempt by regulation, all proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States, or below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters, require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act (33 U.S.C. § 1344). Waters of the United States generally include the territorial seas, all navigable waters, including waters subject to the ebb and flow of the tide, non-tidal interstate and intrastate waters and their tributary waters, including lakes, ponds, rivers, streams, intermittent streams, and adjacent wetlands, the use, degradation, or destruction of which could affect interstate or foreign commerce. This jurisdictional determination is presumed to be consistent with the official interagency guidance of June 5, 2007, interpreting the Supreme Court decision, *Rapanos v. United States*, 126 S. Ct. 2208 (2006).

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) Form." If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA Form within sixty (60) days of the date of this letter.

You may refer any questions on this matter to Mr. David Wickens of my Regulatory staff by telephone at 415-503-6787 or by e-mail at david.m.wickens@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter.

Sincerely,

Jane Monaus
for

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Attachment 4: Record of Decision, and Notice of Determination (Final EIS/EIR included on separate CD)

NOTICE OF DETERMINATION

TO: Office of Planning and Research
PO Box 3044, 1400 Tenth Street, Room 222
Sacramento, CA 95812-3044

FROM: California Department of Transportation
1120 N Street
Sacramento, CA 95814

Subject:
Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code

Project Title

Willits Bypass Project

State Clearinghouse Number	Lead Agency Contact Person	Area Code/Telephone
1990030006	Jeremy Ketchum	916-274-0621

Project Location (include County)

The project, which involves bypassing a segment of existing U.S. 101, is located in the vicinity of the City of Willits, Mendocino County, California.

Project Description:

The California Department of Transportation, in conjunction with the Federal Highway Administration, proposes to construct a new segment of U.S. 101 that would bypass the City of Willits in Mendocino County. The proposed bypass would be a four-lane freeway with full access control and grade separation. The existing U.S. 101 facility within the project study limits is a two-lane conventional highway, which currently serves as the Main Street through the town of Willits. The purpose of the project is to reduce delays, improve safety, and achieve a minimum level of service (LOS) of at least 'C' for interregional traffic on U.S. 101 within the vicinity of Willits through the 20-year design period (i.e., 2028). One no-build alternative and four build alternatives (E3, C1T, J1T, and LT) were considered in the Draft EIS/EIR. Since public circulation of the Draft EIS/EIR, revisions were made to one of the build alternatives, which resulted in the *Modified Alternative J1T*. The Modified Alternative J1T has been selected as the preferred alternative because it would have the least overall impact to the environment. The proposed new U.S. 101 bypass would diverge from the existing facility approximately 0.8 mi south of the Haehl Overhead (Post Mile R43.1). The alignment would then traverse the valley east of Willits and converge back with the existing facility 2.9 km south of Reynolds Highway (Post Mile R49.0). The overall length of the bypass would be approximately 5.8 miles.

This is to advise that the California Department of Transportation has approved the above-described project on (date) **12/15/06** and has made the following determinations regarding the above-described project:

1. The project [☐ will ■ will not] have a significant effect on the environment.
2. ■ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☐ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [■ were ☐ were not] made a condition of the approval of the project.
4. A Statement of Overriding Considerations [☐ was ■ was not] adopted for this project.
5. Findings [■ were ☐ were not] made pursuant to the provisions of CEQA.

The ■ certified EIR or ☐ adopted ND with comments and responses and record of the project approval is available to the general public at:

Willits Public Library – 390 East Commercial Street, Willits, CA

Ukiah Public Library – 105 North Main Street, Ukiah, CA

Fort Bragg Public Library – 499 East Laurel Street, Fort Bragg, CA

Caltrans District 1 Office – 1656 Union Street, Eureka, CA

Caltrans Website – http://www.dot.ca.gov/dist1/d1projects/willits/reports.feir.htm

Wells	12/15/06	Environmental Manager
Signature (California Department of Transportation)	Date	Title

Date received for filing at OPR:

RECEIVED
DEC 18 2006
STATE CLEARING HOUSE

FHWA-CA-EIS-02-02-F
P56038

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

RECORD OF DECISION

Willits Bypass
Mendocino County

This Record of Decision (ROD) was developed pursuant to 40 CFR 1505.2 and 23 CFR 771.127. The California Department of Transportation (Caltrans), in cooperation with the Federal Highway Administration (FHWA), has identified the need to reduce delays, improve safety, and achieve a minimum level of service (LOS) "C" for interregional traffic on U.S. Highway 101 in the vicinity of the City of Willits, Mendocino County, California.

The project's purpose and need are described in Chapter 2 of the Willits Bypass *Final Environmental Impact Statement* (FEIS), approved by FHWA on October 25, 2006. The FEIS is incorporated into the ROD by reference. The Notice of Availability for the FEIS was published in the *Federal Register* on November 9, 2006.

A. Decision

This ROD approves the preferred alternative identified in the Willits Bypass FEIS. After reviewing public comments, as well as coordinating with the regulatory agencies and local stakeholders, including the City of Willits in Mendocino County, California, it was determined that the **Modified Alternative J1T** is the Least Environmentally Damaging Practicable Alternative (LEDPA). The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency have concurred in this determination. The Modified Alternative J1T has, therefore, been identified as the selected alternative. This decision is based upon information in the Draft and Final EIS, as well as comments from other Federal and state agencies, elected officials, and members of the public. Following approval of this ROD, the project will be advanced to final design, right-of-way acquisition, and construction.

All practicable measures to avoid or minimize harm to the environment have been employed in the design of this project and are described in Section D of this document.

The Department could design and construct all or part of the proposed project depending on funding availability. In an effort to balance potential funding limitations and the need for the project, the Willits Bypass could be constructed in phases, whereby a functional interim facility would be constructed initially, and completion of the full facility would occur at a later date when additional funding is available.

B. Alternatives Considered

Based on input from the community and the resource agencies, as well as on engineering and environmental analyses, the **Modified Alternative J1T** has been identified as the Preferred Alternative for the proposed Willits Bypass project. In accordance with Section 404(b)(1) of the Clean Water Act, a Final Alternatives Analysis, which compares the alternatives considered in the DEIS/EIR, was completed in April 2005 (see FEIS, Appendix G). As a result of the Final Alternatives Analysis, the Modified Alternative J1T, which shares design elements with Alternatives LT and J1T, was identified as the LEDPA for the proposed project. Modified Alternative J1T was determined to be the LEDPA/Preferred Alternative because it would have the least overall impact to both natural and community resources, while still meeting the purpose and need for the project. The factual determinations in the Final Alternatives Analysis demonstrate the following:

Alternative E3, which would affect approximately 15 acres of wetlands and other waters, should be eliminated from consideration as the LEDPA for the following reasons: (a) it has the greatest potential to degrade water quality because of highly erosive soils and numerous of stream crossings, as well as the extensive earthwork required, and therefore; (b) it has the greatest potential to affect local populations of three federally listed salmonid species; (c) it would have the largest direct impact to foraging habitat for northern spotted owl because of the removal of approximately 300 acres of coniferous forest; (d) it would displace the largest number of homes and businesses (133); (e) it has the potential to affect the largest number of archaeological sites (18); (f) it would convert a large amount of Williamson Act Contract farmland (59.3 ha/146.6 ac); and (g) it would impact larger areas of upland/foothill habitats, including oak woodland which is more difficult to replace, than the other alternatives.

Alternatives C1T and L/C (the south segment of Alternative LT plus the north segment of Alternative C1T) should be eliminated from consideration as the LEDPA because of substantial impacts to wetlands and other waters of the U.S. and to federally-listed fish species. The impacts associated with Alternatives C1T and L/C include the greatest direct impact to jurisdictional wetlands and other waters of the U.S. when compared to the other build alternatives: 52.7 ha (130.2 ac) for Alternative C1T, and 48.5 ha (119.9 ac) for Alternative L/C. Both alternatives would require realignment of approximately one mile of salmon-bearing creek, which is critical habitat for three federally-listed fish species.

Alternative LT should be eliminated from consideration as the LEDPA because it would directly impact approximately 29.9 ha (73.8 ac) of jurisdictional wetlands and other waters of the U.S. Alternative LT would also result in fragmentation of the largest stand of valley oak riparian woodland in the valley.

Alternative J1T does not meet LEDPA criteria because, while it has impacts to wetlands and other waters of the U.S. comparable to those of Modified Alternative J1T, it creates

unacceptable impacts to the local and regional park/recreation complex ("human use characteristics" under Section 404(b)(1) Subpart F of the Clean Water Act) and the Sanhedrin industrial park. In addition impacts to the industrial park would result in the loss of businesses that would not or could not relocate in Willits. Thus, even though wetlands impacts would be comparable impacts to those of Modified Alternative J1T, Alternative J1T is the more environmentally damaging of the two alternatives.

Modified Alternative J1T meets LEDPA criteria because it would result in the least overall environmental harm. The Draft Alternatives Analysis had identified Alternatives J1T and LT as potential candidates for the LEDPA; however, it became necessary to develop a modified alignment that incorporated portions of these two alternatives in order to avoid important community and biological resources. The Modified Alternative J1T would have comparable wetlands impacts to those of Alternative J1T, but it avoids the important community resources that Alternative J1T would have otherwise impacted. Modified Alternative J1T has fewer impacts to wetlands than Alternative LT and avoids a large stand of valley oak riparian woodland that would have been impacted and fragmented by Alternative LT.

No-Build Alternative is not a practicable alternative because it does not meet the purpose and need of the project.

The U. S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (USEPA) have issued letters of concurrence that Modified Alternative J1T is the LEDPA (see FEIS, Appendix C). Both the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) have issued Biological Opinions (BOs), which state that construction of the Preferred Alternative is not likely to jeopardize the continued existence of federally listed species (see FEIS, Appendix D).

C. Section 4(f)

The Modified Alternative J1T avoids impacts to Section 4(f) properties; therefore, no formal Section 4(f) evaluation is required for this project.

D. Measures To Minimize Harm

All practicable measures to avoid or minimize environmental harm have been incorporated into the decision and are described as follows.

Air Quality

The bypass project would not generate any additional long-term carbon monoxide (CO) emissions to local air quality. Activities during construction would produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and vehicles transporting the construction crew. The use of construction equipment on site would result in localized exhaust emissions. The Department's standard specifications for

construction would be adhered to in order to reduce construction related emissions. Dust emissions during construction, could also have a substantial temporary impact on local air quality. Dust emissions would result from earthmoving (dust generation) and heavy equipment use. Such dust emissions could be generated from land clearing, ground excavation, cut and fill operations, and the construction of the roadway itself. Dust emissions would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing weather. A major portion of these emissions probably would result from equipment traffic over temporary construction roads. The following measures, which are standard best management practices and comply with Rule 430 (Mendocino Air Quality Management District), will minimize construction-related air quality impacts due to dust emissions. Naturally Occurring Asbestos (NOA) is not known to occur in the vicinity of Oil Well Hill; however, measures are in place in the event NOA is encountered during construction. The following measures will avoid or minimize impacts to air quality:

- The contractor will apply water and/or chemical dust suppression on dirt haul roads and surfaces over which equipment will travel.

- The contractor will cover and/or water exposed dirt storage piles to inhibit wind erosion.

- The contractor will stagger the time and location of fugitive dust-generating activities.

- Caltrans Standard Special Provisions for the identification and handling of soils containing NOA will be included in the construction contract documents.

- The contractor will ensure that grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.

- The contractor will utilize electric powered equipment in lieu of gasoline-powered engines where feasible.

- The contractor will ensure that grading plans include a statement that work crews will shut off equipment when not in use.

- The contractor will time the construction activities so as not to interfere with peak hour traffic and minimize obstruction of through traffic lanes adjacent to the site. If necessary, a flag person shall be retained to maintain safety adjacent to existing roadways.

- The contractor will support and encourage ridesharing and transit incentives for the construction crew.

Cultural Resources

Two historic properties were identified within the Area of Potential Effects (APE) established for the Modified Alternative J1T alignment (one archaeological site and one built environment property). The cultural resource investigation conducted for the project concluded that the two cultural resources could be avoided and would not be adversely affected by the project. An Environmentally Sensitive Area (ESA) Action Plan has been developed, as part of the SHPO-approved cultural resource compliance documents, to further ensure the avoidance and protection of cultural resources during the construction phase of the project. The following measures will avoid or minimize potential impacts to cultural resources.

- It is Caltrans' standard policy to avoid cultural resources whenever possible. If buried cultural materials are encountered during construction, it is Caltrans' policy that all work in that area must halt until a qualified archaeologist can evaluate the nature and significance of the find (Caltrans Environmental Handbook, Volume 2, Chapter 1).

- If human remains are unearthed during construction, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur, in the immediate vicinity of the discovery, and the county Coroner shall be notified so that a determination can be made as to origin of the remains. If the Coroner determines that the remains are associated with a Native American archaeological site, the provisions of California Public Resources Code 5097.98 shall be followed to notify the Native American Heritage Commission and to identify the Most Likely Descendent from the local Native American community.

- The ESA Action Plan, which is included as part of the Historic Property Survey Report, has been developed to ensure the avoidance and protection of historic properties during project construction. The ESA Action Plan details the protective measures to be employed at various stages of the project (before, during, and after construction) and identifies the parties responsible for the implementation of such measures, which include the placement of protective fencing and monitoring by a qualified archaeologist. The ESA Action Plan will be included in the Resident Engineer pending file.

Biological Resources

Modified Alternative J1T, as well as the designated borrow site at Oil Well Hill, would result in direct impacts to the following biological resources: Sensitive plant communities and habitats, including wetlands and other waters of the U.S., oak woodland, and riparian woodlands; Three listed salmonid species; One listed plant species (Baker’s meadowfoam); One listed wildlife species (Northern spotted owl); and Seven non-listed plant and wildlife species (white-tailed kite, Cooper’s hawk, yellow-breasted chat, California yellow warbler, foothill yellow-legged frog, northwestern pond turtle, and red tree vole). The following measures will avoid, minimize, or compensate for impacts to biological resources resulting from construction of the Willits Bypass, Modified Alternative J1T, project:

- The project will comply with the terms and conditions provided by the USFWS and NMFS, in their BOs. Caltrans will also comply with conditions of the permits issued by all of the resources agencies, and will implement mitigation and monitoring measures provided in the Conceptual Mitigation Plan (CMP; see FEIS, Appendix L). The CMP includes measures that would compensate for impacts to wetlands and other waters; riparian woodlands, oak woodlands, listed salmonids; northern spotted owl and Pacific fisher; Baker's meadowfoam and non-listed special-status species.

- Compensatory mitigation would include the creation, restoration, enhancement, and/or preservation of sensitive habitats affected by the project. Conceptual mitigation ratios are provided in the CMP for the Modified Alternative J1T alignment. These ratios were developed through consultation with the USACE, USFWS, NMFS, USEPA, the California Department of Fish & Game (CDFG), and the Regional Water Quality Control Board (RWQCB). A number of mitigation sites have been considered and evaluated for their potential for the creation, restoration, enhancement and/or preservation values. A Final Mitigation and Monitoring Plan will be developed and adopted after approval and distribution of the Final Environmental Impact Report/Environmental Impact Statement.

- During the final design phase of the Modified Alternative J1T project, Caltrans biologists, Caltrans design engineers, and resource agency staff will work together on additional design solutions that will avoid or minimize impacts to sensitive biological resources.

- ESAs will be established and delineated on project plans and specifications to protect sensitive biological resources adjacent to the construction corridor by prohibiting construction activities in those areas.

- Caltrans/FHWA will develop and implement an environmental awareness and training program that informs the contractor and construction workers of the environmental regulations with which Caltrans is committed to comply and measures established for the project to minimize and avoid sensitive habitats and species.

- Qualified biologists will monitor construction activities in sensitive biological resource areas to ensure adherence to permit conditions and mitigation requirements.

- Working in live stream channels to the extent feasible will be avoided. Construction associated with stream crossings (bridges, viaduct, and culvert) would conform to the work window of June 15 though October 15 of each year for work associated with bridge, viaduct, and culvert construction over salmonid bearing streams.

- Oak woodland occurring in the project corridor consists of valley oak woodland, Oregon white oak woodland, and black oak woodland. Minimization efforts during construction would consist of the removal of only the minimum number of trees necessary to allow for efficient project construction. ESA fencing would be installed around oak woodlands adjacent to the work areas. Any encroachment beyond the ESA fencing during construction (including driving, material or equipment storage and vehicle parking) would be prohibited. The ESA fencing would be accurately depicted on the final contract drawings. Compensation for the permanent loss of oak woodland would consist of in-kind creation/restoration, enhancement, and preservation of oak woodlands on newly acquired parcels. These parcels would be purchased in fee or by a conservation easement and be preserved in perpetuity. On sites where creation/restoration or enhancement is to occur, oak trees would be initially planted in these areas at the ratio of five new saplings for each oak lost with the goal of three of them surviving after a ten-year monitoring period. Other compensation options may include: 1) a monetary contribution to the California Oak Woodlands Conservation Fund, administered by the State Wildlife Conservation Board for the purpose of purchasing oak woodland conservation easements, or; 2), if there is an established CDFG oak woodland mitigation bank, the mitigation bank could be used to fulfill the off-site compensation requirements (refer to Conceptual Mitigation Plan; Appendix L of FEIS).

- Riparian woodlands within the project corridor are divided into three categories for management purposes (CMP; see FEIS, Appendix L). Category I riparian woodlands are associated with salmonid bearing streams, and Categories II and III riparian woodlands are other riparian woodlands that are not associated with salmonid streams. Minimization measures that would occur during construction would include: (1) removing the minimum amount of vegetation necessary; (2) installing ESA fencing, and enforcing protection of riparian vegetation located within established protected areas; (3) implementation of appropriate BMPs; and (4) pre-construction training sessions to inform contractors and construction workers of the status of sensitive habitats and special-status species and the requirements for avoidance of protected areas. Mitigation for all affected riparian woodlands would be implemented through creation/restoration, enhancement, and preservation within Little Lake Valley. Local native plant species would be used for the revegetation of impacted riparian zones along salmonid streams within the project limits, as well as off-site mitigation areas. Mitigation would be in-kind, and plant propagules would be collected in Little Lake Valley. Riparian trees would be replanted initially, and associated shrubs, herbaceous plants, and annuals would be seeded or planted along with the riparian trees. Planting methods would include the installation of stem (pole) cuttings from plants such as willows, cottonwood, thimbleberry, coyote bush, or other species capable of easy rooting from cuttings. Pole cuttings would also be used to revegetate areas where Rock Slope Protection (RSP) is required on the stream banks. In mitigation areas where some riparian vegetation is already present, additional vegetation would be

planted. Revegetation of unvegetated stream banks would be considered creation. Removal of invasive exotic vegetation and planting of additional vegetation on sparsely vegetated streambanks would be considered enhancement.

- Modified Alternative J1T would temporarily and permanently affect two populations of Baker's meadowfoam, one in the central portion of the project (in the area of the Colli Ranch) and one in the northern portion of the project, in the vicinity of the Quail Meadows Interchange. The project would avoid most of the central population of Baker's meadowfoam, but would impact the majority of the northern population. Impacts to Baker's meadowfoam plants would be mitigated by off-site preservation of existing populations and habitat, as well as by creation/enhancement of new habitat for populations occurring on upland sites and on wetland sites (refer to CMP, FEIS, Appendix L). Portions of temporarily impacted Baker's meadowfoam habitat could be restored where feasible. Baker's meadowfoam habitats occurring within jurisdictional wetlands would be mitigated by a combination of creation/restoration at the same ratios as jurisdictional wetlands, and preservation. Baker's meadowfoam creation/restoration parameters would be based on specific hydrologic and soil conditions specified and described for the species in a formerly prepared study titled "Hydrologic and Soil-Geomorphic Conditions Associated with Baker's Meadowfoam in Little Lake Valley, Mendocino County, California". Baker's meadowfoam preservation sites would be acquired within Little Lake Valley. Additionally, funds would be necessary in order to set up a long-term management and maintenance program. The Baker's meadowfoam preserves would be maintained in perpetuity and their management could be transferred to CDFG or a mitigation bank (refer to FEIS, Appendix L).

- To comply with the provisions of the Migratory Bird Treaty Act, vegetation required for removal will be removed or trimmed during the fall and/or winter months, to the extent possible, to avoid impacts to nesting birds. If vegetation cannot be removed during the non-breeding season, Caltrans will arrange to have a qualified biologist conduct preconstruction surveys of impact areas to check for nesting activity of all bird species. If nesting activity is detected, Caltrans will, if possible, establish a buffer around the nest(s). The buffer width would be determined through consultation with USFWS and CDFG. The buffer will be maintained and construction activities will avoid nest sites until the biologist determines that the young have fledged or nesting activity has ceased.

- Excavation at the designated borrow site at Oil Well Hill could affect a maximum of 40 acres of Northern spotted owl (NSO) foraging and dispersal habitat. Caltrans will conduct additional pre-construction protocol-level surveys to determine the status of NSO in the vicinity of the Oil Well Hill borrow site. If NSO is found nesting within 1.3 miles of the borrow site, Caltrans/FHWA will consult with the USFWS (refer to USFWS Biological Opinion, FEIS, Appendix D). Caltrans/FHWA will document the results of all protocol surveys conducted

for NSOs. Caltrans will implement measures provided in the USFWS BO for NSO, which include: **(1)** All large trees that can reasonably be avoided at Oil Well Hill will be protected; **(2)** Vegetation removal at Oil Well Hill will occur during the non-breeding season (September 15 – February 1), to the extent feasible, to minimize potential impacts to NSOs. Vegetation will be removed incrementally (i.e., only on those portions of the site that are needed for borrow material), rather than removing all vegetation on the approximately 16 ha (40 ac) site prior to excavation; **(3)** Planting the same tree species that occurred at the borrow site following excavation, if feasible, could restore vegetation at Oil Well Hill; **(4)** If an active NSO nest is found within 0.8 km (0.5 mi) of any proposed construction activity, USFWS may require that Caltrans establish a 0.8 km (0.5 mi) diameter buffer around the activity center during the breeding season (February 15 to August 31).

- If non-listed special-status wildlife species are found nesting on or near the project site, including California yellow warbler, yellow-breasted chat, and raptors, Caltrans will establish buffers around each nest. The buffer width will be determined through consultation with CDFG. The buffer shall be maintained and construction activities shall avoid nest sites until the Caltrans biologist determines that the young have fledged or nesting activity has ceased. For white-tailed kites and other raptors, Caltrans shall conduct a pre-construction survey during the spring or early summer (April-early July) to determine whether nesting raptors (e.g., white-tailed kites, Cooper's hawks, red-tailed hawks, red-shouldered hawks) are present on or within 0.40 km (0.25 mi) of the selected alternative. If the survey detects nesting raptors on or within 0.40 km (0.25 mi) of the selected alternative, Caltrans will maintain buffer areas and seasonal construction constraints (e.g., no work during active nesting periods) in coordination with USFWS and CDFG.

- The proposed viaduct and bridge crossings would provide access for wildlife to cross under the proposed alignment. Caltrans may construct additional wildlife under-crossings, if feasible, that would be suitable for use by deer and other wildlife species. If the construction of other wildlife crossings were feasible, the location, number and design of the under-crossings would be determined through consultation with CDFG.

- In addition to requiring the contractor to prepare a Storm Water Pollution Prevention Plan (SWPPP), Caltrans will implement the following measures to minimize disturbances to aquatic resources: **(1)** All construction-related materials shall be stored in designated staging areas at least 100 feet from perennial waterways and drainages; **(2)** Refueling and vehicle maintenance shall be performed at least 100 feet from creeks and other water bodies; **(3)** Operation of heavy equipment shall be minimized in perennial creeks (to the greatest extent possible). If equipment must access perennial creeks, this will occur during the late summer months when the stream flows are low, or when no water is in the channels. If water is flowing, the channels will be dewatered; **(4)** Temporary sedimentation barriers, such as sandbags or siltation fencing, shall be installed to

minimize the amount of silt entering the creeks and any ephemeral drainages with water present in the channel. The location of these barriers shall be determined by the resident engineer and environmental monitor, and shall be clearly marked in the field before construction activities begin; **(5)** Additional Best Management Practices (BMPs) shall be implemented to prevent runoff from adjacent lands from flowing across construction areas, slow down the runoff traveling across construction sites, remove sediment from onsite runoff before it leaves the site, and provide soil stabilization.

- To reduce the spread of invasive non-native plant species and minimize the potential for disturbance activities to decrease palatable vegetation for wildlife species, Caltrans will implement the following protection measures to comply with Executive Order (EO) 13112: **(1)** Prior to construction, Caltrans will conduct surveys in the construction corridor of the NEPA/404 preferred alternative for populations of plants listed on the California Department of Food and Agriculture (CDFA) noxious weed list. Populations of noxious weeds will be mapped. This will establish a baseline from which to evaluate the possible impacts of this construction on the spread of these invasive exotic plants or the establishment of other invasive exotic plants; **(2)** Caltrans will not allow disposal of soil and plant materials from any areas that supports invasive species in areas that support stands dominated by native vegetation; **(3)** Plant species used for erosion control will consist of native, non-invasive species or non-persistent hybrids that will serve to stabilize site conditions and prevent invasive species from colonizing; **(4)** All off highway equipment used on the project shall be free of mineral soil and vegetation. Evidence of high pressure washing or steam cleaning, prior to initial entry to the project limits, will be required to minimize the potential for the spread of invasive weeds from outside the Little Lake Valley area. Contract language will inform Contractors and Caltrans inspection staff of the methods to be used to control and prevent the spread of identified invasive non-native species. Gravel and/or fill material from borrow areas and commercial sources will come from weed free sources. Certified weed-free, landscape and erosion control materials will be used; **(5)** Following construction, Caltrans will conduct a three-year program of invasive exotic weed monitoring, which will consist of conducting surveys every six months during the spring and late summer. The percent cover of invasive exotic plant species occurring within the construction corridor must not exceed the cover of invasive exotic plant species found outside the construction corridor, or the cover found in the construction corridor prior to construction. Monitoring potential invasive species will occur only where ground was disturbed within the construction corridor; **(6)** If, during the three-year monitoring program, invasive weeds show evidence of spreading, Caltrans will develop an Invasive Weed Eradication Plan, targeting identified invasive species on the CDFA list. Herbicides would not be used since Caltrans does not use herbicides in Mendocino County.

- During pile driving activities below the top-of-bank and within 15 m (50 feet) of salmonid bearing streams, Caltrans will dewater the stream (including relocating fish), and a qualified fisheries biologist will monitor underwater noise levels both

upstream and downstream of the dewatered area. If noise levels exceed 187 dB_{SEL} or 208 dB peak, Caltrans will cease pile driving at this location and immediately contact NMFS to discuss further reasonable and prudent measures to minimize potential impacts to fish, which could include additional fish relocation and dewatering. Dewatering could be required for six weeks or more at some stream crossings. See also NMFS Biological Opinion (FEIS, Appendix D).

Business and Residential Relocation

Modified Alternative J1T would require the relocation of 10 residences. The Final Relocation Impact Statement (FRIS) prepared for this alternative concludes that replacement housing would be available for all impacted households in the replacement area and would not dramatically alter the local housing market. Modified Alternative J1T would also impact six industrial businesses and one non-profit organization. Adequate relocation facilities exist in Willits and the surrounding valley for these business uses. The following measures will reduce impacts related to residential and/or business relocations.

- Caltrans will provide relocation assistance payments and counseling to persons and businesses in accordance with the Federal Uniform Relocation Assistance and Real Properties Acquisition Policies Act, as Amended, to ensure adequate relocation and a decent, safe, and sanitary home for displaced residents (see Volume 3, DEIS/EIR, Appendix J for a detailed discussion). All eligible displacees will be entitled to moving expenses. All benefits and services will be provided equitably to all residential and business relocatees without regard to race, color, religion, age, national origins and disability as specified under Title VI of the Civil Rights Act of 1964.

- Caltrans will arrange for Last Resort Housing payments to displaced residents unable to utilize standard relocation benefits to locate existing housing within the project area.

- Caltrans will work with potentially displaced residents and local agencies to develop a comprehensive Relocation Plan to provide displaced residents with the greatest possible use of relocation benefits and Last Resort Housing payments.

Farmland

The Modified Alternative J1T does not exceed the 160-point impact threshold in its conversion of Prime and Unique farmland to other uses; however, this alternative would have several irreversible impacts on agriculture in this area. It would convert over 100 acres of Prime and Unique farmland to non-farm uses, relocate one ranch, and affect over 50 acres of land held in Williamson Act contracts. The following mitigation measures are proposed to offset these impacts.

- The Purchase of Agricultural Conservation Easements (PACE) program enables the landowners to separate and sell their right to develop land from their other property rights. After selling easements, the landowner retains all other rights of

ownership, including the right to farm the land, prevent trespass, and sell the land. Caltrans may purchase an agricultural conservation easement in or near the project area, consisting predominantly of Prime Farmland, which will ensure preservation of the land for farming uses in perpetuity. This mitigation may be combined with mitigation for lost wetlands, assuming that wetlands are suitable for grazing purposes. Easement titles could be deeded to non-profit environmental organizations or to organizations such as the American Farmland Trust.

- Caltrans will stockpile as much topsoil as is feasible for local and re-vegetation use to conserve valuable Prime Farmland (soils). The use of topsoil facilitates the reestablishment of plant communities on disturbed soils and reintroduces this important resource back into the local ecosystem. The topsoil will be stored at an environmentally approved site. Possible applications for the topsoil include: mitigation sites; landscaping the Willits bypass project corridor; and use by the City of Willits, Mendocino County, and local/county residents/businesses/ farming operations.

- Caltrans may contribute to the Department of Conservation's Farmland Conservancy Fund, in an amount to be determined in coordination between Caltrans and the Department of Conservation. The fund provides grants for projects that use and support agricultural conservancy easements for protection of agricultural lands. Caltrans can buy "credits" per Public Resources Code 10231.5, which states "the Department may accept donations of funds if the department is the designated beneficiary of the donation and agrees to use the funds for the purposes of the program in a county specified by the donor." The Department of Conservation, which oversees the Farmland Conservancy Fund can accept funds and apply them within a designated area (Little Lake Valley or near the Willits Bypass Project).

Floodplain

The construction of Modified Alternative J1T within the floodplain would have minimal impact related to additional impervious surface area or to beneficial floodplain values. The following measures will minimize potential floodplain impacts.

- According to FEMA, the floodway is "the area of the floodplain that should be reserved (kept free of obstructions) to allow floodwaters to move downstream." For each valley alternative, the Floodway Viaduct (bridge) spans the floodway. The only encroachments in the floodway are the columns supporting the structure. In addition, the structure designs have relatively long spans, in the range of 30 m (100 ft). These structure design features limit the impacts on the floodplain by minimizing the actual footprint of the impacts and obstructions to flow.

- The valley alternatives include equalizing culverts at periodic points along the embankments, which should minimize the redirection of flows, maintaining the existing flood patterns. The culverts will not, however, be included if detailed

hydraulic studies indicate the culverts would cause other problems with flood patterns.

- The cross sectional design of the facility, the side slopes, median, pavement widths, and so forth, has been established to limit impacts to floodplains as well as other resources. The median width, at 13.8 m (45 ft), is 4.8 m (16 ft) less than Caltrans' current design standard. This median width reduces the footprint of impact along the entire alignment, including the floodplain. Sideslopes are the slopes connecting the roadbed with the existing ground. When the embankment is low, the sideslopes can be constructed at relatively low angles without extending an unreasonable distance from the roadbed. But as embankments increase in height, sideslopes constructed at the same angles would cover much wider areas and add to the volume of earth to be placed. To reduce the earthwork and footprint of higher embankments, sideslopes are constructed at steeper angles. In the floodplain, the higher embankments occur at bridge approaches, and the steeper sideslopes constructed in connection with these higher embankments limit the impacted areas.

- The use of tight diamond interchanges rather than spread diamonds reduces the footprint of impacts on the floodplain.

Geology and Soils

Geologic conditions in the project area consist of active faults, shallow groundwater, and soil deposits that could be subject to liquefaction, shear failures, and settlement. Based on sampling and data analyses, the primary geotechnical considerations for the Modified Alternative J1T is the potential for differential settlement. The following measures will reduce potential impacts related to these geologic conditions:

- If necessary, Caltrans will incorporate special design considerations into the project, such as specialized foundation treatments, specialized cut slope and fill slope design, mechanically reinforced embankments, stabilization trenches, catchment areas, and specialized subsurface drainage techniques.

- Where deposits are highly erodible and prone to landsliding, Caltrans will design the project to include specific slope ratios, special foundation treatments, and other engineering solutions.

- To minimize or prevent settlement, Caltrans will incorporate foundation treatments or long-term settlement periods into the design and construction of the project.

- For any structures overlying potentially liquefiable deposits, Caltrans will design the project to be constructed on foundation piles that could be extended through the susceptible zones into structurally competent materials.

Hazardous Materials

No hazardous waste issues have been identified within the Modified Alternative J1T alignment, and no hazardous waste/materials issues have been identified at the Oil Well Hill borrow site area. On a short-term basis, during construction/demolition activities, the Modified Alternative J1T has potential for the presence of asbestos-containing building materials (ACBM) and lead-based paint in the buildings within the project boundaries. The following measures will avoid or minimize hazardous waste impacts:

- Caltrans will complete an asbestos and lead-based paint survey prior to demolition activities. Caltrans will obtain a Mendocino County Air Quality Management District permit (i.e., NESHAP permit – National Emission Standards for Hazardous Air Pollutants), which is required for demolition.

- Inspections for a NESHAP permit are done by Cal/OSHA certified inspectors. Regulated Asbestos Containing Materials (RACMs), Category I and II materials, are identified during the survey and are noted on NESHAP permit**.** Caltrans will have all Regulated Asbestos Containing Materials (RACM) and lead-based paint abated by a licensed asbestos and lead-based paint contractor.

Noise

Projected noise levels for the Modified Alternative J1T are below the Noise Abatement Criteria; therefore no abatement is to be undertaken under Title 23, Part 772, Code of Federal Regulations, "Procedures for Abatement of Highway Traffic Noise". During the construction phase of the project, noise from construction activities would dominate the noise environment in the immediate area. Activities involved in construction would generate noise levels ranging from 70 to 90 dB at a distance of 15 m (50 ft). Construction activities would be temporary in nature, typically occurring during normal working hours. Noise levels related to pile driving activities would exceed this range, but would vary depending upon the type of equipment, the size/type of piles, and the soil conditions where the work is occurring. The following mitigation measures are proposed to address noise impacts during construction.

- The contractor shall comply with all local sound control and noise level rules, regulations and ordinances, which apply to any work performed pursuant to the contract (Caltrans Standard Specifications Section 7-1.01(I) "Sound control requirements").

- Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without the muffler (Caltrans Standard Specifications Section 7-1.01(I) "Sound control requirements".

- Although standard practice requires that construction be restricted to between the hours of 7:00 am and 7:00 pm (8:00 am and 7:00 pm on Saturdays), some

nighttime work may be needed. Standard practice precludes construction work on Sundays and federal holidays.

- Stationary construction equipment, such as compressors and generators, will be shielded and located as far away as feasible from receptor locations.

- Place any maintenance yard, batch plant, haul roads, and other construction operations as far as possible from sensitive receptor locations.

- Caltrans will keep area residents informed regarding construction work, the time involved, and control measures that will be used to reduce construction-related impacts.

- A Traffic Management Plan will provide methods and restrictions to minimize construction traffic impacts to residents.

Public Services

During construction of the project, traffic delays would not be anticipated since most of the project would be constructed on new alignment, and therefore, would have minimal impact on local roadways. However, to reduce conflicts with emergency services providers and other public services, and local traffic, the following measures are proposed:

- Caltrans will make preconstruction contacts with the fire department, law enforcement, and ambulance services.

- Caltrans will notify concerned agencies of the construction schedule.

- Caltrans will implement a traffic management plan to minimize impacts to roadway users during construction of the project.

SMARA/Grading Permit (Disposal, Borrow, Staging)

Removal of embankment material from the designated borrow site would result in impacts to some biological resources. The biological measures described above will avoid or minimize impacts, as will the following:

- Caltrans/FHWA will obtain a permit pursuant to the State Mining and Reclamation Act (SMARA), if required, before construction activities begin. Caltrans will submit a permit application, a Mendocino County-approved Reclamation Plan, and financial assurance to the Department of Conservation, Office of Mine Reclamation. Caltrans will implement the reclamation plan, which will include steps for maintaining water and air quality, minimizing flooding, erosion and damage to wildlife and aquatic habitats caused by the surface mining. The reclamation process will include topsoil replacement and revegetation with suitable plant species. The reclamation plan also will contain measures to mitigate visual impacts.

Visual Resources

The Modified Alternative J1T would have a less than adverse visual impact to the South Valley, Little Lake Valley, Miracle Mile, and Historic District Landscape Assessment Units (LAUs), and no visual impact to the Brooktrails LAU. At the designated borrow site, one home near the excavation on the east side of the highway and higher on the hill could be impacted visually. The following measures are proposed to minimize visual impacts:

- Caltrans will have the contractor avoid and preserve trees and vegetation where feasible. Native vegetation that is removed for construction of the project will be replaced with like varieties to blend the freeway into the landscape. Tree mitigation is discussed under Biological Resources.

- Caltrans will use stockpiled topsoil in revegetation efforts.

- Slope protection will blend with existing features, simulating natural forms (i.e., rounding tops and bottoms of cut and fill slopes).

- The contractor will avoid/preserve large rock formations that do not interfere with construction of the project.

- Caltrans will provide plantings in appropriate locations, including adjoining highway slopes, to reduce visual impacts. Plant materials will include a combination of native oaks, pines, and/or redwood trees, as well as native shrubs and ground covers, where appropriate.

- For Oil Well Hill only: Caltrans will incorporate into the project design slope rounding, contour grading, and to the extent feasible, leaving a vegetative buffer between the highway and cut slope. At the time of final design, the Caltrans Office of Landscape Architecture will provide specific design solutions for slope treatment.

- For Oil Well Hill only: Caltrans will provide screen planting for the home closest to excavation at the designated borrow site.

- Caltrans Structures and Aesthetics Division, in cooperation with the Office of Landscape Architecture, will provide design treatments for project structures, such as bridges and viaduct, and to highway appurtenances.

- Landscape Plantings for the South Valley Landscape Assessment Unit: After the initial erosion control seeding, Caltrans may provide permanent landscape plantings for this area. Plant material selection is to include native species. Plantings must be concentrated at areas where existing groves of trees occur and leaving open areas unplanted. This method will preserve the existing grassland and horizontal views, which are unique to this landscape unit.

Water Quality

Construction of the bypass would increase the overall impervious surface within Little Lake Valley, which could result in a higher volume of storm water runoff. This will, to some degree, modify the drainage patter near the proposed alignment, which can increase the potential for erosion. Generally, the increase in storm water runoff can increase the potential for erosion due to point discharges, overland flow, and stream bank erosion. Storm water runoff, both during and after construction, and other long-term maintenance activities could potentially introduce chemicals, oil, and grease to surface waters. Construction activities, including the removal of embankment material at Oil Well Hill, would result in soil and ground disturbances, creating loose or unprotected soil that could be transported by storm water runoff or wind to nearby watercourses. Such increases in sediment and turbidity could impact receiving water quality. Modified Alternative J1T does not propose stream channel realignments for any salmonid bearing streams therefore, impacts due to loss of canopy cover and elevated stream temperatures are significantly reduced, compared to the other build alternatives.

- To address potential water quality impacts during construction, Caltrans will require the contractor to use a combination of Best Management Practices (BMPs) to control potential erosion and sedimentation from the project site. Caltrans has developed a suite of construction site BMPs that will be implemented on the proposed project. The Plans, Specifications and Estimates (PS&E) developed for the project will require the contractor to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP), and other project specific construction BMPs, which will effectively reduce potential pollutants of concern in storm water discharges. The SWPPP will be reviewed and approved by the Caltrans Resident Engineer to ensure all the necessary BMPs are incorporated. The SWPPP will also include a final Revegetation Plan to be implemented at the end of construction activities.

- Caltrans' Standard Special Provisions (SSPs) will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters. For example, on this project, equipment operating in water bodies will be required to be steam cleaned prior to arrival on site, and be maintained in a clean condition during the length of activities.

- Where vegetation along streams is removed or severely trimmed back, Caltrans will plant replacement vegetation using native species for shading of creeks to reduce temperature related impacts to water quality.

- Following the construction process, the contractor will stabilize disturbed soil areas through permanent re-vegetation or other means. The Storm Water Quality Handbook, Project Planning and Design Guide (revised July 2005), provides detailed procedures for design of permanent slope stabilization controls, design pollution prevention, and permanent treatment BMPs. The procedures are intended to ensure that an appropriate design is developed that will allow all finished slopes to achieve stabilization, even under severe conditions, and also

provide erosion control BMPs at all point source discharges of storm water runoff. Treatment BMPs, such as biofiltration, will be incorporated where feasible.

- The placement of sand on roads in the Willits area occurs relatively infrequently. When applied, Caltrans uses clean sand and follows the practices and procedures in Maintenance BMP (R1) Snow and Ice Control.

- As part of standard operation and maintenance procedures, Caltrans has developed a standard Hazardous Waste and Spill Response Plan (HW&SRP), which Caltrans will ensure is implemented during the project. These BMPs address water quality issues associated with accidental spills.

Wetlands Only Practicable Alternative Finding

Pursuant to Executive Order 11990 [23 CFR 771.125(a)(1)], Caltrans/FHWA has determined that there is no practicable alternative to constructing the project in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands, which may result from such use. The analysis for this Wetlands Only Practicable Alternative Finding is located in Appendix J of the FEIS.

E. Monitoring or Enforcement Program

In cooperation with the NEPA/404 resource agencies, Caltrans has prepared a Conceptual Mitigation Plan (CMP; see FEIS, Appendix L), which contains detailed information about: the biological resources identified within the project area; how these resources would be impacted by the proposed project; the avoidance and minimization measures to be implemented; and a conceptual plan for the compensatory mitigation of project-related impacts. The USACE, USEPA, USFWS, and NMFS have issued letters of concurrence that the CMP, which will serve as the basis for the Final Mitigation Plan, is adequate (see FEIS, Appendix C). Caltrans will continue to work with the resource agencies to develop the Final Mitigation and Monitoring Plan, which will detail the location and extent of all biological mitigation requirements to be implemented for the project.

The USFWS and NMFS have each issued the BO, which states that the proposed project is not likely to jeopardize the continued existence of Northern spotted owl, Pacific fisher, and three listed salmonid species, after implementation of mitigation measures. The BOs issued by the USFWS (March 2006) and NMFS (September 2006) can be found in Appendix D. The project shall comply with the terms and conditions of the USFWS and NMFS BOs to further minimize impacts to these resources.

F. Comments on Final EIS

This portion of the ROD includes comments received by Caltrans on the Final EIS for the Willits Bypass. The Final EIS was approved by FHWA on October 25, 2006. A Notice

of Availability of the FEIS was published in the Federal Register on November 9, 2006, with the wait period ending December 11, 2006.

Four letters were received in response to the notice in the Federal Register.

Letter Number	Letter From	Date Sent
1	Federal Emergency Management Agency (FEMA)	11/21/06
2	Individual Citizen (Mr. Freddie Long)	11/28/06
3	Willits Environmental Center	12/8/06
4	United States Environmental Protection Agency	12/11/06

Caltrans and FHWA have reviewed the comment letters and have concluded that all substantive comments in the letter have been addressed and FHWA has considered all Final EIS comments before reaching the decisions documented in this ROD.

Letter 1

The FEMA letter contained four recommendations (bold). The following are the recommendations and Caltrans and FHWA's response:

1. **All buildings constructed within a riverine floodplain must be elevated so that the lowest floor is at or above the Base Flood Elevation level in accordance with the effective Flood Insurance Rate Map (FIRM).**

   As stated in Section 2.3 of the FEIS, the highway will be built on elevated structures above the 100-year floodwater surface level.

2. **If the area of construction is located within a Regulatory Floodway as delineated on the Flood Insurance Rate Map, any development must not increase base flood elevations.**

   A detailed hydraulics study has been conducted. Results of the study were included in Section 3.6 of the FEIS. Construction of the floodway viaduct will avoid any increase in the floodway water surface elevation.

3. **Areas within a coastal high hazard area must be elevated on pilings and columns, so that the lowest horizontal structural member is elevated to or above the base flood elevation level.**

   The project is not within a coastal area.

4. **Upon completion of any development that changes existing Special Flood Hazard Areas, the National Flood Insurance Program directs all**

participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision.

Caltrans will complete and submit necessary hydrologic and hydraulic data as appropriate upon completion of the project.

Letter 2

Mr. Long's letter contained the following comments (bold) with Caltrans and FHWA's response below them.

The demand for oil is outstripping the supply resulting in higher fuel prices. As a result traffic levels on 101 will be lower rather than higher in the future. The funds for the project should be spent on pedestrian and bicycle improvements, thereby saving money and impacts to the environment.

There is no data available that shows a substantial change in the mode of transportation in the Willits area in the foreseeable future. A discussion on the appropriateness of a 4-lane bypass has been addressed in General Response 1.10 Two-Lane Bypass in Volume 2 of the FEIS.

Letter 3

The Willits Environmental Center letter contained three comments. The following are the comments and Caltrans and FHWA's response:

1. **The 2-lane Alternative has inappropriately been dismissed as a practical alternative.**
   General Response 1.10 in Volume 2 of the FEIS addresses the suggestion of a 2-lane bypass.

2. **Cost estimates fall short of true costs of the project.**
   Project costs have been continually updated using the best available information to Caltrans staff. Estimates do include funding set aside for mitigation. As stated in Section 1.2 of the FEIS, a combination of funding strategies will be utilized to bridge the gap between construction estimates and programmed amounts. The project may be constructed in full or in part depending on funding availability.

3. **The final mitigation plan does not disclose specific proposed methods for mitigating environmental impacts.**
   The comment that mitigation measures proposed by the project are too conceptual in nature was presented as a comment to the DEIS. General Response 1.14 in Volume 2 of the FEIS addresses this comment.

4. **The project does not address the issue of global warming and rising oil prices. The Environmental documents do not address the community**

responses to these issues, which include increased public transit, reducing vehicle use and greenhouse gases.
Please see the response to letter 2 for the issue on rising oil prices and anticipated public reaction. As for global warming and greenhouse gases, the project has been reviewed pursuant to all applicable air quality regulations. The results of these studies are included in Section 3.12 of the FEIS.

Letter 4

The Environmental Protection Agency letter contained one recommendation. The following are the recommendations and Caltrans and FHWA's response.

The EPA recommends Caltrans to continue to work collaboratively with the City of Willits and resource and regulatory agencies on this project on the development of a final detailed mitigation plan. Caltrans is also encouraged to work jointly with the City and EPA on exploring mitigation opportunities for the bypass and wastewater treatment facility.

Caltrans intends to continue its collaboration with the City and resource and regulatory agencies during the development of the final mitigation plan and with respect to the wastewater treatment plant.

G. Record of Decision Approval

Based on the analysis and evaluation contained in the proposed project's FEIS and after careful consideration of all the identified social, economic, and environmental factors and project commitments outlined in this ROD, it is the decision of FHWA to approve the Modified Alternative J1T as the Selected Alternative for the Willits Bypass Project.

12/18/06
Date of Approval

Gene K. Fong
GENE K. FONG
Division Administrator
Federal Highway Administration

Attachment 5: Section 7 Concurrence Documents

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Arcata Fish and Wildlife Office
1655 Heindon Road
Arcata, California, 95521
Phone: (707) 822-7201 Fax: (707) 822-8411

In Reply Refer To:
1-14-1998-0095

MAR 3 0 2006

Gene K. Fong
Division Administrator
Federal Highway Administration
California Division
650 Capitol Mall, Suite 4-100
Sacramento, California 95814

Subject: Formal Consultation on the Proposed Willits Bypass Project, on U.S. Highway 101, Mendocino County (EA 01-262000, Document # P53181)

Dear Mr. Fong:

This correspondence transmits the Fish and Wildlife Service's (Service's) biological opinion, based on our review of the Federal Highway Administration's (FHWA's) proposed action, construction of the Willits Bypass Project, located between post miles (PM) 43.1 and 52.3, on U.S. Highway 101, in Mendocino County, California, and its effects on the threatened northern spotted owl (*Strix occidentalis caurina*) (spotted owl). You determined that the proposed action may affect and is likely to adversely affect the spotted owl. You also determined that the proposed action may affect but is not likely to adversely affect the threatened bald eagle (*Haliaeetus leucocephalus*). In this response, we also transmit the Service's concurrence with your determination of effects to the bald eagle. This document is prepared in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 O.K. 1531 et seq.) (Act). We received your September 7, 2005, request for consultation on September 12, 2005.

The proposed action is not located within critical habitat designated or proposed for any listed or proposed species, and will not affect any primary constituent element of critical habitat. Therefore, critical habitat need not be addressed further in this consultation.

This consultation is based on information you provided in the August 2005 biological assessment (BA) and its appendices submitted with your request, telephone conversations between staff biologists of the Service's Arcata Fish and Wildlife Office (AFWO) and the California Department of Transportation (Caltrans), field visits to the site of the proposed construction

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project, and other sources of information. A complete administrative record of this consultation is on file at this office.

Consultation History

As early as 1995, Caltrans and other Federal and State agencies began planning numerous design and alignment alternatives for the Willits Bypass project. Various studies and documents have been published by Caltrans since that time. A complete list of those documents can be found on page 14 of the BA. More intensive planning has occurred since 1998, and especially during the most recent five-year period. Field visits to the Willits Bypass project area occurred on several occasions during the years 2002 through 2005, including a visit to the proposed excavation site. The purpose of those field visits was to gain a better understanding of the effects of the proposed project on wetlands in Little Lake Valley, the potential spotted owl suitable habitat in the vicinity of Oil Well Hill, and the effects of design alternatives on fish, wildlife and plant habitat. Several meetings of the project development team (PDT) occurred during this time period as well to discuss project design alternatives, potential effects to wetlands and listed species, and community needs. Additional meetings among Federal, State and local agency representatives were held to discuss effects of various design alternatives, mitigation measures for impacts to wetlands, and scheduling of planning and construction activities. On September 27, 2005, FHWA submitted a request for formal consultation on the Willits Bypass project to AFWO. A biological assessment, dated August 2005, was enclosed with that request.

Concurrence on Effects to Bald Eagle

FHWA determined that the Willits Bypass Project may affect bald eagles in or near Little Lake Valley. These potential effects are analyzed in the August 2005 BA. Based on this analysis, FHWA determined that the proposed action may affect but is not likely to adversely affect the bald eagle. The following discussion documents the Service's concurrence with FHWA's determination. The proposed action is briefly described in the biological opinion which follows, and is discussed in detail in the BA, and will not be repeated here. The reader is referred to the BA for details regarding location, extent of effects, and timing of the proposed action.

Bald eagle nest sites are always associated with a lake, river, or other body of water, and usually occur within approximately 1 mile (1.6 km) of these water bodies (Lehman 1979). Nests are usually constructed in a tree that provides an unobstructed view of the water body and that is almost always the dominant or co-dominant tree in the surrounding stand (Lehman 1979). Snags and dead-topped live trees are important habitat components in a bald eagle nesting territory and provide perch and roost sites. Bald eagles winter along rivers, lakes, or reservoirs that support adequate fish or water bird prey, and that have mature trees or large snags available for perch sites. They often roost communally during the winter, typically in mature trees or snags with open branching structures that are isolated from human disturbance.

No bald eagle nests were observed during field surveys, and no bald eagles are known to nest in the Little Lake Valley area (Caltrans 2000). One adult bald eagle was observed incidentally during other surveys conducted in winter 1993 (Caltrans 1997). Scott Harris (CDFG fisheries biologist, pers. comm., cited in BA) has observed bald eagles in Little Lake Valley on only three

or four occasions over the past 10 years while conducting salmonid surveys in Little Lake Valley, and noted that these birds did not remain in the area for any length of time.

The proposed project will permanently affect approximately 48 acres of wetlands, with approximately 81 percent (39 acres) consisting of wet meadow habitat, and approximately 5.4 acres (11 percent) of mixed marsh. The remaining 8 percent of wetlands affected consist of jurisdictional riparian woodland and scrub habitat. These wetlands are located primarily in the central and southern portions of the valley, and are in the topographically higher central portion of the valley, where flooding occurs only during the wettest years. Hence, these wetlands would provide lower quality habitat for waterfowl, used only during very wet periods. In addition, the majority of the stream reaches within the Modified Alternative J1T project corridor that support salmonids have a fairly dense riparian woodland canopy cover over the creeks, which would restrict the use of these streams by eagles, which require open water to capture their prey.

The northern portion of the valley, north of the project corridor, is topographically lower than the rest of the valley, and standing water in this portion of the valley occurs more regularly, is deeper, and remains longer during the winter months. Approximately 700 acres of higher quality winter waterfowl habitat were identified in the northern portion of the valley outside the action area, which provides the primary habitat for wintering waterfowl in Little Lake Valley (Caltrans 1997). Also, riparian vegetation is sparse along the reach of Outlet Creek north of the project corridor, which would facilitate access to migrating fish by eagles. These areas, which comprise the significant foraging habitat for bald eagles in Little Lake Valley, would not be affected by the proposed action.

Due to the low number of observations of bald eagles in Little Lake Valley, the absence of nesting activity, and the absence of higher quality foraging habitat in and near the proposed project corridor, it is likely that bald eagles observed in the valley are individuals that are occasional winter visitors that forage opportunistically during wet winters, when waterfowl or other suitable prey are present. Hence, project related impacts to wetlands and the streams reaches in the central and southern portions of the valley are not expected to result in a significant loss of foraging habitat for bald eagles.

The Service concurs with your determination that the proposed action may affect but is not likely to adversely affect the bald eagle, based on the following factors:

1. No forest habitat that currently functions as nesting habitat for the bald eagle will be removed, degraded or downgraded. The bald eagle does not currently nest in Little Lake Valley or on Oil Well Hill, and no nest trees currently used or known to have historically been used will be removed as a result of this proposed action.

2. The proposed action will not result in noise or visual disturbance to the species. Bald eagles use Little Lake Valley sporadically during some winters as foraging habitat, and may roost on occasion in or near the valley. However, no communal roosts are known to exist in the valley, so none will be subject to noise or visual disturbance. As indicated above, bald eagles are not known to nest in Little Lake Valley, so nesting bald eagles would not be subject to disturbance.

3. The proposed action will not result in injury or death of any individuals of the species.

4. The action will not result in adverse effects to any primary constituent element of critical habitat, since critical habitat is not designated for the species.

BIOLOGICAL OPINION

The following biological opinion addresses the effects of the proposed action on the northern spotted owl. No other species has been determined by FHWA and Caltrans to be adversely affected by the proposed action. Hence, no other species need be addressed by this opinion.

DESCRIPTION OF THE PROPOSED ACTION

Introduction

A complete description of the proposed action, including construction activities and equipment necessary to complete this action, can be found in the August 2005 BA and its appendices. That document is hereby included by reference. The following discussion provides a brief description of the construction activities most pertinent to this consultation. The reader is referred to the BA for complete details and additional clarification regarding the proposed activities.

Scope of Activities

FHWA and Caltrans propose to construct a bypass highway through Little Lake Valley around the community of Willits. The purposes of this project are to improve the level of service and safety for travelers along U.S. Highway 101; reduce delays for interregional traffic; and improve traffic flow and safety on Main Street, which currently functions as Highway 101 through the city. Caltrans proposes to construct a four-lane, divided highway along an alignment to the east of the city limits. This alignment, referred to as the Modified J1T alternative, would be constructed on a combination of imported fill material and elevated viaduct. Two interchanges are proposed, one each on the south and north ends of the new alignment, to access the community along the existing Highway 101/Main Street.

Construction activities along the proposed alignment through Little Lake Valley will not occur within or near habitat currently occupied, or likely to be occupied in the foreseeable future, by listed species under the regulatory jurisdiction of the Service. However, the road alignment passes through substantial wetlands, and may affect several streams in Little Lake Valley currently occupied by listed salmonid fishes under the jurisdiction of the National Marine Fisheries Service (NOAA Fisheries). Section 7 consultation has been initiated with NOAA Fisheries for those species.

In order to obtain enough fill material to construct the elevated roadway through the valley, Caltrans proposes to import fill material from a major excavation site north of the main roadway construction area and adjacent to the existing highway on Oil Well Hill north of Outlet Creek. Figures 1-3 and 1-4 of the BA, Appendix I, depict the location of the excavation site. Although

Caltrans anticipates that the contractor will obtain fill material from this site, the contractor may choose to import fill from another site if feasible. Caltrans requires that any use of an alternative site comply with all local, state and federal environmental and permitting use regulations, and requires the contractor to prepare and submit documentation of compliance to the Caltrans Resident Engineer. The present consultation addresses only the proposed excavation site on Oil Well Hill, and does not address effects to listed species that may arise from use of any alternative extraction site.

The Oil Well Hill borrow site is immediately adjacent to Highway 101 and north of Outlet Creek. It has been designated as a proposed borrow site because of its proximity to the project corridor, its location within the existing Caltrans right-of-way, and the presence of soil material suitable for use as fill for this project. Other sites were not proposed as designated borrow site(s) for this project due to the cost involved in acquiring land and the distance from the proposed project corridor.

Proposed Construction Activities

Fill material extraction at the Oil Well Hill site would require the removal of forested habitat. This habitat removal has the potential to remove, downgrade or degrade habitat suitable for the spotted owl. Hence, activities related to the extraction and transport of this fill material from Oil Well Hill to the proposed highway alignment in Little Lake Valley are the focus of the following description of proposed activities.

Caltrans proposes to extract soil fill material on a maximum of 40 acres (16.2 ha) for use in constructing the roadbed of a major portion of the Willits Bypass. Caltrans estimates the fill requirements for the Modified J1T alignment to be 1.9 million cubic meters (2.5 million cubic yards), although revisions to the final design standards could reduce the actual acreage and volume of excavated materials. For purposes of this consultation, the estimate of 40 acres of habitat removal and 1.9 million cubic meters of fill are assumed to be reasonable worst case figures. Although the exact amount of fill material to be excavated, and the acreage of forest habitat to be removed, are not precisely known at this time, the extent of habitat removed will be minimized to the extent practicable. As indicate above, some or all of this fill material may come from alternative sites at the discretion of the contractor, provided Caltrans-specified conditions are met.

The material will be excavated by using heavy equipment, assumed to include large excavators, bulldozers, loaders, and large dump trucks, as well as a variety of small power tools and equipment. The material will be transported by truck to the abandoned truck scale area, located about two miles south of the borrow site, via Highway 101, and from there along the new road alignment to its final deposition site. Use of this equipment will modify existing traffic noise dynamics at the excavation site, especially on the east side of extraction area which currently is buffered from the direct noise effects of existing highway use. Changes to the noise dynamics will occur along the haul route as well. The actual effects of these changes to the sound regime on listed species are discussed in detail in the Effects to the Species section of this biological opinion.

Excavation of fill material at Oil Well Hill may require the use of explosives. The number and frequency of charges will be determined by the contractor. The charges will be set below ground to fracture and loosen rock; above-ground use is not anticipated.

Excavation will remove portions of the cut slope on the east side of the existing highway and establish a new cut slope a maximum of 183 meters (600 feet) east of the highway. Caltrans anticipates that these changes will result in minimal alteration of the sound regime within the remaining spotted owl habitat.

Night work is proposed at the excavation site to reduce the cost and time period for construction. Limiting the excavation activities to daylight hours would extend the duration of construction from 2 years to a total of 4 years, and are anticipated to increase costs by approximately $5 million per year of extension (Dave Kelley, Caltrans, pers. comm., as cited in BA).

The area where this fill material would be extracted is currently covered by forested habitat, primarily of the Douglas-fir series. As indicated above, up to 40 acres of forest habitat may be removed to allow the extraction of fill material, although this figure may be reduced to less than 20 acres should substantial modifications be made to the project design. No provisions are identified to reestablish forest habitat on the excavation site due to the permanent removal of suitable topsoil during bypass construction, and the potential use of some of the excavation area for future highway expansion. However, some vegetation reestablishment, including grasses, herbs, and shrubs, is likely as a result of natural colonization. This natural colonization is not expected to result in the establishment of forest habitat in the foreseeable future.

Caltrans anticipates that no disposal sites are needed for this project, as no excess fill material will be generated.

Minimization Measures

Caltrans proposes the following minimization measures at the excavation site to minimize adverse effects:

- The amount of fill material will be minimized to that necessary to complete the proposed project.
- During all timber clearing operations at the proposed Oil Well Hill excavation site, monitoring for the presence of spotted owls will be conducted by a Service-approved biologist to assess potential adverse effects to roosting or nesting adults, their eggs, or juvenile spotted owls. If spotted owls are found on or within 0.8 km (0.5 mile) of the borrow site during timber clearing, Caltrans will consult with the Service immediately to develop a strategy for minimizing impacts to the species.
- All equipment will have sound control devices that are no less effective than those provided by the manufacturer of the equipment.
- All equipment will be operated and maintained to minimize noise generation, and no equipment will have unmuffled exhaust systems.
- Acoustic barriers will be installed around all stationary construction noise sources.
- All large trees that can be avoided will be protected.

- During each construction season, the contractor will limit the removal of vegetation to those portions of the borrow site necessary to provide fill material for that season's construction needs.

Appropriate Best Management Practices (BMP's) would be implemented to minimize impacts to spotted owls and other sensitive resources in the area, and could include: Preservation of Existing Vegetation; Hydroseeding (where feasible); Silt Fencing; Sandbag Barriers; Stabilized construction Entrances/Exits; Material Delivery and Storage; Stockpile Management; Spill Prevention and Control; Solid Waste Management; Hazardous Waste Management; and Sanitary/Septic Waste Management (BMP descriptions are attached as Appendix G of the BA).

A 2-year protocol-level survey will be conducted prior to the start of construction to determine the status of spotted owls in the vicinity of the borrow site prior to excavation. Surveys are anticipated to occur during the years 2007 and 2008. Survey results will be provided to the Service each year upon completion of each survey. If spotted owls are found nesting within 0.8 km (0.5-mile) of the borrow site, Caltrans will reinitiate consultation with the Service to develop a strategy for minimizing adverse impacts.

Conservation Measures

When used in the context of the Act, "conservation measures" represent actions pledged in the project description that the action agency will implement to further the recovery of the species under review. Caltrans is not proposing to include any conservation measures as part of the proposed action.

Action Area

The regulations governing section 7 consultation define "action area" as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). Delineating the analysis area enables the Service to more fully understand the cumulative, interrelated, and interdependent effects of the action within a more appropriate landscape context.

The action area for this proposed action is located in a rural area of Mendocino County, California in the Coast Range Mountains east and north of the community of Willits. The action area includes the existing roadway of U.S. Highway 101 through Willits, as well as the proposed new alignment of the highway as described in planning alternative Modified J1T. The action area also includes the proposed site of fill material excavation adjacent to and east of the highway alignment north of Willits on the grade known as Oil Well Hill.

Areas to be directly affected by the proposed project include the existing road alignment, the proposed new road alignment, and all newly created road cuts, roadbed fills, shoulders, and turnouts. Further, the action area includes all areas affected by the extraction of fill material on the proposed excavation site adjacent to the existing highway on Oil Well Hill. This portion of the action area is also referred to as the "construction footprint".

The action area also extends into a band of natural habitat immediately adjacent to both sides of the road, to a distance of up to one-half mile. This portion of the action area may be subject to elevated sound levels generated by the construction activities, including blasting, heavy machinery, and other sources that have a potential to adversely affect listed species.

STATUS OF THE SPECIES

NORTHERN SPOTTED OWL

Legal Status

The Service listed the northern spotted owl under the Act as a threatened species on June 26, 1990, due to widespread habitat loss across the entirety of its range and the inadequacy of existing regulatory mechanisms to provide for its conservation (USFWS 1990b).

Life History

Taxonomy

The northern spotted owl is one of three subspecies currently recognized by the American Ornithologists' Union, and is the subspecies with the most northerly distribution. The taxonomic separation of these three subspecies is supported by genetic (Barrowclough and Gutiérrez 1990), morphological (Gutiérrez et al. 1995) and biogeographic information (Barrowclough and Gutiérrez 1990). More detailed accounts of the taxonomy, ecology, and reproductive characteristics of the spotted owl are found in the 1987 and 1990 Status Reviews (USFWS 1987, 1990a); the 1989 Status Review Supplement (USFWS 1989); the Interagency Scientific Committee (ISC) Report (Thomas et al. 1990); the Forest Ecosystem Management Assessment Team (FEMAT) Report (Thomas and Raphael 1993); the final rule designating the spotted owl as a threatened species (USFWS 1990b); and the Scientific Evaluation of the Status of the Northern Spotted Owl (Courtney et al. 2004).

Physical Description

The northern spotted owl, the largest of the three subspecies of spotted owl, is medium sized, approximately 46-48 cm in length and 490-850 g in weight (Gutiérrez et al. 1995). The body is dark brown, with a barred tail and white spots on the head and breast. A prominent facial disk surrounds dark brown eyes. Three age classes are distinguishable, based on plumage characteristics (Forsman 1981, Moen et al. 1991). The spotted owl closely resembles the barred owl (*S. varia*), a congeneric species with which it occasionally hybridizes (Kelly et al. 2003). Hybrids exhibit characteristics of both species (Hamer et al. 1994).

Current and Historical Range

The current range and distribution of the spotted owl extends from southern British Columbia through western Washington, Oregon, and California, as far south as Marin County (USFWS 1990a). The southeastern boundary of its range is the Pit River area of Shasta County,

California. The range of the spotted owl is partitioned into 12 physiographic provinces (provinces), based upon recognized landscape subdivisions exhibiting different physical and environmental features (Thomas et al. 1993). These provinces are distributed across the range as follows: four provinces in Washington (Washington Cascades East, Olympic Peninsula, Washington Cascades West, Western Lowlands); five provinces in Oregon (Oregon Coast Range, Willamette Valley, Oregon Cascades West, Oregon Cascades East, Klamath Mountains); and three provinces in California (California Coast, California Klamath, California Cascades). The current range of the spotted owl is similar to its historical range where forested habitat still exists. The relatively contiguous distribution is influenced by the natural insularity of habitat patches within the geographic provinces and by natural and man-caused fragmentation of vegetation. The spotted owl is extirpated or rare in some areas within its historic range, such as southwestern Washington and British Columbia. Timber harvest activities have eliminated, reduced or fragmented spotted owl habitat sufficiently to decrease overall population densities across its range, particularly within the coastal provinces where habitat reduction has been concentrated (Thomas and Raphael 1993).

Behavior

Spotted owls are territorial. However, home ranges of adjacent pairs may overlap (Forsman et al. 1984, Solis and Gutiérrez 1990), which suggests that the area defended is smaller than the areas used for foraging. Territorial defense is primarily effected by hooting, barking and whistle type calls.

Spotted owls are monogamous and usually form long-term pair bonds. "Divorces" occur but are relatively uncommon. There are no known examples of polygyny in this species, although associations of three or more birds have been reported (Gutiérrez et al. 1995).

Habitat Relationships

Home Range

Spotted owl home range size varies by province. Home range generally increases from south to north, which is likely in response to decreasing habitat quality (USFWS 1990a). Home range size is linked to habitat type, availability, and abundance of prey (Zabel et al. 1995).

Based on available radio-telemetry data (Thomas et al. 1990), the Service estimated median annual home range size for the spotted owl by province. Because the actual configuration of the home range is rarely known, and may change from year to year, a circle representative of the median home range size approximates the provincial home range. The circle centers upon a spotted owl activity center, with an area approximating the provincial median annual home range. For example, estimated home range area varies from 3,340 acres (based on a 1.3-mile radius area) in California to 14,271 acres (based on a 2.7-mile radius circle) in Washington. The Service approximates the area most heavily used by spotted owls during the nesting season, identified as the core area, by a 0.7-mile-radius circle (985 acres). The nest tree, location of pre-fledged juveniles, or most significant location of the pair determines the center of the circle. Spotted owls in northern California focused their activities in core areas that ranged from about

167 to 454 acres, with a mean of about 409 acres; approximately half the area of the 0.7-mile radius circle (Bingham and Noon 1997). Spotted owls maintain smaller home ranges during the breeding season and often dramatically increase their home range size during fall and winter (Forsman et al. 1984, Sisco 1990).

Although differences exist in natural stand characteristics that influence provincial home range size, habitat loss and forest fragmentation caused by timber harvest effectively reduce habitat quality in the home range. A reduction in the acreage of suitable habitat results in a reduction in spotted owl abundance and nesting success (Bart and Forsman 1992, Bart 1995).

Habitat Use

Forsman et al. (1984) report that spotted owls have been observed in the following forest types: Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), grand fir (*Abies grandis*), white fir (*Abies concolor*), ponderosa pine (*Pinus ponderosa*), Shasta red fir (*Abies magnifica shastensis*), mixed evergreen, mixed conifer hardwood (Klamath montane) and redwood (*Sequoia sempervirens*). Use of these types coincides with appropriate forest structure (see below). In parts of the Oregon Coast Range, spotted owls have been recorded in pure hardwood stands (Glenn et al. 2004). In California, spotted owls are found from near sea level in coastal forests to approximately 2130 m (7000 ft) in the Cascades (Gutiérrez 1996). The upper elevation limit at which spotted owls occur decreases with increasing latitude in Oregon and Washington (Lint et al. 2005). In all areas, the upper elevation limit at which spotted owls occur corresponds to the transition to subalpine forest, which is characterized by relatively simple structure and severe winter weather (Gutiérrez 1996).

Roost sites selected by spotted owls have more complex vegetation structure than forests generally available to them (Barrows and Barrows 1978, Forsman et al. 1984, Solis and Gutiérrez 1990). These habitats are usually multi-layered forests having high canopy closure and large diameter trees in the overstory.

Spotted owls nest almost exclusively in trees. Like roosts, nest sites are found in forests having complex structure dominated by large diameter trees (Forsman et al. 1984, Hershey et al. 1998). Even in forests that have been previously logged, spotted owls select forests having a structure (i.e., larger trees, greater canopy closure) different than forests generally available to them (Folliard 1993, Buchanan et al. 1995, Hershey et al. 1998).

Foraging habitat is the most variable of all habitats used by territorial spotted owls (Thomas et al. 1990). Descriptions of foraging habitat have ranged from complex structure (Solis and Gutiérrez 1990) to forests with lower canopy closure and smaller trees than forests containing nests or roosts (Gutiérrez 1996).

Habitat Selection

Spotted owls generally rely on the structures and characteristics of older forested habitats for nesting, roosting, foraging, and dispersal. These characteristics include (Thomas et al. 1990, USFWS 1990a):

- A multi-layered, multi-species canopy dominated by large overstory trees;
- Moderate to high canopy closure;
- A high incidence of trees with large cavities and other types of deformities;
- Numerous large snags;
- An abundance of large, dead wood on the ground; and
- Open space within and below the upper canopy for spotted owls to fly.

Forested stands with high canopy closure also provide thermal cover (Weathers et al. 2001), as well as protection from predation. Recent landscape-level analyses in portions of the Klamath Province suggest that a mosaic of late-successional habitat interspersed with other vegetation types may benefit spotted owls more than large, homogeneous expanses of older forests (Zabel et al. 2003, Franklin et al. 2000, Meyer et al. 1998). In redwood forests along the coast range of California, spotted owls may be found in younger forest stands with structural characteristics of older forests (Thomas et al. 1990). However, spotted owls do not generally appear to select for stands of intermediate or younger ages (Solis and Gutiérrez 1990, Thomas et al. 1990).

In mixed conifer forests of the East Cascades province in Washington, 27 percent of nest sites were in old-growth forests, 57 percent in the understory reinitiation phase of stand development, and 17 percent in the stem exclusion phase (Buchanan et al. 1995). In the West Cascades province in Oregon, 50 percent of spotted owl nests were in late-successional (greater than 80 years old) or old-growth stands, and none were found in stands less than 40 years old (Irwin et al. 2000).

Ward (1990) reported that spotted owls foraged in areas that had lower variance in prey densities (prey were more predictable in occurrence) within older forests and near ecotones of old forest and brush seral stages. Zabel et al. (1995) showed that spotted owl home ranges are larger where flying squirrels (*Glaucomys sabrinus*) are the predominant prey. Conversely, home ranges are smaller where woodrats (*Neotoma* spp.) are the predominant prey.

In the Western Washington Cascades, spotted owls used mature/old forests dominated by trees greater than 50 cm diameter-at-breast height (dbh) with greater than 60 percent canopy closure more often than expected for roosting during the non-breeding season. They used young forest (trees 20-50 cm dbh with greater than 60 percent canopy closure) less often than expected based on availability (Herter et al. 2002).

Reproductive Biology

Adult spotted owls exhibit high annual survival rates and are relatively long-lived (USFWS 1992a and Anthony et al. 2004). Spotted owls do not typically reach sexual maturity until after 2 years (Miller et al. 1985 and Thomas et al. 1990). Adult females lay an average of two eggs per clutch, with a range of one to four eggs. Spotted owl pairs typically do not nest every year, nor are nesting pairs successful every year (USFWS 1990a). The small clutch size, temporal variability in nesting success, and somewhat delayed maturation all contribute to the relatively low fecundity of this species (Gutiérrez 1996).

In the Douglas-fir region, nest sites are usually located within stands of old-growth and late-successional forest dominated by Douglas-fir, and they contain structures such as cavities, broken tree tops, and mistletoe (*Arceuthobium* spp.) brooms (Forsman et al. 1984, Blakesley et al. 1992, LaHaye and Gutiérrez 1999). In general, courtship and nesting behavior begins in February to March with nesting occurring from March to June; however, timing of nesting and fledging varies with latitude and elevation (Forsman et al. 1984). After young fledge from the nest, they depend on their parents until they are able to fly and hunt on their own. Parental care continues post-fledging into September (USFWS 1990b), and sometimes into October (Forsman et al. 1984). During this time, the adults may not roost with their young during the day, but they respond to begging vocalizations by bringing food to the young (Forsman et al. 1984).

Some spotted owls, known as "floaters", do not demonstrate territorial behavior, but either remain as residents within the territory of a pair or move among territories (Gutiérrez 1996). Floaters have special significance in spotted owl populations because they may buffer the territorial population from decline (Franklin 1992). Little is known about floaters other than that they exist and typically do not respond to calls as vigorously as territorial birds (Gutiérrez 1996).

Dispersal Biology

Natal dispersal of spotted owls from Oregon and Washington typically begins during mid- to late-September, and shows remarkable synchrony across broad areas (Forsman et al. 2002). When data from many dispersing spotted owls are pooled, the direction of dispersal away from the natal site appears random (Miller 1989, Ganey et al. 1998, Forsman et al. 2002). Dispersal direction from individual territories, however, may be non-random in response to the local distribution of habitat and topography (Forsman et al. 2002). Natal dispersal occurs in stages, with juvenile spotted owls settling in temporary home ranges between bouts of dispersal (Forsman et al. 2002). Median natal dispersal distance is about 10 miles for males and 15.5 miles for females (Forsman et al. 2002, see also Miller 1989, Ganey et al. 1998). Successful dispersal of juvenile spotted owls may depend on their ability to locate unoccupied suitable habitat in close proximity to other occupied sites (LaHaye et al. 2001).

Breeding dispersal occurs among a small proportion of adult spotted owls; these movements were more frequent among females and unmated individuals (Forsman et al. 2002). Breeding dispersal distances were shorter than natal dispersal distances and are apparently random in direction (Forsman et al. 2002).

Large non-forested valleys are apparent barriers to natal and breeding dispersal; forested foothills between valleys may provide the only opportunities for dispersal (Forsman et al. 2002). The degree to which extensive water bodies, such as the Columbia River estuary and Puget Sound, function as barriers to dispersal is unclear. Analysis of genetic structure of spotted owl populations suggests adequate rates of gene flow may occur across the Puget Trough between the Olympic Mountains and Washington Cascades, and across the Columbia River between the Olympic Mountains and the Coast Range of Oregon (Haig et al. 2001). Both telemetry and genetic studies indicate inbreeding is rare.

Dispersing juvenile spotted owls experience high mortality rates, exceeding 70 percent during their first year in some studies (USFWS 1990b, Miller 1989). Leading known causes of mortality are starvation, predation, and accidents (Miller 1989, USFWS 1990b, Forsman et al. 2002). Parasitic infection may contribute to these causes of mortality (Forsman et al. 2002). In a study on habitat use by dispersing juvenile spotted owls in the Oregon Coast Range, Klamath and Western Oregon Cascades Provinces (Miller et al. 1997), mature and old-growth forest were used slightly more than expected, compared to availability, during the transient phase and nearly twice its availability during the colonization phase. Dispersing juvenile spotted owls used closed pole-sapling-sawtimber habitat roughly in proportion to availability in both phases; they used open sapling and clearcuts less than expected based on availability during colonization.

Food Habits

Spotted owls are mostly nocturnal (Forsman et al. 1984), but may forage opportunistically during the day (Laymon 1991, Sovern et al. 1994). Composition of prey in the spotted owl's diet varies regionally, seasonally, annually, and locally, likely in response to prey availability (Laymon 1988, Ganey 1992, Verner et al. 1992, Carey 1993, Ward and Block 1995, Forsman et al. 2001). Northern flying squirrels and woodrats are usually the predominant prey, in biomass and in frequency (Barrows 1980; Forsman et al. 1984; Ward 1990; Bevis et al. 1997; Forsman et al. 2001, 2004), with a clear geographic pattern of diet, paralleling differences in habitat (Thomas et al. 1990). Northern flying squirrels are generally the dominant prey item in the more mesic Douglas-fir/western hemlock forests characteristic of the northern portion of the range. Woodrats are generally the most abundant prey item in the drier mixed conifer/mixed evergreen forests typically found in the southern portion of the range (Forsman et al. 1984, Thomas et al. 1990, Ward et al. 1998, reviewed by Courtney et al. 2004). These prey items were found to be approximately equally abundant in the southwest interior of Oregon (Forsman et al. 2001, 2004).

Other prey species, such as the red tree vole (*Arborimus longicaudus*), red backed voles (*Clethrionomys gapperi*), mice, rabbits and hares, birds, and insects, may be seasonally or locally important (reviewed by Courtney et al. 2004). For example, Rosenberg et al. (2003) showed a strong correlation between annual reproductive success of spotted owls (number of young per territory) and abundance of deer mice (*Peromyscus maniculatus*) ($r^2 = 0.68$), despite the fact they only made up 1.6±0.5 percent of the biomass consumed. However, it is unclear if the causative factor behind this correlation was prey abundance or a synergistic response to weather (Rosenberg et al. 2003). Ward (1990) also noted that mice were more abundant in areas selected for foraging by owls. Nonetheless, spotted owls deliver larger prey to the nest and eat smaller food items, perhaps to reduce foraging energy costs. Therefore, managers should not underestimate the importance of smaller prey items such as *Peromyscus* in the spotted owl diet (Forsman et al. 1984, 2001, 2004).

Population Dynamics

The spotted owl is a relatively long-lived species, produces few but relatively large young, invests significantly in parental care, experiences later or delayed maturity, and exhibits high adult survivorship. The spotted owl's long reproductive life span allows for some eventual recruitment of offspring, even if recruitment does not occur each year (Franklin et al. 2000).

Annual variation in population parameters for spotted owls has been linked to environmental influences at various life history stages (Franklin et al. 2000). In coniferous forests, mean fledgling production of the California spotted owl (*S. o. occidentalis*), a closely related subspecies, was higher when minimum spring temperatures were higher (North et al. 2000), a relationship that may be a function of increased prey availability. Across their range, spotted owls have previously shown a pattern of alternating years of high and low reproduction (Franklin et al. 1999). For reasons unknown, highest reproduction has occurred during even-numbered years. Annual variation in breeding may relate to weather conditions and fluctuation in prey abundance (Zabel et al. 1996). Forsman et al (1996) provided the results of multiple studies showing the effects of weather, specifically temperature and precipitation, on northern spotted owl productivity.

A variety of factors may regulate spotted owl population levels. These factors may be density-dependent (e.g., habitat quality, habitat abundance) or density-independent (e.g., weather). Interactions may occur among factors. For example, severe weather may prove more detrimental to individual spotted owls in fragmented or otherwise poor quality habitat than those living in high quality, contiguous habitat. As habitat quality decreases, density-independent factors may have more influence on variation in survival, which tends to increase variation in the rate of population growth (Franklin et al. 2000). A consequence of this pattern is that, at some point, lower habitat quality may cause the population to be unregulated (i.e., have negative growth) and decline to extinction (Franklin et al. 2000).

Threats

Reasons for Listing

The Service listed the spotted owl as threatened throughout its range "due to loss and adverse modification of suitable habitat as a result of timber harvesting and exacerbated by catastrophic events such as fire, volcanic eruption, and wind storms" (USFWS 1990a). More specifically, significant threats to the spotted owl included low or declining populations; limited or declining habitat; fragmented or isolated distribution of habitat and populations; isolation of provinces; predation and competition; lack of coordinated conservation measures; and vulnerability to natural disturbance (USFWS 1992a). The Service characterized the threats within each province as severe, moderate, low, or unknown. Declining habitat was recognized as a severe or moderate threat to the spotted owl in all 12 provinces, isolation of provinces within 11 provinces, and declining populations in 10 provinces. Consequently, these three factors represented the greatest concern range-wide to the conservation of the spotted owl. Limited habitat was considered a severe or moderate threat in nine provinces, and low populations a severe or moderate concern in eight provinces, suggesting that these factors are a concern throughout the majority of the range. The Service rated the vulnerability to natural disturbances as low in five provinces.

The degree to which predation and competition poses a threat to the spotted owl was unknown in more provinces than any of the other threats, and indicates a need for additional information. Few empirical studies exist to confirm that habitat fragmentation contributes to increased levels of predation on spotted owls (Courtney et al. 2004). However, great horned owls (*Bubo virginianus*), an effective predator on spotted owls, are closely associated with fragmented

forests, openings, and clearcuts (Johnson 1992, Laidig and Dobkin 1995). As mature forest harvest continues, great horned owls may colonize fragmented forests, thereby increasing spotted owl vulnerability to predation.

New Threats

Barred Owls

Since the listing of the spotted owl under the Act, new information suggests that hybridization with the barred owl is less of a threat (Kelly and Forsman 2004) and competition with the barred owl is a greater threat than previously anticipated (Courtney et al. 2004). Since 1990, the barred owl has expanded its range south into Marin County, California and the central Sierra Nevada Mountains, such that it is now roughly coincident with the range of the northern spotted owl and the California spotted owl (Courtney et al. 2004). Further, notwithstanding the likely bias in survey methods towards underestimating actual barred owl numbers (Courtney et al. 2004), barred owl populations appear to be increasing throughout the Pacific Northwest, particularly in Washington and Oregon (Zabel et al. 1996, Dark et al. 1998, Wiedemeier and Horton 2000, Kelly et al. 2003, Pearson and Livezey 2003, Anthony et al. 2004a). Barred owl numbers now may exceed spotted owl numbers in the northern Washington Cascades (Kuntz and Christopherson 1996) and British Columbia (Dunbar et al. 1991) and appear to be approaching spotted owl numbers in several other areas, including Redwood National and State Parks in California (Schmidt 2003). Barred owl populations in the Pacific Northwest appear to be self-sustaining based on current density estimates and apparent distribution (Courtney et al. 2004).

Barred owls apparently compete with spotted owls through a variety of mechanisms: prey overlap (Hamer et al. 2001), habitat overlap (Hamer et al. 1989, Dunbar et al. 1991, Herter and Hicks 2000, Pearson and Livezey 2003), and agonistic encounters (Leskiw and Gutiérrez 1998, Pearson and Livezey 2003). New information on encounters between barred owls and spotted owls comes primarily from anecdotal reports that corroborate initial observations that barred owls react more aggressively towards spotted owls than vice versa (Courtney et al. 2004). Limited circumstantial evidence exists documenting barred owl predation on spotted owls (Leskiw and Gutiérrez 1998, Johnston 2002). Information collected to date indicates that encounters between these two species tend to be agonistic in nature, and that the outcome is unlikely to favor the spotted owl (Courtney et al. 2004).

Although biologists initially thought barred owls were more closely associated with early successional forests than spotted owls (Hamer 1988, Iverson 1993), recent studies indicate that barred owls utilize a broader range of forest successional stages than do spotted owls (Courtney et al. 2004). The only study comparing spotted owl and barred owl food habits in the Pacific Northwest indicated that barred owl diets overlapped strongly (greater than 75 percent) with spotted owl diets (Hamer et al. 2001). However, barred owl diets were also more diverse than spotted owl diets, including species associated with riparian and other moist habitats, as well more terrestrial and diurnal species.

Evidence that barred owls are causing the displacement of spotted owls is largely indirect, based primarily on retrospective examination of long-term data collected on spotted owls. Correlations

between local spotted owl declines and barred owl increases have been noted in the northern Washington Cascades (Kuntz and Christopherson 1996, Herter and Hicks 2000, Pearson and Livezey 2003), on the Olympic peninsula (Wiedemeier and Horton 2000; Gremel 2000, 2003), in the southern Oregon Cascades Johnston 2002), and in the coastal redwood zone in California (Schmidt 2003).

Spotted owl occupancy was significantly lower in spotted owl territories where barred owls were detected within 0.8 km (0.5 mi) of the spotted owl territory center than in spotted owl territories where no barred owls were detected (Kelly et al. 2003). Kelly et al. (2003) found spotted owl occupancy to be significantly lower ($P < 0.001$) when barred owls detections occurred within 0.8 km of the spotted owl territory center. Occupancy was "only marginally lower" ($P = 0.06$) if barred owls were located more than 0.8 km from spotted owl territory centers. In a Roseburg, Oregon, study area, 46 percent of spotted owls moved more than 0.8 km, and 39 percent of spotted owls were not relocated in at least two years, after barred owls were detected within 0.8 km of the territory center. Observations provided by Gremel (2000) from the Olympic National Park are consistent with those of Kelly et al. (2003); he documented significant displacement of spotted owls following barred owl detections "coupled with elevational changes of northern spotted owl sites on the east side of the Park" (Courtney et al. 2004). Pearson and Livezey (2003) reported similar findings on the Gifford Pinchot National Forest where unoccupied spotted owl sites were characterized by significantly more barred owl sites within 0.8-km, 1.6-km, and 2.9-km from the territory center than in occupied spotted owl sites.

In two study areas in Washington, investigators found relatively high numbers of territories, previously occupied by spotted owls, that are now apparently not occupied by either spotted or barred owls. Forty-nine of 107 territories in the Cascades (Herter and Hicks 2000), and 23 of 33 territories in the Olympic Experimental State Forest (Wiedemeier and Horton 2000) were no longer occupied by either species. Since the habitat was still present in these vacant territories, some factor or factors may be reducing habitat suitability or local abundance of both species. For example, weather conditions could cause prolonged declines in abundance of both species (Franklin et al. 2000). Because spotted owls have been reported anecdotally to give fewer vocalizations when barred owls are present, it is possible that these supposed vacant territories are still occupied by spotted owls that do not respond to surveys. Likewise, survey protocols for spotted owls are believed to under-detect barred owls (Courtney et al. 2004). Preliminary results from Olson et al. (2005) suggest that barred owl presence had a negative effect on spotted owl detection probabilities. Thus, some proportion of seemingly vacant territories may be an artifact of reduced detection probability. Nonetheless, previously occupied territories apparently vacant of both *Strix* species suggests that factors other than barred owls alone are contributing to declines in spotted owl abundance and territorial occupancy (Courtney et al. 2004).

Two studies (Kelly 2001, Anthony et al. 2004a) attempted to determine whether barred owls affected fecundity of spotted owls in the long-term demographic study areas. Neither study was able to clearly do so, although the Wenatchee and Olympic demographic study areas showed possible effects (Anthony et al. 2004a). However, both studies described the shortfalls of their methods to adequately test for this effect. Iverson (2004) reported no effect of barred owl presence on spotted owl reproduction, but his results could have been influenced by small sample size (Livezey, in review). Barred owls had a negative effect on spotted owl survival on

the Wenatchee and Olympic study areas and possibly an effect on the Cle Elum study area (Anthony et al. 2004a). Olson et al. (in press) found a significant but weak negative effect of barred owl presence on spotted owl reproductive output but not on survival at a Roseburg, Oregon study area (Courtney et al. 2004).

Regarding interactions between barred and spotted owls, the uncertainties associated with methods, analyses, and possible confounding factors, such as the effects of past habitat loss and weather, warrant caution in interpretation of the patterns emerging from the data and information collected to date (Courtney et al. 2004). Further, data are currently lacking that would allow accurate prediction of how barred owls will affect spotted owls in the southern, more xeric, provinces in the California and Oregon Klamath region. In spite of these uncertainties, the preponderance of the evidence gathered thus far is consistent with the hypothesis that barred owls play some role in spotted owl population decline, particularly in Washington, portions of Oregon, and the northern coast of California (Courtney et al. 2004).

Although the barred owl currently constitutes a significantly greater threat to the northern spotted owl than originally thought at the time of listing (Courtney et al. 2004), it is unclear whether forest management influences the outcome of interactions between species (Courtney et al. 2004, summarized by Lint et al. 2005). The most recent summaries compiled on the barred owl (Courtney et al. 2004, Lint et al. 2005, USDI Fish and Wildlife Service 2004) do not provide recommendations on how to deal with this potential threat. In their status review of the northern spotted owl, the Service (U.S. Fish and Wildlife Service 2004) did not consider the increased risk to northern spotted owl populations due to the uncertainties surrounding barred owls and other factors sufficient to reclassify the subspecies as endangered at this time. Because it was not clear if additional protection of northern spotted owl habitat would reverse the population trends in some portions of the species' range, and because the results of their study did not identify the causes of those trends, Anthony et al. (2004) declined to make any recommendations to alter the current NWFP management strategy.

Wildfire

In 1994, the Hatchery Complex wildfires burned 43,480 acres (17,603 ha) in the Wenatchee National Forest, eastern Cascades, Washington, affecting six spotted owl activity centers (Gaines et al. 1997). Spotted owl habitat within a 2.9 km radius of the affected activity centers was reduced by 8 to 45 percent (mean = 31 percent) due to direct effects of the fire and by 10 to 85 percent (mean = 55 percent) due to delayed mortality of fire-damaged trees and insect caused tree mortality. Spotted owl habitat loss was greater on mid to upper slopes (especially south-facing) than within riparian areas or on benches (Gaines et al. 1997). Direct mortality of spotted owls was assumed to have occurred at one site. Data were too sparse for reliable comparisons of site occupancy or reproductive output between sites affected by the fires and other sites on the Wenatchee National Forest.

Two wildfires burned in the Yakama Indian Reservation, eastern Cascades, Washington, in 1994, affecting home ranges of two radio-tagged spotted owls (King et al. 1997). Although the amount of home ranges burned was not quantified, spotted owls were observed using areas that received

low and medium intensity burning. No direct mortality of spotted owls was observed, even though thick smoke covered several spotted owl site centers for a week.

The short-term effects of wildfires on spotted owl demography are an important consideration for resources managers. Bond et al. (2002) examined the demography of spotted owls post wildfire, in which wildfire burned through spotted owl nest and roost sites in varying degrees of severity. Depending on the severity of the burn, wildfires may have relatively little short-term impact on spotted owl demography (i.e., survival, reproduction and site fidelity). In a preliminary study conducted by Anthony et al. (2004) in the Klamath Province of Oregon, their sample of spotted owls appeared to be using a variety of habitat types within the Timbered Rock Fire, including areas that had experienced moderate burning.

At the time of listing there was recognition that catastrophic wildfire posed a threat to the spotted owl (USFWS 1990a). New information suggests fire may be more of a threat than previously thought. In particular, the rate of habitat loss in the relatively dry East Cascades and Klamath provinces has been greater than expected (see "Habitat Trends" below). However, the total amount of habitat affected by wildfires has been relatively small (Lint et al. 2005). We may be able to influence, through silvicultural management, how fire prone forests will burn, and the extent of the fire when the inevitable fire occurs. Such silvicultural efforts are currently being implemented throughout the spotted owl's range, in an attempt to overcome nearly 100 years of effective fire suppression. However, we now recognize that our ability to protect spotted owl habitat and viable populations of spotted owls from these large fires through risk-reduction endeavors is largely uncertain (Courtney et al. 2004). Lint et al. (2005) indicated that the NWFP recognized wildfire as an inherent part of managing spotted owl habitat in certain portions of the range. The repetitive design of the NWFP can help mitigate the risks associated with large-scale fire (Lint et al. 2005).

West Nile Virus (WNV)

WNV has killed millions of wild birds in North America since it arrived in 1999 (McLean et al. 2001, Caffrey 2003, and Marra et al. 2004). Mosquitoes are the primary carriers (vectors) of the virus that causes encephalitis in humans, horses, and birds. Mammalian prey may also play a role in spreading WNV among predators, like spotted owls. Owls and other predators of mice can contract the disease by eating infected prey (Garmendia et al. 2000, Komar et al. 2001). Recent tests of tree squirrels from Los Angeles County, California, found over 70 percent were positive for WNV (R. Carney, pers. comm. 2004, cited in USFWS 2004). One captive spotted owl in Ontario, Canada, contracted WNV and died.

Health officials expect that WNV will eventually spread throughout the area that includes the range of the spotted owl (Courtney et al. 2004), but it is unknown how WNV will ultimately affect spotted owl populations. Susceptibility to infection and mortality rates of infected individuals vary among bird species, and even within groups of species (Courtney et al. 2004). Owls appear to be quite susceptible. Breeding eastern screech owls (*Megascops asio*) in Ohio experienced 100 percent mortality (T. Grubb, pers. comm., cited in Courtney et al. 2004). In contrast, barred owls showed lower susceptibility (B. Hunter, pers. comm., cited in Courtney et al. 2004). Some level of innate resistance may occur (Fitzgerald et al. 2003), which could

explain observations in several species of markedly lower mortality in the second year of exposure to WNV (Caffrey and Peterson 2003). Wild birds also develop resistance to WNV through immune responses (Deubel et al. 2001). The effects of WNV on bird populations at a regional scale have not been large, even for susceptible species (Caffrey and Peterson 2003), perhaps due to the short-term and patchy distribution of mortality (K. McGowan, pers. comm., cited in Courtney et al. 2004) or annual changes in vector abundance and distribution.

Courtney et al. (2004) offer competing propositions for the likely outcome of spotted owl populations being infected by WNV. One proposition is that spotted owls can tolerate severe, short-term population reductions due to WNV, because spotted owl populations are widely distributed and number in the several hundreds to thousands. An alternative proposition is that WNV will cause unsustainable mortality, due to the frequency and/or magnitude of infection, thereby resulting in long-term population declines and extirpation from parts of the spotted owl's current range.

West Nile virus (WNV) has been identified as a potential threat of unknown magnitude to the spotted owl (Courtney et al. 2004), and has the potential to reduce the population numbers beyond the projected decline anticipated under the NWFP (Lint et al. 2005). Thus far, no mortality in wild, northern spotted owls has been recorded. Habitat restoration and recovery for northern spotted owls is anticipated to take decades, due to the long-term regrowth and development of late-successional forest structure. As such, it is too early to evaluate the long-term effectiveness of conservation efforts and regulatory changes in conserving northern spotted owls. However, the WNV threat to the northern spotted owl may not be influenced by habitat management or improvement (USFWS 2004).

Sudden Oak Death

Sudden oak death was recently identified as a potential threat to the spotted owl (Courtney et al. 2004). The fungus-like pathogen *Phytopthora ramorum* that recently invaded from Europe causes this disease, and it is rapidly spreading. At the present time, sudden oak death is found in natural forest stands that include various oak (*Quercus* spp.) species from Monterey County to Humboldt County in California, and has reached epidemic proportions in oak and tanoak (*Lithocarpus densiflorus*) forests along approximately 300 km of that coast (Rizzo et al. 2002). It also occurs near Brookings, Oregon, killing tanoak, and causing dieback of closely associated wild rhododendron (*Rhododendron* spp.) and evergreen huckleberry (*Vaccinium ovatum*) (Goheen et al. 2002). It has been found in several different forest types and at elevations from sea level to over 800 m elevation. It poses a threat of uncertain proportion because of its potential impact on forest dynamics and alteration of key habitat components (i.e., hardwood trees), especially in the southern portion of the spotted owl's range (Courtney et al. 2004). However, the potential for management to address the additive effects of sudden oak death on habitat availability is unknown and substantial uncertainty about its effects mediated against placing too much weight on this factor in the USFWS Five-Year Review Evaluation (USFWS 2004).

Inbreeding Depression, Genetic Isolation, and Reduced Genetic Diversity

The Service did not consider inbreeding and other genetic problems due to small population sizes an imminent threat to the spotted owl at the time of listing. Recent studies show no indication of reduced genetic variation and past bottlenecks in Washington, Oregon, or California (Barrowclough et al. 1999, Haig et al. in press, Henke et al. unpublished). However, in Canada, Harestad (2004) estimated the breeding population to be less than 33 pairs and annual population decline may be as high as 35 percent. Canadian populations may be more adversely affected by issues related to small population size including inbreeding depression, genetic isolation, and reduced genetic diversity (Courtney et al. 2004). Low and persistently declining populations throughout the northern portion of the species range (see "Population Trends" below) may be at increased risk of losing genetic diversity.

Climate Change

Climate change, a potential additional threat to northern spotted owl populations, is not explicitly addressed in the NWFP. Climate change could have direct and indirect impacts on northern spotted owls and their prey. However, the emphasis on maintenance of serial stage complexity and related species diversity in the Matrix under the NWFP should contribute to the resiliency of the federal forest landscape to the impacts of climate change (Courtney et al. 2004).

Based upon a global meta-analysis, Parmesan and Yohe (2003) discussed several potential implications of global climate change to biological systems, including terrestrial flora and fauna. Results indicated that 62 percent of species exhibited trends indicative of advancement of spring conditions. Bird species manifest these trends in earlier nesting activities. Because the spotted owl exhibits a limited tolerance to heat relative to other bird species (Weathers et al. 2001), subtle changes in climate have the potential to affect this species. However, at this time, there is no agreed-upon, objective means to measure that potential.

Conservation Needs of the Northern Spotted Owl

Based on the above assessment of threats, the spotted owl has the following habitat-specific and habitat-independent conservation (i.e., survival and recovery) needs:

Habitat-Specific Needs

- Large blocks of suitable habitat to support clusters or local population centers of spotted owls (e.g., 15 to 20 breeding pairs) throughout the owl's range;

- Suitable habitat conditions and spacing between local spotted owl populations throughout its range to facilitate survival and movement;

- Suitable habitat distributed across a variety of ecological conditions within the spotted owl's range to reduce risk of local or widespread extirpation;

- A coordinated, adaptive management effort to reduce the loss of habitat due to catastrophic wildfire throughout the spotted owl's range, and a monitoring program to clarify whether these risk reduction methods are effective and to determine how owls use habitat treated to reduce fuels; and

- In areas of significant population decline, sustain the full range of survival and recovery options for this species in light of significant uncertainty.

Habitat-Independent Needs

- A coordinated research and adaptive management effort to better understand and manage competitive interactions between spotted and barred owls; and

- Monitoring to better understand the risk that WNV and sudden oak death pose to spotted owls and (for WNV) research into methods that reduce the likelihood or severity of outbreaks in spotted owl populations.

Conservation Strategy

Since 1990, various efforts have addressed the conservation needs of the spotted owl and attempted to formulate conservation strategies based upon these needs, beginning with the ISC's Conservation Strategy (Thomas et al. 1990). Several ensuing efforts continued to use the basic conservation strategy designed by Thomas et al (1990), including:

- The designation of critical habitat (USFWS 1992b),

- The preparation of a Draft Recovery Plan (USFWS 1992a),

- The Scientific Analysis Team report (Thomas et al. 1993),

- The report of the Forest Ecosystem Management Assessment Team (Thomas and Raphael 1993); and

- The Northwest Forest Plan (USDA/USDI 1994a).

Each conservation strategy was based upon the reserve design principles first articulated in the ISC's report, which are summarized as follows.

- Species well distributed across their range are less prone to extinction than species confined to small portions of their range.

- Large blocks of habitat, containing multiple pairs of the species, are superior to small blocks of habitat with only one to a few pairs.

- Blocks of habitat that are close together are better than blocks far apart.

- Habitat that occurs in contiguous blocks is better than habitat that is more fragmented.

- Habitat between blocks is more effective as dispersal habitat if it resembles suitable habitat.

Federal Contribution to Recovery

The NWFP is the current conservation strategy for the spotted owl on federal lands. It is designed around the conservation needs of the spotted owl and based upon the designation of a variety of land-use allocations whose objectives are either to provide for population clusters (i.e., demographic support) or to maintain connectivity between population clusters. Several land-use allocations, including Late-Successional Reserves (LSRs), Managed Late-Successional Areas (MSLAs), Congressionally Reserved Areas (CRAs), Managed Pair Areas, and Reserve Pair Areas, are intended to contribute primarily to supporting population clusters. The remaining land-use allocations, including Matrix, Adaptive Management Areas (AMAs), Riparian Reserves (RRs), Connectivity Blocks, and Administratively Withdrawn Areas (AWAs), provide connectivity among habitat blocks intended for demographic support.

The range-wide system of LSRs set up under the NWFP captures the variety of ecological conditions within the 12 different provinces to which spotted owls are adapted. This design reduces the potential for extinction resulting from large catastrophic events in one or more provinces. Multiple, large LSRs in each province reduce the potential that spotted owls will be extirpated in any individual province and reduce the potential that large wildfires or other large-scale events will eliminate all habitat within an LSR. In addition, LSRs are generally arranged and spaced to ensure a reasonable likelihood that spotted owls disperse among two or more adjacent LSRs. This network of reserves reduces the likelihood that catastrophic events will substantially reduce habitat connectivity and population dynamics among provinces.

Although FEMAT scientists predicted that spotted owl populations would decline in the Matrix over time, they expected populations to stabilize and eventually increase within LSRs as habitat conditions improved over the next 50 to 100 years (Thomas and Raphael 1993, USDA/USDI 1994a and 1994b). Based on the results of the first decade of monitoring, the NWFP's authors cannot determine if the declining population trend will be reversed because not enough time has passed to provide the necessary measure of certainty (Lint et al. 2005). However, the results from the first decade of monitoring do not provide any reason to depart from the objective of habitat maintenance and restoration as described under the NWFP (Lint et al. 2005). Other stressors, some already in action (e.g., barred owl), and some yet unrealized (West Nile virus), complicate the conservation of the spotted owl. Currently, the new reports generated on the science of the spotted owl offer few management recommendations to address the emerging threats facing the owl. The redundancy and flexibility of the system of NWFP land use allocations may prove to be the most appropriate strategy in responding to these unexpected challenges (Courtney et al. 2004).

Under the NWFP, the agencies anticipated a decline of northern spotted owl populations during the first decade of implementation. Recent reports (Courtney et al. 2004, Anthony et al. 2004a) identified greater than expected northern spotted owl declines in Washington and northern

portions of Oregon, and more stationary populations in southern Oregon and northern California. The reports found no direct correlation between habitat conditions and changes in northern spotted owls at the metapopulation scale. In addition, no evidence currently exists to suggest that dispersal habitat is currently limiting (Courtney et al. 2004, Lint et al. 2005). Even with the population decline, Courtney et al (2004) noted that there is little reason to doubt the effectiveness of the core of the NWFP conservation strategy.

According to the Service (U.S. Fish and Wildlife Service 2004), the current scientific information, including information showing northern spotted owl population declines, indicates that the spotted owl continues to meet the definition of a threatened species. That is, populations are still relatively numerous over most of its historic range, which suggests that the threat of extinction is not imminent, and that the subspecies is not endangered even in the northern part of its range where greater than expected population declines were documented.

Conservation Efforts on Non-Federal Lands

FEMAT noted that limited Federal ownership in some areas constrained the ability to form an extensive reserve network to meet conservation needs of the spotted owl. Thus, non-federal lands were an important contribution to the range-wide goal of achieving conservation and recovery of the spotted owl. The Service's primary expectations for private lands are their contributions to demographic support (pair or cluster protection) to and/or their connectivity with Federal lands. In addition, forest practice rules in effect in each state govern timber harvest, and provide protection of spotted owls and/or their habitat to varying degrees.

Washington: In 1993, the State Forest Practices Board adopted rules (Forest Practices Board 1996) that would "contribute to conserving the spotted owl and its habitat on non-Federal lands" based on recommendations from a Science Advisory Group which identified important non-Federal lands and recommended roles for those lands in spotted owl conservation (Hanson et al. 1993, Buchanan et al. 1994). Spotted owl-related Habitat Conservation Plans (HCPs) in Washington generally provide both demographic and connectivity support as recommended in these reports and the draft recovery plan (USFWS 1992a).

Oregon: The Oregon Forest Practices Act provides for protection of 70-acre core areas around known spotted owl nest sites, but it does not provide for protection of spotted owl habitat beyond these areas (ODF 2000). In general, no large-scale strategy or mechanism for spotted owl habitat protection currently exists for non-federal lands in Oregon. The four spotted owl-related HCPs currently in effect in Oregon address relatively few acres of land; however, they will provide some nesting habitat and connectivity over the next few decades.

California: In 1990, the State amended the State Forest Practice Rules (FPRs), which govern timber harvest on non-federal lands, to require surveys for spotted owls in suitable habitat and to provide protection around activity centers (CDF 2001). Under the FPRs, no timber harvest plan (THP) can be approved if it is likely to result in incidental take of Federally listed species, unless authorized by a federal HCP. The California Department of Fish and Game initially reviewed all THPs to ensure that take was not likely to occur; the Service took over that review function in 2000. Several large industrial owners operate under Spotted Owl Management Plans that have

been reviewed by the Service; the plans specify basic measures for spotted owl protection. The Service has approved three HCPs that authorize take of spotted owls. Implementation of these plans will provide for spotted owl demographic and connectivity support to NWFP lands.

Current Condition of the Spotted Owl

The current condition of the species incorporates the effects of all past human and natural activities or events that have led to the present-day status of the species and its habitat (USFWS and NMFS 1998).

Range-wide Habitat and Population Trends

Habitat Trends

The Service has used information provided by the Forest Service, Bureau of Land Management, and National Park Service to update the habitat baseline conditions on Federal lands for spotted owls on several occasions since the listing of the spotted owl in 1990. The estimated 7.4 million acres used for the NWFP in 1994 (USDA/USDI 1994a) was believed to be representative of the general amount of spotted owl habitat on these lands. This baseline was used to track relative changes over time in the subsequent analyses. The plan's effectiveness monitoring program resulted in the production, in 2005, of a new map depicting suitable spotted owl habitat throughout the species' range (Lint et al. 2005). However, this new habitat map is not yet available for use in tracking individual actions. Therefore, the following analyses indicate changes to the baseline condition established in 1994. The Service is beginning a process to evaluate the map for future use of tracking habitat trends.

Currently, there are no reliable estimates of spotted owl habitat on other land ownerships. Consequently, consulted-on acres can be tracked but not evaluated in the context of change with respect to a reference condition on non-federal lands. However, the production of the monitoring program habitat map provides an opportunity to evaluate trends in non-federal habitat.

Range-wide Analysis 1994 – 2001

In 2001, the Service assessed habitat baseline conditions (USFWS 2001), the first assessment since implementation of the NWFP in 1994. This range-wide evaluation of habitat was necessary to determine if the rate of potential change to spotted owl habitat was consistent with the change anticipated in the NWFP. In particular, the Service considered habitat effects documented through section 7 consultations since 1994. In general, the analytical framework of these consultations focused on the reserve or connectivity goals established by the NWFP land-use allocations (USDA/USDI 1994a). The Service expressed these effects in terms of changes in acreage of suitable spotted owl habitat within those land-use allocations. The Service determined that actions and their effects were consistent with the expectations for implementation of the NWFP from 1994 through June 2001 (USFWS 2001).

Range-wide Analysis 1994 – 2004 (first decade of the NWFP)

This section updates the information considered in USFWS (2001), relying particularly on information in documents the Service produced pursuant to section 7 of the Act and information provided by NWFP agencies on habitat loss resulting from natural events (e.g., fires, windthrow, insect and disease).

In 1994, about 7.4 million acres of suitable habitat were estimated to exist on federal lands. As of April 12, 2004, the Service had consulted on the proposed removal of 575,447 acres of spotted owl habitat range-wide, of which 190,429 acres occurred on federal lands managed under the NWFP. Federal lands were expected to experience an approximate 2.6 percent decline in suitable habitat due to all management activities (not just timber harvest) over the past decade, with about 167,134 acres[1] (approximately 2.3 percent) removed by timber harvest. These anticipated changes in suitable spotted owl habitat were consistent with the expectations for implementation of the NWFP.

Most management-related habitat loss on federal lands, considered range-wide, was concentrated in the Oregon physiographic provinces. In particular, the percentage of habitat to be removed from the Oregon Klamath Mountains province was relatively high (approximately 11 percent) in comparison to other provinces, most of which were characterized by less than a 4 percent decrease in habitat. Habitat removed from the Oregon Klamath Mountains province and the two Oregon Cascades provinces made up 44 percent and 36 percent, respectively, of the habitat loss range-wide since 1994. In summary, habitat loss in Washington accounted for 9.06 percent of the range-wide loss, but it only resulted in a loss of 0.73 percent of available habitat on Federal lands in Washington. In Oregon, habitat loss accounted for 82.37 percent of the range-wide losses, but only 4.13 percent of available habitat on Federal lands in Oregon. Loss of habitat on federal lands in California accounted for 8.57 percent of the losses range-wide, but only 1.34 percent of habitat on federal lands in California.

Since 1994, habitat lost due to natural events was estimated at approximately 168,301 acres range-wide. About two-thirds of this loss was attributed to the Biscuit Fire that burned over 500,000 acres in southwest Oregon (Rogue River basin) and northern California in 2002. This fire resulted in a loss of approximately 113,451 acres of spotted owl habitat, including habitat within five LSRs.

Little information is available regarding spotted owl habitat trends on non-federal lands. Internal Service consultations conducted since 1992 have documented the eventual loss of 407,849[2] acres of habitat on non-federal lands. Most of these losses have yet to occur because they are part of large-scale, long-term HCPs.

Subsequent to the analysis for the first decade (1994–2004) of the NWFP, the Forest Service and Bureau of Land Management reported revised estimates of fire impacts. They also reported that not all effects anticipated during section 7 consultations actually occurred on the landscape, since

[1] Data compiled by the U.S. Fish and Wildlife Service, Northern Spotted Owl Coordination Group.

[2] Data compiled by the U.S. Fish and Wildlife Service, Northern Spotted Owl Coordination Group.

the action agencies have not implemented some projects. Together these reports reduce the anticipated habitat loss during that decade. Therefore, the analysis above represents a reasonable, worst-case assessment. In addition, at the time of this assessment, we had no empirical information on increases in spotted owl habitat on any ownership resulting from suitable habitat that had developed through forest succession and in-growth. The 2005 NWFP monitoring program's recently released reports suggests that approximately 515,000 to over 1 million acres of younger forests may have transitioned into late-successional forest condition, range-wide, since 1994.

Range-wide Analysis from 2004 (first decade) to the Present

This section updates the information considered in the first range-wide, decadal (1994-2004) analysis of the NWFP to the present writing of this BO. In 1994, about 7.4 million acres of suitable habitat were estimated to exist on Federal lands. As of April 2004, the Service had consulted on the removal of 575,447 acres of spotted owl habitat range-wide, of which 190,429 acres occurred on Federal lands managed under the NWFP. From April 12, 2004, to the present, the Service has consulted on the removal or downgrading of 15,455 acres of spotted owl habitat range-wide on Federal lands managed under the NWFP (190,429 acres consulted on for removal through April 12, 2004, subtracted from 205,884 acres consulted on for removal through July 19, 2005). This amount of habitat loss (0.21 percent) is consistent with the expectations for timber management under the NWFP for the second decade of implementation, using the 2004 baseline of 7,038,368 acres of suitable habitat (1994 baseline with all suitable habitat losses subtracted out).

Currently, an estimated 4,876,646 acres of spotted owl habitat in Reserves receive protection under the NWFP.

Spotted Owl Numbers, Distribution, and Reproduction Trends

There are no estimates of the historical population size and distribution of the spotted owl within preferred habitat, although spotted owls are believed to have inhabited most old-growth forests throughout the Pacific Northwest prior to modern settlement (mid-1800s), including northwestern California (USFWS 1989). According to the final rule listing the spotted owl as threatened (USFWS 1990a), approximately 90 percent of the roughly 2,000 known spotted owl breeding pairs were located on federally managed lands, 1.4 percent were located on State lands, and 6.2 percent were located on private lands. The percent of spotted owls located on private lands in northern California was slightly higher (Forsman et al. 1984, USFWS 1989, Thomas et al. 1990).

Gutiérrez (1994), using data from 1986-1992, tallied 3,753 known pairs and 980 singles throughout the range of the spotted owl. At the time the NWFP was initiated (July 1, 1994), BLM estimated 5,431 known locations or site centers of spotted owl pairs or resident singles: 851 sites (16 percent) occurred in Washington, 2,893 (53 percent) occurred in Oregon, and 1,687 (31 percent) occurred in California (BLM 1995). Because some areas were unsurveyed (USFWS 1992a, Thomas et al. 1993), and many remain so, the actual population of spotted owls across the range was believed to be larger than either count.

Because current survey coverage and effort are insufficient to produce reliable population-size estimates, researchers use other indices, such as demographic data, to evaluate trends in spotted owl populations. Analysis of demographic data can provide an estimate of the rate and direction of population growth, identified by the parameter lambda (λ). A λ of 1.0 indicates a stationary population that is neither increasing nor decreasing, a λ less than 1.0 indicates a declining population, and a λ greater than 1.0 indicates a growing population.

In January 2004, at the spotted owl demographic meta-analysis workshop, two meta-analyses were conducted on the rate of population change using the re-parameterized Jolly-Seber method (λ_{RJS}). One meta-analysis applied to all 13 study areas, and a second meta-analysis applied to the eight study areas included in the Effectiveness Monitoring Program of the NWFP (Anthony et al. 2004a). Data were analyzed separately for individual study areas, as well as simultaneously across all study areas (true meta-analysis).

Estimates of λ_{RJS} ranged from 0.896-1.005 for the 13 study areas, and all but one (Tyee) of the estimates were <1.0, suggesting population declines for most areas (Anthony et al. 2004a) (Figure 1). There was strong evidence that populations on the Wenatchee, Cle Elum, Warm Springs, and Simpson study areas declined during the study, and there also was evidence that populations on the Rainer, Olympic, Oregon Coast Range, and HJ Andrews study areas were decreasing (Figure 1). Precision of the λ_{RJS} estimates for the Rainier and Olympic study areas were poor and not sufficient to detect a difference from 1.00. The estimate of λ_{RJS} for the Rainier study area (0.896) was the lowest of all of the areas. Populations on the Tyee, Klamath, South Oregon Cascades, Northwest California, and Hoopa study areas appeared to be stationary during the study, but there was some evidence that the South Oregon Cascades, Northwest California, and Hoopa study areas were declining (λ_{RJS} <1.00).

The weighted mean λ_{RJS} for all of the study areas was 0.963 (SE = 0.009, 95 percent CI = 0.945-0.981), suggesting that populations over all study areas collectively were declining by about 3.7 percent per year from 1985-2003. The mean λ_{RJS} for the eight demographic monitoring areas on Federal lands was 0.976 (SE = 0.007, 95 percent CI = 0.962-0.990), and the mean for non-Federal lands was 0.942 (SE = 0.016, 95 percent CI = 0.910-0.974), an average decline of 2.4 versus 5.8 percent per year, respectively. This suggests that spotted owl populations on Federal lands were declining but at a lower rate than elsewhere. However, interspersion of non-federal and federal land ownership on the study areas confounds this analysis.

The number of populations that have declined and the rate at which they have declined are noteworthy, particularly the precipitous declines on the four Washington study areas (Wenatchee, Cle Elum, Rainier, and Olympic). In these study areas, the population decline is estimated at 30-50 percent over 10 years. A similar decline is estimated for the Warm Springs study area in Oregon (Anthony et al. 2004a). Declines in adult survival rates may be an important factor contributing to declining population trends. Survival rates declined over time on five of the 14 study areas: four study areas in Washington, which showed the sharpest declines, and one study area in the Klamath province of northwest California (Anthony et al. 2004a). In Oregon, apparent survival for four of six study areas showed no time trends, and the remaining two study areas had weak non-linear trends. In California, two study areas showed no

trend, one showed a slight decline, and one showed a significant linear decline (Anthony et al. 2004a). Like the trends in annual rate of population change, trends in adult survival rate showed clear declines in some areas, but not in others.

A small population of spotted owls occurs in British Columbia. This relatively isolated population apparently is declining sharply. Large areas of apparently suitable habitat are currently unoccupied (Courtney et al. 2004). Breeding populations have been estimated at fewer than 33 pairs. The species may be declining as much as 35 percent per year (Harestad et al. 2004). The amount of interaction between spotted owls in Canada and the U.S. is unknown (Courtney et al. 2004). The Canadian population has reached the point where it is now vulnerable to stochastic demographic events that could cause further declines and perhaps extirpation; conditions are not likely to improve in the short term (Courtney et al. 2004).

Status in the Project Vicinity

Information for northern spotted owl territories in Mendocino County was obtained by Caltrans from the most current version of the California Department of Fish and Game (CDFG) database. This database is maintained by CDFG and tracks all known northern spotted owl territories throughout the state of California. Currently, the CDFG northern spotted owl database lists 556 territories in Mendocino County.

Crude density (i.e., the number of owls per square kilometer) has been calculated for several forest lands in northwestern California. The current density of northern spotted owls on Mendocino Redwoods Company lands is 0.272 owls/km^2. This density appears to be one of the greater densities throughout forest lands in northern California. The Biological Opinion for Pacific Lumber Company cites a density of 0.325 owls/km^2 (USFWS 1999c), the greatest known density reported for northern California. Lower densities were found in the Willow Creek study area in Humboldt County, 0.235 owls/km^2 (Franklin et al. 1990); Green Diamond lands in northern California, 0.209 owls/km^2 (Diller and Thome 1999); and Redwood National Park, 0.163 owls/km^2 (Tanner 1999).

Research in California indicates that several northern spotted owl study populations may be stable or slightly declining (Franklin et al. 1996, Franklin et al. 2002). A minimum population estimate for northern spotted owls in California during the late 1980s and early 1990s was 1,111 pairs (Gutierrez et al. 1995). Although populations may be stable in northern California, northern spotted owl populations are declining across a large portion of their range due to destruction and fragmentation of old-growth habitat (Noon and McKelvey 1996). Fragmentation of old-growth and other late-successional forest habitat has isolated populations and reduced prey availability in areas of the northern spotted owls' range other than northern California (Thomas et al. 1990).

ENVIRONMENTAL BASELINE (in the Action Area):

Regulations implementing the Act (50 CFR §402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have

already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation process.

Distribution of Northern Spotted Owls in the Action Area

Field Surveys

Potential northern spotted owl habitat was mapped by Caltrans within the Oil Well Hill area according to California Board of Forestry guidelines (Caltrans 1997). Several vegetation communities in the project area were found to be generally consistent with spotted owl habitat characteristics. Initial preparation of the habitat map was conducted using information from the vegetation assessment.

Caltrans' surveys for northern spotted owls followed guidelines endorsed by the Service. Surveys for northern spotted owls occurred from April through August 1991; additional surveys were conducted in 1992 and 1993. Surveys were conducted in areas that provide functional nesting, roosting, and foraging habitat for spotted owls. The surveys were conducted to determine spotted owl presence and nesting status in the project area. The quality and amount of suitable habitat within an occupied spotted owl territory were described in order to assess the effects of altering spotted owl habitat in the project area. The amount of functional nesting, roasting, foraging, and dispersal habitat was measured within the proposed project corridor to determine the ability of these areas to support spotted owls (Caltrans 1997). After spotted owls were detected during night surveys in 1991, intensive day surveys were conducted to locate nest sites or activity centers. Once located, spotted owls were moused to locate nests (Caltrans 1997).

Caltrans biologists conducted informal, non-protocol, site-specific surveys for northern spotted owls in 1998, in habitat known to support spotted owls. These surveys were conducted in order to locate spotted owls detected in the 1991, 1992, and, 1993 surveys (Caltrans 2000). Following this informal survey, protocol-level surveys for northern spotted owls were initiated again, in 1999, in order to assess the status and presence of spotted owls in the project area. These surveys followed the two-year method as described in the 1992 California State Board of Forestry guidelines.

In addition to these survey results, Caltrans also utilized the Natural Environment Study (NES) (Caltrans 1997), local CDF/CDFG Timber Harvest Plans, the California Natural Diversity Database (CNDDB 2003, CNDDB 2005), and discussions with CDFG biologists to update and assess presence of northern spotted owls in the project area.

Current Condition in the Action Area

Northern spotted owls were not found within the Modified J1T project corridor, nor within the footprint of the designated borrow site at Oil Well Hill during the most recent (i.e., 1999) surveys. However, spotted owls were found historically near the project corridor and at Oil Well Hill, west of the existing U.S. Highway 101. Suitable nesting/roosting/foraging habitat does not occur within the Modified JIT corridor; the area is not capable of supporting such habitat.

However, suitable spotted owl foraging and dispersal habitat exists at the Oil Well Hill designated borrow site (Figure 3-2, Appendix I, of the BA).

Suitable northern spotted owl nesting and foraging habitat occurs in the densely forested areas around the western and northwestern perimeter of Little Lake Valley, consisting of mixed north-slope forest, Douglas-fir forest, mixed conifer forest, mixed evergreen forest, and some of the black oak and Garry oak woodland. Large stands occur at the extreme northern end of the valley, north of Outlet Creek, and west of U.S. Highway 101, just southwest of the Louisiana-Pacific mill along the west side of U.S. Highway 101 (Figure 3-2, Appendix I of the BA).

Protocol-level surveys within potential northern spotted owl habitat in the project area resulted in finding two pairs of spotted owls in 1991 and 1992 (Figure 5-4, Appendix I of the BA). Both pairs were located outside of the Modified J1T corridor and outside the proposed Oil Well Hill borrow site. One pair (pair 1) was located west of U.S. Highway 101 in the Wild Oat Canyon drainage, and the second pair (pair 2) was observed just west of U.S. Highway 101 and north of Outlet Creek (Figure 5-4, Appendix I of the BA).

Pair 1 was a breeding pair observed in 1991 and 1992. In 1991, the pair produced one young at a nest within a mature forest grove covering several hectares along an unnamed drainage. The land surrounding the nesting area (or activity center) consisted of dense mixed-conifer forest on all sides. The nest site was within 0.8 km (0.5-mile) of a rural residential area along Highway 101 north of Willits. In late 1991 all but approximately 5.7 hectares (14.1 acres) (designated as a protected area) of this nesting grove was selectively harvested. All large conifers were removed, except those within the 5.7 hectares (14.1 acres) protected area. In 1992, this pair nested in an old stick nest just north of the remnant nesting grove and produced two young. No adults were found during a one-day survey conducted on April 8, 1993. A two-year protocol-level survey conducted in 1999 and 2000 found no evidence of spotted owls nesting at this site. The nesting grove is located outside of the project corridor and designated borrow site at Oil Well Hill, approximately 2.3 km (1.4 miles) southwest of Oil Well Hill.

Pair 2 was located in the area of Outlet Creek, west of Highway 101 and north of Outlet Creek. This pair did not breed in 1991 but did breed in 1992. In 1992, this pair nested within a small unnamed drainage between Highway 101 and Outlet Creek Road, approximately 150 meters (500 feet) west of Oil Well Hill, and produced two young. Based on results of the one-day survey conducted on April 8, 1993, this pair did not breed in 1993. Most of the area is dense, second growth mixed-conifer forest with small pockets of older forest. The nesting grove is outside of the project corridor, but is near the designated borrow site at Oil Wel Hill. A two-year protocol-level survey conducted in 1999 and 2000 found no evidence of nesting activity at this nest site.

The area immediately north of Little Lake Valley, including the proposed borrow site, is the southernmost area in the Coast Range with continuous spotted owl dispersal habitat that connects the coastal spotted owl populations with more interior coastal range spotted owl populations east and south of Willits. South of this area, connections between coastal and more interior populations are fragmented by river valleys, drier forest types, agriculture, and developed areas less conducive to dispersal by spotted owls.

Critical Habitat

No designated critical habitat for northern spotted owl occurs within or near the Modified J1T alignment or the designated borrow site at Oil Well Hill. Therefore, no critical habitat will be affected by this proposed action.

EFFECTS OF THE ACTION

Scientific Basis for Evaluating Potential Effects

This section describes the scientific basis for analyzing the potential direct and indirect effects of human actions, including their interrelated and interdependent actions, on the northern spotted owl. While the implementation of most proposed actions, including the proposed Willits Bypass Project, would not result in all of the potential effects described herein, this discussion provides a general framework and understanding under which the proposed action considered in this biological opinion may be objectively analyzed.

Potential Effects of Habitat Modification

Site-Specific Effects

Forest and fire management practices have the potential to reduce the quantity and quality of spotted owl nest and roost sites. Spotted owls depend upon existing forest structures, such as cavities and broken treetops, for nest sites. Silvicultural prescriptions, timber harvest activities, and fire management activities which result in the removal of the oldest, most decadent trees or require removal of hazard trees and snags may remove potential spotted owl nest sites (Blakesley et al. 1992). Further, prescriptions designed to reduce ladder fuels or release the growth of co-dominant trees often simplify vertical structure in the understory, where spotted owls perch for hunting or roosting (Forsman et al. 1984).

Timber harvest and fire management activities can contribute to changes in habitat microclimate by reducing overall canopy closure within nesting and roosting habitat. A reduction in canopy closure often results in reduced protection from environmental factors, such as rain, wind, snow, and temperature. Laboratory and field studies have determined that spotted owls are less heat tolerant than many other bird species. Physiological limitations corroborate these observations (Weathers et al. 2001).

Removing trees, snags, and downed wood can affect prey composition and/or availability by altering characteristics of the habitat upon which prey species depend. Because the amount of snags and down material on the forest floor is positively correlated with densities of some prey species, a reduction in the abundance of these components may contribute to localized, short-term declines in prey (Williams et al. 1992). Reductions in populations of these prey species could lower spotted owl recruitment.

Landscape-Level Effects

Site-specific effects could change the function which forested stands provide for northern spotted owls. For the purposes of the following discussion, changes in habitat function resulting from cutting of trees and other vegetation are categorized as removal, downgrade, or degrade. Removal represents a complete loss of habitat function following an action. For example, an area functioned as nesting/roosting habitat; after habitat modification, the area does not provide any habitat function. Downgrade is a subset of the term removal and refers to a loss of habitat function and change from one habitat function to another. For example, if an area functioned as nesting/roosting habitat before habitat modification, but is capable of providing only foraging habitat post-project, this would be classified as downgrade. This term could also be used to signify a change in function from foraging to dispersal as well. Degrade, to be distinguished from downgrade, indicates a reduction in habitat quality, but not habitat function. For example, an area that functioned as foraging habitat prior to an action still provides foraging habitat after the effect, but prey abundance may be reduced due to a reduction in some structural components or vegetation.

Removal or downgrading of habitat within home ranges, especially when located close to the nest site, can reasonably be expected to negatively affect northern spotted owls. A reduction in northern spotted owl productivity and survivorship occurs as the amount of suitable habitat within a spotted owl home range declines (Bart 1995). In northwestern California, survivorship of adult spotted owls was greater where greater amounts of older forest were present around the activity center, but reproductive success increased where the amount of edge between older and younger forest was relatively high (Franklin et al. 2000).

Research indicates that spotted owls in northern California focus their activities in heavily-used "core areas" that range in size from about 167 to 454 acres, with a mean of about 409 acres (Bingham and Noon 1997). These core areas, which included 60 to 70 percent of the spotted owl telemetry locations during the breeding season, typically comprised only about 20 percent of the home range area. Therefore, habitat removal within core areas could have disproportionate effects on spotted owls. Spotted owl abundance and productivity significantly decrease when the proportion of suitable habitat within 0.7 mile of an activity center falls below 500 acres, which represents 50 percent of the total 1,000 acres within 0.7 mile (O'Halloran 1989; Simon-Jackson 1989; Thomas et al. 1990). For the purpose of consultation, the Service identifies the following guidelines for the amount of suitable habitat needed to maintain essential behaviors, such as breeding, within the home range area: 500 acres within 0.7 mile of the activity center and 1,336 acres within 1.3 mile of the activity center.

Potential Effects of Noise Disturbance

Some activities, such as timber harvesting, road construction and decommissioning, landslide rehabilitation, trail maintenance, and fire management, use motorized equipment (e.g., helicopters, heavy equipment, or chainsaws) that introduces high levels of noise into the environment. This elevated noise level may have adverse effects on wildlife species by interfering with essential behaviors. The effects of noise on birds are difficult to determine (Knight and Skagen 1988) and quantify. Confounding factors include the tolerance level of individual birds, type and frequency of human activity, ambient sound levels, how sound reacts

with topography and vegetation, and differences in how species perceive noise. Regardless of these difficulties, research conducted on a variety of bird species suggests that disturbance can have a negative impact on their reproductive success (Tremblay and Ellison 1979; Belanger and Bedard 1989; Piatt et al. 1990; Henson and Grant 1991). Disturbance can affect productivity in a number of ways, including interference of courtship (Bednarz and Hayden 1988), nest abandonment (White and Thurow 1985), egg and hatchling mortality, exposure and predation (Drent 1972; Swensen 1979), and altered parental care (Fyfe and Olendorff 1976; Bortolotti et al. 1984).

The few studies which examined responses of northern and Mexican spotted owls to several disturbance sources, such as helicopters, small chainsaws, and hikers, indicate that noise can disrupt spotted owl behaviors, such as flushing from roosts and prey delivery rates (Delaney et al. 1999; Delaney and Grubb 2001; Swarthout and Steidl 2001). However, spotted owl sensitivity varies with stimulus distance, location (i.e., aerial or ground), type, and timing, as well as individual tolerance (Delaney et al. 1999; Delaney and Grubb 2001; Swarthout and Steidl 2001).

Potential Effects of Injury or Mortality

In extreme cases, forest or fire management activities could result in direct injury or mortality of adults, eggs, or young. The potential for northern spotted owls to be struck and killed or injured by falling trees during harvesting or exposed to high levels of smoke during prescribed burning is confined to the area relatively close to the nest tree. Individual adult spotted owls reasonably can be expected to move from the area of disturbance and avoid injury or death. However, adult spotted owls which are incubating eggs or brooding young may be reluctant to leave the area (Delaney et al. 1999) and be vulnerable to injury or death. Young spotted owls are poor fliers immediately after leaving the nest; they develop their flight skills during their first months after leaving the nest. Thus, they are most vulnerable to being struck by falling trees during this time. Young are also susceptible to smoke inhalation. They may disperse prematurely in response to disturbance such as tree falling or smoke, thus increasing the likelihood of predation or starvation outside of the nest grove. Adults may abandon eggs in response to tree felling near the nest (Drent 1972; Swensen 1979; White and Thurow 1985). Forest management that includes falling trees may crack or destroy eggs.

Effects of the Proposed Action

The proposed project corridor and road alignment will avoid direct and indirect impacts to northern spotted owl nesting and foraging habitat, because it is greater than 0.8 km (0.5 mile) from known nesting activity centers, and would not remove any suitable habitat. Because much of the alignment through Little Lake Valley will require fill material upon which to build the road bed, very little excavation will occur in the proposed road prism. However, a substantial amount of fill material is needed to build the roadbed, and a borrow site will be needed. Oil Well Hill, located alongside Highway 101 approximately 3 miles north of the proposed road alignment, is the designated borrow site. Excavation of fill material there will require the removal of existing forest vegetation.

Potential effects of this proposed action to spotted owls within the action area include loss of suitable nesting, roosting and foraging habitat, and temporary noise and visual disturbance within potentially occupied habitat during construction. Minimization measures identified earlier in this biological opinion will reduce but will not eliminate adverse effects. The potential effects to the spotted owl from the proposed action, and reductions in the effects as a result of implementing the proposed minimization measures, are discussed below.

Caltrans anticipates the removal of a maximum of 40 acres (16 ha) of nesting, roosting, foraging and dispersal habitat, and disturbance resulting from potential differences in noise patterns during the excavation activities. In addition, existing traffic noise dynamics resulting from extensive landscape modification on the east side of the highway could change. These impacts to spotted owls are discussed in detail in the following sections. Because of the historic presence of northern spotted owl nesting within approximately 152 meters (500 feet) of the proposed Oil Well Hill borrow site, and the removal of approximately 40 acres (16 ha) of nesting, roosting, foraging and dispersal habitat at the proposed borrow site, the proposed project may adversely affect northern spotted owl.

Effects Due to Habitat Removal and Degradation

Excavation of fill material within the borrow site will require a substantial removal of native forest vegetation. The area has been subject to previous logging activities, but mature and old-growth trees are found within the forest matrix in the excavation area. The removal of this forest habitat will result in the loss of nesting, roosting, and foraging habitat for the spotted owl, as well as some dispersal habitat.

Provincial Home Range

The provincial home range of a spotted owl in the vicinity of the action area is approximated by a circle of radius 1.3 mi. (2.1 km). This circle encompasses the median area of a spotted owl home range within the California Coast Range province, as estimated through research, of approximately 3,340 ac.(1,352 ha). Provincial home ranges apply to nesting or territorial pairs as well as individual spotted owls that demonstrate multi-year occupancy of suitable nesting habitat. The center of the provincial home range is identified by a known nest tree, location of fledglings, or other sign of spotted owl occupancy of a given area.

Project effects to suitable habitat are based on the types of activities and their location within identified provincial home ranges. The threshold for harm to the spotted owl is defined as the reduction of available suitable habitat to less than 1,336 acres (40 percent of the area) within a provincial home range as a result of the current action combined with effects of previous actions. The home range is further defined by a more critical area of about 1,000 ac. (405 ha), approximated by a 0.7 mi. (1.1 km) radius circle from the spotted owl activity center. The threshold within this critical area is the reduction below 50 percent (500 acres) of suitable habitat as a result of the current action combined with previous actions in the area. Any suitable nesting/roosting habitat removal within the closest 70 ac. (2.8 ha) area to the activity center constitutes harm to spotted owls. This 70-acre core area can be approximated by a circle of

radius 985 ft. (0.186 mi., 0.304 km), or may be described as a specific polygon of habitat in a site-specific analysis.

Existing potentially suitable nesting/roosting/foraging habitat was mapped in 2005 within a 1.3-mile radius of the Oil Well Hill borrow site by Caltrans wildlife biologist Peter Lewendal (Appendix F of the BA). This study involved assembling a base map consisting of portions of the USGS 7.5 minute Longvale, Burbeck, Willis Ridge and Willits quadrangles. Aerial photographs were not available, so Caltrans had the area flown to created stereo-pair photographs of the site in 2005. The aerial photos were reviewed in April 2005 to assess spotted owl nesting/roosting, foraging and unsuitable habitats. The area was ground-truthed on April 25 and 26, 2005.

Caltrans' analysis determined that within the 1.3-mile radius polygon of this borrow site (encompassing approximately 4839.1 acres), approximately 3070.3 acres consist of suitable foraging habitat, and 99.2 acres consist of suitable nesting/roosting habitat, encompassing an area of approximately 3169.5 acres of suitable habitat, or approximately 65.5 percent of the 1.3-mile radius polygon.

Approximately 32.4 acres of the Oil Well Hill borrow site consists of suitable nesting, roosting, and foraging habitat. Hence, if the entire Oil Well Hill borrow-site is excavated, Caltrans estimated that approximately 3,137.1 acres (approximately 64.9 percent) of suitable foraging and nesting/roosting habitat would remain within the 1.3-mile radius of the Oil Well Hill borrow site (Habitat Analysis Report, Appendix F of the BA).

In a separate analysis using a slightly different classification of habitat, the Service estimated that approximately 4,802.9 acres occurs within 1.3 miles of the footprint of the borrow site, of which 2,435.5 acres (50.7 percent) currently support suitable nesting, roosting and foraging habitat. For the owl site on Oil Well Hill that would be directly affected by the removal of suitable habitat, approximately 1828.6 acres (53.9 percent) of suitable nesting, roosting, and foraging habitat currently exists within the provincial home range of the known site on Oil Well Hill.

Following the removal of a maximum of 32.4 acres of suitable habitat, the 1.3 mile buffer area around the borrow site would retain at least 2,403.1 acres of suitable, or 50.0 percent of the area. For the affected owl site, the removal of 32.4 acres of suitable will result in an estimated retention of 1,796.2 acres (53.8 percent) of suitable within the provincial home range.

In the more critical area within 0.7 miles of the site center, the Service estimates that approximately 597.9 acres of suitable habitat currently exists, or about 59.8 percent of the area. Following the removal of suitable habitat from the borrow site, approximately 565.5 acres of suitable will remain, or about 56.6 percent of the area.

Site Center

One known owl site center is located near the proposed borrow site, and we estimate that up to 10 acres of suitable nesting, roosting, and foraging habitat would be removed from the 70-acre core area. This estimate is based on the anticipated core area around the known nest site including the most favorable, contiguous nesting and roosting habitat. For this particular site,

approximately 10 acres occurs within the proposed borrow site. The known site center was not occupied during the most recent protocol surveys completed in 1999 and 2000. However, its occupancy status has not been documented since 2000, so it is presumed to still be a functional site center. Site surveys will be conducted during the two years prior to the initiation of project construction to confirm presence or absence during project implementation. These surveys are anticipated to occur during the years 2007 and 2008. It is possible that the site center for this owl site has moved to a new, undetected location since the last confirmed sighting. However, in the absence of new information, the known site center will be adversely affected by the removal of nesting and roosting habitat near a known site center.

Effects Due to Noise Disturbance

Excessive noise generated by the proposed action has the potential to disrupt essential breeding behaviors of spotted owls, or result in reduced reproductive performance through adverse effects to nesting spotted owls and their young. Based on surveys conducted during 1991 to 1993 and repeated in 1999 and 2000, only one spotted owl nest site is known to occur within 0.5 miles or less of the proposed action, on Oil Well Hill. The last known occupancy of this nest site was 1993. Spotted owls located farther than 0.5 miles from the project footprint would not be affected by noise generating activities.

A 65-hour-long, continuous noise survey conducted by Caltrans at Oil Well Hill during the period May 6-8, 2004, found that existing traffic sound levels were fairly high throughout one 24 hour period, ranging from approximately 60 to 83 decibels (dB) (L_{max}, from table in Appendix E of the BA), but were lower during the late evening and early morning hours for the other 24 hour period, ranging between approximately 37 and 52 dB (Appendix E of the BA). Caltrans anticipates that noise levels generated by heavy equipment used for excavation would range from approximately 70 to 80 dB at the project site (Keith Pommerenck, pers. comm.). Hence, it is anticipated that excavation noise levels are not expected to significantly exceed existing traffic levels for excavation occurring immediately adjacent to the existing highway. However, because excavation is expected to occur continuously during both day and night hours, the difference in the frequency of noise patterns could potentially disturb spotted owls, if they are nesting and foraging in the area.

Excavation can occur as far as 600 ft. (183 m) from the edge of the existing highway surface, if the need for fill material dictates. The ambient sound environment at this distance from the highway is anticipated to be substantially lower than what occurs nearer to the highway. The sound level generated by excavation activities may, therefore, substantially exceed the ambient condition. However, these excessive sound levels would be farther from the known nest site, and would likely have less effect on nesting owls there than if their nest site nearer this eastern edge of the excavation area.

The contractor may use explosives at Oil Well Hill as part of the excavation of fill material. The number and frequency of charges would be determined by the contractor. Blasting typically produces a rapid series of impulse type noise with mostly low frequency noise content (Illingsworth and Rodkin 2005). If explosives are used at Oil Well Hill, the charges would be set below ground rather than on the surface, to fracture and loosen the rock. Estimates of noise

levels generated by blasts in a study for the Confusion Hill Relocation Project (Illingsworth and Rodkin 2005) recorded a noise level of approximately 85 dBA at approximately 550 feet. In addition, blasting noise levels recorded for emergency work performed at Confusion Hill, Mendocino County, which involved a surface blast, recorded noise levels of 83 dBA at approximately 500 feet line-of-site from the point of detonation, as reported in the BA.

These numbers reported by Caltrans would translate to sound levels substantially higher than sound levels within the site center or at a potential nest tree under ambient conditions. Sound levels reported for blasting (85 dB at 550 feet) would translate to approximately 106 dB at 50 ft. (15 m), which substantially exceeds the reported sound level (60-83 dB) of traffic on the existing highway. Should owls attempt to nest at the site on Oil Well Hill, this level of disturbance could lead to behavioral modifications, such as flushing from the nest, and injury to owls.

Highway noise levels are not anticipated to increase significantly in the future, and the existing cut banks absorb sound and contribute no more than a minimal echo effect. Therefore, Caltrans anticipates that the transmission of highway traffic noise eastward into potential NSO habitat east of Oil Well Hill would not be significantly higher than existing levels (K. Pommerenck, pers. comm.).

Interrelated and Interdependent Activities

Regulations implementing the Act require the Service to consider the effect of activities which are interrelated and interdependent to the proposed action (50 CFR 402.02). The Act defines interrelated activities as those which are part of a larger action and depend upon the larger action for their justification, and interdependent activities as those projects which have no independent utility apart from the action that is under consideration. This proposed action does not include any interrelated and interdependent activities.

Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur within the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Within the Action Area, the only foreseeable action with known construction dates which potentially would have cumulative effects associated with the Willits Bypass is the proposed wastewater treatment facility for the City of Willits. This action would include the construction of new wastewater treatment facilities, including the construction of expanded oxidation ponds, treatment wetlands, mitigation areas for wetland use, and a public trail around these facilities. This project does not occur within or near suitable spotted owl habitat, and is not expected to have any effects on the species.

Other potential activities in or near the Action Area include: a second access road to the Brooktrails subdivision, which may be routed in or near Wild Oat Canyon; a third access road to Brooktrails, connecting to Highway 20 west of Willits; the expansion of public transit and

bicycle/pedestrian facilities near Baechtel Road/Railroad Avenue; repairs to the existing Northwest Pacific Railroad, including its route through the Outlet Creek Canyon; the build-out of the Brooktrails subdivision; the build-out of the City of Willits and adjacent unincorporated Mendocino County lands; and, future timber harvest plans (THPs) in the Action Area. However, none of these activities are currently designed or planned to a level where effects to listed species or their habitats can be reasonably considered at this time, and so do not contribute to cumulative effects for the project considered in this consultation.

The CDF has records of six THPs within, or partially within, the 2.6 km (1.6-mile) radius circle around Oil Well Hill that have been recorded since 1990. These are 1-90-364 MEN (50 acres [20 ha]); 1-90-631 MEN (665 acres [370 ha]); 1-94-155 MEN (20 acres [8 ha]); 1-94-591 MEN (238 acres [96 ha]); 1-95-487 MEN (50 acres [20 ha]); and 1-99-051 MEN (11 acres 4.5 ha]). Portions of two THPs, 1-90-631 and 1-94-591 extend outside the 2.6 km (1.6-mile) radius. The majority of these logging activities involved seed tree and shelterwood cuts.

Because of the existing market the current value of timber is low, there are no immediate future plans to harvest timber within the Oil Well Hill area. Hence, it is not possible to predict future logging activities. All of the land within the 1.6-mile radius is privately owned, and logging on the areas encompassed by these THPs has occurred in the past, and could occur in the future if timber prices are more favorable.

No other actions likely to result in cumulative effects to listed species are currently being implemented or planned in the action area at this time.

CONCLUSION

After reviewing the current status of the northern spotted owl, the environmental baseline for the action area, the effects of implementing the proposed construction of the Willits Bypass project in Mendocino County, and its cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the northern spotted owl. The Service reached this non-jeopardy conclusion based on the following factors:

1. The proposed action will remove suitable spotted owl nesting, roosting and foraging habitat. Most of this loss of habitat will be permanent. That is, those portions of the habitat that will be permanently maintained as roadway, cut banks, fill slopes, and other areas permanently unvegetated or maintained as low vegetation will never recover its function as suitable spotted owl habitat. Despite this loss, the removal of suitable habitat has been reasonably minimized, in regards to the purpose and need of the action, through implementation of minimization measures identified in the project description. After completion of the proposed action, the known active spotted owl site will still encompass more than 40 percent suitable habitat within the provincial home range (1.3 mile radius of the known nest), and will contain more than 50 percent suitable habitat within the 0.7 mile radius area.

2. One owl site will be affected by the loss of up to 32.4 acres of suitable habitat. Only a small portion of this 32.4 acres occurs within the 70-acre owl core area, likely to be less

than 10 acres. All of these acres to be removed are across the highway from the known site center. However, some of the acres to be removed are the better quality habitat remaining available to this already compromised site center. Despite the potential loss of this site center, the regional scale of the effect is small, affecting only a single known site within this province.

3. One spotted owl nest site is known to occur within a distance of the borrow site such that it may be adversely affected by noise disturbance resulting from construction activities, under the proposed minimization measures. However, this site was not occupied when last surveyed in 1999 and 2000. Surveys will be conducted during the two years prior to the start of construction, to confirm occupancy of this site at that time. Surveys are anticipated to occur during the years 2007 and 2008. Should this spotted owl site, or another new site within one-quarter mile of the borrow site, be found to be occupied at that time, FHWA and Caltrans will consult with the Service at that time to address new information and consider minimization measures appropriate to the exact location of any known spotted owls.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under that Act provided that such taking is in compliance with this Incidental Take Statement.

Any Reasonable and Prudent Measures described below are non-discretionary, and must be undertaken by the FHWA so that it becomes a binding condition of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. FHWA has a continuing duty to regulate the activity covered by this incidental take statement. If FHWA (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, FHWA must report the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement [50 CFR §402.12(I)(3)].

AMOUNT OR EXTENT OF INCIDENTAL TAKE

The Service anticipates that up to one pair of northern spotted owls associated with the site center on Oil Well Hill will be taken as a result of this proposed action. Implementing the proposed action would result in the removal of suitable habitat, and would adversely affect the species. This removal of suitable habitat would occur within a known northern spotted owl site center, and would harm the species as a result of loss of suitable habitat around an historically occupied and successfully nest. The removal of up to 32.4 acres of suitable habitat would occur within the provincial home range of an known owl site, but would not remove sufficient habitat to result in harm to the species at the home range scale. Finally, should blasting occur at the excavation site, the sound level generated by such subsurface explosives would harass the species as a result of substantially elevated sound levels at a potentially occupied nest site. Up to one pair of northern spotted owls would be harassed by this elevated sound level.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the northern spotted owl.

REASONABLE AND PRUDENT MEASURES

No reasonable and prudent measures are necessary to minimize impacts of incidental take of northern spotted owls. Minimization measures agreed to by Caltrans and incorporated into the project description would sufficiently reduce the amount of take.

TERMS AND CONDITIONS

No terms and conditions are necessary because reasonable and prudent measures are deemed unnecessary.

MONITORING REQUIREMENTS

No monitoring requirements are necessary.

REPORTING REQUIREMENTS

Upon locating a dead or injured northern spotted owl, initial notification must be made to the Service's Division of Law Enforcement in Chico, California at (530) 342-8724 and Michael Long, Field Supervisor, Arcata Fish and Wildlife Office at (707) 822-7201 immediately, and in writing within three (3) working days. Notification must include the date, time, and location of the carcass; cause of death or injury, if known; and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state for later analysis of cause of death. The finder has the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed, unless to remove it from the path of further harm or destruction. Should any treated listed species survive, the Service should be contacted regarding the disposition of the animal. In the case of take or suspected take of northern spotted owl not exempted in this

biological opinion, the Arcata Fish and Wildlife Office and the Division of Law Enforcement shall be notified within 24 hours.

COORDINATION OF INCIDENTAL TAKE WITH OTHER LAWS

The Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), of the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service provides Caltrans with the following conservation recommendations:

1. Portions of the habitat disturbed during construction of the Willits Bypass may be appropriate to restore to conditions that promote the future growth of suitable habitat conditions. These conditions include limiting the extent of tree removal to that necessary for completing the construction work, replanting disturbed areas as appropriate to local, native conifer and hardwood tree species, and retention of large woody debris within planted areas.

2. To minimize the permanent loss of suitable habitat, Caltrans should consider ways to minimize the width of the extraction area to that necessary for future highway alignment and right-of-way, avoiding creation of broad areas will little habitat value in the future. This approach would reduce overall habitat loss in the long term, and retain habitat that exists farther from the existing and future highway alignment.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in your September 27, 2005, request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat is designated that may

be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Please contact staff biologist Ray Bosch at (707) 822-7201 should you have further questions regarding this consultation.

Sincerely,

for Andrea Bricker

Michael M. Long
Field Supervisor

cc:
Federal Highway Administration, Sacramento, California (Attn: Lanh Phan)
California Department of Transportation, Eureka (Attn: John Bulinski)
California Department of Transportation, Sacramento (Attn: Don Schmoldt)
National Marine Fisheries Service, Santa Rosa (Attn: Tom Daugherty)
California Department of Fish and Game, Yountville (Attn: Corinne Gray)

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802- 4213

SEP 1 1 2006

In response refer to:
2005/07370:TKD

Gene K. Fong
Division Administrator
U.S. Department of Transportation
Federal Highway Administration
California Division
650 Capitol Mall, Suite 4-100
Sacramento, California 95814

Dear Mr. Fong:

This document transmits NOAA's National Marine Fisheries Service's (NMFS) biological opinion (Enclosure 1) based on NMFS' review of the U.S. Federal Highway Administration's (FHWA) and California Department of Transportation's (Caltrans) proposed construction of the Route 101 Willits Bypass, in Mendocino County, California. FHWA and Caltrans have proposed the Willits Bypass Project to reduce delays, improve safety, and improve conditions for interregional traffic. The primary feature of the proposed project is a new segment of U.S. 101 that would bypass the City of Willits in Mendocino County, California.

The enclosed biological opinion is based on NMFS' review of information provided with FHWA's request of October 18, 2005, for formal consultation and other documents, meetings, telephone conferences, site visits, and analyses provided during consultation. It addresses potential adverse effects on the following listed species (Evolutionarily Significant Unit or Distinct Population Segment) and designated critical habitat, in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §1531 *et seq.*):

California Coastal Chinook salmon (*Oncorhynchus tshawytscha*)
threatened (June 28, 2005, 70 FR 37160)
critical habitat (September 2, 2005, 70 FR 52488)
Southern Oregon/Northern California Coasts coho salmon (*O. kisutch*)
threatened (June 28, 2005, 70 FR 37160)
critical habitat (May 5, 1999, 64 FR 24049)
Northern California steelhead (*O. mykiss*)
threatened (January 5, 2006, 71 FR 834)
critical habitat (September 2, 2005, 70 FR 52488)

Based on the best available information, the enclosed biological opinion concludes the proposed Willits Bypass Project is not likely to jeopardize the continued existence of California Coastal Chinook salmon, Southern Oregon/Northern California Coasts coho salmon, or North Coast steelhead, or result in the destruction or adverse modification of designated critical habitat for these species. However, NMFS expects the action is likely to result in take of listed anadromous

salmonids. An incidental take statement is included with the enclosed biological opinion. The incidental take statement includes non-discretionary terms and conditions that are expected to minimize the impacts of incidental take of listed salmonids as a result of the Willits Bypass Project road and bridge building activities. In addition, a conservation recommendation is included in the enclosed biological opinion.

Regarding the project's Conceptual Mitigation Plan, Caltrans has proposed creation/restoration, enhancement and preservation of salmonid habitat and riparian areas within Little Lake Valley. Due to the preliminary nature of future in-channel mitigation proposals, NMFS was unable to analyze the impacts of these projects. NMFS staff will work with FHWA and Caltrans to design these future mitigation actions. If these actions may affect listed species or their critical habitats, reinitiation of consultation would be needed.

This letter also transmits NMFS' Essential Fish Habitat (EFH) Conservation Recommendations pursuant to section 305(b) of the Magnuson-Stevens Fisheries Conservation and Management Act (MSFCMA) (Enclosure 2). The Willits Bypass project site includes areas identified as EFH for various life stages of species managed under the Pacific Coast Salmon Fishery Management Plan. Based on our review, NMFS concludes that the Willits Bypass Project has the potential to adversely affect EFH. The enclosed EFH Conservation Recommendations are designed to minimize potential adverse effects on EFH.

Mr. Thomas Daugherty is the lead biologist for this project. If you have any questions regarding the enclosed documents, please contact Mr. Thomas Daugherty at (707) 468-4057.

Sincerely,

for Rodney R. McInnis
Regional Administrator

Enclosures

cc: Russell Strach, NMFS Sacramento
Jeremy Ketchum, Caltrans Sacramento

Enclosure 1

BIOLOGICAL OPINION

ACTION AGENCY:	U.S. Department of Transportation, Federal Highway Administration, California Division
ACTION:	Funding and Construction of the Highway 101 Willits Bypass Project
CONSULTATION CONDUCTED BY:	National Marine Fisheries Service, Southwest Region
PCTS TRACKING NUMBER:	2005/07370
DATE ISSUED:	_____

I. CONSULTATION HISTORY

In 1994, the U.S. Army Corps of Engineers (ACOE), U.S. Environmental Protection Agency (USEPA), U.S. Department of Transportation Federal Highway Administration (FHWA), U.S. Fish and Wildlife Service (USFWS), NOAA's National Marine Fisheries Service (NMFS), and California Department of Transportation (Caltrans) signed a formal Memorandum of Understanding (MOU) that would integrate the National Environmental Policy Act (NEPA) process and Clean Water Act Section 404 procedures, as well as improve coordination among stakeholder agencies. The NEPA/404 integration process was designed to implement Section 404 more effectively to preserve wetlands and the plants and animals that depend on this type of habitat. Under the guidelines of the MOU, signatory agencies (NEPA/404 Resource Agencies) are to agree to a project's Purpose and Need Statement, which sets forth the criteria for selecting project alternatives. The guidelines also specify that signatory agencies are to agree to the alternatives to be studied, early in the environmental review process.

Shortly after the MOU was signed, Caltrans and FHWA initiated the NEPA/404 integration process for the Route 101 Willits Bypass project with USEPA, ACOE, USFWS, and NMFS, and invited these agencies to join the Project Development Team (PDT). In 1995, the participating agencies approved the alternatives that would be studied and the Purpose and Need Statement that would guide the project design and operation.

In 1997, Jones and Stokes Associates Inc. prepared a Natural Environmental Study for the Highway 101/Willits Bypass Project Area that was submitted to Caltrans, Eureka, California (Jones and Stokes 1997).

On June 1, 1998, NMFS received a letter from Caltrans stating that studies on the Highway 101 Willits Bypass would be resuming and six distinct four-lane corridor alignments were to be evaluated. This correspondence also formally invited NMFS to take part in the PDT and to bring forth any concerns regarding the potential effects of the proposed action on threatened Northern California (NC) steelhead (*Oncorhynchus mykiss*), threatened California Coastal (CC) Chinook salmon (*O. tshawytscha*), and threatened Southern Oregon/Northern California Coasts (SONCC) coho salmon (*O. kisutch*) and designated critical habitat for these species.

NMFS participated in ten PDT meetings from June 1998 to October 2003. During this time, a number of major decisions were made with respect to the project. Caltrans determined that two alternatives (Alternatives K and K2) were no longer prudent or feasible, and a third alternative (Alternative TSM) did not meet the project's purpose and need. NMFS brought forth concerns with one of the remaining alternatives (Alternative E3) due to the potential impacts to high-quality stream habitats located in the upper reaches of Baechtel, Broaddus, and Mill creeks. In addition, NMFS expressed concern with an alternative (Alternative C1) due to potential effects to salmonid spawning and rearing habitat in reaches of Outlet Creek.

Alternatives C1T, J1T, LT, E3, and No Build were considered in the draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS). In addition, the NEPA/404 Resource Agencies agreed that Caltrans would examine the remaining alternatives using a nodal approach, whereby each segment of the remaining alternatives would be evaluated in the draft EIR/EIS. During development of these alternatives, NMFS participated in a number of site visits and meetings regarding the effects of the project and possible mitigation actions to reduce the overall effect to the environment.

On August 22, 2002, NMFS provided Caltrans with comments on the draft EIR/EIS. In that letter, NMFS raised various issues, including potential effects of proposed alternatives on water quality, salmonid habitat, and specific life stages of Federally-protected salmonids. Caltrans conducted alternatives analysis based on public and agency comments on the draft EIR/EIS, and identified the Modified J1T Alternative as the least environmentally damaging practical alternative (LEDPA). NMFS provided Caltrans with a letter on January 23, 2004, which supported the Modified J1T Alternative as the LEDPA, yet provided Caltrans with concerns related to riparian removal and sediment delivery associated with the Modified J1T Alternative. Once FHWA and Caltrans received concurrence from the NEPA/Section 404 agencies on the LEDPA, they initiated formal section 7 consultation with NMFS on October 17, 2005.

During late May and June 2006, Caltrans and NMFS discussed potential changes to the project's construction techniques including dewatering of bridge construction sites and sound monitoring during pile driving. On June 1, 2006, NMFS provided to Caltrans a preliminary draft of the Incidental Take Statement (ITS) attached to the NMFS internal draft biological opinion. Caltrans provided comments on the draft ITS on June 9, and June 22, 2006. Caltrans suggested that dewatering and relocation of salmonids not occur unless sound levels during pile driving exceeded 187 dB_{SEL} or 208 dB peak. The September 2005 biological assessment for the project proposed that NMFS would establish the sound threshold which would trigger dewatering of the project sites.

NMFS and Caltrans then met in Sacramento, California, on June 26, 2006, to discuss sound monitoring, project site dewatering, and sound level impacts on fish. During the meeting, Caltrans continued to propose that dewatering of the stream area near a pile driving work site not occur unless injurious levels of sound were detected. NMFS expressed concern that waiting until injury occurred does not minimize impacts. NMFS proposed that measures be implemented to protect the fish prior to the onset of injury.

To resolve this issue, Caltrans proposed to dewater stream reaches in advance of pile driving to ensure listed salmonids would not be exposed to unsafe levels of sound. An electronic mail message from Sarah Allred (Caltrans) to Thomas Daugherty (NMFS) on June 30, 2006, confirmed that Caltrans would remove fish and de-water stream areas in the vicinity of pile driving and would not rely on sound monitoring thresholds to determine if dewatering is needed. Above and below each dewatered reach, Caltrans proposed to conduct hydroacoustic monitoring during pile driving to assess sound levels.

By letter dated July 13, 2006, to NMFS, Caltrans expressed concern with the delay in issuance of the NMFS biological opinion for the Willits Bypass Project. Caltrans' letter suggested the sound threshold issues associated with pile driving be set aside for this project, because they agreed to dewater all wetted stream crossings prior to pile driving.

On July 19, 2006, Caltrans and NMFS exchanged additional information by electronic mail regarding the hydroacoustic monitoring above and below dewatered areas of the stream.

A complete administrative record for this consultation is on file at the NMFS Ukiah, California field office.

II. DESCRIPTION OF THE PROPOSED ACTION

A. General Description

Caltrans and FHWA propose the Highway 101 Willits Bypass to reduce delays on U.S. Route 101. Currently Highway 101 runs through the City of Willits, California. The bypass project will re-route Highway 101 around the City of Willits, providing a stable flow of traffic at 65 miles per hour. The proposal includes the construction of a four-lane freeway that crosses the Little Lake Valley east of Willits. The bypass would begin 3.3 kilometers (km) south of Willits, where the existing Highway 101 becomes a two-lane road, and extend to about 2.2 km north of Willits, where the new alignment would merge with the existing two-lane Highway 101. Construction would begin in 2009 and likely take four years to complete.

The southern end of the proposed bypass project begins at the Haehl Creek Interchange, where future traffic will be able to remain on the freeway by taking the bypass, or exit to the south end of Willits. The freeway bypass project will continue from the Haehl Creek interchange approximately five km along existing and new imported fill to a proposed viaduct structure. The viaduct structure begins near Center Valley Road and crosses Haehl, Baechtel, Broaddus, and Mill creeks for a distance of 1.7 km. The proposed freeway bypass then continues on new fill for approximately 0.4 km, crosses the railroad grade before reaching the Quail Meadows Interchange

1.5 km to the north of Willits. The proposed freeway bypass continues for approximately one additional km after crossing Upp Creek before re-joining the existing route of Highway 101. The overall length of the proposed freeway bypass will be approximately 9.3 km.

North and southbound lanes of the new alignment will be 3.6 meters wide. A 13.8-meter median will separate the northbound and southbound lanes. Inside shoulder width, nearest the medium, will be 1.5 meters and 3.0 meters on the outside shoulder. Cut slopes will vary from 1:1 (vertical: horizontal) to a 1:4 ratio. Fill slopes generally will vary between 1:2 and 1:4 ratios.

Interchange ramps will have single lanes. Some local roads will be improved or constructed, and these roads will be two lanes with 2.4 meter shoulders. Private access roads will be improved or constructed to meet Mendocino County Standards.

The proposed bypass will cross Haehl Creek at three locations (hereafter termed upper, middle and lower), Baechtel Creek, Broaddus Creek, Mill Creek, and Upp Creek. The crossings at upper Haehl Creek will consist of the southbound and northbound freeway bridge structures; one bridge each for the southbound off-ramp and the northbound on-ramp associated with the southern interchange; and replacement of an existing culvert for the Schmidbauer (private landowner access) access road with a natural bottom culvert. The crossings at middle Haehl Creek would consist of bridges for the north- and south-bound lanes, south of Shell Lane. The crossing at Upp Creek, at the northern end of the project, will consist of a natural bottom culvert for the north-and southbound lanes. The crossings at lower Haehl, Baechtel, Broaddus, and Mill creeks will consist of the north and southbound viaduct structures.

B. Specific Construction Actions

1. Staging Areas

The first phase of construction is the establishment of three staging areas, one each in the southern, central, and northern portions of the project corridor. The "southern" staging area will be located south of East Hill Road and east of the railroad tracks, and is approximately 365 meters east of Haehl Creek. The "central" staging area is located between Center Valley Road and East Commercial Street (Hearst-Willits Road), and borders Baechtel Creek, just upstream and downstream of the confluence with Haehl Creek. The northern staging area will be located near the proposed Quail Meadows interchange.

The staging areas may be used by the contractor(s) to store equipment and materials, and will be located where the contractor can gain easy access to the project corridor. Access roads from the staging areas to the project corridor will be constructed where necessary. It is anticipated that work will begin at several areas at the same time. Where staging areas are located adjacent to salmonid bearing creeks, a sufficient buffer will be maintained along with appropriate best management practices (BMPs) to ensure storm runoff from these areas does not directly flow into any natural drainage. No riparian vegetation would be removed within the staging areas.

2. Road Construction

Caltrans will lay out the new alignment and the contractor will demolish structures and clear the area to be worked. Excavated material from a permitted borrow site, such as Oil Well Hill, will be transported to the alignment where it is placed and compacted to support the pavement section. A maximum of 1.9 million cubic meters of earthen material will be excavated, transported, and compacted to build the project. A haul road will constructed within the limits of the alignment, and it will be used to transport material from the borrow site to the areas of new construction.

Once the material is transported to its desired location, heavy equipment including bulldozers, graders, scrapers, and large trucks will shape the freeway embankment. Compaction occurs simultaneously during this process. Drainage facilities will be installed during this phase of the project.

When the embankment is completed, aggregate will be brought in with belly dump trucks and spread on the roadbed surface. The roadbed will then be watered, shaped and compacted to design specifications. Trucks will then haul in asphalt concrete, spread it with specialized paving equipment, and compact it to specified dimensions.

3. Borrow of Earthen Fill from Oil Well Hill

Up to 1.9 million cubic meters of earthen material may be excavated from the borrow site at Oil Well Hill. Up to 16.2 hectares will be excavated. This activity will occur on the east side of Highway 101, beginning approximately 425 meters north of the Highway 101 bridge over Outlet Creek. Material would be transported to the project corridor via trucks using existing Highway 101, and from Highway 101, material will be transported along haul roads within the limits of the new alignment. Sediment basins and other BMPs will be used to minimize and avoid sediment entering Outlet Creek.

If the contractor selected by Caltrans opts to use an alternative borrow site, the contractor will be required to submit a new borrow site plan to the Caltrans Resident Engineer. All borrow sites, whether designated by Caltrans or the contractor must comply with the project contract and environmental laws and regulations.

4. Concrete Batch Plant

It may be necessary to supplement the current commercial production of concrete and to minimize specified haul time, by allowing contractors to construct a temporary plant(s) near the project site. Caltrans has indicated a likely site for a batch plant is the existing Schusters Transportation site, located north of East Valley Street, and between Haehl Creek and Baechtel Creek. This biological opinion assumes one concrete batch plant will be constructed at the Schusters Transportation site. If an alternative site is selected or additional temporary concrete plants are constructed, additional review by NMFS and reinitiation of section 7 consultation may be necessary.

5. Retaining Walls

Three retaining walls will be constructed for this project. Two retaining walls will be located near Haehl Creek, at the southern freeway interchange. At this site, one will be located along the west side of the northbound on-ramp. The second retaining wall will be located on the east side of the northbound mainline lanes just south of the new crossing over upper Haehl Creek. Rock slope protection may be needed for a distance of up to 15 meters along the south bank of Haehl Creek. The third retaining wall will be located on the west side of the southbound lanes south of the viaduct, and east of Baechtel Creek.

To construct the two retaining walls at the southern interchange, removal of riparian vegetation will be required. A portion of these walls may require rock slope protection. The wall foundation will require the installation of "H" piles by pile driving. Equipment may need to enter the Haehl Creek channel at this location for construction activities. However, because this reach of Haehl Creek is normally dry during the summer months, work in this area will likely occur when the channel is dry.

The third retaining wall south of the viaduct will be constructed on grassland. This site will not require the removal of riparian vegetation.

6. Permanent Bridge Construction

At the upper Haehl Creek crossing location, the proposed bridges will consist of the two freeway structures (northbound and southbound lanes); the southbound off-ramp; and the northbound on-ramp. Rock slope protection may be required along both banks at the southbound off-ramp and northbound on-ramp for a distance of approximately 8 meters above and below each structure.

The proposed new Schmidbauer Ranch access road will be located off the east side of the interchange and will connect with an existing dirt road that crosses over Haehl Creek. The reconstruction of this access road will require removal of an existing culvert. This culvert will be replaced with an appropriately sized culvert that provides flood flow conveyance and anadromous fish passage.

At the middle Haehl Creek crossing, the proposed bridges will consist of two freeway structures (northbound and southbound lanes). The proposed bridge sites will be cleared of vegetation prior to construction. Rock slope protection may be required along the south bank for a distance of approximately 8 meters above and below each structure.

At lower Haehl Creek, Baechtel Creek, Broaddus Creek, and Mill Creek, permanent stream crossings will consist of two freeway structures (northbound and southbound lanes) for the viaduct. These viaduct crossings and construction methods are described in detail below.

Permanent bridge building will begin with construction of approaches, where necessary, followed by construction of the abutments. The abutment work will include excavation for the footings, pile driving, or drilling for the foundations (which will occur outside the creek channels), formwork for concrete placement, steel reinforcement bar placement, concrete pouring, finishing, and curing. Each of the permanent bridge abutments may require 20 or more

35 centimeter to 51 centimeter "H" piles, which will be placed by pile drivers, at or near the top of bank.

The temporary false work at each permanent bridge site will be constructed between June 15 and October 15. The false work substructure will consist of steel beams supported by the piles or wood pads and will span the creek channel, thus eliminating the need to place piles in the streambed below ordinary high water mark. False work supports will consist of hollow, 61 centimeter to 76 centimeter diameter steel piles, "H" piles, or wood pads. Installation of these supports may require pile driving. The permanent bridge superstructure forms would then be erected and concrete poured, finished, and cured. After a suitable time to allow the concrete to set and strengthen, the falsework would be removed and other work, including bridge rail and approach work, would be completed.

The use of temporary culverts for construction of the structures crossing salmonid bearing streams is not anticipated. If dewatering is required at any of these stream crossings, cofferdams will be used to divert stream flow around the work area. Any salmonids in work areas will be collected prior to and during dewatering for relocation to other suitable habitats nearby in the same sub-basin.

7. Temporary Bridge Construction

Temporary bridges may be required to access portions of the project site at the initial stages of construction. The temporary bridges will likely consist of Bailey Bridges, railroad flatcars, or similar type of structures. These bridges would not require placing any piers in the stream channels or banks. No access into the live stream channels would be required.

Temporary bridges may be located at Haehl, Baechtel, Broaddus, Upp and Mill creeks, or at several (5 or less) other non-fish bearing streams, as necessary. If the placement of these bridges is outside of areas already proposed for temporary riparian removal areas, an additional distance of three meters of riparian vegetation will be removed on both sides of the structure. The bridges would be installed during the dry season between June 15 through October 15.

8. Viaduct Construction

The proposed viaduct crossings will be located on lower Haehl Creek, Baechtel Creek, Broaddus Creek, and Mill Creek. The proposed viaduct crossings would consist of separate northbound and southbound elevated structures. These viaducts would be elevated above the valley floor for their full lengths of approximately 1730 meters. The viaducts will span the Little Lake Valley and allow for runoff in the valley floodway. Each of the elevated viaduct structures would be approximately 12.5 meters wide. The viaduct superstructures will be supported by piles with a maximum diameter of 2.1 meters. The size and number of columns and the distance between the sets of columns has yet to be determined. The installation of the columns and deck construction would require a 30.5-meter wide temporary work area on the east side of the viaduct, and a 17-meter wide temporary work area on the west side of the viaduct.

Permanent fill in the floodway would be limited to the total surface area encompassed by the columns (estimated to be approximately one percent of the area under the viaduct). It is likely

that the northbound and southbound viaduct structures will be constructed simultaneously. When each frame (consisting of multiple spans) is completed, work would begin on the next frame, where material and equipment would be located. One of the viaduct spans would require support columns at the site of the existing aeration ponds at the Willits Wastewater Treatment Plant. These ponds will be decommissioned or relocated prior to construction of the viaduct.

The viaduct crossing over Baechtel Creek may require rock slope protection. Rock slope protection may be installed on both banks under the structures and for a maximum distance of 8 meters upstream and downstream of the structures.

9. Pile Driving Associated with Bridge and Viaduct Construction

Pile driving will be required to construct the bridge abutments and piers, the columns for the viaduct, and installation of the temporary falsework supports. The exact number and size of the piles for each of the structures have not been determined. However, there will be no permanent or temporary piles in any stream channel below ordinary high water. For the proposed viaduct, piles could be as large as 2 meters in diameter. Falsework supports may be piles approximately 61 centimeters to 76 centimeters in diameter on wood pads. Where necessary, benches will be excavated on the stream bank above ordinary high water to provide temporary footings for the false work. Each permanent bridge abutment may require approximately 20, 36-centimeter to 51-centimeter "H" piles. All permanent bridge abutments would be located above the top-of-bank. The approximate number of piers and columns within 15 meters of the stream channels are summarized below:

- Upper Haehl Creek: 455, 30-centimeter "H" piles would be driven within 15 meters of the top-of-banks for the upper Haehl Creek crossings for the bridge abutments and retaining walls; and 69, 61 to 76 centimeter falsework piles would be driven, with 12 of these piles, within 15 meters of the top-of-banks and 28 below the top-of-banks (but above the ordinary high water mark).

- Middle Haehl Creek: 186, 30-centimeter "H", piles would be driven within 15 meters of the top-of-banks for the middle Haehl Creek crossing for the bridge abutments; one 2-meter diameter cast in steel shell (CISS) pile would be located below the top-of-bank; and 50, 61- to 76-centimeter diameter falsework piles would be driven, with 20 of these piles within 15 meters of the top-of-banks and 30 piles below the top-of-banks.

- Lower Haehl Creek: 4, 2-meter diameter CISS piles would be driven within 15 meters above the top-of-banks at Haehl Creek, near it's confluence with Baechtel Creek; and 25, 61 to 76-centimeter falsework piles would be driven, with 20 of these piles within 15 meters of the top-of-banks, and 5 piles below the top-of-banks.

- Baechtel Creek: 12, 2-meter diameter, CISS piles would be driven, with 6 of these piles within 15 meters of the top-of-banks, and 6 piles below the top-of-banks; and 70, 61- to 76-centimeter falsework piles would be driven, with 25 of these piles within 15 meters of the top-of-banks and 45 piles below the top-of-banks.

- Broaddus Creek: 6, 2-meter diameter, CISS piles would be driven within 15 meters of the top-of-banks, with no large piles being driven below the top-of-banks; 30, 61 to 76-centimeter falsework piles would be driven, with 20 of these piles located within 15 meters of the top-of-banks, and 10 piles located below the top-of-banks.

- Mill Creek: 6, 2-meter diameter, CISS piles would be driven within 15 meters above the banks at Mill Creek; and 20, 61 to 76-centimeter falsework piles would be driven, with 10 of these piles within 15 meters of the top-of-banks and 10 piles below the top-of-banks.

All temporary and permanent piles will be installed with an impact or vibratory hammer. It is anticipated that the time required to drive each 2-meter diameter pile could be approximately 10 to 20 hours, but may take longer. The time required to drive typical small diameter piles may be one hour. Pile driving activities within 15 meters of the top-of-bank may require up to a week, or more, at each crossing.

Prior to the driving of piles in or near the stream banks of Haehl, Baechtel, Broaddus, or Upp creek, Caltrans proposes to dewater the adjacent reach of wetted streams for a distance up to 150 meters. Fish including anadromous salmonids will be collected prior to and during dewatering for relocation to suitable and unaffected aquatic habitat nearby. Cofferdams will be constructed and water diverted through appropriately sized pipes. The cofferdams will likely be constructed with impermeable liners placed over clean, washed, commercially available river gravel, ranging in size from approximately 2.5 centimeters to 7.5 centimeters, or by use of sand bags or rubber bladders. No native streambed material or angular rock material would be used. Water will be diverted into the upstream entrance of a diversion pipe and around the construction site.

A qualified fisheries biologist who has authorization from NMFS will be on-site to capture and relocate salmonids trapped in dewatered areas and pools. The biologist would relocate fish to suitable habitat outside of the construction area. The methods of fish removal will be selected in coordination with NMFS and California Department of Fish and Game (CDFG). Upon completion of construction at each crossing, material used for the cofferdams and water diversion will be removed from the channel. Any imported washed gravel used for cofferdams would be spread out within the stream channel. Cofferdams and diversion facilities will be removed from the channel no later than October 15 of each year.

10. Stream Realignment

The project will require the realignment of approximately 915 meters of an unnamed ephemeral watercourse, located east of the existing roadbed fill near the Schmidbauer Ranch, north the proposed southern freeway interchange. The 915-meter reach affected occurs south of East Hill Road, and averages approximately 3 meters wide. This watercourse has a small watershed, consisting of a small portion of the Schmidbauer Ranch. A new channel may be constructed east of the existing watercourse, and would be completed in one construction season while the watercourse is dry.

11. Culvert Construction, Removal, and Replacement

An existing culvert on Upp creek, under existing Highway 101, will be replaced to improve fish passage. The culvert will be either a steel arch design or a cast-in-place box culvert with a natural bottom. The culvert that spans the creek will be constructed in a manner that maintains the original channel configuration and gradient. If a cast-in-place design is used, temporary construction formwork will require supports in multiple locations within the creek channel. If a steel arch design is selected, no temporary false work will be used in the creek. Removal of vegetation up to a distance of 23 meters above and below the Upp Creek culvert site may be required for construction. The new culvert site may also require placement of rock slope protection on the banks for a maximum distance of 8 meters above and below the culvert

An existing culvert in upper Haehl Creek will be replaced during the improvement of the Schmidbauer Ranch access road. The existing culvert will be replaced with a natural bottom arch or box culvert. Construction will occur during the summer months when this reach of Haehl Creek is normally dry. However, flows through the existing culvert have created an outfall pool that can retain water throughout the year. If water is present, a qualified fisheries biologist will survey the pool for the presence of salmonids. If present, the fish would be removed prior to removal and replacement of the culvert.

A second culvert located in upper Haehl Creek under the proposed freeway bridge will be removed to improve fish passage. Stabilization of the creek channel following removal of the culvert may consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Stream channel stabilization would follow guidelines provided in the *California Salmonid Stream Habitat Restoration* Manual (CDFG 1998). Guidance from NMFS and CDFG will be used in development of appropriate stream stabilization structures at this site.

12. Freeway Maintenance and Use

Long-term maintenance for the completed bypass will include mowing, ditch and culvert cleaning, vegetation pruning, pavement sweeping, applying sand, and repair. These normal maintenance activities are conducted using Caltrans BMPs as described in the Storm Water Quality Handbook Maintenance Staff Guide (Caltrans 2003). Caltrans estimates that the freeway bypass will be used by 14,400 vehicles per day (average annual daily traffic estimated for 2008).

C. Proposed Measures to Minimize and Avoid Impacts

In addition to the impact minimization measures described above, the following measures are proposed by Caltrans and FHWA to further minimize impacts to salmonids during implementation of the project:

- Construction at each of creek crossings will be limited to the period between June 15 and October 15 of each year, unless earlier and/or later dates for construction activities at the creek crossings are approved by NMFS. This work window is intended to minimize the impacts to migrating salmon and steelhead that utilize Haehl, Baechtel, Broaddus, Mill, and Upp creeks.

- If a rain event occurs between June 15 and October 15, and rock slope protection or other erosion control measures have not been completed, non-rainy season BMPs would be implemented in accordance with the Storm Water pollution Prevention Plan (SWPPP), including inspection, maintenance and repair, to minimize delivery of soil to the stream channels.

- The use of vehicles and heavy equipment may not occur in areas below the top-of-bank when standing or flowing water is present with the exception of establishing a flow diversion around a work site.

- BMPs will be used to prevent the discharge of equipment fluids to the stream channel.

- Equipment will not be stored in the channel when not in use. All equipment will be removed from the channel at the end of each workday. All equipment will be fueled, maintained, and repaired at sites well away from the stream banks.

- Caltrans will monitor underwater sound pressure levels in the wetted stream habitats immediately above and below dewatered areas. A minimum of 10 blows per pile will be monitored for underwater sound levels. If in-stream peak sound pressure levels exceed 187 dB_{SEL} or 208 dB peak (Caltrans 2006), Caltrans will immediately contact NMFS for recommendations to reduce the potential for harm to listed salmonids. Possible measures to reduce harm could include dewatering additional areas and fish relocation. The length of channel that would be dewatered would be determined through consultation with NMFS and CDFG fisheries biologists. If the streambed is dry for a distance of approximately 75 meters upstream and downstream of the piles/columns, such that no cofferdams or dewatering is required, no underwater sound monitoring is proposed by Caltrans.

- Appropriate BMPs will be developed and implemented in accordance with the Statewide National Pollutant Discharge Elimination System (NPDES) permit for all soil disturbance activities. These BMPs will be submitted by the contractor to Caltrans for approval as a SWPPP prior to engaging in any construction activities related to the proposed Willits Bypass Project.

- Caltrans/FHWA will have a qualified biologist monitor construction activities in sensitive biological resource areas (*e.g.*, stream crossings) as necessary, to ensure permit conditions and mitigation requirements are implemented and enforced.

D. Proposed Willits Bypass Conceptual Mitigation Plan

Pursuant to the NEPA/404 MOU, Caltrans has prepared a conceptual mitigation plan to serve as a guide in the preparation of the final mitigation and monitoring plan and as a basis for further negotiations with resource agencies. Mitigation for impacts to riparian vegetation would occur both on-site and off-site. Appropriate, local native plant species would be used for the revegetation of impacted riparian areas within the project limits as well as in off-site mitigation areas. Riparian trees are proposed for planting at the ratio of five new trees for each tree lost with the goal of four living trees after five years of monitoring. Associated shrubs, herbaceous

perennial plants and annuals would be seeded or planted along with riparian trees. Planting methods would include the installation of stem (pole) cuttings from plants such as willow (*Salix spp.*), cottonwood (*Populus spp.*), thimbleberry (*Rubus parviflorus*), California blackberry (*Rubus ursinus*), coyote bush (*Baccharis spp.*), or other species capable of easy rooting from cuttings.

Pole cuttings will also be utilized to revegetate areas where riprap is installed. Cuttings would be planted in openings between the rock riprap. As part of the mitigation, pole cuttings may be utilized to armor active erosion headcuts, eroding gully banks, and unstable stream banks in the project area and its vicinity. Installation of container grown or bare rootstock plants, such as alder, Oregon ash, valley oak, or box elder would also be utilized in areas at or above ordinary high water. Selected sensitive plants growing in areas impacted by the project could be relocated.

Mitigation for permanently impacted project area riparian habitats would be implemented as creation/restoration, enhancement, and preservation of stream bank. All temporarily impacted riparian areas would be restored to their original condition in addition to compensatory mitigation elsewhere in Little Lake Valley. The purpose of the compensatory mitigation in addition to restoration of impacted project areas is to offset the temporal loss of the riparian habitat functions in the impacted areas.

In addition to re-planting of native vegetation, Caltrans may pursue a program to remove invasive exotic vegetation. Invasive exotic vegetation would be removed in compliance with the California Invasive Plant Council's *Invasive Plants of California's Wildlands* manual. Areas where invasive exotic plants are removed would be closely monitored for several years for the plant's re-emergence.

For compensation of impacts to anadromous salmonid habitat, Caltrans may construct instream structures such as opposing wing deflectors, anchored large woody debris, or stepped pool systems in project streams or elsewhere in the Willits Valley. Another possible mitigation activity could be the removal of fish passage barriers on primary salmonid streams in Little Lake Valley. Fish passage barriers within Caltrans right-of-way areas would be prioritized. These projects have not been designed and were not analyzed in this biological opinion. Reinitiation of consultation with NMFS may be necessary for these projects if one or more of them may affect listed salmonids or their critical habitat.

In coordination with state and federal agencies, Caltrans will develop a final mitigation and monitoring plan prior to project construction to ensure project impacts to listed species will be fully mitigated. By separate memorandum with the CDFG, Caltrans will ensure adequate funding to implement mitigation and monitoring measures for purposes of obtaining a consistency determination pursuant to CDFG Code Section 2080.1.

E. Action Area

The action area for a consultation includes all areas affected directly and indirectly by the project. For the purposes of this consultation, the action area consists of stream segments of Haehl,

Baechtel, Broaddus, Mill, Outlet, and Upp creeks within the Willits Bypass Project footprint. Indirect effects could extend to reaches of Outlet Creek below the confluence of Baechtel and Broaddus creeks, a reach of Mill Creek, and reaches of Haehl Creek between the construction sites. All of the action area stream reaches eventually flow to Outlet Creek, which flows north out of the Little Lake Valley.

Impacts from direct, indirect, and beneficial effects by this project vary between streams. The extent of the potential impacts by stream length will be greatest along Haehl and Outlet creeks. Baechtel, Broaddus, and Upp creeks will be exposed to less impact by stream length, with one proposed freeway crossing (north and south lanes) at each of them. The Outlet Creek stream reach included in the action area is located downstream of the of the freeway construction project. Table 1 summarizes the length of each stream that is included as in the action area for this biological opinion.

Table 1. Streams and expected lengths of impacted areas for the Willits Bypass Project.

Stream Name	Number of Crossings	Type of Crossings	Action Area Length
Haehl Creek	6	6 bridges, 1 culvert, 1 culvert removal, 2 viaduct crossings	5 kilometers
Baechtel Creek	1	2 viaduct crossings	1250 meters
Broaddus Creek	1	2 viaduct crossings	150 meters
Mill Creek	1	2 viaduct crossing	2 kilometers
Upp Creek	1	1 culvert	400 meters
Outlet Creek	None		5 kilometers
			Total = 13.8 kilometers

* All action area lengths are approximate.

III. STATUS OF THE SPECIES AND CRITICAL HABITAT

This biological opinion analyzes the effects of the proposed action on the following listed salmonids and their designated critical habitat:

Threatened Southern Oregon/Northern California Coasts coho salmon. (*Oncorhynchus kisutch*)
Listing determination (70 FR 37160; June 28, 2005)
Critical habitat designation (64 FR 24049; May 5, 1999);

Threatened California Coastal Chinook salmon (*Oncorhynchus tshawytscha*)
Listing determination (70 FR 37160; June 28, 2005)
Critical habitat designation (70 FR 52488; September 2, 2005);

Threatened Northern California steelhead (*Oncorhynchus mykiss*)
Listing determination (71 FR 834; January 5, 2006).
Critical habitat designation (70 FR 52488; September 2, 2005).

A. Species Description and Life History

Coho salmon, Chinook salmon, and steelhead are anadromous fish, spending some time in both fresh- and saltwater. The older juvenile and adult life stages occur in the ocean, until the adults ascend freshwater streams to spawn. Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles all rear in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults. Juveniles migrating to the ocean are called smolts. Both smolts and adults go through physiological changes as they emigrate from fresh- to saltwater (smolts) and immigrate from salt- to freshwater (adults). The timing of migrations, freshwater habitat preferences for spawning and rearing, the duration of freshwater and ocean rearing, distribution in the ocean, age at maturity, and other traits vary by species. Coho salmon and Chinook salmon die after spawning, whereas steelhead can sometimes survive to spawn again (Shapovalov and Taft 1954, Sandercock 1991, Healy 1991, Busby *et al.* 1996).

1. Coho Salmon

The life history of the coho salmon in California has been well documented (Shapovalov and Taft 1954, Hassler 1987, Weitkamp *et al.* 1995). In contrast to the life history patterns of other anadromous salmonids, coho salmon in California generally exhibit a relatively simple 3-year life cycle. Adult salmon typically begin the immigration from the ocean to their natal streams after heavy late-fall or winter rains breach the sand bars at the mouths of coastal streams (Sandercock 1991). Coho salmon are typically associated with small to moderately-sized coastal streams characterized by heavily forested watersheds; perennially-flowing reaches of cool, high-quality water; dense riparian canopy; deep pools with abundant overhead cover; instream cover consisting of large, stable woody debris and undercut banks; and gravel or cobble substrates (Sandercock 1991). Immigration continues into March, generally peaking in December and January, with spawning occurring shortly after arrival at the spawning ground (Shapovalov and Taft 1954). The timing of adult coho salmon migration to the Eel River watershed is October through February, peaking in November and December (Fukushima and Lesh 1998).

The eggs generally hatch after four to eight weeks, depending on water temperature. Survival and development rates depend, in part, on fine sediment levels within the redd. Under optimum conditions, mortality during this period can be as low as 10 percent; under adverse conditions of high scouring flows or heavy siltation, mortality may be close to 100 percent (Baker and Reynolds 1986). McMahon (1983) found that egg and fry survival drops sharply when fines make up 15 percent or more of the substrate. The newly-hatched fry remain in the redd from two to seven weeks before emerging from the gravel (Shapovalov and Taft 1954). Upon emergence, fry seek out shallow water, usually along stream margins. As they grow, juvenile coho salmon often occupy habitat at the heads of pools, which generally provide an optimum mix of high food availability and good cover with low swimming cost (Nielsen 1992). Chapman and Bjornn (1969) determined that larger juveniles tend to occupy the head of pools, whereas smaller juveniles are found further down the pools. As the fish continue to grow, they move into deeper water and expand their territories until, by July and August, they reside exclusively in deep pool habitat. Preferred rearing habitat has little or no turbidity and high sustained invertebrate forage production. Juvenile coho salmon feed primarily on drifting terrestrial insects, much of which

are produced in the riparian canopy, and on aquatic invertebrates growing within the interstices of the substrate and in leaf litter in pools. Juvenile coho salmon prefer well shaded pools at least 1 meter deep with dense overhead cover; abundant submerged cover composed of undercut banks, logs, roots, and other woody debris; and preferred water temperatures of 12-15° Celsius (C) (Brett 1952, Bell 1991, Reiser and Bjornn 1979, McMahon 1983), but not exceeding 22-25°C (Brungs and Jones 1977) for extended time periods. Growth is slowed considerably at 18°C and ceases at 20°C (Stein *et al.* 1972, Bell 1991).

In the spring, as yearlings, juvenile coho salmon undergo a physiological process, or smoltification, which prepares them for living in the marine environment. In the Eel River watershed, coho salmon smolts migrate to the ocean from May through July, peaking in April, May, and June (Fukushima and Lesh 1998). Emigration timing is correlated with precipitation events and peak upwelling currents along the coast. Entry into the ocean at this time facilitates more growth and, therefore, greater marine survival (Holtby *et al.* 1990).

2. Chinook Salmon

Chinook salmon are the largest anadromous member of Oncorhynchus; adults weighing more than 120 pounds have been reported from North American waters (Scott and Crossman 1973, Page and Burr 1991). Chinook salmon exhibit two main life history strategies: ocean-type fish and river-type fish (Healy 1991). Ocean-type fish typically are fall- or winter-run fish that spawn shortly after entering freshwater and their offspring emigrate shortly after emergence from the redd. River-type fish are typically spring- or summer-run fish that have a protracted adult freshwater residency, sometimes spawning several months after entering freshwater. Progeny of river-type fish frequently spend one or more years in freshwater before emigrating. The Chinook salmon in the Eel River watershed and Outlet Creek sub-basin are ocean-type fish.

Chinook salmon in the CC Chinook salmon ESU generally remains in the ocean for two to five years (reviewed in Myers *et al.* 1998 – Appendix B). In the ocean, Chinook salmon from California tend to stay along the California and Oregon coasts, but migration may continue to higher latitudes if oceanographic conditions are appropriate (Allen and Hassler 1986). Some Chinook salmon return from the ocean to spawn one or more years before full sized adults return, and are referred to as jacks (males) and jills (females). Fall-run Chinook salmon enter the Eel River from October through January (Fukushima and Lesh 1998). These fish typically enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas on the mainstem or lower tributaries of rivers, and spawn within a few weeks of freshwater entry. Fall-run Chinook salmon typically spawn in the lower reaches of rivers and tributaries at elevations of 200 to 1,000 feet. Run timing is also, in part, a response to stream flow characteristics.

Egg deposition must be timed to ensure that fry emerge during the following spring at a time when the river or estuary productivity is sufficient for juvenile survival and growth. Adult female Chinook salmon prepare redds in stream areas with suitable gravel composition, water depth, and velocity. Spawning generally occurs in swift, relatively shallow riffles or along the edges of fast runs at depths greater than 24 centimeters (cm). Optimal spawning temperatures range between 5.6 and 13.9°C. Redds vary widely in size and location within the river. Preferred spawning substrate is clean, loose gravel, mostly sized between 1.3 and 10.2 cm, with no more than 5 percent fines. Gravels are unsuitable when they have been cemented with clay or fines or

are produced in the riparian canopy, and on aquatic invertebrates growing within the interstices of the substrate and in leaf litter in pools. Juvenile coho salmon prefer well shaded pools at least 1 meter deep with dense overhead cover; abundant submerged cover composed of undercut banks, logs, roots, and other woody debris; and preferred water temperatures of 12-15° Celsius (C) (Brett 1952, Bell 1991, Reiser and Bjornn 1979, McMahon 1983), but not exceeding 22-25°C (Brungs and Jones 1977) for extended time periods. Growth is slowed considerably at 18°C and ceases at 20°C (Stein *et al.* 1972, Bell 1991).

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2. Chinook Salmon

Chinook salmon are the largest anadromous member of Oncorhynchus; adults weighing more than 120 pounds have been reported from North American waters (Scott and Crossman 1973, Page and Burr 1991). Chinook salmon exhibit two main life history strategies: ocean-type fish and river-type fish (Healy 1991). Ocean-type fish typically are fall- or winter-run fish that spawn shortly after entering freshwater and their offspring emigrate shortly after emergence from the redd. River-type fish are typically spring- or summer-run fish that have a protracted adult freshwater residency, sometimes spawning several months after entering freshwater. Progeny of river-type fish frequently spend one or more years in freshwater before emigrating. The Chinook salmon in the Eel River watershed and Outlet Creek sub-basin are ocean-type fish.

Chinook salmon in the CC Chinook salmon ESU generally remains in the ocean for two to five years (reviewed in Myers *et al.* 1998 – Appendix B). In the ocean, Chinook salmon from California tend to stay along the California and Oregon coasts, but migration may continue to higher latitudes if oceanographic conditions are appropriate (Allen and Hassler 1986). Some Chinook salmon return from the ocean to spawn one or more years before full sized adults return, and are referred to as jacks (males) and jills (females). Fall-run Chinook salmon enter the Eel River from October through January (Fukushima and Lesh 1998). These fish typically enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas on the mainstem or lower tributaries of rivers, and spawn within a few weeks of freshwater entry. Fall-run Chinook salmon typically spawn in the lower reaches of rivers and tributaries at elevations of 200 to 1,000 feet. Run timing is also, in part, a response to stream flow characteristics.

Egg deposition must be timed to ensure that fry emerge during the following spring at a time when the river or estuary productivity is sufficient for juvenile survival and growth. Adult female Chinook salmon prepare redds in stream areas with suitable gravel composition, water depth, and velocity. Spawning generally occurs in swift, relatively shallow riffles or along the edges of fast runs at depths greater than 24 centimeters (cm). Optimal spawning temperatures range between 5.6 and 13.9°C. Redds vary widely in size and location within the river. Preferred spawning substrate is clean, loose gravel, mostly sized between 1.3 and 10.2 cm, with no more than 5 percent fines. Gravels are unsuitable when they have been cemented with clay or fines or

when sediments settle out onto redds, reducing intergravel percolation. Minimum intergravel percolation rate depends on flow rate, water depth, and water quality. The percolation rate must be adequate to maintain oxygen delivery to the eggs and remove metabolic wastes. The Chinook salmon's need for a strong, constant level of subsurface flow may indicate that suitable spawning habitat is more limited in most rivers than superficial observation would suggest. After depositing eggs in redds, adult Chinook salmon guard the redd from 4 to 25 days before dying.

Chinook salmon eggs incubate for 90 to 150 days, depending on water temperature. Successful incubation depends on several factors including dissolved oxygen levels, temperature, substrate size, amount of fine sediment, and water velocity. Maximum survival of incubating eggs and pre emergent fry occurs at water temperatures between 5.6 and 13.3°C with a preferred temperature of 11.1°C. Fry emergence begins in December and continues into mid April (Leidy and Leidy 1984). Emergence can be hindered if the interstitial spaces in the redd are not large enough to permit passage of the fry. In laboratory studies, Bjornn and Reiser (1991) observed that Chinook salmon and steelhead fry had difficulty emerging from gravel when fine sediments (6.4 millimeters or less) exceeded 30 to 40 percent by volume.

After emergence, Chinook salmon fry seek out areas behind fallen trees, back eddies, undercut banks, and other areas of bank cover (Everest and Chapman 1972). As they grow larger, their habitat preferences change. Juveniles move away from stream margins and begin to use deeper water areas with slightly faster water velocities, but continue to use available cover to minimize the risk of predation and reduce energy expenditure. Fish size appears to be positively correlated with water velocity and depth (Chapman and Bjornn 1969, Everest and Chapman 1972). Optimal temperatures for both Chinook salmon fry and fingerlings range from 12 to 14°C, with maximum growth rates at 12.8°C (Boles 1988). Chinook salmon feed on small terrestrial and aquatic insects and aquatic crustaceans. Cover, in the form of rocks, submerged aquatic vegetation, logs, riparian vegetation, and undercut banks provide food, shade, and protect juveniles from predation.

The low flows, high temperatures, and sand bars that develop in smaller coastal rivers during the summer months favor an ocean-type life history (Kostow 1995). With this life history, smolts typically emigrate as subyearlings during April through July (Myers *et al.* 1998). The ocean-type Chinook salmon in California tend to use estuaries and coastal areas for rearing more extensively than stream type Chinook salmon. The brackish water areas in estuaries moderate the physiological stress that occurs during parr smolt transitions.

3. Steelhead

General reviews for steelhead in California document much variation in life history (Shapovalov and Taft 1954, Barnhart 1986, Busby *et al.* 1996, McEwan and Jackson 1996). Juvenile steelhead live 1 to 4 years in freshwater before smolting and emigrating, then spend 1 to 4 years maturing in the ocean. Steelhead spawn at 2 to 8 years, and may spawn 1 to 4 times over their life. Although variation occurs, in coastal California, steelhead usually live in freshwater for 2 years, then spend 1 or 2 years in ocean before returning to their natal stream to spawn. Steelhead exhibit much variation in migration timing too. Steelhead can be divided into two reproductive ecotypes, based upon their state of sexual maturity at the time of river immigration and the duration of their spawning migration: stream maturing and ocean maturing. Stream maturing

steelhead enter freshwater in a sexually immature condition and require several months to mature and spawn; whereas, ocean maturing steelhead enter freshwater with well developed gonads and spawn shortly after river entry. These two reproductive ecotypes are more commonly referred to by their season of freshwater entry (*i.e.*, summer [stream maturing] and winter steelhead [ocean maturing]). Summer steelhead typically immigrate between May and October and spawn in January and February; winter steelhead typically immigrate between November and April spawning soon after reaching the spawning grounds. Both summer and winter steelhead are reported from the South Fork Eel River, but only winter steelhead are likely found in the action area.

Survival to emergence of steelhead embryos is inversely related to the proportion of fine sediment in the spawning gravels. However, steelhead are slightly more tolerant than other salmonids, with significant reductions in survival when fines of less than 6.4 millimeters (mm) comprise 20-25 percent of the substrate. Fry typically emerge from the gravel two to three weeks after hatching (Barnhart 1986). Upon emerging from the gravel, fry rear in edgewater habitats and move gradually into pools and riffles as they grow larger. Older fry establish territories which they defend. Cover is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation (Shirvell 1990, Meehan and Bjornn 1991). Steelhead, however, tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids. Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. In winter, juvenile steelhead become inactive and hide in available cover, including gravel or woody debris. Rearing steelhead juveniles prefer water temperatures of 7.2-14.4°C and have an upper lethal limit of 23.9°C (Barnhart 1986, Bjornn and Reiser 1991). They can survive in water up to 27°C with saturated dissolved oxygen conditions and a plentiful food supply. Fluctuating diurnal water temperatures also aid in survivability of salmonids (Busby *et al.* 1996).

In Waddell Creek, in Santa Cruz County, Shapovalov and Taft (1954) found steelhead juveniles migrating downstream at all times of the year, with the most juvenile steelhead emigrating during spring and summer. Fukushima and Lesh (1998) report the steelhead emigrate from the Eel River watershed from April through July.

B. Status of Species and Critical Habitat

In this opinion, NMFS assesses the status of each species by examining four types of information, all of which help us understand a population's ability to survive. These population viability parameters are: abundance, population growth rate, spatial structure, and diversity (McElhany *et al.* 2000). While there is insufficient information to evaluate these population viability parameters in a quantitative sense, NMFS has used existing information to determine the general condition of populations in each ESU and factors responsible for the current status of each ESU.

1. SONCC Coho Salmon

A comprehensive review of estimates of historic abundance, decline, and present status of coho salmon in California is provided by Brown *et al.* (1994). They estimated that the coho salmon annual spawning population in California ranged between 200,000 and 500,000 fish in the 1940s,

which declined to about 100,000 fish by the 1960s, followed by a further decline to about 31,000 fish by 1991. Brown *et al.* (1994) concluded that the California coho salmon population had declined more than 94 percent since the 1940s, with the greatest decline occurring since the 1960s. More recent population estimates vary from approximately 600 to 5,500 adults (Brown *et al.* 1994). Available information suggests that SONCC coho salmon abundance is very low, and the ESU is not able to produce enough offspring to maintain itself (population growth rates are negative) and has experienced many local extirpations (NMFS 2001, Good *et al.* 2005). In addition, SONCC coho salmon have experienced range constriction, fragmentation, and a loss genetic diversity. Many subpopulations that may have acted to support the species' overall numbers and geographic distribution, have likely been lost. While the amount of data supporting these conclusions is not extensive, NMFS is unaware of information that suggests a more positive assessment of the condition of the SONCC coho salmon ESU and its critical habitat. Recent status reviews for SONCC coho salmon conclude that this ESU is presently "likely to become endangered" (NMFS 2001, Good *et al.* 2005). Recently NMFS evaluated the listing status of SONCC coho salmon and maintained the threatened status of SONCC coho salmon (70 FR 37160).

2. CC Chinook Salmon

Rigorous population estimates for the CC Chinook salmon are lacking. Myers *et al.* (1998) reviewed early estimates and reported estimated historic (prior to 1965) Chinook salmon escapement for the Eel River as 55,500. Recent estimates of abundance within the Eel River exceeds 4,000 Chinook salmon and show a -29.7 percent trend in abundance from 1987-1997 (Myers *et al.* 1998). Evidence suggests that CC Chinook salmon populations have been extirpated or nearly extirpated in the southern part of the ESU, or are extremely low in abundance – Chinook salmon in the Russian River are an exception. In addition, an apparent loss of the spring-run Chinook life history in the Eel River Basin and elsewhere in the ESU indicates risks to the diversity of the ESU. Although there are few data available, recent status reviews for CC Chinook salmon conclude that population abundance levels remain depressed relative to historical levels and that this ESU is presently "likely to become endangered" (NMFS 2001, Good *et al.* 2005). Recently NMFS evaluated the listing status of CC Chinook salmon and maintained the threatened status of SONCC coho salmon (70 FR 37160). Chinook salmon runs observed in the South Fork Eel River and the Van Duzen River in 1992/93 through 1994/95 indicated a slight increase in numbers (CDFG 1997).

3. NC Steelhead

Based on the limited data available (dam counts of portions of stocks in several rivers), NMFS' initial status review of NC steelhead (Busby *et al.* 1996) determined that population abundance was very low relative to historical estimates (1930s and 1960s dam counts), and recent trends were downward in most stocks. Overall, population numbers are severely reduced from pre-1960s levels, when approximately 198,000 adult steelhead migrated upstream to spawn in the major rivers of this Distinct Population Segment (DPS) (Busby *et al.* 1996, 65 FR 36074). Updated status reviews reach the same conclusion, and noted the poor amount of data available, especially for winter run steelhead (NMFS 1997, Adams 2000, Good *et al.* 2005). The information available suggests that the population growth rate is negative. Comprehensive geographic distribution information is not available for this DPS, but steelhead are considered to

remain widely distributed (NMFS 1997). It is known that dams on the Mad River and Eel River block large amounts of habitat historically used by NC steelhead (Busby *et al.* 1996). Hatchery practices in this DPS have exposed the wild population to genetic introgression and the potential for deleterious interactions between native stock and introduced steelhead. Historical hatchery practices at the Mad River hatchery are of particular concern, and included out-planting of non-native Mad River hatchery fish to other streams in the DPS and the production of non-native summer steelhead (65 FR 36074). The conclusion of the most recent status review (Good *et al.* 2005) echoes that of previous reviews. Abundance and productivity in this DPS are of most concern, relative to NC steelhead spatial structure (distribution on the landscape) and diversity (level of genetic introgression). The lack of data available also remains a risk because of uncertainty regarding the condition of some stream populations. Recently, NMFS evaluated the listing status of NC steelhead and proposed maintaining the threatened listing determination (71 FR 834). NMFS is unaware of recent population status information specific to steelhead in the mainstem Eel River, or more specific to the Outlet Creek subbasin.

4. Critical Habitat

Critical habitat is defined in section 3(5)(A) of the Endangered Species Act (ESA) as "(i) the specific areas within the geographical area occupied by the species . . . on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species . . . upon a determination by the Secretary of Commerce (Secretary) that such areas are essential for the conservation of the species" (see 16 U.S.C. 1532(5)(A)). The term 'conservation', as defined in section 3(3) of the ESA, means ". . . to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary" (see 16 U.S.C. 1532(3)). Therefore, critical habitat is the geographic area and habitat functions necessary for the recovery of the species.

The condition of critical habitat, for all the Chinook and coho salmon ESUs and the steelhead DPS, has been degraded from conditions known to support viable salmonid populations. These conditions are, in part, the result of the following human-induced factors affecting critical habitat[1]: logging, agricultural and mining activities, urbanization, stream channelization, dams, wetland loss, and water withdrawals, including unscreened diversions for irrigation (reviewed in Good *et al.* 2005). Impacts of concern include alteration of stream bank and channel morphology, reduced surface flow, alteration of water temperatures, loss of spawning and rearing habitat, fragmentation of habitat, loss of downstream recruitment of spawning gravels and large woody debris, degradation of water quality, removal of riparian vegetation resulting in increased stream bank erosion, increases in erosion entry to streams from upland areas, loss of shade (higher water temperatures), and loss of nutrient inputs. Depletion and storage of natural river and stream flows have drastically altered natural hydrologic cycles in many of the streams in the ESUs and the DPS.

[1]Other factors, such as over fishing and artificial propagation have also contributed to the current population status of these species. All these human induced factors have exacerbated the adverse effects of natural environmental variability from such factors as drought and poor ocean conditions.

Assessment of the CC Chinook and NC steelhead designated critical habitat is included in NMFS (2005), which addresses critical habitat for seven salmon and steelhead ESUs/DPSs. The NMFS Southwest Region established Critical Habitat Analytical Review Teams (CHARTs) consisting of NMFS fishery biologists that assessed the habitat conservation value of Hydrologic Subareas (HSAs) within the ESUs/DPSs. Conservation values of "high", "medium", and "low", were determined from a variety of data sources on quality, quantity, and distribution of physical or biological features associated with spawning, rearing, and migration in each HSA.

For CC Chinook salmon, the CHART identified 45 occupied HSAs within the freshwater and estuarine range of the ESU. Eight HSAs were rated low in conservation value, 14 were rated medium, and 27 were rated high in conservation value (NMFS 2005). Essential features for spawning, rearing and migration are contained in approximately 5,036 km of occupied habitat within these HSAs. The proposed project is located within the Outlet Creek HSA, which contains 96 km of spawning, 65 km of rearing, and 72 miles of migration habitat for Chinook salmon. The Outlet Creek HSA was considered by the CHART to have high conservation value for CC Chinook critical habitat (NMFS 2005).

The CHART identified 50 occupied HSAs within the freshwater and estuarine range for the NC steelhead DPS. Nine HSAs were rated as low conservation value, 10 were rated medium, and 27 were rated high in conservation value (NMFS 2005). Essential features for spawning, rearing, and migration are contained in approximately 2,931 km of occupied stream habitat within the HSAs. The Outlet Creek HSA contains 133 km of spawning, rearing and migration habitat, which represents 4.5 percent of the total habitat of the DPS occupied habitat. A high conservation value was given to the Outlet Creek HSA for NC steelhead critical habitat (NMFS 2005).

IV. ENVIRONMENTAL BASELINE

This biological opinion analyses the areas affected directly and indirectly by the proposed Willits Bypass construction project. The action area evaluated in this biological opinion includes stream segments of Haehl, Baechtel, Broaddus, Mill, Outlet and Upp creeks identified above.

A. Status of the Species in the Action Area

All of the stream segments identified in the action area are located within the Outlet Creek watershed, sub-basin within the Eel River watershed. This basin currently provides habitat for populations of CC Chinook, SONCC coho salmon, and NC steelhead. Chinook salmon, coho salmon, and steelhead utilize the low gradient reaches of the action area streams as migration corridors during adult spawning and smolt migrations (LeDoux-Bloom 2006).

Chinook and coho salmon spawning and rearing are known to occur in upstream areas of Baechtel, Broaddus, and Mill creeks (S. Harris, CDFG, personal communication, 2005). Coho salmon spawning and rearing is not expected to occur in the action areas of Haehl, Upp, or Outlet creeks. There is some potential for straying of adult coho salmon into these streams (S. Harris,

CDFG, personal communication, 2006). Some Chinook salmon spawning does occur in reaches of Outlet, and Haehl creeks. Juvenile Chinook and coho may rear for short periods of time during their outmigration during the spring, but are not expected to utilize any stream reaches identified in action area for summer rearing.

Juvenile steelhead have been found to utilize all stream segments that are within the project action area (LeDoux-Bloom 2006). Although many of the reaches within the action area either have very low (less than 1 cfs) flow, are intermittent, or dry during the summer months, juvenile steelhead are expected to be found in aquatic habitat present during the summer low flow period. CDFG observed low numbers of juvenile steelhead in Baechtel and Broaddus creeks during 1995 habitat typing surveys. CDFG (2004) conducted spring stream surveys of proposed project crossings and visually observed juvenile steelhead in Baechtel, Broaddus, Mill, lower Haehl, but did not observe salmonid juveniles in Upp or upper Haehl creeks.

B. Habitat Conditions in the Action Area

The majority of the action area is located on the valley floor area of the Willits Valley that has a history of intermittent flow from July to September in most years. LeDoux-Bloom (2006) reports that in 1920 the U.S. Department of Agriculture Soil Survey for the Willits area stated that all streams entering the valley are intermittent, including Baechtel, Broaddus, Haehl, Davis, and Berry creeks. CDFG conducted habitat typing in twenty reaches of the Outlet Creek basin. The following is summary of the habitat conditions for stream segments within the action area.

1. Baechtel Creek

The action area stream reach is located in the valley bottom where several tributaries meet to form Outlet Creek. This lower reach of Baechtel Creek characterized by an F3 channel type which are characterized by low gradients (< 2%), are well entrenched, and have gravel/cobble substrates (Rosgen 1994). CDFG (1995) surveys found that pools in Baechtel Creek are relatively shallow in the summer with only 174 of 463 pools having a maximum depth of greater than two-feet. Pool shelter ratings for Baechtel Creek indicate that habitat complexity is low. Pool tail-outs, or areas where adult fish spawn, had high embeddedness ratings during the 1995 CDFG surveys, indicating poor gravel quality for salmonid spawning. Surveys conducted by CDFG in the spring of 2004 characterized the Baechtel Creek crossing site as having a high proportion of run habitat, high levels of silt and sand substrate and very low gradient, less than 0.5% (CDFG 2004). The lower reach of Baechtel also has poor water temperature conditions, with stream temperatures up to 29° C in late July and August (CDFG 1995).

2. Broaddus Creek

Surveys of Broaddus Creek by CDFG in 1995 and 2004 characterize this reach as well entrenched, low gradient, and with fine substrates of sand and silt. CDFG's 2004 survey of the stream reach at the proposed crossing indicates a high number of run and riffle habitats with few pools. Spawning habitat is rated as very poor in the CDFG 1995 survey results, with seventy-five percent of the pool tail-outs having high embeddedness ratings (>50% fine sediment). Stream temperatures during July of 1995 ranged from 14.5°C to 24°C in Broaddus Creek. The

action area considered in this biological opinion is located at the lower end of Broaddus Creek where stream temperatures are likely in the upper end of the documented range.

3. Haehl Creek

Haehl Creek is a well entrenched, low gradient stream with gravel as the dominant substrate (CDFG 1995). Stream temperatures measured by CDFG habitat inventory crews in 1995 ranged from 15.5°C to 24°C in the summer. CDFG reports poor spawning conditions at all three of the proposed Haehl Creek crossing locations (S. Harris, CDFG, personal communication, 2005). Elevated percentages (estimated > 90%) of fine-grained sediment are present within Haehl Creek (CDFG 2004). Riparian canopy cover averaged 80 percent along the total length of Haehl Creek (CDFG 1995). Based on site visits by NMFS in 2005, the proposed crossings areas along Haehl Creek have areas that are sparse or have no riparian vegetation. CDFG characterizes Haehl Creek as having degraded conditions from past land use practices and low potential as summer rearing habitat for salmonids (S. Harris, CDFG, personal communication, 2005).

4. Mill Creek

Current habitat conditions for Mill Creek have not been well documented. A general stream survey conducted by CDFG in 2004 evaluated stream conditions at the proposed crossing location (CDFG 2004). This area of Mill Creek is also a very low gradient valley reach characterized by intermittent flows during the summer months. The portion of the action area in Mill Creek consists of a high proportion of pool habitat (85 percent), and substrates dominated by fine sand sized material (CDFG 2004). This area of Mill Creek has a riparian canopy that consists of red alder (*Alnus rubra*), willow (*Salix spp.*), Himalayan blackberry (*Rubus discolor*), and poison oak (*Toxicodendron diversilobum*).

5. Outlet Creek

The portion of the action area in Outlet Creek was created by local ranchers to maintain transport of accumulated sediment where Baechtel, Broaddus and Mill Creek join. The original channel that drained these streams is located to the west, and is currently known as the Outlet overflow channel. This newer channel, created in the 1950s, is a "U" shaped channel that provides marginal salmonid rearing habitat, but does function as a migration corridor for all three listed salmonid species (C. LeDoux-Bloom, CDFG, personal communication, 2005). The Outlet Creek channel provides little in the way of rearing habitat during the summer months. Intermittent pools having high temperature and stagnant conditions characterize the channel during this time (C. LeDoux-Bloom, CDFG, personal communication, 2005).

6. Upp Creek

The segment of stream that makes up the Upp Creek action area is considered to be very degraded habitat for salmonids, and is typically dry during the summer months. Migration conditions at the existing Highway 101 culvert limit adult salmonids passage to the upper segments of Upp Creek that provides spawning and rearing habitat. Spring surveys at the culvert replacement site by CDFG (2004) did not document the presence of salmonids. These surveys

also noted that flow was intermittent and the dominant substrate was fine sand sized sediment mixed with gravel.

C. Value of the Action Area as Critical Habitat for Salmonids

Outlet, Haehl, Baechtel, Broaddus, Mill and Upp creeks in the action area are designated critical habitat for CC Chinook salmon, SONCC coho salmon, and NC steelhead. These streams are part of the Outlet Creek hydrologic sub-area, which has a high conservation value as determined by NMFS (NMFS 2005). Conservation Value was determined by the CHARTs by evaluating the quantity and quality of habitat features, the relationship of the area (HSA) to other areas within the ESU/DPS, and the significance to the ESU/DPS of the population occupying that area (NMFS 2005). Because quality of habitat was only one of the rating factors used to determine conservation value, and habitat quality was considered at the geographic scale of an HSA, specific stream reaches within an HSA may, or may not, contain high quality of habitat, regardless of the HSA's overall rating for conservation value.

The longest stream reaches included in the action area are Haehl Creek and Outlet Creek. Both of these stream reaches currently have marginal salmonid rearing habitat during the summer due to intermittent flow and lack of riparian canopy to maintain suitable salmonid stream temperature conditions. During 2004, CDFG conducted stream temperature monitoring in nine streams located within the southern subbasin (action area) of the Outlet Creek basin and all nine had maximum weekly average temperatures (MWATs) considered unsuitable for salmonid rearing (LeDoux-Bloom 2006).

Spawning habitat in the Outlet Creek reach of the action area is limited due to its very low gradient and is typically inundated during the winter by the "Little Lake" for which the valley was named. This reach of Outlet Creek serves as primarily as migration corridor for adult salmon and steelhead during the fall and winter months, as well as smolts as they migrate out of tributaries to the Eel River. Chinook salmon and steelhead spawn in Haehl Creek, but it is only used by Chinook salmon in years when high adult escapement occurs (S. Harris, CDFG, personal communication, 2005).

The action areas of Baechtel, Broaddus, Mill, and Upp Creek represent much shorter stream reaches (150-1250 meters) of habitat, which are located on the valley floor in the most downstream area of each named stream. These valley segments currently have low quality habitat for juvenile steelhead summer rearing; steelhead have been found at low densities in these areas. Some reaches such as Outlet Creek may not be occupied by salmonids during the late summer months (C. LeDoux-Bloom, CDFG, personal communication, 2005). For the most part these segments provide migration passage for adult and smolts to and from higher quality habitat, which is upstream and outside of the action area. Some limited spawning and rearing use by steelhead is likely to occur in the lower reaches of Baechtel, Broaddus, Mill, and Outlet creeks, but is not expected to occur in Upp Creek.

D. Factors Affecting the Species and Critical Habitat in the action Area

Pomo Native Americans occupied the Outlet Creek sub-basin when the first European settlers arrived in the early 1840s. In 1855, Sam and Harry Baechtel drove cattle to the valley from Marin County and settled in the Little Lake Valley (LeDoux-Bloom 2006). In 1892, the California Northwestern Railroad Company began scouting locations along their routes for an egg taking station and hatchery under the direction of Colonel LaMotte. By 1897, fish facilities were open on Gibson Creek in the Russian River Basin and Outlet Creek. Steelhead eggs collected from the Little Lake Valley were grown in the Gibson Creek Hatchery and planted throughout the Outlet Creek Basin, parts of Big River, Russian River, and possibly Lagunitas Creek (LeDoux-Bloom 2006). LeDoux-Bloom (2006) also reports that trout eggs from the Shasta or McCloud rivers were grown out and planted in Outlet Creek and other Mendocino County watersheds until the facility was closed in 1920.

During the late 1800s and early 1900s many of the creeks in the Outlet Creek basin were relocated for the building of railroads. Today in several areas one can observe where Outlet Creek was moved by cutting off the meander and straightening the stream to build the existing Highway 101 alignment (C. LeDoux-Bloom, CDFG, personal communication, 2005). Beginning in 1910, channels were created with oxen and plows to facilitate draining of the Little Lake Valley to lower Outlet Creek for agricultural purposes such as potato production and cattle grazing (DWR 1965, as cited in Le-Doux Bloom 2006). The largest channel, according to longtime landowner John Ford, was constructed to form a straight channel that drains flow from Baechtel, Broaddus, and Haehl creeks, this is what is currently know as Outlet Creek. The original Outlet Creek, as reported in Le-Doux Bloom (2006), is located to the west and is referred to as the Outlet overflow channel.

By the 1950s and 1960s, many of the upper areas of the Outlet Creek Basin had been logged with little attention to erosion control. According to LeDoux-Bloom (2006), many of the valley floor stream reaches such as Baechtel, Broaddus, and Haehl became aggraded during the winter storms of 1955 and 1964. These same stream reaches went through additional aggradation in the 1980s and in some areas the adjacent meadows were lower in elevation than the streams. Juvenile steelhead and coho were found rearing in some of the meadow areas only to perish when water temperatures reached lethal levels (W. Jones, private consultant, personal communication, 2006). In order to maintain passage in the aggraded reaches along the valley floor, CDFG funded barrier and sediment removal projects to define channels for adult salmonid migration (LeDoux-Bloom 2006).

Currently reaches within the action area are affected by cattle grazing, which occurs on Haehl, Baechtel, Outlet, and Upp creeks. Based on field observations by NMFS during site visits of the action area, the current grazing practices continue to impact the riparian areas along streams located on the valley floor. The current riparian zone consists of a narrow strip of riparian vegetation including alder, willow, oak, Himalayan blackberry, and poison oak. Much of the riparian zone is inconsistent in forming a functional riparian community, which does not provide adequate protection for salmonid habitat. Evidence of inadequate riparian zones within the action area were found during 2004 temperature monitoring, which documented unsuitable stream temperature conditions for salmonids (LeDoux-Bloom 2006).

Planwest Partners (2002) reports that localized flooding in upstream areas has resulted in efforts to reduce the amount of brush and debris in these valley streams that are part of the action area. An existing water treatment plant releases treated wastewater in Outlet Creek near the confluence with Baechtel Creek. Releases occur during the winter period and are reported to have no impact on spawning salmonids other than providing slightly more flow (Planwest Partners 2002).

Non-native fish have been introduced to some of the streams located within the action area. Bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), and smallmouth bass (*Micropterus dolomieu*) have been reported to inhabit reaches of Haehl, Mill, and Outlet Creek (S. Harris, CDFG, personal communication, 2005). Introduction of these non-native species is believed to be from farm ponds and local reservoirs from which they escape. Presence of these warm water species effects salmonids in a number of ways, including competition for habitat space, and predation, elimination of natives, reduced growth and survival, and changes in community structure (Spence *et al.* 1996).

V. EFFECTS OF THE ACTION

Pursuant to section 7(a)(2) of the ESA (16 U.S.C. § 1536), Federal agencies are directed to ensure that their activities are not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat. This biological opinion assesses the effects of the proposed Willits Bypass Project on listed salmonids, and the designated critical habitats for SONCC coho salmon, CC Chinook salmon, and NC steelhead. The proposed freeway construction project is likely to adversely affect listed salmonids and critical habitats. An overview of the action is provided in the *Description of the Proposed Action* section of this opinion. In the *Status of the Species and Critical Habitat* and *Environmental Baseline* sections of this Opinion, NMFS provided an overview of the threatened and endangered species and critical habitat that are likely to be affected by the activity under consultation.

Regulations that implement section 7(a)(2) of the ESA require NMFS to evaluate the direct and indirect effects of Federal actions and actions that are interrelated with or interdependent to the Federal action to determine if these actions appreciably reduce listed species' likelihood of surviving and recovering in the wild by reducing their reproduction, numbers, or distribution (16 U.S.C. §1536, 50 CFR 402). Section 7 of the ESA also requires NMFS to determine if Federal actions would destroy or adversely modify critical habitat (16 U.S.C. §1536). This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR §402.2. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

The purpose of this consultation is to examine the total range of potential beneficial and detrimental effects to the ESA listed salmonids and their critical habitats that may occur as a result of constructing the proposed Willits Bypass over a four-year period, and to ascertain the likelihood that construction activities and proposed mitigations would jeopardize the survival and recovery of the subject species and or destroy or adversely modify their critical habitats.

A. NMFS Assumptions Regarding the Effects Analysis in this Biological Opinion

To date, Caltrans proposed plans for the construction of the Willits Bypass are at a 30 percent design level. SWPPP BMPs will be developed once the contractor(s) have acquired contracts from Caltrans. In addition, the mitigation plan is at a "Conceptual" level and few specific mitigation areas or plans have been developed to date. In order to facilitate the development of this biological opinion, NMFS has had to make certain assumptions regarding the effectiveness of the conceptual BMPs and the mitigation plans. NMFS assumes that the BMPs, SWPPP, and mitigation actions will be effective with regard to minimizing impacts of the proposed construction and mitigating and improving habitat over time. NMFS expects that Caltrans will provide proposed plans for the SWPPP, mitigation, and final project design prior to implementing these actions. Furthermore, NMFS must review these plans to determine if they are sufficient to meet the effectiveness assumptions in this biological opinion regarding potential project impacts.

B. Direct and Indirect Effects to Salmon and Steelhead or Their Critical Habitats

1. Effects of Dewatering the Project Areas

Construction of bridges at four locations (six bridges), construction of viaduct crossings at four locations (eight viaduct bridges), two culvert crossings, and one culvert removal will require in-channel work and pile driving. To minimize effects of the proposed construction and pile driving, Caltrans proposes to dewater stream construction areas and relocate fish to other appropriate streams within the Outlet Creek sub-basin. By removing fish from the stream reaches in and adjacent to construction areas, the project is expected to significantly reduce the number of juvenile anadromous salmonids injured or killed during the summer work season. In the absence of fish relocation, juvenile steelhead, coho and Chinook salmon would be exposed to dewatering, thermal stress, desiccation, physical injury from construction equipment and elevated sound levels during pile driving.

Although fish relocation avoids significant impacts to fish in the project area, the fish relocation activities themselves are expected to result in some stress and mortality. Direct effects to juvenile salmonids from this dewatering and relocation will occur in action areas at Haehl, Baechtel, Broaddus, and Mill creeks. The action area for Upp Creek is expected to be dry during the construction phase of the project.

The actual distance that may need to be dewatered will vary with actual summer flow conditions. Summer flows in the Outlet Creek sub-basin are dependant on precipitation levels during the winter and spring preceding construction. Haehl Creek has five stream crossing locations that can vary from dry channel condition to wetted surface flow conditions in the summer depending the previous winter and spring rains. For evaluation purposes in this biological opinion NMFS assumes that all stream crossings except for Upp Creek, will have surface flow at the beginning of the proposed construction period (June 15). Upp Creek is expected to be dry by June 15 of each year at this location.

Nine stream crossings will have up to 150 meters dewatered at each site with the use of cofferdams for up to six weeks during the summer months. The Haehl Creek culvert replacement for the Schmidbauer Ranch road access and the Haehl Creek culvert removal may require dewatering of intermittent pools. Caltrans proposes to allow the contractor to choose various methods of cofferdam construction, including the use of rubber bladders, clean gravel, or sand bags to block stream flow and divert water around the construction sites. During dewatering of each stream crossing area, juvenile fish, including listed salmonids, will be relocated to other appropriate stream reaches. Capture and relocation efforts will result in stress and potential mortality of some juvenile steelhead and salmon. These activities may occur at each construction site over two construction seasons.

During the dewatering and fish relocation phase, juvenile steelhead are expected to be present at each stream crossing site. Juvenile steelhead densities are expected to be low based on habitat quality and prior survey work by fishery biologists. The likelihood of juvenile Chinook salmon and coho salmon being present during the construction/dewatering phase of the proposed project is very low (S. Harris, CDFG, personal communication, 2005). Juvenile coho salmon may be present in low numbers at Baechtel Creek, Broaddus Creek, and Mill Creek project locations, but not present at the four Haehl Creek project sites. Because ocean-type Chinook salmon can reside within streams for up to a year it is possible that juvenile Chinook salmon could be present at the lower Haehl, Baechtel, Broaddus, and Mill creek project areas during the dewatering and relocation activities. Ocean-type juvenile Chinook salmon normally migrate out of their natal stream from 60-150 day post-hatching, but under some conditions may remain in freshwater their first year (Myers *et al.* 1998).

Fish relocation at the proposed project sites will be conducted with electroshocking gear, seining gear, or dip nets by qualified biologists. Once cofferdams are in place, water in pool habitats may be removed using screened pumps. When stream habitats have been sufficiently dewatered, relocation efforts will continue until all fish have been removed from the dewatered reach. Despite these measures, some mortality of fish is likely at each stream crossing construction due to injury from relocation equipment (seining or electrofishing), stress related to handling, and individual fish eluding capture. These latter fish will die when the work areas are dewatered.

Mortality associated with fish relocation activities is expected to be low. To minimize impacts during fish collection and relocation, Caltrans proposes to use only experienced biologists, approved by NMFS and the CDFG. Fish will be relocated to suitable habitats outside of the construction area. Based on review of up-to-date fish relocation techniques and protocols, unintentional mortality of juvenile anadromous salmonids is expected to not exceed three percent of the fish collected. Biologists with electrofishing experience and skill can reduce injury and mortality rates to near one percent. Juvenile NC steelhead will comprise most or all of the salmonids collected at the stream crossing project sites. Due to the very low densities of juvenile Chinook and coho salmon in the project area, few are likely to be present and, thus, very few coho and Chinook salmon mortalities are expected. Juvenile salmonids that avoid capture in the project work area are not likely to survive within the construction sites once they are dewatered. Due to the poor habitat conditions (lack of hiding cover) at the construction sites, NMFS expects that relocation efforts will be effective and mortalities from dewatering and fish relocation will be less than three percent of the total number of fish present in the affected reach of stream.

2. Effects of Pile Driving During Project Construction

Pile driving will be required at eight of the ten proposed stream crossings, requiring combinations of smaller piles ("H" piles) and large CISS piles. All piles are proposed to be driven above ordinary high water levels of each stream channel. The majority of the piles at stream crossings will be located outside of the stream channel all together, but will be within 15 meters of the top-of-bank. Piles that will be located within the channel, yet above ordinary high water will be smaller, measuring from 61 to 76 centimeters. Caltrans has not specified whether pile driving will be performed with an impact hammer or vibratory hammer. The analysis below assumes either hammer type could be used to install the project's temporary and permanent piles. As described above, Caltrans has proposed to dewater construction areas and relocate fish to minimize the potential impacts of high sound pressure waves from the pile driving.

Available information indicates that fish may be injured or killed when exposed to elevated underwater sound pressure waves generated from driving steel piles with impact hammers (Abbott and Bing-Sawyer 2002, Abbott and Reyff 2004, Abbott *et al* 2005, Caltrans 2001, Caltrans 2003, Caltrans 2004, Nedwell *et al.* 2003, Vagle 2003). Pathologies associated with very high sound levels are collectively know as barotraumas. These include hemorrhage and rupture of internal organs, including the swimbladder and kidneys in fish. Death can be instantaneous, occur within minutes after exposure, or occur several days later. High sound pressure levels can also result in hearing damage and elicit stress responses in fish (Popper et al. 2003/2004).

Based on data collected during the installation of piles with a vibratory hammer in Richmond Inner Harbor (Reyff 2003), the adverse effects described above are not expected with the use of a vibratory hammer. Sound levels produced by pile driving with a vibratory hammers are not only lower, but generate different sound wave forms and lower sound frequencies that are less injurious than those produced by an impact hammer. Therefore, it is expected that underwater sound produced during the driving of the project's permanent piles and temporary piles with a vibratory hammer will not exceed levels that result in injury or mortality of listed anadromous salmonids.

If an impact hammer is used for construction in combination with timber piles, no physical injuries or mortality of salmonids are expected. Similar to a vibratory hammer, the driving of wooden and concrete piles with an impact hammer generates sound wave forms that are less injurious to fish (Reyff and Anderson 2005).

Alternatively, when steel piles are used in combination with an impact hammer at the stream crossing locations, high sound levels are likely to be generated during construction. However, all pile driving will be performed on the stream bank or further upland with adjacent stream areas either naturally dry or dewatered by a constructed flow diversion. Elevated sound levels generated by pile driving are expected to travel through the ground and streambed. Although below the level of physical injury, juvenile steelhead could be exposed to high sound pressure waves traveling through the streambed. Juvenile steelhead, coho, and Chinook salmon will be present in wetted habitats immediately upstream and downstream of the dewatered stream reaches. The degree to which an individual salmonid may be affected by high sound pressure

waves is dependent on many variables including size of fish, peak sound pressure, frequency, *etc.* Depending on these factors, effects on juvenile salmonids during the driving of steel piles with an impact hammer will range from a stress response to no response.

Juvenile salmonids are expected to be present upstream and downstream of the dewatered reaches during pile driving. Given what is currently known about the effects on salmonids from pile driving and conditions at the project site, NMFS expects that dewatering of each crossing site (up to 150 meters) will be a sufficient distance to reduce sound exposure in nearby wetted habitats to safe levels. Since fish will likely be at least 75 meters from the sound source, decibel levels during pile driving are not expected to cause mortality or injury of juvenile salmonids. Decibel levels may cause juvenile fish to become startled and abandon preferred habitats, which are adjacent to the dewatered areas. Caltrans has proposed to monitor underwater sound pressure in the wetted aquatic areas immediately above and below dewatered reaches. This information will allow for evaluation of sound exposure levels to fish rearing upstream and downstream of the stream crossing construction sites.

In the event that hydroacoustic monitoring in areas above and below the dewatered stream reach reveals excessively high sound levels, Caltrans can dewater additional areas and relocate fish to increase the distance between listed salmonids and the pile driving sound source. Based on the results of the hydroacoustic monitoring program, NMFS may recommend additional areas be dewatered. If additional dewatering is performed, numbers of juvenile salmonids collected and handled would increase, but the numbers will likely be small.

3. Effects of Riparian Vegetation Removal

Removal of riparian vegetation along banks of proposed construction areas is expected to adversely affect designated critical habitat for listed anadromous salmonids and impact juvenile steelhead within the action area. When streamside vegetation is removed, summer water temperatures typically increase in proportion to the increase in sunlight that reaches the stream surface (Chamberlain *et al.* 1991). Increases in solar radiation to stream reaches may also change aquatic species composition, increase algal biomass and alter invertebrate communities (Beschta *et al.*1987). Primary elements of salmonid habitat such as large woody debris, pool and riffle formation, and food inputs are likely to be impacted by the riparian vegetation removal (Caltrans, 2005a). In addition, removal of riparian vegetation can change local microclimate, soil moisture, groundcover, and susceptibility to bank erosion, and influence the re-establishment of vegetation (Spence *et al.* 1996).

Removal of riparian vegetation will be performed with heavy equipment and hand crews. Permanent and temporary removal of vegetation will be conducted along upper Haehl Creek (southern interchange), the Schmidbauer culvert replacement near Haehl Creek, middle Haehl Creek crossing, lower Haehl Creek viaduct crossing, Baechtel Creek viaduct crossing, Broaddus Creek viaduct crossing, Mill Creek viaduct crossing, and the Upp Creek culvert replacement location. Riparian vegetation removal is proposed from the edge of ordinary high water to areas above the top of bank that encompass most of the existing riparian zone. Table 2 presents the amount of bank length of permanent and temporary riparian vegetation removal at each stream crossing on the salmonid bearing streams.

Table 2. Permanent and temporary (replanted) riparian removal at proposed stream crossings and construction sites along the Willits Bypass.

Stream Name	Permanent Removal in meters	Temporary Removal in meters	Total Bank Length Affected in meters	Total Stream Reach Length Affected in meters
Upper Haehl Creek	772	12	784	392
Middle Haehl Creek	105	92	197	98.5
Lower Haehl Creek	34	161	195	97.5
Baechtel Creek	300	370	670	335
Broaddus Creek	33	157	190	95
Mill Creek	37	170	207	103.5
Upp Creek	179	4.6	184	92

With three distinct construction areas, Haehl Creek will require the most extensive amount of permanent riparian vegetation removal. Construction of the north and southbound viaduct crossings at Baechtel, Broaddus, and Mill creeks requires both permanent and temporary removal of riparian bank vegetation. Approximately 92 meters of channel will be affected by the permanent removal of riparian vegetation at the Upp Creek culvert crossing.

Impacts associated with the riparian vegetation removal vary within the action area depending on removal type (permanent or temporary), stream flow (absent, intermittent, surface flow present) during the summer, and presence of salmonids. The current condition of riparian habitat also influences the potential impact to salmonid habitat.

a. Removal of Riparian Vegetation along Salmonid Streams

The proposed removal of riparian vegetation at stream crossings is expected to adversely affect water temperature on the salmonid streams in the project action area. Water temperature is a critical environmental factor in most aquatic ecosystems. Chemical and biological processes in aquatic environments ultimately are regulated by temperature. As cold-blooded animals, the metabolism, reproduction, development, and scope of activity of anadromous salmonids are largely controlled by environmental temperature (Marcus *et al.* 1990). The Willits Bypass Project's proposed temporary and permanent removal of riparian vegetation is expected to result in increased solar radiation input and increase summer/fall water temperatures on the five salmonid-bearing streams in the action area.

Gillies (2000) conducted a focused study of the effects of riparian canopy removal on stream water temperature in the Little Lake Valley. Using local stream habitat inventory data, Gillies (2000) concluded that in the Willits Bypass Project area there is a direct relationship between percent canopy cover and elevated water temperatures in streams. Based on this study's results,

the riparian vegetation removal associated with the proposed Willits Bypass Project is likely to result in severe consequences to habitat quality by increasing water temperatures in the action area.

The preferred temperature range for *Oncorhynchus* spp. is generally between 6 and 15° C (Reiser and Bjornn 1979). In the Eel River Basin, stream water temperature is recognized as a critical habitat parameter (Gillies 2000), particularly during the summer months for juvenile rearing salmonids. Summer and fall water temperatures influence growth rates, swimming ability, availability of dissolved oxygen, ability to capture and use food, and ability to withstand disease outbreaks. Steelhead and coho salmon juveniles are known to rear during the summer months in the five salmonid-bearing streams of the action area. Chinook salmon juveniles typically outmigrate to the ocean as smolts during the spring months in their first year and are generally not expected to be within the streams of the action area over summer.

Due to riparian vegetation losses, additional solar inputs at the project's riparian removal sites will increase summer water temperature and degrade salmonid habitat. Summer stream temperatures are expected to increase as a result of project construction in wetted areas of Haehl, Baechtel, Broaddus, and Mill creeks. In areas where riparian vegetation is re-planted post-construction, the canopy will likely be restored in five to ten years and these additional solar radiation inputs will be reduced or eliminated. In areas of permanent vegetation losses, salmonid habitat including designated critical habitat will be permanently impacted due to the effects of increased water temperature.

Since Haehl Creek contains the largest linear extent of permanent vegetation removal, thermal impacts are expected to be more extensive and may convey the warmed water into downstream reaches of Baechtel Creek, and Outlet Creek below the confluence with Haehl Creek. However, during the summer and fall months of most water years, portions of the creek bed of Haehl, Baechtel, and Outlet creeks may be naturally dry in the action area. These intermittent flow conditions could help reduce the thermal effects of riparian removal, because subsurface flow through the project area will not be subject to direct solar radiation. The extent of this amelioration due to dry and intermittent stream flows in the action area is unknown. Juvenile steelhead that reside in thermally impacted reaches of Haehl, Baechtel, and Outlet creek are likely to experience reduced survival rates due to increases in water temperatures in portions of the action area. These effects are expected to last for at least a five year period, until mitigation actions ameliorate the impacts of the project riparian vegetation removal. The few areas that permanently lose riparian vegetation may become uninhabitable to listed salmonids.

CDFG (1995) reports existing stream temperature conditions are marginal for salmonid rearing in most of Haehl Creek. Gillies (2000) estimates reduced canopy cover in the action area due to construction of the Willits Bypass Project could increase water temperatures to levels in excess of 30° C. Although existing summer habitat conditions are marginal due to elevated temperatures, the suitability of salmonid rearing habitat within Haehl Creek and Baechtel Creek is expected to further decrease due to the project's extensive removal of riparian vegetation.

Riparian vegetation removal and the associated effects at Broaddus and Mill creeks are similar, but less extensive than Haehl and Baechtel creeks. At both Broaddus and Mill creeks it is

estimated that approximately 100 meters of stream will be affected by the viaduct construction at each site. Marginal stream temperature conditions in lower reaches of Broaddus and Mill Creeks will become less suitable for salmonid rearing during the summer months due to increased solar radiation.

Approximately 92 meters of channel will be affected by the permanent removal of riparian vegetation at the Upp Creek culvert crossing. Upp Creek typically has dry channel conditions from early spring to late fall. Therefore, riparian vegetation removal along Upp Creek is not expected to effect stream temperatures due to the lack of summer flow at the site.

b. Removal of Riparian Vegetation on Non-Salmonid Streams

Non-salmonid bearing streams located within 305 meters of salmonid streams were designated at Category II streams due to their potential influence to fish bearing streams. Other stream courses which are located beyond 305 meters of a salmonid stream, and have less potential to impact salmonid streams, were categorized as Category III streams.

Category II streams are typically important sources of water, nutrients, wood, and other vegetative material for streams inhabited by fish and other aquatic organisms (FEMAT 1993). Removal of riparian vegetation in these channels has the potential to increase stream temperatures of salmonid streams, and to deliver sediment and increase turbidity in fish bearing streams. The Willits Bypass Project proposes to permanently remove 1,090 meters of riparian vegetation along five Category II stream reaches. Temporary riparian removal is proposed on 726 meters of Category II streams.

Category III streams are small ephemeral streams, which are more than 305 meters (1000 feet used in California Forest Practice Rules) from fish bearing streams. These streams typically have no flow or aquatic life during the summer months, but are capable of transporting sediment, woody debris, and nutrients during winter rainstorms. Riparian vegetation removal for permanent and temporary impacts to these channels totals 967 meters and 21 meters, respectively.

Riparian vegetation removal is expected to create increased in surface erosion, and bank erosion, which results in increased turbidity and sediment (sand sized particles) to fish bearing channels. The majority of the Category II and III stream channel reaches impacted by the Willits Bypass Project will be placed in culverts. By placing these stream types in culverts, they are not expected to increase stream temperatures of fish bearing streams. Losses of aquatic macro invertebrate food producing areas in Category II channels will likely decrease food delivery to fish bearing channels. Loss of these food-producing areas is not expected to reach levels that would adversely affect fish bearing streams because the length of Class II stream that will be placed in culverts less than 500 meters combined. In addition, there may be some minor reduction in nutrients, woody debris, and vegetative material because of the culvert installations. Response of salmonid lifestages to increased sediment levels, including Category II and Category III streams, will be discussed in the effects section below titled *Effects of Riparian Vegetation Removal on Salmonids*.

Category II channels which are not within constructed culverts may experience stream temperature increases due to vegetation removed from the riparian zone. These streams typically have very low flow, intermittent flow, or are dry by early summer. Thus, the small contribution of flow from Category II drainages is generally not enough to result in stream temperature changes to fish bearing streams during the summer months.

4. Mobilization of Sediment from Construction Activities

Suspended and deposited fine sediment can adversely affect salmonid rearing and spawning habitat if present in excessive amounts. High levels of suspended solids may abrade and clog fish gills, reduce feeding, and cause fish to avoid some areas (Cordone and Kelly 1961). Several activities associated with construction of the Willits Bypass Project may result in an increase delivery of sediment to streams in the action area. These include construction of the roadbed, operation of staging areas, riparian vegetation removal, channel realignment, in-channel work such as rock slope protection and bridge construction, culvert replacements, excavation activities at the southern interchange, and construction and removal of cofferdams. An estimated 1.9 million cubic meters of earthen material will be excavated, transported, and compacted to build the project. Caltrans estimates the total ground disturbance for all project areas will total 93 hectares (D. Schmoldt, Caltrans, personal communication, 2006). In addition to road and bridge construction activities, Caltrans construction of fish enhancement/mitigation projects could result in short-term increases in turbidity during the placement of instream structures.

Barret *et al.* (1995) reviewed various highway construction projects on an ephemeral stream in Texas and concluded that several projects built in the 1970's resulted in a 50 percent increase in sediment delivery as a result of highway construction. Other studies reviewed by Barret *et al.* (1995) showed short term and minor inputs of sediment to streams from highway construction.

Caltrans currently requires contractors implement soil stabilization and sediment control BMPs. These actions are designed to contain the majority of erodible material. Proper implementation of the BMPs is expected to reduce the mobilization and delivery of sediments to nearby streams. However, the large quantity of earthen material used in this project over a broad area is expected to result in some level of increased delivery of sediment to salmonid bearing streams in the action area. For the Willits Bypass Project, current BMPs are expected to provide more effective sediment control than that reviewed by Barret et al. (1995).

Although increased amounts of sediment input to salmonid bearing streams are expect during project construction, sediment quantities have not been estimated by Caltrans or in this biological opinion. Fine grain sediment will likely enter streams from soil disturbed by construction along stream banks and from upland areas. Staging areas, roadbeds, vegetation removal sites, excavation and compaction areas area likely sources of sediment to the stream channels of the action area. Soils disturbed during construction will provide a source of sediment that can be mobilized by rain events during the subsequent winter/spring. Sediment will travel along gullies and ravines to stream channels and then to the bottom of the creek bed. Once in the creek channel, sediment can increase turbidity levels in the water column, fill-in gravel interstices in the creek bed, and coat the bottom of the channel with layers of fine materials.

Within the action area, sediment originating from construction activities may be deposited in Haehl, Baechtel, Broaddus, Mill, and Upp creeks. In addition, a five kilometer reach Outlet Creek downstream of the construction sites was included in the action due the potential for increased rates of sediment delivery. Increased levels of fine sediment can adversely affect salmonid spawning habitat, various life stages of salmonids, and other instream habitat features within the action area.

a. Effects on Salmonid Spawning Habitat

Spawning habitat for Chinook salmon occurs within the action area; although existing conditions are poor. Surveys performed by CDFG in 2005 identified high percentages of sand which reduces the quality of the creek bed for spawning. CDFG reports that during a normal water year, up to 20 Chinook salmon redds may be constructed in creek areas adjacent to the Willits Bypass Project (S. Harris, CDFG, personal communication, 2006). Additional Chinook salmon spawning occurs in creeks both upstream and downstream of the action area. Adult coho salmon and steelhead entering the Little Lake Valley area spawn primarily upstream of the action area. CDFG estimates over 90 percent of the adult coho salmon and steelhead migrate to areas upstream of the project site to spawn (S. Harris, CDFG, personal communication, 2006). Therefore, few coho salmon and steelhead are expected to spawn within the action area.

Sediment input by project construction is expected to further degrade existing spawning habitat conditions in the action area. Fine sediments input associated with project construction will reduce the permeability of gravels, intergravel flow, and the availability of dissolved oxygen for developing embryos, and interfere with emergence success by occluding interstitial pore space (Everest *et al.*1987). Laboratory studies have found an inverse relationship between fine sediment and fry survival, with decreases of 3.4 percent survival for each one percent increase in fine sediment (Everest *et al.* 1987). Fine sediment originating from project during the four year construction period is expected to further decrease the survival of salmonid embryos and reduce the ability of fry to emerge from redds in the creeks of the action area. However, sediment delivery levels associated with project construction should diminish significantly after project construction is completed.

b. Effects on Salmonid Life Stages

Construction activities are known to cause temporary increases in water turbidity (reviewed in Furniss *et al.* 1991, Reeves *et al.* 1991, and Spence *et al.* 1996). Short-term increases in turbidity could occur during construction, but reach dewatering will generally avoid this problem because work will be performed in the dry. Post construction winter rains will likely result in short-term increases in turbidity as runoff occurs in areas of exposed soil and removed riparian vegetation. High levels of turbidity and suspended sediment in the action area may affect adult and juvenile anadromous salmonids by a variety of mechanisms. High concentrations of suspended sediment can disrupt normal feeding behavior and efficiency (Cordone and Kelly 1961; Bjornn *et al.* 1977, Berg and Northcote 1985), reduce growth rates (Crouse *et al.* 1981), and increase plasma cortisol levels (Servizi and Martens 1992). Even small pulses of turbid water will cause salmonids to disperse from established territories (Waters 1995), which can displace fish into less suitable habitat and/or increase competition and predation, decreasing chances of survival. Increased

sediment deposition can fill pools and reduce the amount of cover available to fish, decreasing the survival of juveniles (Alexander and Hansen 1986).

Increased turbidity levels associated with the Willits Bypass Project are not expected to physically injure listed salmonids or result in adverse behavioral effects. Moderate, but temporary increases in turbidity during the summer construction season and during the winter months are expected. These levels will likely result in some limited behavioral effects, such as temporarily reduced feeding efficiency of juvenile salmon or steelhead in the action area. These behavioral changes are not expected to cause mortality or decrease the probability of individual juvenile or adult salmonid survival within the action area.

5. Mobilization of Sediment from Oil Well Hill

Oil Well Hill is the proposed borrow site identified by Caltrans. Project construction could result in the excavation of 1.9 million cubic meters of material from this location. The borrow area will likely encompasses 12 to 16 hectares. This site is east of Highway 101 and approximately 425 meters from Outlet Creek.

Sediment delivery reduction measures have been proposed to prevent sediment from reaching Outlet Creek. Sediment detention basins will be located at key drainage areas to capture material that is mobilized. Proper construction and operation of these detention .basins are expected to intercept all mobilized sediments prior to reaching Outlet Creek. The detention basin design appears to be adequate to avoid adversely affecting salmonid habitat in Outlet Creek and other streams within the action area.

Caltrans has indicated that alternative borrow site areas may be selected by the contractor, but selection of an alternative site will require submittal of a borrow site plan. Alternative borrow site plans have not been evaluated in this biological opinion. Further review by NMFS may be required if an alternative non-commercial borrow site is proposed.

6. Effects of Rock Slope Protection

Rock slope protection or riprap is proposed in at several stream crossings in combination with retaining walls for protection of bridge columns and banks. A total of 140 meters of stream length will be impacted by placement of riprap along three sites on upper Haehl Creek: one site on middle Haehl Creek, and one site each on Baechtel, and Upp creeks. Use of riprap to protect banks is expected to result in effects to designated critical habitat for Chinook salmon, coho salmon, and steelhead.

General effects of riprap on salmonid habitat include, elimination of lateral bank erosion, which prevents development of undercut banks, and cover for fish (Schmetterling *et al.* 2001). Placement of large rock can change the sediment transport capacity of a stream reach and affect the natural distribution of particle sizes in a stream (Beschta and Platts 1986). Sediment size changes can affect spawning substrate and food production for salmonids and cover requirements provided by certain substrate (Platts 1979). The loss of riparian vegetation due to the placement of riprap can reduce or eliminate recruitment of new riparian vegetation, reduce habitat complexity, reduce shade to streams which maintain cold water habitat, and reduce recruitment

of large woody debris (LWD) (Schmetterling *et al.* 2001).

At each stream crossing on Haehl, Baechtel, and Upp creeks, approximately 15 meters of riprap will be placed along one or both banks. Rock will extend from the channel bed to an area approximately two-thirds up the bank. Top of bank areas will be planted with willow. Riprap is expected to reduce habitat complexity and riparian shade adjacent to stream crossings. This action is expected to have long-term adverse effects on designated critical habitat for CC Chinook salmon, SONCC coho salmon and NC steelhead. Existing habitat at the stream crossing sites is in moderate to poor condition. The proposed placement of riprap will further degrade stream habitat for salmonids. Reduced cover, LWD, shade, and changes in stream bed substrate are expected to decrease rearing habitat quality for juvenile Chinook salmon and steelhead, and to a lesser extent coho salmon. Juvenile coho are not expected to utilize the action area during the summer month due to unsuitable stream temperature conditions.

7. Toxic Chemicals

Equipment refueling, fluid leakage, and maintenance activities within and near the stream channel pose some risk of contamination of aquatic habitat and subsequent injury or death to listed salmonids. Caltrans has proposed measures which are designed to prevent the spill of contaminants into the waterways of the action area. Measures include: maintaining fuel storage and refueling sites in upland locations at an appropriate distance from the stream channel; maintaining vehicles and construction equipment be in good working condition; and servicing of equipment in an upland location.

Caltrans may use bentonite as a lubricant for pile placement and an accidental release of bentonite may occur. Bentonite is potentially lethal to fish. Sigler *et al.* (1984) reported that steelhead and coho salmon show reduced growth rates or increased emigration rates when exposed to 125 to 175 mg/l bentonite. In addition to toxic chemicals associated with construction equipment, stream water that comes into contact with wet cement can adversely affect water quality by raising the pH of water, which may result in injury or death to listed salmonids. However, these water quality impacts are not anticipated, because the stream will be dewatered around the construction work sites. Measures should minimize the potential for a spill. In addition, Caltrans and its contractors will have ample opportunity to attend to any spill prior to toxic chemicals reaching the waters of the action area.

8. Long-term Maintenance and Use

NMFS believes it unlikely that long-term maintenance actions, including mowing of vegetation, cleaning of ditches, pruning vegetation near bridges, and repairing pavement, will result in adverse affects. Post construction maintenance actions implemented with the use of appropriate BMPs are likely to minimize and avoid any sediment and turbidity entering streams in the action area. This includes any sediment generated from infrequent sand applications conducted for icy freeway conditions. BMPs are included in the Caltrans Storm Water Quality Handbook Maintenance-Planning and Design Staff Guide (P&DSG) (Caltrans 2003b), and will be used during maintenance of the Bypass. NMFS believes that in general, these BMPs are likely to be effective at avoiding maintenance impacts on listed species and critical habitats. However, a

complete maintenance plan is unavailable for the project, and maintenance actions expected to result in sediment and turbidity entering streams would require reinitiation of consultation.

Use of the freeway bypass is expected to generate grease and oil as well as other contaminants along the freeway corridor. Also, accidental spills are expected from freeway related traffic accidents. These contaminants may be washed into nearby streams during the rainy season. Caltrans has developed a standard Hazardous Waste and Spill Response Plan (HW&SRP) which would be implemented during the operation of the project. NMFS believes that hazardous waste and spill response practices contained in the HW&SRP and BMPs contained in the P&DSG are likely to be effective in minimizing the amount of contaminants entering streams. Adverse effects to salmonids and their habitat from introduced chemicals, oils, grease, or accidental spills are not expected.

The existence of the freeway bypass may cause increased runoff from impervious surfaces that could cause adverse effects to salmonids and their habitat within the action area. For example, increased runoff can scour redds and destroy salmonid eggs and alevins. To address the potential for increased runoff from the impervious freeway surfaces, Caltrans designed permanent BMPs into the design, construction, and maintenance of the project to minimize increased runoff potential (Caltrans 2000). The P&DSG requires the Caltrans design team to account for hydrologic impacts of the project, and provide measures to minimize impacts to stream stability. Based on the information provided in Caltrans' Water Quality Assessment (Caltrans 2000), NMFS concludes that design features, and permanent BMPs, will avoid adverse effects to salmonids and their habitat related to potential increased runoff from the completed project.

C. Interdependent and Interrelated Actions

NMFS does not anticipate any interdependent or interrelated actions associated with the proposed action.

D. Actions with Beneficial Effects to Salmonids or their Habitat

1. Haehl Creek and Upp Creek Culvert Replacements

Existing culverts on Haehl and Upp creeks are impediments to fish anadromous passage (Caltrans 2005a). The Willits Bypass Project proposes to replace both these culverts with new structures that improve passage for both adult and juvenile lifestages of salmonids. At Upp Creek the existing culvert will be replaced with a new culvert. On upper Haehl Creek, the existing culvert under the new propoposed Highway 101 alignment will be removed and not replaced. A second culvert on Haehl Creek will be replaced for improvement of the new Schmidbauer Ranch access road.

These culvert removals and replacements are expected to improve adult anadromous fish passage on Upp and Haehl creeks. Recent assessments of the existing culvert on upper Haehl Creek by CDFG and NMFS staff biologists have determined that the culvert is a barrier to adult salmon and steelhead. A fish passage assessment study conducted by Caltrans ranked Upp Creek as one of the top ten locations for restoration of passage conditions in Mendocino County (Caltrans

2005b). Habitat surveys on upper reaches of Upp Creek have documented the presence of approximately 2,300 meters of available anadromous habitat. Replacement of the Upp Creek culvert on existing Highway 101 would be most beneficial for NC steelhead due to the higher gradient that exists upstream of the culvert (S. Harris, CDFG, personal communication, 2006). Coho and Chinook salmon are not known to use high gradient stream habitat, and are less likely to use the newly accessible upper reaches of Upp Creek for spawning and rearing. Increased rearing opportunities would be available for juvenile NC steelhead, which, over time, would likely result in increased steelhead production in the Outlet Creek watershed.

The replacement of the culvert on upper Haehl Creek is expected to provide a lesser benefit to anadromous fisheries. Upper Haehl Creek is near the upstream end of anadromous habitat in the streams headwaters. Replacement of the culvert with one that improves fish passage is not expected to increase levels of salmonid productivity. The habitat may provide for some additional spawning of Chinook salmon and steelhead adults, and some use during the winter by juvenile Chinook and steelhead. This reach of upper Haehl Creek is usually dry during the summer months and is not expected to provide juvenile rearing habitat for steelhead or salmon.

2. Riparian Vegetation Mitigation

Caltrans proposes to restore and mitigate temporary and permanent impacts to riparian vegetation on anadromous streams, Category II streams, and Category III streams. The general extent and nature of the project's mitigation plantings are described in the "*Conceptual Mitigation Plan for the Willits Bypass Project*", dated August 19, 2006. The riparian mitigation plan is "conceptual", because it is based on early and limited level of project design. Therefore, Caltrans and FHWA have not ascertained the specific compensatory mitigation sites for this project.

The Conceptual Plan proposes replanting of riparian vegetation on anadromous stream at a 3:1 ratio. Based on the existing project design, this ratio will result in the creation/restoration of 22.2 acres of riparian area mitigation for permanent and temporary impacts. Mitigation of Category II and III stream types will result in riparian creation/enhancement of 13.6 and 1.95 acres of riparian revegetation, respectively.

Riparian vegetation mitigation by Caltrans will be designed to restore the ecosystem to its natural pre-disturbance riparian community structure and function. In order to accomplish this goal, Caltrans proposes to plant five riparian trees for every tree that has been removed. Anadromous reaches will be planted to achieve a 30-meter riparian zone, Category II streams will be re-vegetated to achieve a 15-meter riparian zone, and Category III stream will be re-vegetated to create an 8-meter riparian zone. In addition, native shrubs and herbaceous perennial plants are proposed to be planted along with riparian trees.

Proposed riparian restoration/creation is expected to compensate for project impacts in some areas and improve existing conditions in other areas. Evaluation of past riparian replanting projects in California generally shows improvement in anadromous salmonid habitat conditions. Opperman and Merenlender (2004) found positive responses in salmonid habitat to riparian restoration actions conducted 10-20 years earlier. Factors that may affect success or failure of a riparian planting project may be due to one or more reasons, including aspect, slope, existing

vegetation, upland drainage, soil moisture conditions, competing vegetation, use of imported soil, native soil conditions, and stock quality (Anderson and Welton 2005). Caltrans has proposed specific success criteria in order to provide a level of certainty for riparian mitigation success. Caltrans has estimated that after a five-year period, riparian tree canopies would provide a ten-foot strip of shade from restored vegetation, at a minimum. Other success criteria such as absolute vegetative cover, woody plant survival, and floristic composition, *etc.*, are proposed per the Conceptual Mitigation Plan.

Success of the proposed revegetation of riparian areas may take several decades to produce a riparian forest (Manci 1989). Faster growing species, such as willow (*Salix spp*), and white alder (*Alnus rhombifolia*), are expected to provide shade and bank protection within the first 5-10 years. Restoration of functional riparian areas may take 20-40 years dependent on the growth of species such as big leaf maple (*Acer macrophyllum*), cottonwood (*Populus spp*), California bay laurel (*Umbellularia californica*), and other riparian species proposed for planting. Riparian vegetation is generally in poor condition within the Little Lake Valley due to effects of grazing and urbanization over the last one-hundred years. Therefore, the proposed plan to provide restoration/creation at the proposed levels is a benefit, but this benefit to aquatic habitat may not be fully realized for 10 to 40 years. Beneficial effects will include improvement of stream temperatures, increased bank stability (5-10 years), and over a longer period, introduction of LWD and improved cover for fisheries habitat (10-40 years).

3. Instream Habitat Mitigation

Caltrans may propose to construct instream structures (such as opposing wing deflectors), anchor LWD, or contract to have other stream enhancement/restoration structures placed in stream mitigation reaches. As described previously, these projects are uncertain to occur and are not analyzed in this biological opinion. If these projects are designed and proposed, and may adversely affect listed salmonids or their critical habitats, reinitiation of consultation with NMFS will be needed.

VI. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

A variety of cumulative effects are occurring to salmonid fisheries resources within the Outlet Creek sub-basin. Following are the activities that are reasonably certain to occur within these watersheds that will likely result in cumulative effects in the future:

A. Rural Development

BLM *et al.* (1996) reports that many 64.7 hectare parcels within the South Fork Eel River watershed will continue to undergo subdivision down to 16.2 hectare parcels. Since the Outlet

Creek watershed is part of the South Fork Eel River watershed, it is reasonable to assume that similar subdivision activities are and will continue to occur within the Outlet Creek watershed. Impacts to salmonid habitat from rural development include loss of riparian vegetation, changes in channel morphology and dynamics, altered watershed hydrology, increased sediment delivery from roads, elevated water temperatures and increased water demand within the action area.

B. Chemical Use

It is anticipated that chemicals such as pesticides, herbicides, fertilizers, and fire retardants will continue to be used in the action area. Impacts to salmonids may include changes to riparian vegetation and associated organic input into aquatic systems, changes in aquatic invertebrate communities, and increased algae production. Due to the lack of specific information, we are unable to determine the effects of chemical applications in the action area. Due to the undeveloped nature of the action area, the use of chemicals is not expected to be conducted under applicable State and Federal laws.

C. California Streambed Alteration Agreements

CDFG has strengthened the permitting process for activities taking place in, or near, rivers and streams by requiring environmental review. Henceforth, streambed alteration agreements will be reviewed in accordance with the California Environmental Quality Act. This program is expected to result in lessened impacts to salmonids from projects such as temporary summer dams, and stream bank stabilization projects within the action area.

D. Illegal Marijuana Cultivation

Beginning in the 1960's a new significant land use activity arose in the South Fork Eel River watershed. The "back to the land movement" as it is known consisted of individuals leaving urban centers in an attempt to "get back to nature" (BLM *et al.* 1996). Many areas that had been logged were subdivided and real estate activities became very prominent within southern Humboldt and northern Mendocino counties. Many of the "back to the land" individuals could not find employment and turned to illegal marijuana cultivation as a means of economic support (BLM *et al.* 1996). These activities are expected to continue into the future. According to BLM *et al.* 1996 this activity has significant impacts on the ecosystem through runoff of fertilizers, poisons to control rodents, and water diversions which some have suggested may rival impacts of logging and grazing. Water withdrawal in Baechtel and Broaddus creeks has been reported to degrade summer rearing conditions for juvenile steelhead and coho salmon; these impacts are expected to continue (C. LeDoux-Bloom, CDFG, personal communication, 2005).

VII. INTEGRATION AND SYNTHESIS OF EFFECTS

The construction of the Willits Bypass Project is anticipated to affect five salmonid-bearing streams in the Outlet Creek sub-basin of the Eel River watershed over a four-year period. An estimated 1.9 million cubic meters of material will be excavated, transported and compacted to build a four-lane freeway, crossing the Little Lake Valley, beginning approximately 3.3

kilometers south of Willits to 2.2 kilometers north of Willits. New freeway stream crossings will be construction over Haehl Creek at three locations, and one crossing each at Baechtel, Broaddus, Mill, and Upp creeks. Construction is expected to adversely affect threatened NC steelhead, threatened CC Chinook salmon and threatened SONCC coho salmon by dewatering/fish relocation, temporary and permanent riparian vegetation removal, mobilization of sediment, and placement of rock slope protection. Maintenance and use of the bypass is not expected to adversely affect salmonids or their critical habitats, as described above.

Direct effects to listed salmonids associated with construction activities will be limited to the summer months when juvenile NC steelhead are likely to be present at the stream crossing sites. Construction in channels will be limited to the period between June 15 and October 15. CC Chinook are unlikely to be present during construction, because juveniles will have emigrated from the watershed as smolts during the spring months. Juvenile SONCC coho salmon are unlikely to be present in the action area due to unsuitable water temperature conditions during the summer and early fall months. Dewatering and fish collection activities prior to in-water construction are expected to result in the safe relocation of over 97 percent of the juvenile steelhead residing at the stream crossings.

Effects to salmonid habitat, including designated critical habitat, include loss of riparian vegetation, increased water temperatures, increased levels of sediment delivery to the creek, and placement of rock slope protection. These actions are expected to reduce instream cover, reduce recruitment of LWD, reduce canopy cover and associated shade (increasing water temperatures), degrade spawning habitat, and generally decrease juvenile rearing habitat diversity and complexity. A small number of listed salmonids may be injured or killed as a result. Most of these impacts to habitat are temporary. Impacts to critical habitat caused by reductions in riparian vegetation may persist for a number of years after project construction.

Riparian mitigation is expected to ameliorate impacts to stream temperatures and associated salmonid summer rearing habitat within five years of the completion of the project, and ultimately to improve habitat conditions in certain reaches of the creeks in the action area. More habitat will be improved by riparian mitigation than will be permanently lost. BMPs implemented by Caltrans to control sediment during construction are expected to be sufficient to avoid long-term adverse effects to spawning and rearing habitat in the action area. Culvert removal and replacement are expected to improve fish passage conditions for both adult and juvenile salmonids in Upp and Haehl creeks.

The project is likely to incrementally degrade critical habitat in the action area until mitigation actions are complete and riparian vegetation has re-established. This degradation is unlikely to affect the conservation value of critical habitat as a whole for these species because the degradation in the action area is minimal and short term, and therefore unlikely to adversely affect the conservation of salmonid species in the Haehl Creek HSA. Early coordination between CDFG, NMFS, and Caltrans during development of project alternatives resulted in selection of a roadway alignment that is least damaging and avoids impacts to the highest quality habitat in the Outlet Creek sub-basin. Reaches of streams that currently provide the best quality of habitat for listed salmonids in the sub-basin will not be affected by the project. Stream crossings proposed in the Willits Bypass Project are at locations that frequently dry out in the summer. In addition,

existing conditions at the proposed stream crossings are currently lacking well-developed riparian vegetation and contain high percentages of fine sediment in the streambed. Bypass alignment alternatives that traveled through the western hills of Willits had the potential to impact the highest quality spawning and rearing habitat of Baechtel, Broaddus and Mill creeks. These areas with well-developed riparian vegetation, high quality spawning gravels and perennial flow conditions for summer rearing are not affected by the proposed project. Thus, by design, the selected project alternative avoids and minimizes impacts to listed anadromous salmonids and designated critical habitat in the Outlet Creek sub-basin.

Although incidental take of NC steelhead, CC Chinook salmon, and SONCC coho salmon is anticipated, impacts within the action area are not expected to reduce the probability of these populations surviving and recovering in the wild. NMFS reasons that low numbers of individual steelhead are currently produced in the action area and very low numbers of CC Chinook salmon and SONCC coho salmon are produced in the action area. Low reproductive productivity from the action area is due to baseline habitat conditions of high levels of fine sediment and low embryo/fry survival rates.

For NC steelhead, few of the fish originating from the action area are likely to contribute to the adult population given the poor rearing conditions that currently exist. During the summer and fall months, intermittent to dry conditions in stream channels, high stream temperatures, and poor to moderate habitat diversity currently limits summer habitat conditions and juvenile survival. NC steelhead are sufficiently distributed throughout the Eel River watershed to ameliorate the small losses expected in the action area from the project during the four year construction period, and for the five to ten years required for restored riparian vegetation to provide shade over streams.

CC Chinook salmon primarily use the action area during adult and smolt migrations, although some juvenile rearing occurs prior to emigration from the basin in the spring months[2]. The majority of Chinook salmon spawn and rear in Baechtel, Broaddus, and Mill creeks upstream of the action area (S. Harris, CDFG, personal communication, 2006). A small amount of spawning annually occurs in the action area and it is anticipated sediment from the project will result in a decreased level of embryonic survival. These decreases in survival of embryos within redds are expected to occur after each of the four construction seasons and should diminish to baseline conditions a few years after construction is completed. It is anticipated that adverse affects associated with this project will not decrease the probability of survival and recovery of CC Chinook salmon at the ESU level. CC Chinook salmon are sufficiently distributed throughout the Eel River watershed to ameliorate the small losses expected in the action area during this project's 4-year implementation period.

A small population of threatened SONCC coho salmon is thought to remain in the Outlet Creek sub-basin (S. Harris, CDFG, personal communication, 2006). Due to warm water temperature conditions and poor habitat complexity, low potential for juvenile coho salmon summer rearing currently exists in the action area. For similar reasons of poor habitat quality, few adult fish are

[2] Because these juveniles rear and outmigrate in the spring, adverse effects from elevated summer water temperatures are not anticipated.

likely to spawn in the reaches of the creeks in the action area. Thus, the proposed project has minimal impact on SONCC coho salmon or their habitat in the Outlet Creek sub-basin. Upstream reaches of these creeks in the Outlet Creek sub-basin, and other streams in the Eel River Basin, provide sufficient habitat and population productivity to maintain the SONCC coho salmon ESU during and after construction of the Willits Bypass Project. NMFS expects the small impact to coho salmon associated with this project is unlikely to affect the SONCC coho ESU population trend.

The proposed Willits Bypass Project is not expected to appreciably diminish the value of designated critical habitat for NC steelhead, CC Chinook salmon or SONCC coho salmon. Habitat impacts from the project in the action area are mostly temporary and/or minor. These impacts will be ameliorated, *i.e.*, critical habitat will return to its current condition, within 5-10 years, by the proposed riparian mitigation. Proposed riparian mitigation, as well as fish passage improvements in Haehl and Upp creeks, are likely to result in improvements to the current value of critical habitat for listed anadromous salmonids throughout the action area, and Outlet Creek sub-basin, although these improvements may take as long as 40 years.

VIII. CONCLUSION

After reviewing the best available scientific and commercial information, the current status of the species and critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion that the construction of the Willits Bypass Project by FHWA and Caltrans, in Mendocino County, California is not likely to jeopardize the continued existence of SONCC coho salmon, CC Chinook salmon, or NC steelhead.

After reviewing the best available scientific and commercial information, the current status of critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS biological opinion that the construction of the Willits Bypass Project by FHWA and Caltrans, in Mendocino County, California is not likely to adversely modify or destroy designated critical habitat for SONCC coho salmon, CC Chinook salmon, or NC steelhead.

IX. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by NMFS as an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to

and not the purpose of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are nondiscretionary, and must be undertaken by the FHWA, Caltrans, and their designees for the exemption in section 7(o)(2) to apply. The FHWA and Caltrans have a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA and Caltrans: (1) fail to assume and implement the terms and conditions, or (2) fail to require any designee to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to any permit, grant document, or contract, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the FHWA and Caltrans must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement (50 CFR §402.14(i)(3)).

A. Amount or Extent of Take

The Willits Bypass Project is expected to result in the incidental take of NC steelhead, CC Chinook salmon, and SONCC coho salmon. The majority of take is associated with the de-watering and fish relocation activities at the stream crossing construction sites. Caltrans proposes to implement dewatering and fish relocation to minimize take of juvenile salmonids associated with pile driving and other instream construction activities. Dewatering and fish relocation is proposed at all stream crossings except when the stream is dry and no water is present.

Based on summer electrofishing surveys conducted by the CDFG in 1993, NC steelhead are expected to comprise the vast majority of juvenile salmonids collected during fish relocation. Few to no juvenile Chinook and coho salmon are expected to be present during reach de-watering. No adult salmonids are expected to be present or taken by this project.

The majority of take during de-watering and relocation will be non-lethal take. Qualified biologists will relocate all fish, including salmonids from the dewatered stream channel areas (as much as 150 lineal meters) at each stream crossing. Some mortality of juvenile steelhead is anticipated during seining, electrofishing and other relocation related activities. Up to three percent of the juvenile steelhead, Chinook salmon, or coho salmon could be injured or killed because of relocation efforts. Therefore, the death or injury of no more than three percent of the total number of juvenile steelhead, Chinook salmon, and coho salmon relocated is anticipated at each stream crossing site during each year of construction.

During construction, Caltrans and its construction contractor will implement a SWPPP, to reduce the mobilization of sediment to the action area. It is likely the project construction will mobilize fine-grained (sand sized) sediment and this material will eventually be deposited in the stream channels during the winter months. Increased rates of fine sediment input may decrease the survival of embryos and the emergence of fry from spawning sites (redds) within the Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet creeks within the action area (13.8 km total). It is unlikely that sediment delivery will reach levels in the action area that result in complete loss of spawning success within redds. Some incremental loss is anticipated, but due to many factors,

the loss is unquantifiable.

Similarly, loss of riparian vegetation is expected to result in injury or death to juvenile steelhead due to elevated water temperatures. The number of steelhead affected cannot be precisely quantified but is expected to be very small based on the current condition of habitat in the affected areas, which limits steelhead use of these areas for rearing. The extent of take to juvenile steelhead is likely to persist in the action area for at least a five year period. Elevated water temperatures may persist for as long as ten years, depending upon how quickly proposed revegetation provides shade to the affected streams.

Anticipated take will have been exceeded if construction activities, construction of stream crossings, culvert removal, and replacement, or related construction activities are conducted in a manner inconsistent with the proposed project description (including project minimization and avoidance measures) or do not adhere to the terms and conditions of this biological opinion.

B. Effect of the Take

In the accompanying opinion, NMFS determined that this level of anticipated take is not likely to result in jeopardy to the species.

C. Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the impacts of the incidental take of NC steelhead, CC Chinook salmon, and SONCC coho salmon:

1. Measures shall be taken to ensure that fish relocation efforts are carried out in a manner that minimizes effects to Federally-listed salmonids.

2. Measure shall be taken to minimize harm to listed salmonids resulting from bridge and roadway construction and maintenance.

3. Measures shall be taken to minimize impacts to stream water quality.

4. Measures shall be taken to monitor the effects of pile driving on listed species.

5. Measures shall be taken to ensure the final mitigation plan adequately compensates for project impacts.

6. Measures shall be taken to monitor take of salmonids.

D. Terms and Conditions

FHWA and Caltrans must comply with the following terms and conditions, which implement the reasonable and prudent measures, described above and define the reporting and monitoring requirements. These terms and conditions are non-discretionary.

The following terms and conditions implement **Reasonable and Prudent Measure 1** to ensure that any fish relocation efforts are carried out in a manner that minimizes effects to federally listed salmonids:

1. FHWA and Caltrans shall provide NMFS with a Fish Relocation and Dewatering Plan at least 30 days prior to the start of dewatering for fish relocation activities, and shall receive written approval for this plan from NMFS prior to beginning any dewatering for fish relocation in streams where federally listed salmonids are present. This plan shall outline cofferdam construction, dewatering methods, and fish relocation methods. If the plan meets NMFS' approval, NMFS shall provide approval and any comments within 30 days of plan submittal. If the plan does not meet NMFS' approval, NMFS shall provide a list of changes needed within 30 days of plan submittal.

2. The FHWA and Caltrans shall retain a qualified biologist with expertise in the areas of anadromous salmonid biology, including handling, collecting, and relocating salmonids; salmonid/habitat relationships; and biological monitoring of salmonids. The FHWA and Caltrans shall ensure that all fisheries biologists working on this project be qualified to conduct fish collections in a manner which minimizes all potential risks to ESA-listed salmonids. Electrofishing, if used, shall be performed by a qualified biologist and conducted according to the *NOAA Fisheries Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act*, June 2000.

3. The fisheries biologist shall monitor the construction site during placement and removal of cofferdams to ensure that any adverse effects to salmonids are minimized. The biologist shall be on site during all dewatering events in anadromous fish streams to ensure that all ESA-listed salmonids are captured, handled, and relocated safely. The fisheries biologist shall notify NMFS biologist Thomas Daugherty at (707) 468-4057 or tom.daugherty@noaa.gov, or other NMFS staff at (707) 575-6062 one week prior to capture activities in order to provide an opportunity for NMFS staff to observe the activities. During fish relocation activities the fisheries biologist shall contact Thomas Daugherty (or other NMFS staff) at the above numbers, if mortality of federally listed salmonids exceeds 3 percent, at which time NMFS will stipulate measures to reduce the take of salmonids.

4. If ESA-listed fish are handled, it shall be with extreme care and they shall be kept in water to the maximum extent possible during rescue activities. All captured fish shall be kept in cool, shaded, aerated water protected from excessive noise, jostling, or overcrowding any time they are not in the stream and fish shall not be removed from this water except when released. To avoid predation the biologist shall have at least two containers and segregate young-of-year fish from larger age-classes and other potential aquatic predators. Captured salmonids will be relocated as soon as possible to a suitable instream location (pre-approved by NMFS) where suitable habitat conditions are present to allow for survival of transported fish and fish already present.

5. Non-native fish that are captured during fish relocation activities shall not be relocated to anadromous streams, or areas where they could access anadromous habitat.

6. Pumps used to dewater the work area shall be equipped with screens that meet the following NMFS fish screening criteria:

- Perforated plate: screen openings shall not exceed 3/32 inches (2.38mm), measured in diameter.
- Woven Wire: screen openings shall not exceed 3/32 inches (2.38 mm measured diagonally).
- Screen material shall provide a minimum of 27% open area.
- Approach velocity shall not exceed 0.33 feet per second.

The following terms and conditions implement **Reasonable and Prudent Measure 2** to minimize impacts of bridge and roadway construction.

7. The FHWA or Caltrans shall notify the NMFS Santa Rosa Area Office, by letter stating the project commencement date, at least fourteen days prior to implementation. The letter shall be sent to the NMFS Santa Rosa Area Office, Attention: Supervisor of Protected Resources Division 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528.

8. The FHWA or Caltrans shall allow any NMFS employee(s) or any other person(s) designated by NMFS, to accompany field personnel to visit the construction sites during activities provided for in this opinion. NMFS will notify the Caltrans Resident Engineer at least 48 hours prior to the planned site visits and will contact Caltrans personnel prior to entering the construction site.

9. Representatives from NMFS and CDFG shall be notified two weeks in advance of any FHWA or Caltrans pre-construction meetings for the Willits Bypass Project.

10. Prior to commencement of work on the Upp Creek and Haehl Creek fish passage improvement components, FHWA or Caltrans shall submit the engineering design for the structures related to fish passage to NMFS for evaluation and concurrence prior to implementation. Fish passage design at these two structures shall follow the March 2000, *NMFS Guidelines for Salmonid Passage at Stream Crossings*. NMFS shall provide evaluation within 30 days of design submittal. If passage design meets the NMFS guidelines above, NMFS shall provide evaluation and concurrence within 30 days of design submittal. The designs should be sent to the NMFS Santa Rosa Area Office, Attention: Supervisor of Protected Resources Division, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528.

The following terms and conditions implement **Reasonable and Prudent Measure 3** to minimize impacts to stream water quality.

11. Water that comes in contact with wet concrete and has a pH greater than 9.0 must not be allowed to enter the ground or stream but shall be either: (1) pumped to a separate, lined basin, and then pumped to a truck or upland for disposal or treatment (not within the bank to bank of any waterway); or (2) pumped directly to a truck for disposal at a site that is not within the top of bank to top of bank of any waterway.

12. Construction equipment used within the creek channel will be checked each day prior to work within the creek channel (top of bank to top of bank) and if necessary action will be taken to prevent fluid leaks. If leaks occur during work in the channel (top of bank to top of bank), FHWA, Caltrans, or their contractor will contain the spill and remove the affected soils.

13. Water drafting must not be acquired from any source that may affect salmonid habitat. Water drafting from the action area is not permitted.

14. Working waters from the project area shall not be discharged to the live stream, unless Caltrans can demonstrate that no impact to stream water temperature or other water quality parameters will occur as a result of the discharge.

15. A biologist shall monitor in-channel activities and performance of sediment control or detention devices for the purpose of identifying and reconciling any condition that could adversely affect salmonids or their habitat. If sediment run-off does occur, work activities that are the cause of the sediment shall be halted and corrective measures implemented until the sediment source is eliminated.

16. When updates to the SWPPP occur, Caltrans shall notify NMFS of these changes. Caltrans will submit a re-certified SWPPP annually to NMFS, and indicate any substantial changes within the SWPPP.

17. All necessary erosion control BMPs shall be in place by October 31 of each construction season. FHWA and Caltrans shall provide NMFS with a site tour to view the BMPs during the month of November.

18. FHWA and Caltrans shall provide NMFS with a detailed description of any proposed contractor-constructed concrete batch plant, including the location and measures to avoid impacts to stream water quality.

19. Construction work conducted outside of the June 15 to October 15 work window shall not create conditions that mobilize sediment or concentrate over-land flow from construction areas into the stream-channel network.

20. FHWA and Caltrans shall provide NMFS with the detailed plan for non-fish bearing stream realignments that are proposed. The channel realignment plan will include a detailed map of channel(s) to be realigned, methods of construction, restoration, and BMPs to be implemented to minimize sediment delivery to downstream stream reaches.

21. Prior to the completion of Willits Bypass construction, FHWA and Caltrans shall provide NMFS with a maintenance plan for the project that includes description of specific maintenance activities and the specific BMPs that will be used to avoid impacts to listed salmonids and their critical habitats.

The following terms and conditions implement **Reasonable and Prudent Measure 4** to reduce effects of pile driving on listed species.

22. Caltrans shall submit a hydroacoustic monitoring plan to NMFS that provides details of the sound monitoring that is proposed in the project proposal. The hydroacoustic monitoring plan shall be submitted for NMFS review 30 days prior to the start of pile driving actions. If the plan meets NMFS' approval, NMFS shall provide written approval and any comments within 30 days of plan submittal. If the plan does not meet NMFS' approval, NMFS shall provide a list of changes needed within 30 days of plan submittal.

23. Caltrans shall conduct hydroacoustic monitoring during pile driving events in wetted aquatic habitats upstream and downstream of de-watered stream areas .

The following terms and conditions implement **Reasonable and Prudent Measure 5** to ensure the final mitigation plan adequately compensates for potential impacts.

24. FHWA and Caltrans shall provide the NMFS with a final mitigation plan. This plan shall include specific mitigation work that Caltrans proposes to conduct. For those mitigation efforts that Caltrans is unable to propose at this time, the plan shall provide a mechanism (such as a review committee, *etc.*) for developing and approving final mitigation efforts.

The following terms and conditions implement **Reasonable and Prudent Measure 6** to provide a monitoring take of salmonids.

25. FHWA and Caltrans shall provide NMFS with a summary report within 90 days of the completion of fish relocation activities each year. The report shall include the methods used during the fish relocation efforts, location, number and species captured, number of mortalities by species, and other pertinent information related to the fish relocation activities.

26. FHWA and Caltrans shall monitor stream temperatures associated with riparian vegetation removal, and provide the data to NMFS no later than 120 days after the last day of data collection.

27. All reports or plans required for the above terms and conditions shall be sent to:

Santa Rosa Field Office Supervisor, Protected Resources Division
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404.

X. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. One or more years in advance of construction of stream crossings, FHWA and Caltrans should plant riparian vegetation along the banks of on Haehl, Baechtel, Broaddus, Mill, and Upp creeks to enhance the riparian corridor prior to the project's vegetation removal. By increasing the canopy cover in areas with sparse or no existing riparian vegetation, the project can minimize the effects of increased solar radiation on stream water temperature.

XI. REINITIATION NOTICE

This concludes formal consultation for the proposed FHWA and Caltrans Highway 101 Willits Bypass Project in Mendocino County, California. As provided in 50 CFR §402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

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B. Federal Register Citations

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70 FR 37160. National Marine Fisheries Service. Final rule: Final Listing Determinations for 16 ESUs of West Coast Salmon, and Final 4(d) Protective Regulations for Threatened Salmonid ESUs. Federal Register 70:37160-37204. June 28, 2005.

70 FR 52488. National Marine Fisheries Service. Final rule: Designation of Critical Habitat for Seven Evolutionarily Significant Units of Pacific Salmon and Steelhead in California. Federal Register 70: 52488-52586. September 2, 2005.

71 FR 834. National Marine Fisheries Service. Final rule: Endangered and Threatened Species: Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead. Federal Register 71: 834-862. January 5, 2006.

Enclosure 2

Highway 101 Willits Bypass Project

DRAFT

ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS
(Magnuson-Stevens Fishery Conservation and Management Act - EFH Consultation)

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) set forth new mandates for the National Marine Fisheries Service (NMFS), regional fishery management councils, and Federal action agencies to identify and protect important marine and anadromous fish habitat. The regional fishery management councils, with assistance from NMFS, are required to delineate essential fish habitat (EFH) in fishery management plans (FMPs) or FMP amendments for all managed species. Federal action agencies, which fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to NMFS conservation recommendations. In addition, NMFS is required to comment on any state agency activities that would impact EFH. Although the concept of EFH is similar to that of critical habitat under the Endangered Species Act, measures recommended to protect EFH are advisory, not proscriptive. The Pacific Fisheries Management Council has delineated EFH for Pacific coast salmon (PFMC 1999).

I. IDENTIFICATION OF ESSENTIAL FISH HABITAT

EFH is defined in the MSFCMA as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. NMFS regulations further define waters to include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate to include sediment, hard bottom, structures underlying the waters, and associated biological communities necessary to mean the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem; and spawning, breeding, feeding, or growth to maturity to cover a species full life cycle.

For Pacific coast salmon, the geographic extent of EFH currently being considered includes both marine and freshwater habitat. For purposes of this consultation, Pacific coast salmon EFH corresponds closely to Critical Habitat designated under the Endangered Species Act for Southern Oregon-Northern California Coasts Coast coho salmon (*Oncorhynchus kisutch*) and California Coastal Chinook salmon (*O. tshawytscha*) (64 FR 24049 and 70 FR 52488).

II. PROPOSED ACTION

The California Department of Transportation (Caltrans) and Federal Highway Administration (FHWA) propose the Highway 101 Willits Bypass to reduce delays on U.S. Route 101. Currently Highway 101 runs through the City of Willits, California. The bypass project will re-route Highway 101 around the City of Willits, providing a stable flow of traffic at 65 miles per

hour. The proposal includes the construction of a four-lane freeway that crosses the Little Lake Valley east of Willits. The bypass would begin 3.2 kilometers (km) south of Willits, where the existing Highway 101 becomes a two-lane road, and extend to about 0.6 km north of the Willits, where the new alignment would merge with the existing two-lane Highway 101. Construction would begin in 2009 and likely take four years to complete.

III. EFFECTS OF THE PROJECT ACTION

The associated biological opinion has a general description of the non-fishing related activities that directly or cumulatively, temporarily or permanently may threaten the physical, chemical, and biological properties of the habitat utilized by Pacific coast salmon and their prey within the proposed project area. The direct result of these threats is that the function of EFH may be eliminated, diminished or disrupted.

Potential impacts to salmonid habitat are described in the preceding biological opinion. Adverse effects of the proposed action on salmonid EFH may occur through dewatering and in-channel construction activities, riparian vegetation removal, and associated freeway construction work within Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet creeks, which are tributaries to the Eel River.

IV. CONCLUSION

Upon review of the anticipated effects, NMFS believes that proposed freeway construction actions are likely to cause adverse effects to Pacific coast salmon EFH.

V. EFH CONSERVATION RECOMMENDATIONS

Pursuant to Section 305(b)(4)(A) of the Magnuson-Stevens Act, NMFS recommends that the terms and conditions 7 through 21 of the preceding biological opinion's Incidental Take Statement be adopted as EFH conservation recommendations for Pacific coast salmon habitat.

VI. FEDERAL AGENCY STATUTORY REQUIREMENTS

The Magnuson-Stevens Act (Section 305(b)(4)(B)) and Federal regulations (50 CFR Section 600.920(j)) to implement the EFH provisions of the MSFCMA require Federal action agencies to provide a written response to EFH Conservation Recommendations within 30 days of its receipt. The Federal action agency included in this consultation is the Federal Highway Administration. A preliminary response is acceptable if final action cannot be completed within 30 days. The final response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on delineated EFH. If the response is inconsistent with our EFH Conservation Recommendations, it must provide an explanation of the reasons for not implementing them.

Attachment 6: Section 106 Concurrence Documents

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER,
Governor

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
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December 6, 2005

In Reply Refer To: FHWA000717A

Gene K. Fong
Division Administrator
U.S. Department of Transportation
Federal Highway Administration, California Division
650 Capitol Mall, Suite 4-100
Sacramento, CA 95814

Dear Mr. Fong:

Re: HAD-CA File #01-Men-101 K.P. 70.0/82.6 (PM 43.5/51.3) Willits Bypass Project EA 01-262000 Document # P53417.

You are continuing consultation with me regarding the above noted undertaking pursuant to 36 CFR § 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act. This aspect of the Willits Bypass Project undertaking focuses on the Modified Alternative J1T alignment and the additional studies completed on four archeological sites in the project APE, the National Register of Historic Places (NRHP) eligibility for those properties, and the determination of a finding of effect. In addition to your letter of November 7, 2005, you have submitted the following documents for my review:

● *Supplemental Historic Property Survey Report Willits Bypass Project: Site Evaluations, Finding of Effect, ESA Action Plan 03-Men-101 Willits Bypass Project EA 03-262000 PM 43.5/51.3 (KP 70.0/82.6)* (S.A. Williams, Caltrans District 3-Marysville: September 2005).

● *Phase II Investigation At Historic Archaeological Site CA-MEN-2618H (Branscomb Ranch) On State Route 101, Willits, Mendocino County 101 KP T70.0 and 82.6 (PM 42.1 and 51.3) EA: 01-262000, Contract No. 03A0574, Task Order 9, Amendment* 1 (K.M. Bartoy & R.J. Jackson, Pacific Legacy, Inc.: May 2005).

● *Phase II Investigations At CA-MEN-2645/H, CA-MEN-3037H, and CA-MEN-3190H on State Route 101, Willits, Mendocino County 01-MEN-101 KP T70.0 and 82.6 (PM 42.1 and 51.3) EA: 01-262000, Contract No. 03A0574, Task Order 9, Amendment 1* (H.S. Ballard, T. Fernandez, M.R. Bever, & R. Jackson: Pacific Legacy, Inc.: September 2004).

After reviewing your letter of November 7, 2005, and the documentation submitted in support of this undertaking, I have the following comments:

1) I concur that the documentation submitted for this undertaking is adequate regarding the identification and evaluation of historic properties pursuant to 36 CFR § 800.4.

2) I further concur that archeological site CA-MEN-2645/H is eligible for the NRHP under criterion D.

3) CA-MEN-3111H, the Northwestern Pacific Railroad, has been previously determined eligible for the NRHP under criteria A and C in an earlier consultation for this undertaking (SHPO letter of August 17, 2000).

4) I further concur that the following archeological sites are *not* eligible to the NRHP.

- CA-MEN-2618H
- CA-MEN-3057H
- CA-MEN-3190H

5) I further concur that the finding of No Adverse Effect with conditions is appropriate pursuant to 36 CFR § 800.5(b), with the implementation of the conditions outlined in: *Finding of Conditional No Adverse Effect/ESA Action Plan 03-Men-101 Willits Bypass Project EA 03-262000 PM 43.5/51.3 (KP 70.0/82.6)* (S.A. Williams, Caltrans District 3: September 2005).

Thank you for seeking our comments and for considering historic properties in planning your project. If you require further information, please contact William Soule at phone 916-654-4614 or email wsoule@parks.ca.gov.

Sincerely,

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

Attachment 7: Clean Water Act Section 404(b)(1) Alternatives Analysis

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Executive Summary

The California Department of Transportation (Caltrans) in partnership with the Federal Highway Administration (FHWA) proposes to construct a new segment of U.S. 101 around the city of Willits in Mendocino County (Figure ES-1). The need for the project is caused by the current facility within the project limits, which serves both as an interstate highway and as Main Street in the city of Willits; the facility, as a result, carries both interregional and local traffic on a surface street with curb parking and multiple side streets and driveways, resulting in congestion and delays for drivers, pedestrians, and bicyclists. The purpose of the project is to reduce delays, improve safety and achieve a level of service (LOS) of at least "C" for interregional traffic on U.S. 101 within the project limits.

All of the six build alternatives discussed in this Section 404(b)(1) Alternatives Analysis meet the project purpose and need, stated above, with construction of an access-controlled four-lane freeway that separates U.S. 101 from Willits' Main Street.

The Willits Bypass project was funded in the 1992 State Transportation Improvement Plan (STIP) and later supplemented and programmed in the 2002 STIP for $116 million by the California Transportation Commission (CTC). The Mendocino Council of Governments (MCOG) included its entire $17.3 million share of Regional Improvement Program funds to show strong local support for the project.

Since project planning began in 1962, approximately 30 alternatives have been considered as a result of public and governmental agency input and independent investigation by Caltrans staff (Map 29, Appendix A).

Seven alternatives are included in this Section 404(b)(1) Alternatives Analysis, including six build alternatives and one No Build alternative. The six build alternatives are: E3, C1T, J1T, Modified J1T, LT, and the hybrid L/C. All of the build alternatives involve construction of a four-lane freeway. Under the No Build scenario, no new freeway or highway construction would occur.

In 1994 and again in 1995, the NEPA/404 signatory agencies concurred with the purpose and need statement (Section 3) and the range of alternatives being considered in this alternatives analysis (Section 5). Alternatives J1T, Modified J1T, LT, C1T, and L/C

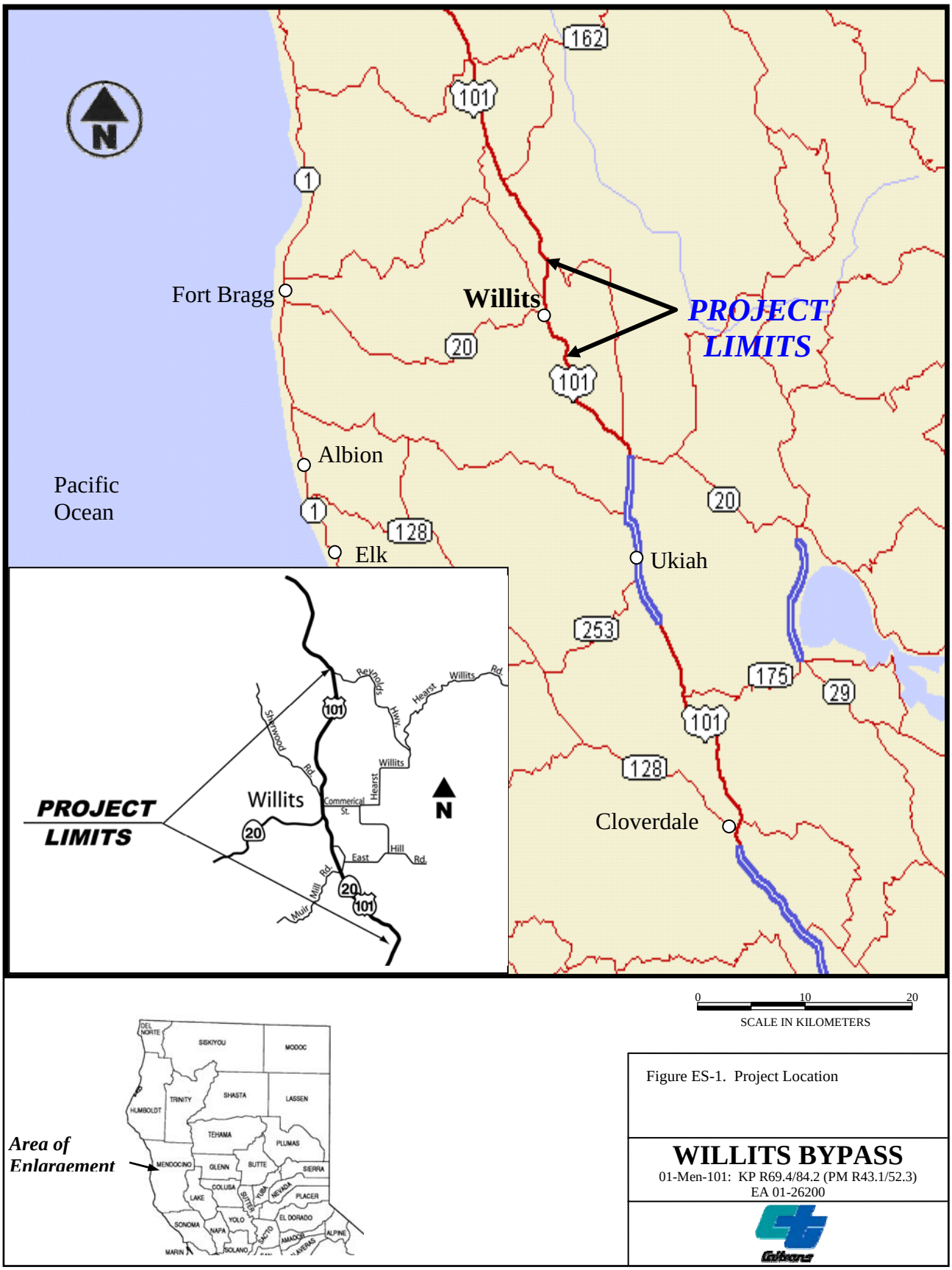

Figure ES-1. Project Location

WILLITS BYPASS

01-Men-101: KP R69.4/84.2 (PM R43.1/52.3)
EA 01-26200

would cross Little Lake Valley east of the City of Willits, and Alternative E3 would traverse the hills west of Willits (Figure 7-1 and Map 3, Appendix A). In addition, a No-Build Alternative is included in the analysis. Under the No-Build Alternative, no changes would occur, and vehicles would continue to use existing U.S. 101. See Appendix E for the complete purpose and need statement with which the signatory agencies formally concurred in 1995.

This Section 404(b)(1) Alternatives Analysis has been undertaken to determine which of the proposed alternatives is the least environmentally-damaging practicable alternative (LEDPA) to wetlands and other waters of the U.S., while meeting the project's purpose. Because selection of any of the proposed build alternatives as the preferred alternative would require a U.S. Army Corps of Engineers (ACOE) Section 404 Individual Permit, an analysis of impacts to aquatic resources and associated sensitive species for each alternative is required to comply with the Clean Water Act Section 404(b)(1) Guidelines. The U.S. Environmental Protection Agency (USEPA) (40 CFR Part 230, December 24, 1980) published these Guidelines to ensure that where projects would adversely affect aquatic resources that no other alternative exists that avoids or would have less adverse effects to those resources. Because the proposed project is not water-dependent, it is presumed that less environmentally-damaging practicable alternatives exist. Therefore, the burden is on FHWA and Caltrans as the permit applicant to clearly demonstrate compliance with the Guidelines that a less environmentally-damaging practicable alternative does not exist.

This Section 404(b)(1) Alternatives Analysis clearly demonstrates why Alternatives E3, C1T, L/C, LT, J1T, and the No Build are either not practicable or would have greater overall environmental impacts. FHWA and Caltrans have identified Modified Alternative J1T as the LEDPA.

Summary of Alternatives

The NEPA 404 signatory agencies have provided informal agreement that Alternatives E3, C1T, L/C, LT and No Build do not meet LEDPA criteria.[1] Figures ES-2 and ES-3 show the build alternatives. Table ES-1 provides a comparison of the kinds and scope of impacts of each of the alternatives under consideration.

[1] USEPA letter dated 9/9/2002 and 1/30/04; NOAA Fisheries letter dated 8/22/2002 and 1/23/04; USFWS letter, dated 11/21/2002. Verbal informal agreement at January and April 2003 Project Development Team (PDT) meetings.

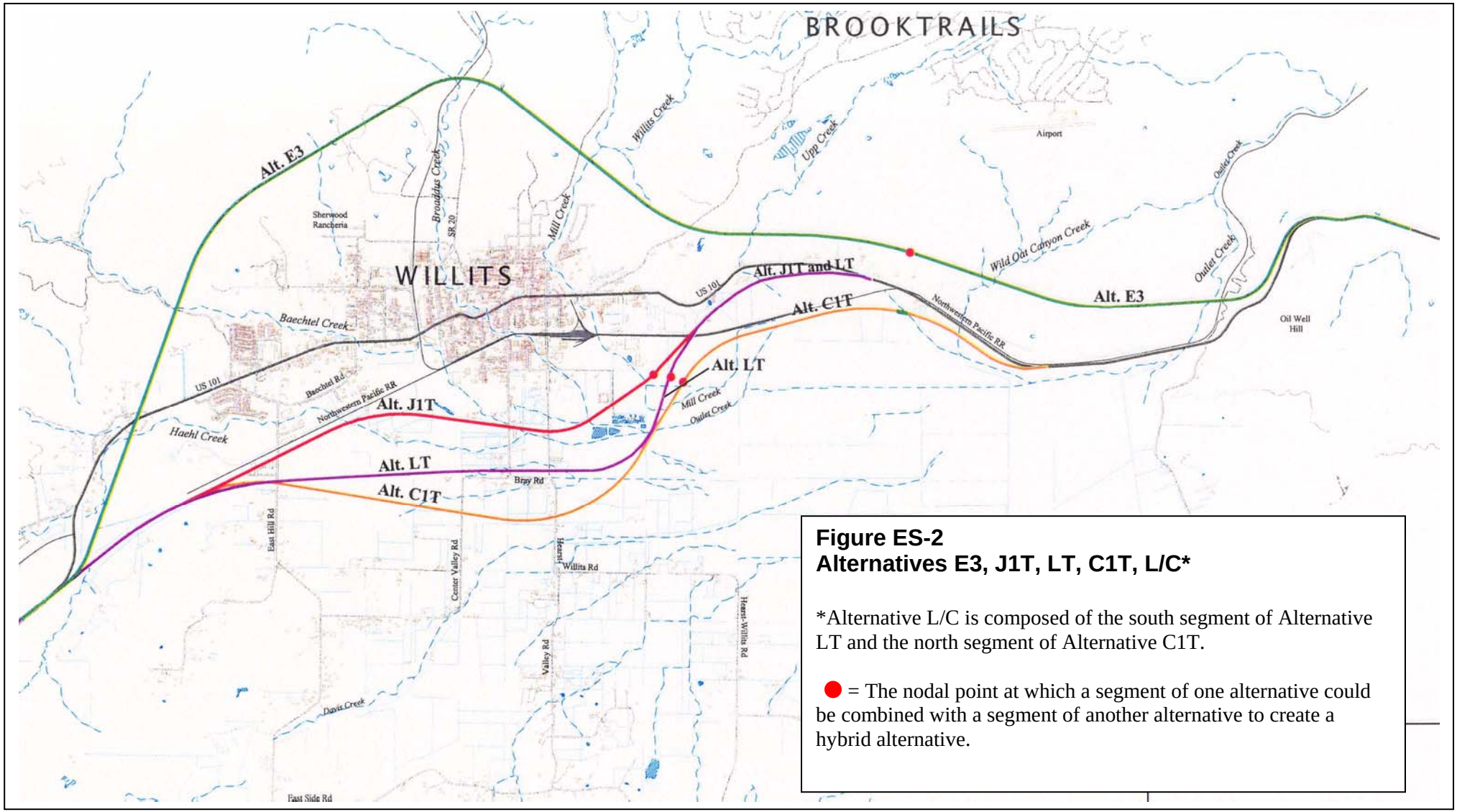

Figure ES-2
Alternatives E3, J1T, LT, C1T, L/C*

*Alternative L/C is composed of the south segment of Alternative LT and the north segment of Alternative C1T.

● = The nodal point at which a segment of one alternative could be combined with a segment of another alternative to create a hybrid alternative.

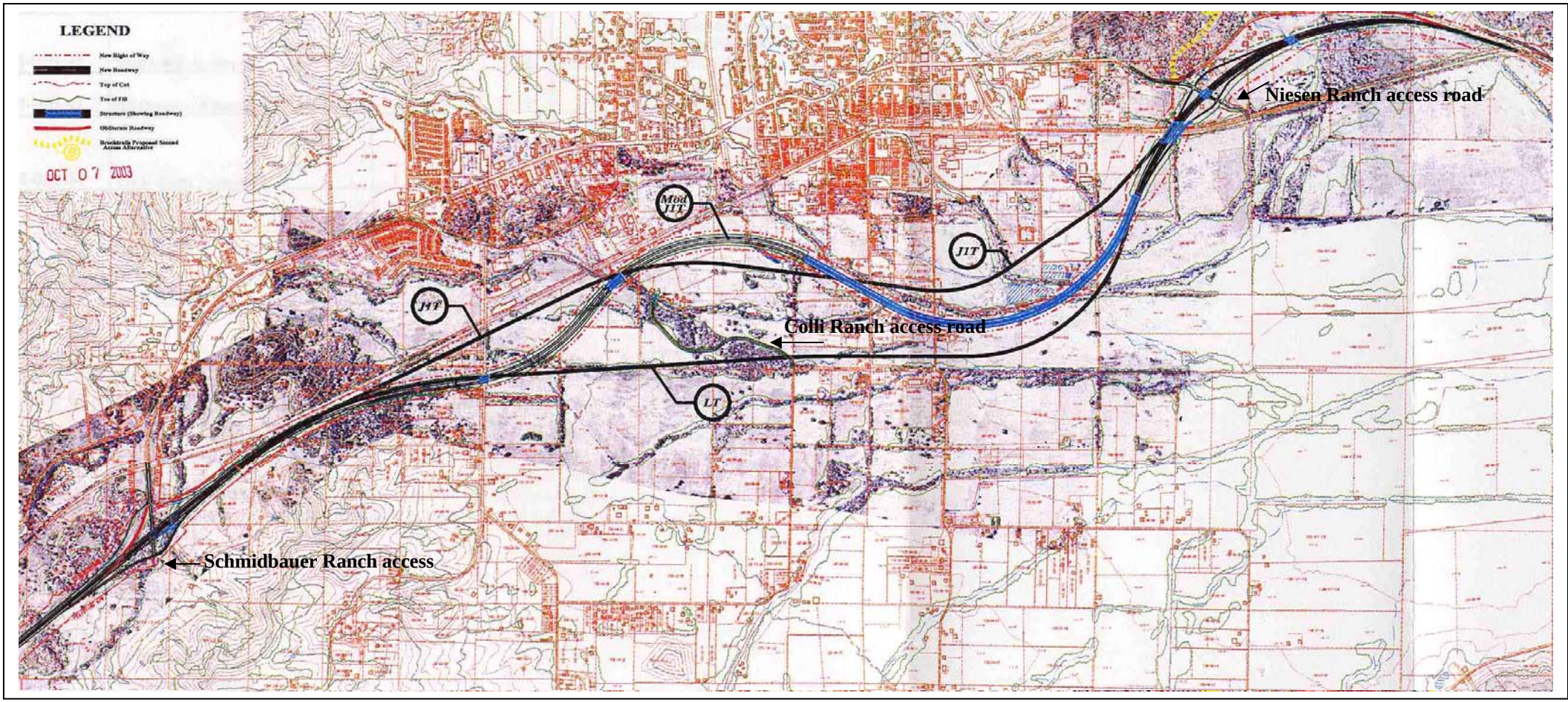

Figure ES-3. Modified Alternative J1T
(This figure also shows the centerline of Alternatives J1T and LT)

The factual determinations herein demonstrate the following conclusions for each of the build alternatives and the no build alternative:

Alternative E3

Of the build alternatives, Alternative E3 has the least direct impacts to jurisdictional wetlands and other waters of the U.S. (6.1 ha [15.1 ac]) (based on the 1998 ACOE verification)[2]. However, it would have the greatest potential indirect impact to jurisdictional aquatic resources that are habitat to federally listed species, due to the potential for large amounts of erosion-related sediments to enter major salmonid streams. Ongoing storm damage maintenance on this alternative is expected to be a major contributor to sediment loads in downstream waters that provide high quality spawning habitat for local populations of three federally-listed salmonid species (Northern California steelhead, Southern Oregon/Northern California coho salmon, and California Coastal chinook salmon).

Construction of Alternative E3 would result in the following adverse environmental effects: 1) it has the greatest potential to jeopardize the continued existence of local populations of three federally listed salmonid species; 2) it would have the largest direct impact to foraging habitat for Northern spotted owl because of this alignment's massive earthwork requirements, which could result in the removal of over 313 acres of forest habitat; 3) it has the greatest potential to degrade water quality because of highly erosive soils and extensive number of stream crossings; 4) it displaces the highest number of homes and businesses (133); 5) it has the potential to affect the highest number of archaeological sites (18); 6) it converts a large amount of Williamson Act Contract farmland (59.3 ha/146.6 ac); and 7) it would impact larger areas of upland/foothill habitats than the other alternatives, including oak woodland, a habitat type that is very

[2] See Table 7-3. The acreages of wetland impacts for Alternatives E3, C1T, L/C, LT, and J1T are based on the 1998 ACOE wetlands verification, except for access roads, which are based on the 2005 ACOE wetlands verification. Access roads do not exceed 0.9 ha/2.23 ac on any alternative. The acreage calculations for wetland impacts for Modified Alternative J1T are based on the 2005 ACOE verification. Some sites that were delineated as wetlands in the 1998 ACOE verification are no longer identified as wetlands in the 2005 ACOE verification. This is most notably the case with some riparian woodland wetland areas and some wet meadow areas which ACOE determined, in the 2005 delineation, are not subject to ACOE jurisdiction. However, the differences between the two delineations still allow for a comparable comparison of wetland impacts among the alternatives.

difficult to replace. In addition, Alternative E3 would have growth inducing impacts because of its proposed third interchange at S.R. 20.

Further, Alternative E3 is not a practicable alternative because it cannot be accomplished "within the financial resources that could reasonably be made available and it is [not] feasible from the standpoint of technology and logistics." (Guidance Papers 1994:12). Specifically, Alternative E3 is not practicable because: 1) it requires 12 million cubic yards of roadway excavation during construction; 2) even with specialized foundation treatments, specialized cut slope and fill slope design, mechanically reinforced embankments, stabilization trenches, catchment areas, and specialized subsurface drainage techniques, the potential for unpredictable landslides on the highly erosive soils on this alignment would remain high; 3) the highly unstable soils would require ongoing maintenance; and 4) the high estimated cost ($301 million in 2002 U.S. dollars) to construct Alternative E3 makes it infeasible

Alternatives C1T and L/C

Because the northern section of Alternatives C1T and L/C is shared and because the northern segment is the location of the majority of adverse impacts due to these alternatives, the analysis of Alternatives C1T and L/C is combined.

Both Alternatives C1T and L/C are practicable because they can be accomplished "within the financial resources that could reasonably be made available and [they are] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12), however, these two alternatives would result in severe impacts to wetlands and other waters of the U.S. and to federally listed salmonid species.

Alternatives C1T and L/C have the greatest direct impact to jurisdictional wetlands and other waters of the U.S. of all the build alternatives: 52.7 ha (130.1 ac) for Alternative C1T and 48.5 ha (119.8 ac) for Alternative L/C. Both alternatives would require approximately 2000 m (1.2 miles) of creek realignment.

Alternatives C1T and L/C would result in the following adverse environmental effects: 1) The extensive creek realignment would result in adverse impacts to habitat for the three federally listed salmonids and critical habitat for coho salmon; 2) direct impacts to Baker's meadowfoam, a federal species of concern and a State-listed rare species (three populations / 1.3 ha (3.2 ac) on Alternative C1T and two populations / 1.2 ha (3.0 ac) on

Alternative L/C[3]); 3) loss of riparian woodland habitat that supports special-status wildlife species including yellow warbler, yellow-breasted chat, and white-tailed kite; 4) habitat fragmentation, which may adversely affect winter waterfowl use; 5) Alternative C1T would impact 62.6 ha (154.6 ac) of farmland currently enrolled in Williamson Act Contracts; 6) both alternatives extend furthest to the east into Little Lake Valley, resulting in greater habitat fragmentation than Alternatives J1T or Modified J1T.

Alternative LT

Alternative LT is practicable because it can be accomplished "within the financial resources that could reasonably be made available and [it is] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12), however, Alternative LT would have high overall impacts compared to the remaining build alternatives.

Alternative LT would directly impact approximately 36.2 ha (89.3 ac) of jurisdictional wetlands and other waters of the U.S.

Alternative LT also would result in the following additional adverse impacts: 1) would result in the fragmentation of the largest stand of Valley oak riparian woodland in the valley; and 2) extends further into the valley than Alternatives J1T and Modified J1T, resulting in not only habitat fragmentation but possible growth-inducement. In addition, Alternative LT would require approximately 2.4 million cubic meters (3.1 million cubic yards) of borrow material; Alternatives J1T and Modified J1T, on the other hand, would require 0.5 million cu m (0.6 million cu yds) less of fill material, which would represent a reduction in loss of suitable foraging habitat for Northern spotted owl, if Oil Well Hill is the only borrow site used for the project.

Alternative J1T

Alternative J1T is practicable because it can be accomplished "within the financial resources that could reasonably be made available and [it is] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12).

Alternative J1T has the least direct impacts to jurisdictional wetlands and other waters of the U.S. of the valley alternatives with 27.1 ha (67.0 ac) of direct impacts to this resource.

[3] Baker's meadowfoam impacts based on 1991-1992 surveys.

However, Alternative J1T would result in the following adverse impacts: 1) construction of Alternative J1T through the local and regional park/recreation complex would result in adverse impacts to "human use characteristics"/Section 4(f) resources and 2) construction of the alternative would result in removal of the city's only business park and the loss of businesses that would not or could not relocate in Willits.

The NEPA/Section 404 Integration Process Guidance Papers explains that when evaluating harm to non-aquatic (i.e., Section 4(f)) resources versus jurisdictional aquatic resources is that the alternatives selection process evaluates reasonable and prudent alternatives based on the "net harm" (after mitigation) of the alternative to Section 4(f) properties or other environmental resources. Feasible mitigation is not available to reduce or compensate for impacts to the Section 4(f) resource or the business park in the project area by Alternative J1T, so Caltrans and FHWA coordinated extensively with local government and community representatives and NEPA 404(b)(1) agencies to develop the Modified Alternative J1T to avoid the potential Section 4(f) resource and the business park (see Section 7.4.4.5 and 7.4.4.6).

Modified Alternative J1T

Modified Alternative J1T is practicable because it can be accomplished "within the financial resources that could reasonably be made available and [it is] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12).

Modified Alternative J1T would result in direct impacts to 25.9 ha (64.0 ac) of jurisdictional wetlands and other waters of the U.S. (2005 Corps approved wetlands delineation).

Modified Alternative J1T minimizes impacts to jurisdictional wetlands and other waters of the U.S., compared to Alternatives E3, C1T, L/C, and LT, while minimizing impacts to sensitive species. While Modified Alternative J1T would impact approximately 3.8 ha (9.4 ac) more wetlands than Alternative J1T, it avoids human use characteristics/Section 4(f) resources, and other environmental resources that would be impacted by the other alternatives. The proposed fill activity from Modified Alternative J1T would not result in significant adverse impacts on human health and welfare, including effects on aesthetic, educational, historical, recreational, and/or scientific values. Modified Alternative J1T would not reduce or eliminate the uses of the regional recreational/park complex, including the skate park. Caltrans and FHWA coordinated extensively with local government and community representatives and NEPA 404(b)(1) signatory agencies to

develop the Modified Alternative J1T to avoid the Section 4(f) resource and business park that would be impacted by Alternative J1T. The proposed placement of fill will comply with the Guidelines, to the extent practicable, following implementation of appropriate mitigation and monitoring measures to minimize adverse effects on the aquatic ecosystem.

No Build Alternative

Although the No Build alternative would have no impact to wetland resources, traffic on existing U.S.101/Main Street is projected to increase in the future based on regional transportation demands, which would result in continued delays and safety concerns for interregional and local traffic on U.S. 101 within the City of Willits. The No Build alternative does not meet the purpose and need of the project to alleviate current and projected traffic demand and safety concerns on U.S. 101 within the project limits.

Summary and Conclusion

In 1994, Caltrans initiated the NEPA/404 Integration process for the project and in 1995, Caltrans, FHWA and NEPA/404 signatory agencies agreed to the purpose and need statement for the project and concurred with the modal choice statement, and the range of alternatives to be studied. Engineering and environmental studies continued on several alternatives through 1994. Then, as a result of the 1995 storms, resources were redirected to seismic safety and storm damage restoration projects, and bypass project development was suspended until 1998. In 1998, with new funding and resources allocated to the project, studies resumed on the alternatives approved by the NEPA/404 signatory agencies.

Throughout project development, a range of reasonable alternatives that potentially could meet the stated project purpose and need were considered by the Project Development Team (PDT), the Willits Technical Advisory Groups (TAG), and the signatory agencies. Alternative alignments were formulated and studied. Many of the alternatives studied had a number of alignment variations resulting from different interchange locations and combinations. See Table ES-2 below. Many of the alternatives that were considered have been eliminated, leaving a reasonable range of feasible alternatives considered in this alternatives analysis.

The NEPA/Section 404 Integration Process Guidance Papers explains that when evaluating harm to non-aquatic resources (such as Section 4(f) resources) versus jurisdictional aquatic resources is that the alternatives selection process evaluates reasonable and prudent alternatives based on the “net harm” (after mitigation) of the

alternative to Section 4(f) properties or other environmental resources. Feasible mitigation is not available to reduce or compensate for impacts to the Section 4(f) resource or the business park in the project area, so Caltrans and FHWA coordinated extensively with local government and community representatives and NEPA 404(b)(1) agencies to develop the Modified Alternative J1T to avoid the potential Section 4(f) resource and the business park (see Sections 7.4.4.5 and 7.4.4.6).

This alternatives analysis demonstrates why Caltrans and FHWA need to discharge fill material to waters of the U.S. in order to construct the Willits Bypass project. The analysis also demonstrates that Caltrans and FHWA have considered many alternatives to achieving the basic and overall project purpose. In this analysis, Caltrans and FHWA identify one alternative – Modified Alternative J1T – as the LEDPA.

Table ES-1
Section 404 (b)(1) Alternatives Analysis Matrix

Project Elements/Environmental Resource	E3	C1T	LT	L/C	J1T	Mod J1T LEDPA	No Build
Wetland Impacts[1]	6.1 ha(15.1 ac) [2]	52.7 ha(130.2 ac)[2]#	29.9 ha (73.8 ac)[2]	48.5 ha (119.9 ac)[2]#	22 ha (54.6 ac)[2]	25.9 ha (64.0 ac)[3]	0
Aquatic habitat: Riffle and Pool Complexes[4]	High	Moderate	Low-moderate	Low-moderate	Low-moderate	Low-moderate	low
Critical and essential fish habitat (crossings/creek realignment)[5]	8 / 880 m#	7 / 2,000 m#	4 / 0	7 / 2,000 m#	8 / 0	8/ 0	0
Water Quality Impacts	High#	High#	Mod	High#	Mod	Mod	Low
Earthwork/Borrow (cubic m/cubic yd in millions) -- for Alt. E3 (which involves excavation, no borrow), amount represents loss of suitable foraging habitat for NSO; for valley alternatives, amounts represent loss of suitable foraging habitat for NSO only if Oil Well Hill is sole borrow site.	9.1 / 12#	1.8 / 2.4	2.4 / 3.1	2.1 / 2.7	1.9 / 2.5	1.9/2.5	0
Erosion	High#	Low	Low-mod	Low-mod	Low-mod	Low-mod	Low
Potential Adverse Impacts (*permanent and direct*) to numbers of Special Status Fish Species (coho, chinook, steelhead)	3#	3#	0	3#	0	0	0
Potential Adverse Impacts to #s of Special Status Wildlife Species (NSO, red tree vole, foothill yellow-legged frog, northwestern pond turtle)	4#	3	3	3	3	3	0
Baker's meadowfoam[7] ha (ac)	--	1.3 (3.2)	0.2 (0.5)	1.2 (3.0)	1.6 (4.0)	0.2 (0.5)	0

Table ES-1
Section 404 (b)(1) Alternatives Analysis Matrix

Project Elements/Environmental Resource	E3	C1T	LT	L/C	J1T	Mod J1T LEDPA	No Build
Oak Woodland (upland) Impact (ha/ac)	22.7/56.1#	1.6/4.0	1.6/4.0	1.6/4.0	1.3/3.2	1.6/4.0[7]	0
Riparian Habitat Impact (ha/ac) Includes Valley oak riparian woodland on Alternative LT	3.0 /7.3	16.1 /39.8	4.7 /11.6	13.8 /33.9	4.54 (11.5)	4.24 (10.2)	0
Cultural resources sites	18	3	3	3	3	3	0
Williamson Act Contract (ha/ac)	59.3 (146.6)#	62.6 (154.6)#	28.1 (69.5)	60.3 (148.8)#	20.7 (51.2)	20.8 (51.4)	0
Farmland Conversion Impact Rating	170	153	155	153-155	158	161.5	0
Residential Relocation	114#	3	7	2	13	10	0
Business Relocation	19	0	5	1	20	10	0
Human Use Characteristics/ Section 4(f) Resource: Park/Recreation Complex	0	0	0	0	1#	0	0
Industrial Park	0	0	0	0	1#	0	0
Affordable Housing removed	76#	1	2	1-2	3	3	0
Project Cost estimated (millions $) (2002 dollars)	$301	$128	$130	$130	$151	$162	0

Table ES-1
Section 404 (b)(1) Alternatives Analysis Matrix

Project Elements/Environmental Resource	E3	C1T	LT	L/C	J1T	Mod J1T LEDPA	No Build

NOTES

1 Impacts include access roads
2 Based on 1998 Corps-verified wetlands delineation. Also includes access roads based on 2005 Corps verified delineation: 0.4 ha (0.9 ac) in access road for Alternatives CT, L/C, and LT; and 1.8 ha (4.4 ac) in access roads for Alternatives J1T and Modified J1T.
3 Based on 2005 Corps-verified wetlands delineation.
4 Refer to "Instream Habitat at the Proposed Willits Bypass (Modified Alternative J1T) Crossings, Spring 2004," Appendix I.
5 The proposed interchange at the south end of the project has been redesigned and will no longer require the realignment of 275 m (902 feet) of Haehl Creek, which will avoid potential impacts to salmonids in that area.
6 Baker's meadowfoam populations based on 1991-1992 survey data. URS Corporation America conducted surveys of Baker's meadowfoam in 2003 for Alternatives J1T and LT that identified approximately 3.86 acres of Baker's meadowfoam habitat in the Quail Meadows Interchange area that could be directly impacted. Modified Alternative J1T would affect the same area, but would avoid the Colli Ranch population Alternative J1T would impact.
7 Acreage is approximate. Upon LEDPA concurrence, Caltrans will conduct surveys to determine the number of each species of oak the project would impact.

Note: Greyed areas indicate highest impacts

 # Impacts that would be difficult or not possible to mitigate.

Table ES-2. Alternatives Considered Throughout Project Development

Alternatives/*Timeframe*	Comments
In 1988, Alternatives A through E and the No Build were presented to the public.	
Alternatives A, A1, A2, A3 & A4. CTC adopted Alternative A as the original alignment in 1962. Versions of Alternative A known as A1 - A4 identified different combinations of interchange locations.	The PDT rejected Alternative A due to the substantial potential impacts to wetlands and other sensitive natural habitat. Alternative A also required time-consuming and extensive construction techniques to address embankment settlement and consolidation caused by poor soil conditions in northern Little Lake Valley.
Alternative B. In an effort to modify Alternative A to avoid wetlands, Alternative B diverged from Alternative A beginning just north of the crossing of Hearst-Willits Road, then veered to the east and skirted the eastern limits of Little Lake Valley.	Preliminary investigations revealed that Alternative B, rather than having lower wetland impacts, actually had higher wetland impacts than Alternative A. In addition, a later alignment, Alternative K, better represented the intent of Alternative B.
Alternative C. Similar to Alternative B, Alternative C diverged from Alternative A beginning just north of the crossing of Hearst-Willits Road. From there, Alternative C skirted the west side of Little Lake Valley and rejoined Alternative A and the existing highway on Oil Well Hill. Alternative C1T developed from Alternative C. Versions of Alternative C known as C1-C4 identified different combinations of interchange locations.	**Alternative C1 was retained for further study.** The PDT rejected other versions of Alternative C because of the substantial potential impacts to wetlands and due to the high cost and growth-inducing impacts of additional valley interchanges. Mendocino County requested Caltrans to investigate the Alternative C/J in 1993. This was a combination of what is now the south portion of C1T and the north portion of J1. Most of Alternative J1 north of Quail Meadows is no longer under consideration, and hence, the C/J alternative is no longer considered viable.
Alternative D traversed the hilly terrain west of Willits and was similar to E3 but closer to Willits.	The PDT rejected Alternative D based on its similarity to Alternative E and due to substantial potential impacts to wetlands and riparian habitat along the north end of Little Lake Valley.
Alternative E ran through the hills near Willits cemetery. The north end connected to Alternative A after traversing the hills west of the old Louisiana Pacific mill site. Versions of Alternative E known as E1-E3 had different combinations of interchange locations.	**Alternative E3 was retained for further studies.** The PDT rejected other versions of Alternative E3 due to potential impacts to residential development and the estimated higher cost for interchanges at Wild Oat Canyon and at Oil Well Hill.
In 1989, additional scooping sessions resulted in the addition of Alternatives F through R	

Alternatives/*Timeframe*	Comments
Alternative F proposed relocating the Northwestern Pacific Railroad tracks through a portion of Willits and using the resulting right of way for a low speed expressway.	The PDT rejected Alternative F due to its similarity with Alternative O and due to the high cost of relocating railroad tracks.
Alternative G describes many variations of alternatives from the Project Study Report that connected with US 101 south of Oil Well Hill and north of Haehl Creek.	The PDT rejected Alternative G because there was no cohesive alternative described from the public scoping sessions. Many of the proposals loosely defined under this alternative were studied as variations of other alternatives.
Alternative H came out of the scoping sessions as an alignment that would relocate U.S. 101 at least 8 miles west of Willits to remove noise and air pollution from town.	The PDT rejected this alternative due to the high costs and because it was outside the scope of the study area.
Alternative I was a tunnel located roughly in the Alternative E corridor. It was suggested as a means of reducing impacts to Willits Cemetery and the other properties along the proposed D/E alignments.	With an estimated cost of $250 million to $300 million for the tunnel alone, the PDT rejected this alternative.
Alternatives J1 and J2 followed the railroad tracks after leaving existing U.S. 101 at the south end of Willits, skirted the rodeo grounds, skirted the sewage plant to the east, and headed back toward U.S. 101, conforming just north of the Willits northerly city limits.	The PDT rejected J2 because it resulted in poor service in terms of interchange locations and could have growth-inducing impacts. **The PDT retained Alternative J1 for further studies. Alternative J1 was truncated to become J1T.**
Alternatives K and "old" L were easterly wetland avoidance alternatives located in the hills to the east of Reynolds Highway. Alternative K2 followed K for about the first 1.2 miles, then continued north along the base of the hills on the east side of the valley.	With concurrence from the signatory agencies, the PDT eliminated both alternatives. Constructing facilities on the east side of the valley would result in poor service in terms of interchange locations. Studies indicated that both alternatives generated unavoidable impacts to wetlands, archaeological resources, and the destruction of millions of Baker's Meadowfoam plants, a listed species of concern and listed as rare under the California Plant Protection Act. Both alternatives required deep cuts in active landslide areas and traversed material of questionable stability.
Alternative M offered an expressway through Willits skirting the wastewater treatment plant and corporation yard and widened existing U.S. 101 at the north end of the project to four lanes.	Based on its similarity with Alternative J, and because of safety concerns and whether an expressway could meet the project's purpose and need, the PDT dropped Alternative M.

Alternatives/*Timeframe*	Comments
Alternative N departed from U.S. 101 near Holland's Lane, then skirted the east side of the Mormon Church property crossing Haehl Creek, passing over East Hill Road and the railroad tracks, then paralleled the tracks with a two lane roadway through Willits.	A portion of Alternative N included four lanes with turn pockets and a portion included a continuous left turn lane. The PDT rejected this alternative based on its similarity to Alternative O.
Alternative O was similar to Alternative N, paralleling the Northwestern Pacific Railroad tracts. Alternative O proposed a four-lane boulevard expressway that continued beyond the old truck scales and railroad crossing north of Willits.	The PDT rejected this alternative due to substantial potential impacts to multi-dwelling residential units and potential impacts to Section 4(f) eligible properties.
Alternative P was a couplet through Willits. A couplet is a pair of one-way city streets with traffic running in opposite directions usually separated by a city block.	A preliminary traffic analysis revealed that this alternative would operate poorly because of the substantial out-of-direction travel it required. Citing the failure to meet project objectives of providing a safe and efficient highway, the PDT rejected this alternative.
Alternative Q involved a concept of two-lane routes with increased railroad use.	The modal analysis indicated a need for a highway solution rather than rail and, citing failure to meet project objectives of providing a safe and efficient highway, the PDT rejected this alternative.
Alternative R was a couplet through Willits. The alignment identified Main Street as the northbound lanes and suggested southbound lanes to the west of U.S. 101.	Like Alternative P, this alternative had widely separated north/southbound legs that required out-of-direction travel. Citing the failure to meet project objectives of providing a safe and efficient highway, the PDT rejected this alternative.
In 1992, the Transportation System Management (TSM) Alternative was requested for study by members of the TAG and PDT. The same year, Willits Environmental Center requested study of a two-lane alternative to reduce environmental impacts.	
Alternative TSM was a non-freeway alternative that would parallel existing U.S. 101/Main Street within Willits.	The TSM alternative was eliminated because it did not meet the purpose and need of the project and would result in high overall adverse impacts: removal of 140 residential units; relocation of 28 commercial and industrial business (including one utility which, alone, would cost an estimated $25 million to relocate); insufficient housing in Willits for the large number of residents who would be displaced by the TSM alternative; would result in unavoidable adverse impacts to eligible historic architectural properties, including numerous structures within the Willits Historic District; increased noise, increased traffic

Alternatives/*Timeframe*	Comments
	volumes, reduction in parking supply, and reduced access in the vicinity, thus adversely impacting the existing character of the area.
Two-lane alternative	A two-lane alternative was eliminated from consideration because it would not meet the purpose and need of the project. It would not result in a considerable reduction in biological impacts, because of engineering and design requirements such as median, shoulders, merge lanes, ramps, and interchanges.
In 1993, Alternatives K2 and a "new" L were added.	
Alternative K2 was added in 1993 at request of USEPA.	With concurrence from the signatory agencies, the PDT eliminated Alternative K2. Constructing facilities on the east side of the valley would result in poor service in terms of interchange locations. Studies indicated that the alternative generated unavoidable impacts to wetlands, archaeological resources, and the destruction of millions of Baker's Meadowfoam plants, a listed species of concern and listed as rare under the California Plant Protection Act. .
The "new" Alternative L is a center valley alternative that avoids large wetland impacts along its northern half by conforming to the alignment of the existing highway and railroad.	**The PDT retained Alternative L for further studies. Alternative L, which continued to a point on Oil Well Hill, was later truncated to become LT.**
May 26, 1994	Signatory agencies met with Caltrans and FHWA and agreed to the project purpose and need statement, modal choice, and range of alternatives including Alternatives C1, J1, L, E3, K, K2, TSM, and No Build. Formal concurrence letters were submitted by signatory agencies in 1995 (Appendix F).
1999	Signatory agencies concurred with eliminating Alternatives K and K2 (explained above under each alternative).
2001	Signatory agencies concurred with truncating, or shortening, Alternatives C1, J1, and L to create Alternatives C1T, J1T, and LT (it was not feasible from an engineering standpoint to shorten Alternatives E3 or TSM); and they did not object to elimination of Alternative TSM.

Alternatives/*Timeframe*	Comments
2003	Signatory agencies expressed their positions that Alternatives C1T, L/C, and LT do not meet LEDPA criteria and that Alternative J1T could meet LEDPA criteria with modifications. The signatory agencies concurred that Alternative E3 does not meet LEDPA criteria. June 12, 2003, signatory agencies suggested developing modifications to Alternative J1T to achieve an overall reduction in environmental impacts. After additional coordination with and support from signatory agencies, local government, and other stakeholders, Caltrans began formal studies of Modified Alternative J1T.

1 Introduction

The California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) are proposing a highway bypass around the City of Willits in Mendocino County. The project is being proposed to address operational problems due to the current facility being used as both an interregional through route and a local main street in Willits. Several alternatives have been considered for the project, including five alternatives that are examined in the Draft EIS/EIR. Alternatives E3, J1T, Modified J1T, LT, C1T, and L/C would involve the construction of a four-lane freeway. Under the No Build alternative, no new freeway or highway construction would take place.

Subsequent to public circulation of the Draft EIS/EIR and Draft Alternatives Analysis, Caltrans, FHWA, the NEPA/404 signatory agencies, and local government worked together on modifications to Alternative J1T that would reduce impacts to community resources while minimizing impacts to wetlands and other Waters of the U.S. Modified Alternative J1T is described in Section 5. A Clean Water Act Section 404(b)(1) alternatives analysis of Modified Alternative J1T is included here in Section 7.6.

2 Regulatory Framework[4]

The proposed project is subject to Section 404 of the Clean Water Act (CWA). The objective of the Clean Water Act (CWA) is to restore and maintain the physical, chemical, and biological integrity of the nation's waters, including wetlands, through the elimination of discharges of pollutants, which includes dredged and fill materials. Each of the build alternatives under consideration would require a U.S. Army Corps of Engineers (ACOE) Section 404 Individual Permit under the Clean Water Act for discharging or placing fill material into wetlands and other waters of the United States. Pursuant to the 404(b)(1) Guidelines, Caltrans and FHWA must clearly demonstrate that the proposed discharge is unavoidable and is the LEDPA. Failure to do so as required under EPA's 404(b)(1) Guidelines (40 CFR 230) may result in permit denial.

The Environmental Protection Agency's 404(b)(1) Guidelines (40 CFR 230) are the substantive environmental criteria used in evaluating permit applications to the U.S. Army Corps of Engineers to discharge dredged or fill material into waters of the United States, including wetlands. Under the Guidelines, a primary screening mechanism to determine the necessity of permitting a discharge of dredged or fill material is the analysis of practicable alternatives [see 40 CFR 230.10(a)]. The Guidelines prohibit all discharges of dredged or fill material into regulated "waters," including wetlands, unless a discharge, as proposed, constitutes the LEDPA that will achieve the basic project purpose.

The Guidelines recognize that certain areas regulated by the CWA ("special aquatic sites") are deserving of special protection because of their ecological significance and contributions to the overall health or vitality of an ecosystem of a region. "Special aquatic sites" include wetlands, mudflats, coral reefs, riffle-and-pool complexes, vegetated shallows, and sanctuaries and refuges. Special aquatic sites in the project area include wetlands and riffle-and-pool complexes. Because the proposed project is not water-dependent and proposes to discharge dredged or fill material into a special aquatic site, it is subject to the Guidelines' regulatory presumption that a less environmentally damaging practicable alternative exists, unless the permit applicant (Caltrans and FHWA) can clearly demonstrate otherwise. If the presumption is not clearly rebutted, no permit may be issued for the proposed project.

[4] This discussion is taken largely from Yocom et al., 1989.

This alternatives analysis was prepared according to the Guidelines, which outlines the following discharge restrictions:

> 40 CFR 230.10(a): A discharge is not allowed if there is a practicable alternative that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences;
>
> 40 CFR 230.10(b)(1): The alternative must not cause or contribute to violations of any applicable State water quality standards;
>
> 40 CFR 230.10(b)(2): The alternative may not violate any applicable toxic effluent standard or prohibition under Section 307 of the Act;
>
> 40 CFR 230.10(b)(3): The alternative must comply with the Endangered Species Act (ESA) and not jeopardize the continued existence of species listed as endangered or threatened under the 1973 ESA;
>
> 40 CFR 230.10(c): No discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of waters of the U.S. Under the Guidelines, effects contributing to significant degradation considered individually or collectively, include:
>
> 1. Significantly adverse effects of the discharge of pollutants on human health or welfare, including but not limited to effects on municipal water supplies, plankton, fish, shellfish, wildlife, and special aquatic sites.
> 2. Significantly adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent on aquatic ecosystems, including the transfer, concentration, and spread of pollutants or their byproducts outside of the disposal site through biological, physical, and chemical processes;
> 3. Significantly adverse effects of the discharge of pollutants on aquatic ecosystem diversity, productivity, and stability. Such effects may include, but are not limited to, loss of fish and wildlife habitat or loss of the capacity of a wetland to assimilate nutrients, purify water, or reduce wave energy; or
> 4. Significantly adverse effects of discharge of pollutants on recreational, aesthetic, and economic values.
>
> 40 CFR 230.10(d): The alternative must include appropriate and practicable steps to minimize adverse impacts on the aquatic ecosystem.

Under the terms of the NEPA/404 MOU, FHWA and Caltrans agree to request written preliminary agreement from ACOE and USEPA that the final EIS NEPA preferred alternative is the LEDPA. ACOE will make findings of compliance or non-compliance with the discharge restrictions listed above, based on the potential impacts on physical and

chemical characteristics of the aquatic ecosystem and potential impacts on special aquatic sites (Subparts C-G of the Guidelines).

This alternatives analysis demonstrates why Caltrans and FHWA need to discharge fill material to waters of the U.S. in order to construct the Willits Bypass project. The analysis also demonstrates that Caltrans and FHWA have considered many alternatives to achieve the basic and overall project purpose. In this analysis, Caltrans and FHWA identify one alternative – Modified Alternative J1T – as the LEDPA.

3 Purpose and Need for the Project

In 1994, Caltrans initiated the NEPA/404 Integration process for the proposed Willits Bypass project, pursuant to the guidelines of the 1994 Memorandum of Understanding (1994 MOU)[5], and in 1995, Caltrans, FHWA and NEPA/404 signatory agencies concurred with the project's purpose and need statement, which sets forth the criteria for evaluating project alternatives; the modal choice; and the range of alternatives to be studied. Engineering and environmental studies continued on several alternatives through 1994. Then, as a result of the 1995 storms, resources were redirected to seismic safety and storm damage restoration projects, and bypass project development was suspended until 1998. In 1998, with new funding and resources allocated to the project, studies resumed on the alternatives approved by the NEPA/404 signatory agencies. The following list documents the points and dates of signatory agency concurrence:

- In 1994, the signatory agencies concurred on modal choice of four-lane freeway, purpose and need statement, and range of alternatives including Alternatives C1, J1, L, E3, K, K2, TSM, and No Build (May 26, 1994 meeting attended by Caltrans, FHWA, and signatory agencies; and documented in letters from USEPA 4/13/95; USACE 3/20/95; NOAA Fisheries 3/15/95; and USFWS 3/24/95; in addition, USACE concurred with eliminating the TSM alternative from further consideration if Caltrans determined it did not meet the project purpose and need).

- In 1999, the signatory agencies agreed to a narrowed range of alternatives to consider in the draft environmental document, including Alternatives C1, J1, L, E3, TSM, and No Build (documented in letters from USEPA 4/27/99; USACE 4/19/99; NOAA Fisheries 5/14/99; and USFWS 5/6/99).

- In January 2001, the signatory agencies concurred with Caltrans' proposal to truncate, or shorten, Alternatives C1, J1, and L to create Alternatives C1T, J1T, and LT (it was not feasible from an engineering standpoint to shorten Alternatives E3 or TSM). (January 2001, Caltrans telephone conversations with signatory

[5] The 1994 MOU implements a policy to improve coordination between agencies and to integrate National Environmental Policy Act (NEPA) and Clean Water Act Section 404 procedures.

agencies; and February 22, 2001, full Project Development Team meeting attended by signatory agencies)

- In 2001, Caltrans and FHWA determined that the TSM alternative does not meet the purpose and need for the project and none of the signatory agencies expressed concern over the elimination of the TSM alternative from further analysis (April 2001, Caltrans telephone conversations with signatory agencies).

Signatory agency letters and other supporting documentation are included in Appendix F.

The following discussion of purpose and need is consistent with the 1995 NEPA/404 purpose and need statement agreed upon by the signatory agencies.

3.1 Need For Project

U.S. 101 is an important route for interstate and interregional travel and is considered the economic lifeline of California's North Coast, because it is the principal arterial route for people and goods between the San Francisco Bay Area and the greater Eureka-Arcata area. The need for the project is caused by the current facility within the project limits, which serves both as an interstate highway and as Main Street in the city of Willits; the facility, as a result, carries both interregional and local traffic on a surface street with curb parking and multiple side streets and driveways, resulting in congestion, and delays for drivers, pedestrians, and bicyclists. Travel through developed areas on congested surface streets, in the project area, increases interregional travel times and transportation costs.

Because U.S. 101 also serves as Main Street in Willits and is the only continuous north/south street traversing the city, it must accommodate nearly all local traffic traversing Willits as well as all interregional traffic. Traffic congestion has been a concern in Willits for a number of years, and it is becoming more prevalent as traffic volume increases. The proposed project is needed to respond to a number of deficiencies that exist on the current facility. These problems are discussed in detail in Appendix E purpose and need for the Project.

Figure 3-1. Existing U.S. 101 in Willits

A long queue of commercial trucks and automobiles crawls through Willits, while bicyclists and pedestrians wait for an opportunity to safely cross congested U.S. 101, which also serves as Willits' Main Street.

3.2 Purpose of the Project

Recognizing the importance of U.S. 101 for the interregional movement of people and commercial products, the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) propose to construct a new segment of U.S. 101 that would bypass Willits. The NEPA/404 signatory agencies agreed that the purpose of the project is to

> reduce delays, improve safety and achieve a level of service (LOS) of at least "C" for interregional traffic on Route 101 within the project limits in the vicinity of the City of Willits in Mendocino County. . . The project is proposed due to a recognition that increased congestion, delay and accidents will occur as traffic

volumes increase over time as a result of local development and increased interregional traffic volumes, if the project is not built.[6]

The project is not dependent on waters of the U.S. to fulfill its basic purpose, yet it proposes to discharge fill material into a special aquatic site. This alternatives analysis, therefore, clearly demonstrates as required by 40 CFR 230.10(a)(3) that no other less environmental damaging practicable alternative exists to Modified Alternative J1T.

[6] A copy of the 1995 Purpose and Need (P&N) statement is provided in Appendix E. In 2002, Caltrans updated the 1995 P&N statement with current data on traffic and safety conditions. This information follows the original P&N statement, in Appendix E.

4 Resource Identification

The Guidelines specify that special aquatic sites include sanctuaries and refuges (40 CFR 230.40), wetlands (40 CFR 230.41), mud flats (40 CFR 230.42), vegetated shallows (40 CFR 230.43), coral reefs (40 CFR 230.44), and riffle and pool complexes (40 CFR 230.45). The project area does not contain sanctuaries and refuges, mud flats, vegetated shallows, or coral reefs. However, wetlands and riffle-and-pool complexes do occur in the project area. They are discussed in detail in Appendix G. The resource identification discussion also summarizes the endangered species and species of special concern that occur in the project area.

5 ALTERNATIVES

5.1 Alternatives Withdrawn From Further Consideration

A number of alternative routes to bypass the City of Willits have been considered. Approximately thirty alternatives, including a two-lane concept and additional interchange locations, were considered but later rejected because they were determined to be infeasible, "not practicable," or had severe environmental consequences. The rejected alternatives and the reason(s) for their rejection are summarized in Table 5-1 and shown on Map 29, Appendix A.

The study for the Willits Bypass began in the early 1960s. In 1988, Alternatives A through E and the No Build were presented to the public. The following year, Caltrans conducted additional scoping sessions and as a result, Alternatives F through R were added to the list of alternatives to be studied during the project development process. In 1992, Caltrans investigated the Transportation System Management (TSM) Alternative and in 1993 Alternative K2 and L were also recommended for study.

In 1994, Caltrans initiated the NEPA/404 Integration process for the project and in 1995, Caltrans, FHWA and NEPA/404 signatory agencies concurred with the purpose and need statement, the modal choice, and the range of alternatives to be studied. Engineering and environmental studies continued on several alternatives through 1994. Then, as a result of the 1994 Northridge earthquake and the 1995 winter storms, resources were redirected to seismic safety and storm damage restoration projects, and bypass project development was suspended until 1998. In 1998, with new funding and resources allocated to the project, studies resumed on the alternatives approved by the NEPA/404 signatory agencies.

Table 5-1. Alternatives Considered Throughout Project Development

Alternatives/*Timeframe*	Comments
In 1988, Alternatives A through E and the No Build were presented to the public.	

Alternatives/*Timeframe*	Comments
Alternatives A, A1, A2, A3 & A4. CTC adopted Alternative A as the original alignment in 1962. Versions of Alternative A known as A1 - A4 identified different combinations of interchange locations.	The PDT rejected Alternative A due to the substantial potential impacts to wetlands and other sensitive natural habitat. Alternative A also required time-consuming and extensive construction techniques to address embankment settlement and consolidation caused by poor soil conditions in northern Little Lake Valley.
Alternative B. In an effort to modify Alternative A to avoid wetlands, Alternative B diverged from Alternative A beginning just north of the crossing of Hearst-Willits Road, then veered to the east and skirted the eastern limits of Little Lake Valley.	Preliminary investigations revealed that Alternative B, rather than having lower wetland impacts, actually had higher wetland impacts than Alternative A. In addition, a later alignment, Alternative K, better represented the intent of Alternative B.
Alternative C. Similar to Alternative B, Alternative C diverged from Alternative A beginning just north of the crossing of Hearst-Willits Road. From there, Alternative C skirted the west side of Little Lake Valley and rejoined Alternative A and the existing highway on Oil Well Hill. Alternative C1T developed from Alternative C. Versions of Alternative C known as C1-C4 identified different combinations of interchange locations.	**Alternative C1 was retained for further study.** The PDT rejected other versions of Alternative C because of the substantial potential impacts to wetlands and due to the high cost and growth-inducing impacts of additional valley interchanges. Mendocino County requested Caltrans to investigate the Alternative C/J in 1993. This was a combination of what is now the south portion of C1T and the north portion of J1. Most of Alternative J1 north of Quail Meadows is no longer under consideration, and hence, the C/J alternative is no longer considered viable.
Alternative D traversed the hilly terrain west of Willits and was similar to E3 but closer to Willits.	The PDT rejected Alternative D based on its similarity to Alternative E and due to substantial potential impacts to wetlands and riparian habitat along the north end of Little Lake Valley.
Alternative E ran through the hills near Willits cemetery. The north end connected to Alternative A after traversing the hills west of the old Louisiana Pacific mill site. Versions of Alternative E known as E1-E3 had different combinations of interchange locations.	**Alternative E3 was retained for further studies.** The PDT rejected other versions of Alternative E3 due to potential impacts to residential development and the estimated higher cost for interchanges at Wild Oat Canyon and at Oil Well Hill.
In 1989, additional scooping sessions resulted in the addition of Alternatives F through R	
Alternative F proposed relocating the Northwestern Pacific Railroad tracks through a portion of Willits and using the resulting right of way for a low speed expressway.	The PDT rejected Alternative F due to its similarity with Alternative O and due to the high cost of relocating railroad tracks.
Alternative G describes many variations of alternatives from the Project Study Report that connected with US 101 south of Oil Well Hill and north of Haehl Creek.	The PDT rejected Alternative G because there was no cohesive alternative described from the public scoping sessions. Many of the proposals loosely defined under this alternative were studied as variations of other alternatives.

Alternatives/*Timeframe*	Comments
Alternative H came out of the scoping sessions as an alignment that would relocate U.S. 101 at least 8 miles west of Willits to remove noise and air pollution from town.	The PDT rejected this alternative due to the high costs and because it was outside the scope of the study area.
Alternative I was a tunnel located roughly in the Alternative E corridor. It was suggested as a means of reducing impacts to Willits Cemetery and the other properties along the proposed D/E alignments.	With an estimated cost of $250 million to $300 million for the tunnel alone, the PDT rejected this alternative.
Alternatives J1 and J2 followed the railroad tracks after leaving existing U.S. 101 at the south end of Willits, skirted the rodeo grounds, skirted the sewage plant to the east, and headed back toward U.S. 101, conforming just north of the Willits northerly city limits.	The PDT rejected J2 because it resulted in poor service in terms of interchange locations and could have growth-inducing impacts. **The PDT retained Alternative J1 for further studies. Alternative J1 was truncated to become J1T.**
Alternatives K and "old" L were easterly wetland avoidance alternatives located in the hills to the east of Reynolds Highway. Alternative K2 followed K for about the first 1.2 miles, then continued north along the base of the hills on the east side of the valley.	With concurrence from the signatory agencies, the PDT eliminated both alternatives. Constructing facilities on the east side of the valley would result in poor service in terms of interchange locations. Studies indicated that both alternatives generated unavoidable impacts to wetlands, archaeological resources, and the destruction of millions of Baker's Meadowfoam plants, a listed species of concern and listed as rare under the California Plant Protection Act. Both alternatives required deep cuts in active landslide areas and traversed material of questionable stability.
Alternative M offered an expressway through Willits skirting the wastewater treatment plant and corporation yard and widened existing U.S. 101 at the north end of the project to four lanes.	Based on its similarity with Alternative J, and because of safety concerns and whether an expressway could meet the project's purpose and need, the PDT dropped Alternative M.
Alternative N departed from U.S. 101 near Holland's Lane, then skirted the east side of the Mormon Church property crossing Haehl Creek, passing over East Hill Road and the railroad tracks, then paralleled the tracks with a two lane roadway through Willits.	A portion of Alternative N included four lanes with turn pockets and a portion included a continuous left turn lane. The PDT rejected this alternative based on its similarity to Alternative O.
Alternative O was similar to Alternative N, paralleling the Northwestern Pacific Railroad tracts. Alternative O proposed a four-lane boulevard expressway that continued beyond the old truck scales and railroad crossing north of Willits.	The PDT rejected this alternative due to substantial potential impacts to multi-dwelling residential units and potential impacts to Section 4(f) eligible properties.

Alternatives/*Timeframe*	Comments
Alternative P was a couplet through Willits. A couplet is a pair of one-way city streets with traffic running in opposite directions usually separated by a city block.	A preliminary traffic analysis revealed that this alternative would operate poorly because of the substantial out-of-direction travel it required. Citing the failure to meet project objectives of providing a safe and efficient highway, the PDT rejected this alternative.
Alternative Q involved a concept of two-lane routes with increased railroad use.	The modal analysis indicated a need for a highway solution rather than rail and, citing failure to meet project objectives of providing a safe and efficient highway, the PDT rejected this alternative.
Alternative R was a couplet through Willits. The alignment identified Main Street as the northbound lanes and suggested southbound lanes to the west of U.S. 101.	Like Alternative P, this alternative had widely separated north/southbound legs that required out-of-direction travel. Citing the failure to meet project objectives of providing a safe and efficient highway, the PDT rejected this alternative.
In 1992, the Transportation System Management (TSM) Alternative was requested for study by members of the TAG and PDT. The same year, Willits Environmental Center requested study of a two-lane alternative to reduce environmental impacts.	
Alternative TSM was a non-freeway alternative that would parallel existing U.S. 101/Main Street within Willits.	The TSM alternative was eliminated because it did not meet the purpose and need of the project and would result in high overall adverse impacts: removal of 140 residential units; relocation of 28 commercial and industrial business (including one utility which, alone, would cost an estimated $25 million to relocate); insufficient housing in Willits for the large number of residents who would be displaced by the TSM alternative; would result in unavoidable adverse impacts to eligible historic architectural properties, including numerous structures within the Willits Historic District; increased noise, increased traffic volumes, reduction in parking supply, and reduced access in the vicinity, thus adversely impacting the existing character of the area.
Two-lane alternative	A two-lane alternative was eliminated from consideration because it would not meet the purpose and need of the project. It would not result in a considerable reduction in biological impacts, because of engineering and design requirements such as median, shoulders, merge lanes, ramps, and interchanges.
In 1993, Alternatives K2 and a "new" L were added.	

Alternatives/*Timeframe*	Comments
Alternative K2 was added in 1993 at request of USEPA.	With concurrence from the signatory agencies, the PDT eliminated Alternative K2. Constructing facilities on the east side of the valley would result in poor service in terms of interchange locations. Studies indicated that the alternative generated unavoidable impacts to wetlands, archaeological resources, and the destruction of millions of Baker's Meadowfoam plants, a listed species of concern and listed as rare under the California Plant Protection Act. .
The "new" Alternative L is a center valley alternative that avoids large wetland impacts along its northern half by conforming to the alignment of the existing highway and railroad.	**The PDT retained Alternative L for further studies. Alternative L, which continued to a point on Oil Well Hill, was later truncated to become LT.**
May 26, 1994	Signatory agencies met with Caltrans and FHWA and agreed to the project purpose and need statement, modal choice, and range of alternatives including Alternatives C1, J1, L, E3, K, K2, TSM, and No Build. Formal concurrence letters were submitted by signatory agencies in 1995 (Appendix __).
1999	Signatory agencies concurred with eliminating Alternatives K and K2 (explained above under each alternative).
2001	Signatory agencies concurred with truncating, or shortening, Alternatives C1, J1, and L to create Alternatives C1T, J1T, and LT (it was not feasible from an engineering standpoint to shorten Alternatives E3 or TSM); and they did not object to elimination of Alternative TSM.
2003	Signatory agencies expressed their positions that Alternatives C1T, L/C, and LT do not meet LEDPA criteria and that Alternative J1T could meet LEDPA criteria with modifications. The signatory agencies concurred that Alternative E3 does not meet LEDPA criteria. June 12, 2003, signatory agencies suggested developing modifications to Alternative J1T to achieve an overall reduction in environmental impacts. After additional coordination with and support from signatory agencies, local government, and other stakeholders, Caltrans began formal studies of Modified Alternative J1T.

5.2 Project Description

Seven alternatives are included in this 404 (b)(1) Alternatives Analysis, including six build alternatives and one No Build alternative. The six build alternatives are E3, C1T, J1T, Modified J1T, LT, and the hybrid L/C. All of the build alternatives involve the construction of a four-lane freeway. Under the No Build scenario no new freeway or highway construction would occur.

At the south end of the project area, all of the freeway alternatives depart from the existing four lane U.S. 101 in the Haehl Creek area. Alternatives C1T, J1T, Modified J1T, LT, and L/C cross the Little Lake Valley east of the City of Willits and are also referred to as the "center valley" alternatives in this document. Alternative E3 is located in the hills west of the City of Willits. Map 3 (Appendix A) shows the routes of Alternatives E3, C1T, J1T, and LT. Alternative L/C can be seen on this map by following the south segment of Alternative LT to the node and then following the north segment of Alternative C1T. Figure 5-1 shows the route of Modified Alternative J1T.

The No Build alternative would consist of the continued use of the existing U.S. 101, which passes through the City. The No Build alternative is discussed for the purpose of comparing the effects of the build alternatives with a future scenario in which a bypass would not be constructed.

5.2.1 Common Features of Alternatives Under Consideration

This section discusses the common features of Alternatives C1T, E3, J1T, Modified J1T, LT, and L/C. The dimensions listed in the following discussions are typical; during final design there may be some variance from them.

Alternatives C1T, E3, J1T, Modified J1T, LT, and the hybrid L/C would be constructed with four lanes; two in each direction, with full access control bypassing Willits. Each lane would be 3.6 m (12 ft) wide. A 13.8 m (45.3 ft) median would separate the northbound and southbound lanes. Inside paved shoulder width would be 1.5 m (5 ft) (nearest the median) and 3.0 m (10 ft) on the outside shoulder. Cut slopes generally would vary between a 1:1 (vertical:horizontal) (at Oil Well Hill) and a 1:2 ratio. Fill slopes generally would vary between a 1:2 and 1:4 ratio. The plans would call for slope rounding at appropriate locations. Figures 5-2 through 5-4 show Typical Cross Sections for the build alternatives.

Interchange ramps would have a single lane. Where local roads are improved or constructed, they would be two lanes or two lanes with a left-turn pocket, and would have generally 2.4 m (8 ft) shoulders. Private access roads would generally have up to two 3.6 m (12 ft) lanes and may be either paved or unpaved.

The freeway sections of the alternatives would maintain a minimum design speed of 110 kilometers per hour (kph) (68 mph), except at the end of Alternative E3 where the design speed would be 100 kph (62 mph). Each of the build alternatives would meet the purpose of providing at least LOS C. Each build alternative would carry the predicted average annual daily traffic (AADT) in 2028 at LOS C or better.

All of the valley alternatives would provide access to the Schmidbauer Ranch at the Haehl Creek Interchange to the south. At the north end of the project, Alternatives J1T, Modified J1T, and LT would provide an access road to the Niesen Ranch and other properties. Alternatives J1T and Modified J1T include an access road to the Colli Ranch. These access roads are discussed in more detail below. Minimization measures are discussed in Section 9.4.

5.2.1.1 Schmidbauer Ranch Access Road

For all of the valley alternatives, the Haehl Creek Interchange would be a diamond style interchange to allow access to the Schmidbauer Ranch from the east side of the interchange through an access controlled private road opening (Figure 5-1).

5.2.1.2 Colli Ranch Access Road

Alternatives J1T and Modified J1T would sever the existing access road to the Colli Ranch. The proposed replacement access road would begin near the ranch buildings and immediately crosses Haehl Creek (Figure 5-1). It would cut generally easterly through the oak woodlands, then turns northeast, then north skirting along the oaks. It would cross the oak woodland in a northwesterly direction through an area where few trees exist. It would run generally northerly skirting the west side of the woodland until reaching Center Valley Road at the northeast corner of the ranch where Center Valley Road makes a right angle with north and east legs. The access road would be an estimated 7.2 m (24 ft) in width and 1 km (0.6 mi) in length. Side slopes and ditches would be added as needed and would add to the footprint of this road.

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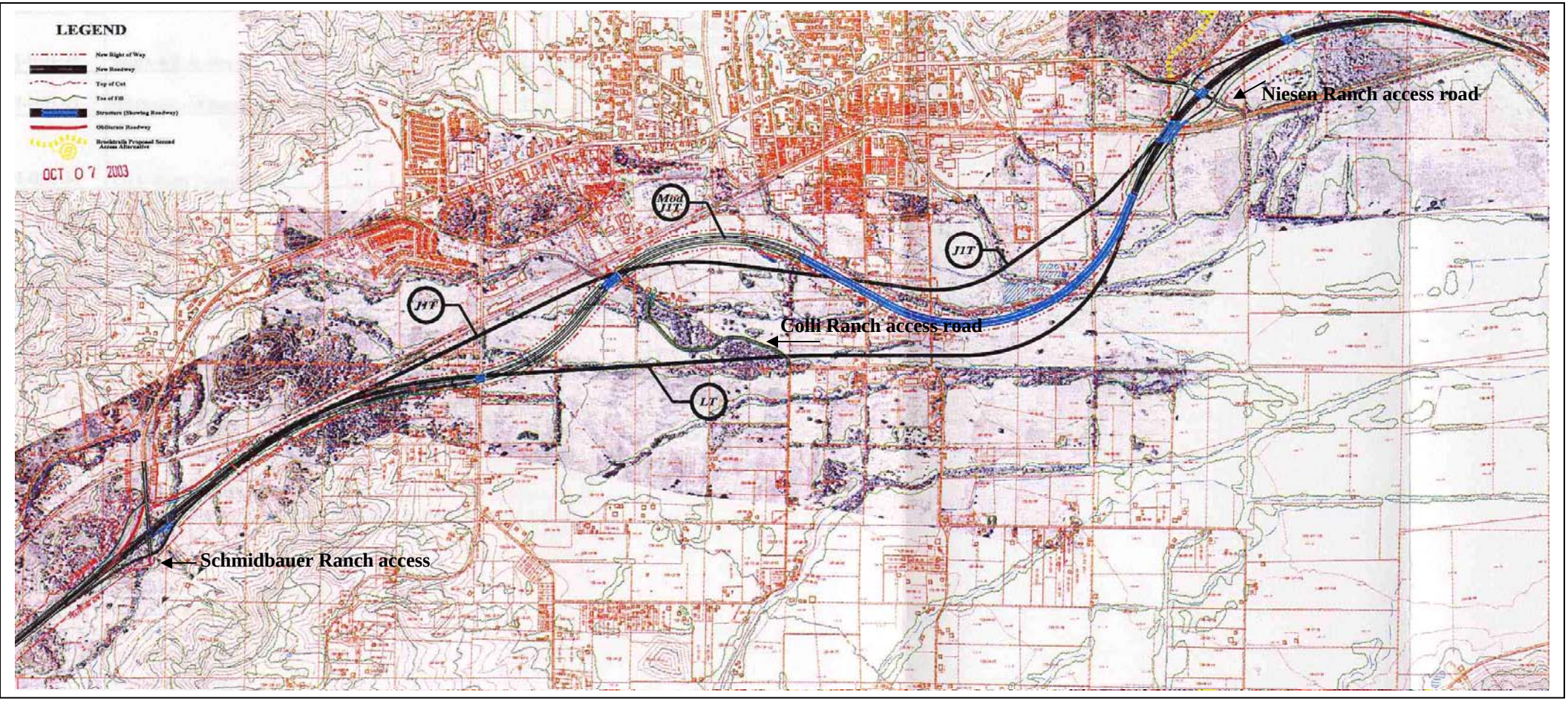
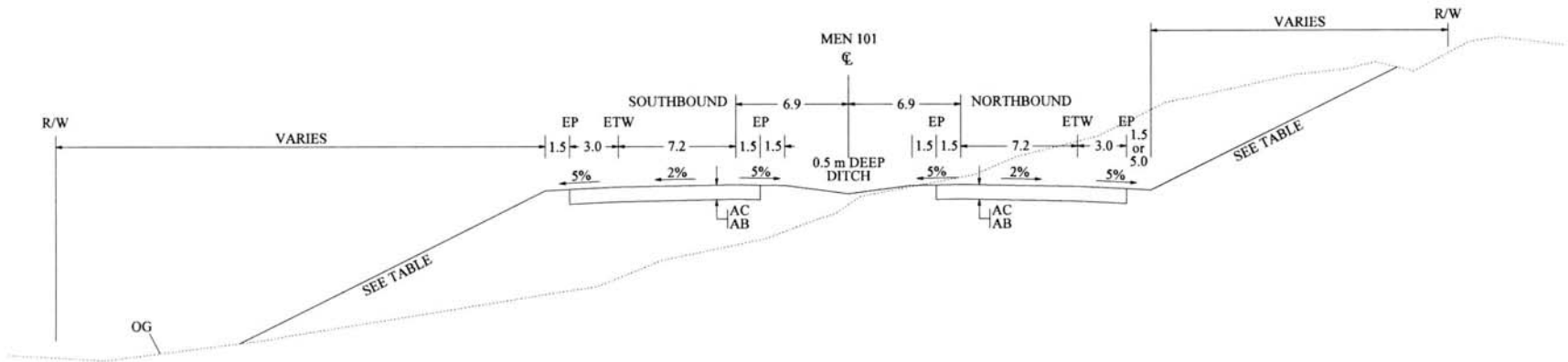


Figure 5-1. Modified Alternative J1T
(This figure also shows the centerline of Alternatives J1T and LT)

Figure 5-2. Typical Cross-Sections: Freeway Mainline



ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

NO SCALE

Figure 5-3. Typical Cross-Sections: Side Slopes

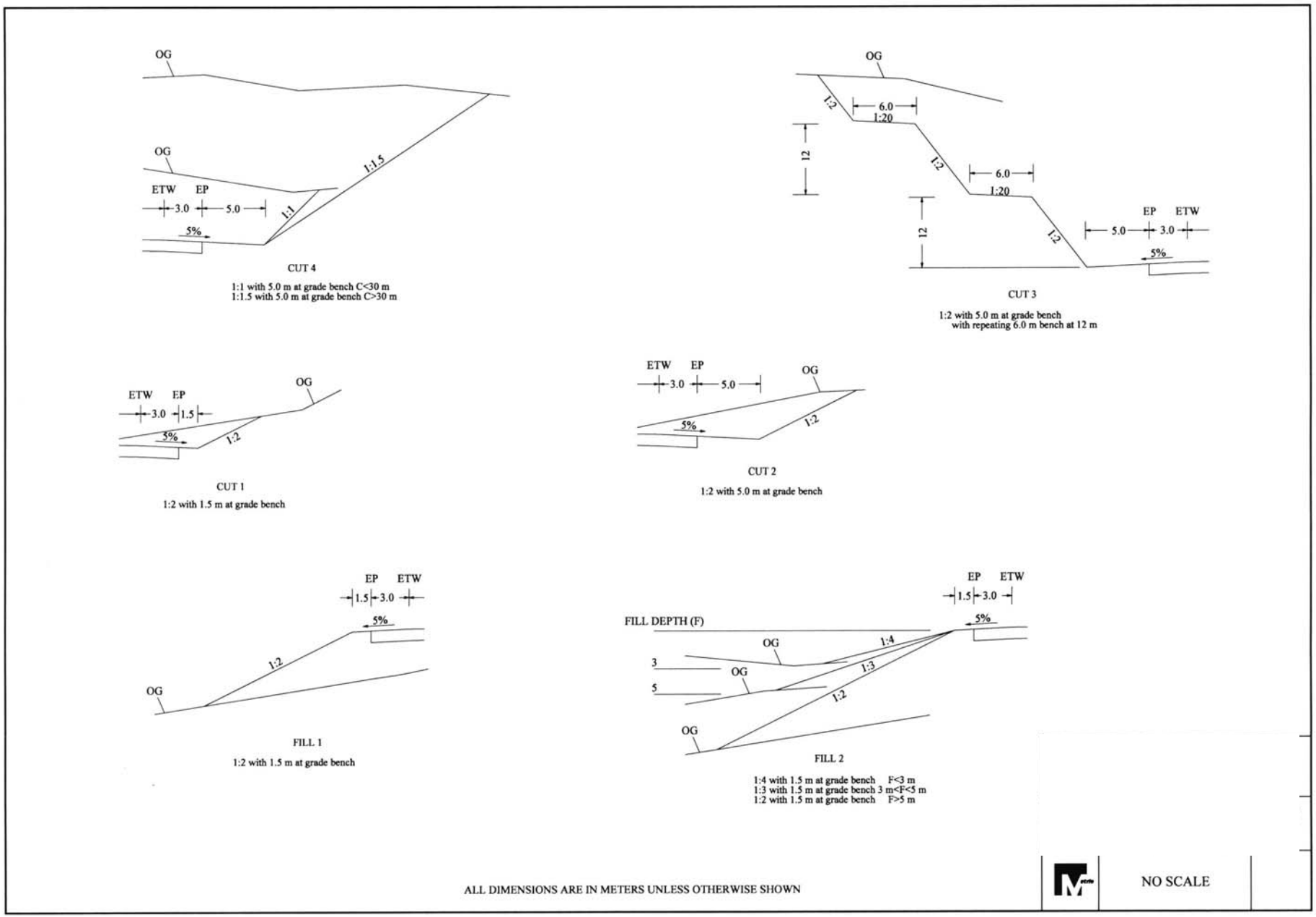
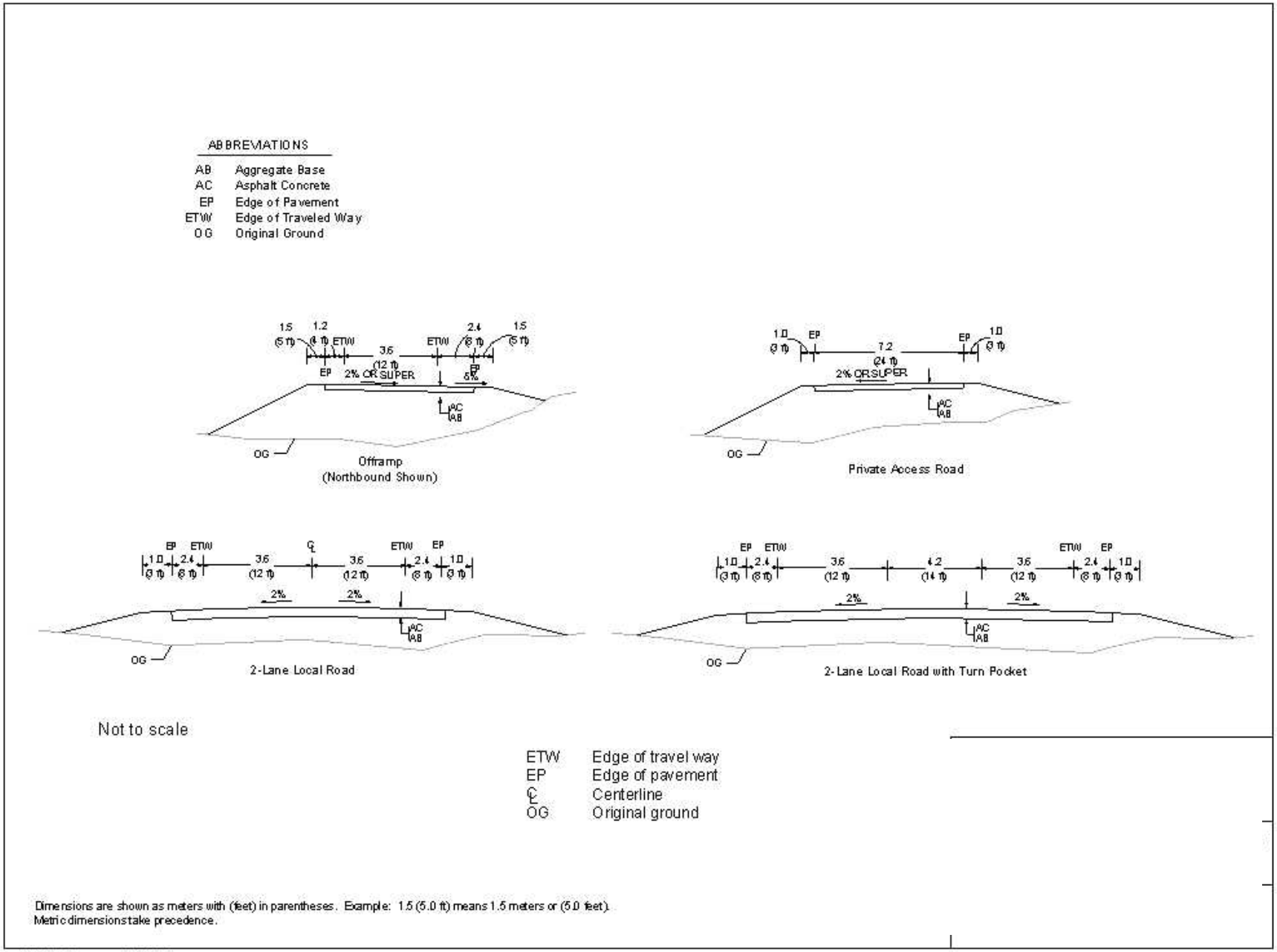


Figure 5-4. Typical Cross-Section: Ramps, Local Roads, and Private Access Roads



5.2.1.3 Niesen Ranch Access Road

For Alternatives J1T, Modified J1T, and LT, the existing access road to the Niesen Ranch and other parcels on the east side of the Northwestern Pacific Railroad would be severed by the freeway. The replacement access road would begin at the intersection of the northbound ramps and North Main Street at the Quail Meadows Interchange (Figure 5-1). The access road would be an estimated 7.2 m (24 ft) in width and 200 m (656 ft) in length. Side slopes and ditches would be added as needed and would add to the footprint of this road. A private access opening would allow the property owners to travel northeasterly from the interchange to the existing unsurfaced road. The existing crossing of the Northwestern Pacific Railroad would continue to provide access to the parcels east of the railroad.

5.2.2 Design Exceptions

5.2.2.1 Median

The median separates opposing lanes of traffic and provides a clear recovery zone for errant vehicles. The median also provides a refuge area in emergency situations and reduces headlight glare. During the early stages of the development of the alternatives, the standard minimum median width for rural freeways was 14 m (46 ft). The current Caltrans design standard for minimum median width is 18.6 m (61.0 ft). As part of its effort to lower environmental impacts of the project, Caltrans retained the old standard, which when adapted to metric units is 13.8 m (45.3 ft). Caltrans policy requires a design exception approval for the proposed median.

5.2.2.2 Single Lane Ramp Length

The ramps would exceed the advisory standard for maximum length of a single lane ramp, and a design exception would be required.

5.2.2.3 Embankment Slopes

For all alternatives, embankments have been established at 1:4 for fill heights less than 3 m, 1:3 for fill heights from 3 through 5 m, and 1:2 for fill heights greater than 5 m. Caltrans standards for embankments steeper than 1:4, which are within the clear recovery zone should be eliminated, moved, or shielded (HDM 309.1(2), 5th Edition). For the eastern valley alternatives, the embankment heights generally increase approaching structures. Flattening these slopes would increase wetland and other environmental impacts. For Alternative E3, the alternative through the hills west of Willits, many embankments are proposed on relatively steep hillsides, and it would be impractical to

flatten the slopes due to the large cuts and fills necessary to achieve 1:4 slopes on hillsides steeper than 1:4. This would significantly increase embankment volumes, construction costs, and environmental impacts. Additionally, the local community has expressed concern over the visual impacts that Alternative E3 would cause.

5.2.2.3 Ramp To Intersection Distance

The distance between the proposed Quail Meadows Interchange (Alternatives J1T, Modified J1T, and LT) south bound ramps intersection and the nearest local road intersection is approximately 60 m. Caltrans mandatory standard distance (curb return to curb return) between a ramp intersection and a local road intersection is 125 m. (HDM 504.3(3), 5th Edition). The Quail Meadows interchange design is constrained by a hillside on the west, railroad tracks and wetlands on the east, and the existing highway alignment north of the interchange. To comply with the mandatory standard, realigning the freeway mainline or the frontage road or both would be necessary. This would result in increasing the environmental footprint and impacting the steep hillside to the west.

5.2.3 Estimated Borrow Requirements

Alternative E3 would not require additional fill material but would require extensive excavation [9.1 million cubic meters (12.0 million cubic yards)]. Alternatives C1T, J1T, and LT would be constructed largely on embankment and would require material from elsewhere. The fill requirements for the valley alternatives are estimated as follows:

- Alternative C1T: 1.8 million cubic meters (2.4 million cubic yards)
- Alternative J1T: 1.9 million cubic meters (2.5 million cubic yards)
- Modified Alternative J1T: 1.9 million cubic meters (2.5 million cubic yards)
- Alternative LT: 2.4 million cubic meters (3.1 million cubic yards)
- Alternative L/C: 2.1 million cubic meters (2.7 million cubic yards)

The construction contractor would determine the specific source of material for earthwork; however, Caltrans has designated a borrow site in the project area as a possible source of material that the contractor may use for the project.

Caltrans has identified the Oil Well Hill area, located north of the junction of Reynolds Highway and U.S. 101, as the designated borrow site (Appendix A, Map 2). The material in this area is of good quality and suitable for use in embankment construction. The existing right of way for U.S. 101 at the designated borrow site is wide enough to provide

the necessary material for earthwork. The designated borrow site could be used for any of the valley alternatives, although the quantity excavated would depend on the amount needed for each alternative. In general, the area excavated would be similar for all of the valley alternatives (Figure 5-5).

Because the designated borrow site is a possible choice for obtaining material, it is included in the project's environmental review. Obtaining borrow material from Oil Well Hill may require Surface Mining and Reclamation Act (SMARA) permit, which is administered by the California Department of Conservation, Office of Mine Reclamation. Pursuant to SMARA, a permit application, a Reclamation Plan, and financial assurance are required before conducting surface mining operations. Mendocino County has the approval authority for the Reclamation Plan.

Contractors may choose to use their own selected sites when advantageous to them (e.g., savings in time or money). However, if the contractor selects an alternative borrow site(s) for this project, the site must be SMARA-approved. If not, a separate environmental review for the contractor's site(s) would be required before the contractor obtains permits and begins construction. The contractor would be responsible for performing and bearing the cost of the environmental review and of obtaining permits if the contractor chooses a different site. No disposal sites would be required for this project.

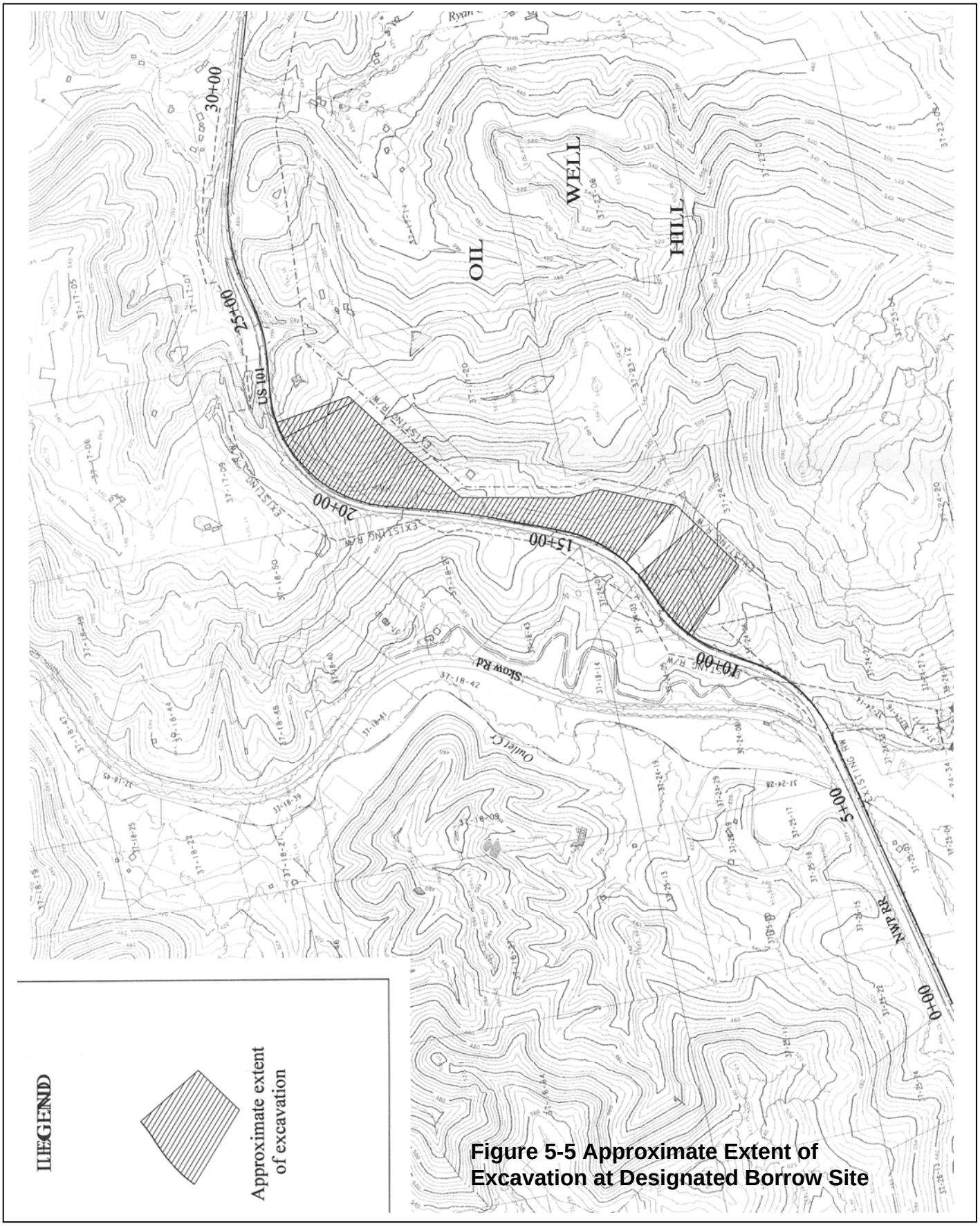


Figure 5-5 Approximate Extent of Excavation at Designated Borrow Site

5.2.4 Relinquishment of Bypassed Portions of Existing U.S. 101

According to Section 27 of the California Streets and Highway Code, the State of California shall relinquish to any county and/or city any portion of any state highway within the county or city that has been removed from the state highway system. This also applies to portions of the state highway system that have been bypassed. Relinquishments are made by a resolution of the California Transportation Commission.

After construction of the proposed project, bypassed portions of U.S. 101 would be relinquished to the City of Willits and Mendocino County. Those portions of U.S. 101 located in unincorporated portions of Mendocino County would be relinquished to Mendocino County, and those portions located in the City of Willits would be relinquished to the City of Willits. Coordination with Mendocino County and the City of Willits will result in the execution of a Freeway Agreement signed by all jurisdictions involved and would provide the basis for the relinquishment action later taken by the CTC.

Caltrans would prepare a separate Project Report and environmental document to cover the anticipated relinquishment work and estimated costs. Caltrans also would prepare a Pavement Deflection Study to determine the need for any overlay and/or other pavement rehabilitation treatment.

5.3 Description of Alternatives Under Consideration

This section describes the distinguishing features of each alternative. In the individual alternative descriptions that follow, each alternative is described in relation to existing U.S. 101, S.R. 20, and local roads.

5.3.1 Alternative C1T

Map 4, Appendix A depicts the alignment and structures for Alternative C1T.

Alignment Description: Alternative C1T would begin approximately 0.9 km (0.6 mi) south of the proposed Haehl Overhead and would end approximately 1.4 km (0.9 mi) south of Reynolds Highway. The overall length of this alternative would be approximately 10.6 km (6.6 mi). The estimated cost for Alternative C1T is $128 million (2002 dollars).

South Segment: Alternative C1T would diverge from existing U.S. 101 at the proposed Haehl Creek Interchange and head northwesterly on the existing embankment constructed with excess fill material from a previous highway project. The alignment would run along the east side of the Northwestern Pacific Railroad tracks, turning northeasterly as it passed west of Little Lake Cemetery. The alignment would cross Center Valley and Hearst-Willits Roads east of Bray Road, then turn northwesterly, skirting the Willits wastewater treatment plant. The alignment then would cross Outlet and Mill Creeks, which is the approximate location of the node that separates the north and south segments of this alternative.

North Segment: The alignment would turn north along the east side of the Northwestern Pacific Railroad tracks. Near the railroad crossing with existing U.S. 101, Alternative C1T would begin paralleling the existing highway. The proposed Truck Scales Interchange would provide an access point along a northeasterly reach of the existing highway. Just north of the interchange near the existing lumber mill, the four-lane alternative would conform to the existing two-lane section of U.S. 101.

Engineering Features: The vertical alignment of Alternative C1T would begin with a gentle downgrade and head northwesterly from the existing freeway section to approximately East Hill Road. Between East Hill Road and Outlet Creek, the profile grade would be nearly flat except at bridge approaches and departures.

Throughout the valley, Alternative C1T would cross the 100-year floodplain but the roadway elevation would remain at least 1 m (3 ft) above the estimated 100-year water surface level. Alternative C1T would provide two interchanges that direct motorists to Willits and Fort Bragg. The Haehl Creek Interchange would be located at the south terminus of the project. The northbound exit ramp would connect with existing U.S. 101, which would become S.R. 20 at this location. A second interchange called the Truck Scales Interchange would be located approximately 8.5 km (5.3 mi) north of the Haehl Creek Interchange. For the Truck Scales Interchange, the ramps would terminate at existing U.S. 101, which would become a local road in this area.

South of the Truck Scales Interchange, the existing highway would serve as a local road, providing access to Willits from the interchange to S.R. 20. The roadway would retain the existing at-grade crossing with the Northwestern Pacific Railroad.

Structures: The C1T alignment would include seven mainline structures and two ramp structures. The mainline structures include the floodway viaduct, which would span the Little Lake Valley floodway at Outlet and Mill Creeks near the city's wastewater treatment. This viaduct would be designed to convey the base flood without substantially increasing the 100-year water surface elevation. Bridges also would be constructed over Upper Haehl and Mill Creeks.

5.3.2 Alternative E3

Map 5, Appendix A depicts the alignment and structures for Alternative E3.

Alignment Description: Construction of Alternative E3 would begin approximately 0.9 km (0.6 mi) south of the Haehl Overhead and end approximately 1.6 km (1.0 mi) north of Reynolds Highway at Oil Well Hill. The overall length of this alternative would be approximately 14.8 km (9.2 mi); it would include three interchanges. The estimated cost for Alternative E3 is $301 million (2002 dollars).

South Segment: Alternative E3 would start at the end of the existing four-lane freeway section. The E3 alignment would turn to the northwest and cross the existing U.S. 101 near Hollands Lane where an interchange would be constructed. Heading into the hills west of Willits, Alternative E3 would cross Baechtel Creek and continue north on the west side of the Sherwood Valley Indian Rancheria. Alternative E3 would continue north across the California Western Railroad (Skunk Train), across Broaddus Creek, and S.R. 20 west of the Willits Cemetery. An interchange at S.R. 20 would provide access for motorists traveling to Fort Bragg or Willits. The alignment would turn to the northeast and continue through the hills, crossing over Exley Lane and under Sherwood Road. Turning north, Alternative E3 would provide a third interchange at Upp Creek. Just north of the Upp Creek Interchange is the approximate location of the node dividing the north and south segments of this alternative.

North Segment: The E3 alignment would continue north through the hills and east of the Brooktrails Community and the Willits Airport. The alignment would cross Outlet Creek, the Northwestern Pacific Railroad, and Skow Road before conforming with existing U.S. 101 north of Reynolds Highway at Oil Well Hill. The alignment would continue on the existing two-lane highway to the end of the project study area.

Engineering Features: The vertical alignment of Alternative E3 would begin with a slight downgrade, but after heading into the hills, the grades would increase. Grades

would rarely be less than 2 percent except at the vertical crests and sags of the curves. Alternative E3 would include truck climbing lanes on a large, steep hill between Baechtel Creek and the proposed S.R. 20/U.S. 101 Interchange. The northbound truck-climbing lane would begin on the west side of the Baechtel Creek Bridge and end about 1.0 km (0.6 mi.) west. The southbound climbing lane would run about 1.5 km (0.9 mi) between the top of the hill and the southbound on-ramp at the S.R. 20/U.S. 101 Interchange. The truck climbing lanes would be in addition to the four lanes as proposed for the other alternatives.

Alternative E3 would include three interchanges that act as access points. The Hollands Lane Interchange would be located near the intersection of Hollands Lane with existing U.S. 101. A rehabilitated, and somewhat realigned Hollands Lane, which would become a portion of South Main Street, would form the local road for the southerly access to the Willits area.

A second interchange approximately 4.5 km (2.8 mi) northwest of the proposed Hollands Lane Interchange, which would be known as the S.R. 20/U.S. 101 Interchange, would provide access to Willits and Fort Bragg. Here again, the mainline of U.S. 101 would cross over the local road, which is S.R. 20. The highway would continue as S.R. 20 to the west, but it would become a local road to the east. At Upp Creek, approximately 2.9 km (1.8 mi) northwest of the second interchange, a third interchange would be constructed.

Alternative E3 would cross over the Northwestern Pacific Railroad tracks at the south end of the project at Haehl Creek and again at the north end of the project near Outlet Creek. Near the S.R. 20/U.S. 101 Interchange, the alignment would cross the California Western Railroad. None of the crossings would be at-grade.

Structures: Alternative E3 includes ten structures on the mainline, six ramp structures, and two structures over local roads. Major structures include the Exley Lane Bridge, the Upp Creek Bridge, the Wild Oat Canyon Bridge, and the Outlet Creek Bridge.

5.3.3 Alternative J1T

Map 6, Appendix A depicts the alignment and structures for Alternative J1T.

Alignment Description: Alternative J1T would begin approximately 0.9 km (0.6 mi) south of the Haehl Overhead and end approximately 2.9 km (1.8 mi) south of Reynolds

Highway. The overall length of this alternative would be approximately 9.0 km (5.6 mi). The estimated cost for J1T is $151 million (2002 dollars).

South Segment: Like the other valley alternatives, Alternative J1T would diverge from existing U.S. 101 at the Haehl Creek Interchange and head northwesterly on the existing embankment constructed with excess fill material from a previous highway project. The alignment would parallel the east side of the Northwestern Pacific Railroad tracks for approximately 1.7 km (1.1 mi.), turn north to cross Center Valley and Hearst -Willits Roads just east of the Lofling Field baseball diamonds and Willits Rodeo Grounds, then turn northwesterly and skirt west of the city's wastewater treatment plant. The alignment then would cross Mill Creek, which is the approximate location of the node that separates the south and north segments of this alternative.

North Segment: After crossing the Northwestern Pacific Railroad, Alternative J1T would provide access to the north side of Willits with the Quail Meadows Interchange. The mainline would reduce from four lanes to two lanes and conform to existing U.S. 101 just north of the old truck scales and just south of the at-grade crossing of the Northwestern Pacific Railroad. The alignment would continue on the existing two-lane highway to the end of the project study area.

Engineering Features: The vertical alignment would begin with a gentle downgrade and head northwesterly from the existing freeway section to approximately East Hill Road. From this point north to the Quail Meadows Interchange, the flat valley floor would allow grades that are nearly flat except at structure approaches and departures. Throughout the valley, Alternative J1T would cross the 100-year floodplain. However, Alternative J1T would be constructed at least 1 m (3 ft) above the estimated 100-year water surface level.

Alternative J1T would include two interchanges as the access points to Willits and Fort Bragg. The Haehl Creek Interchange would be located at the south terminus of the project. The northbound exit ramp would tie directly to existing U.S. 101 and would become S.R. 20 at this location. Approximately 6.3 km (3.9 mi) northwest of the proposed Haehl Creek Interchange, the Quail Meadows Interchange would provide access to Willits and Fort Bragg via Main Street, as existing U.S. 101 would become a local road in this area. For this interchange, the ramps would terminate at a realigned Redwood Highway (existing U.S. 101) that would become a local road in this area. Between the point where existing U.S. 101 would be realigned and where Alternative J1T would connect to existing U.S. 101, the former highway (existing U.S. 101) would become an

access road for the mobile home parks and other parcels that had their direct access to U.S. 101 severed.

This alternative would conform to existing U.S. 101 approximately 1.7 km (1.1 mi) north of the Quail Meadows Interchange. The existing highway would remain in service as U.S. 101 north of this point and retain the existing at-grade crossing with the Northwestern Pacific Railroad.

Structures: The alignment would include seven mainline structures and two ramp structures. The major structure in this group would be the Floodway Viaduct that would span the Little Lake Valley floodway. This viaduct would be designed to convey the base flood without substantially increasing the 100-year water surface elevation.

5.3.4 Modified Alternative J1T

Modified Alternative J1T was developed after public circulation of the Draft EIS/EIR, as a result of input received from the public and local government regarding Alternative J1T's impacts to community resources. Caltrans, FHWA, the NEPA 404 resource agencies, and local government worked together on modifications to Alternative J1T that would reduce its impacts to community resources while minimizing impacts to wetlands and other Waters of the U.S. Figure 5-4 depicts the alignment and structures for Modified Alternative J1T.

Alignment Description: Modified Alternative J1T would begin approximately 0.9 km (0.6 mi) south of the Haehl Overhead and end approximately 2.9 km (1.8 mi) south of Reynolds Highway. The overall length of this alternative would be approximately 9.2 km (5.7 mi). The estimated cost for Modified Alternative J1T is $162 million (2002 dollars).

South Segment: Like Alternatives J1T and LT, Modified Alternative J1T would diverge from existing U.S. 101 at the proposed Haehl Creek Interchange and head northwesterly on the existing embankment constructed with excess fill material from a previous highway project. The alignment would run along the east side of the Northwestern Pacific Railroad tracks. Shortly before East Hill Road, the alignment would turn north to avoid the Sanhedrin Business Park. At East Hill Road, the alignment turns in a northwesterly direction back to the railroad tracks to avoid a large oak riparian woodland. It crosses Haehl Creek, and shortly before Baechtel Creek, the alignment curves back to the northeast to avoid the city's park recreation complex. The alignment runs along the east

side of a dense riparian corridor that lies between the park complex and the proposed alignment. The alignment turns to the northwest, crossing the wastewater treatment plant.

North Segment: After crossing the Northwestern Pacific Railroad tracks, Modified Alternative J1T would provide access to the north side of Willits with the Quail Meadows Interchange. The mainline would reduce from four lanes to two lanes and conform to existing U.S. 101 just north of the old truck scales and just south of the at-grade crossing of the Northwestern Pacific Railroad. The alignment would continue on the existing two-lane highway to the end of the project study area.

Engineering Features: The vertical alignment would begin with a gentle downgrade and head northwesterly from the existing freeway section to approximately East Hill Road. From this point north to the Quail Meadows Interchange, the flat valley floor would allow grades that are nearly flat except at structure approaches and departures. Throughout the valley, Modified Alternative J1T would cross the 100-year floodplain. However, Modified Alternative J1T would be constructed at least 1 m (3 ft) above the estimated 100-year water surface level.

Modified Alternative J1T would include two interchanges as the access points to Willits and Fort Bragg. The Haehl Creek Interchange would be located at the south terminus of the project. The northbound exit ramp would tie directly to existing U.S. 101 and would become S.R. 20 at this location. Approximately 6.3 km (3.9 mi) northwest of the proposed Haehl Creek Interchange, the Quail Meadows Interchange would provide access to Willits and Fort Bragg via Main Street, as existing U.S. 101 would become a local road in this area. For this interchange, the ramps would terminate at a realigned Redwood Highway (existing U.S. 101) that would become a local road in this area. Between the point where existing U.S. 101 would be realigned and where Modified Alternative J1T would connect to existing U.S. 101, the former highway (existing U.S. 101) would become an access road for the mobile home parks and other parcels that had their direct access to U.S. 101 severed.

This alternative would conform to existing U.S. 101 approximately 1.7 km (1.1 mi) north of the Quail Meadows Interchange. The existing highway would remain in service at U.S. 101 north of this point and retain the existing at-grade crossing with the Northwestern Pacific Railroad.

Structures: The alignment would include seven mainline structures and four ramp structures. The major structure in this group would be the Floodway Viaduct that would span the Little Lake Valley floodway. This viaduct would be designed to convey the base flood without substantially increasing the 100-year water surface elevation.

5.3.5 Alternative LT

Map 7, Appendix A depicts the alignment and structures for Alternative LT.

Alignment Description: Alternative LT would start approximately 0.9 km (0.6 mi) south of the Haehl Overhead and end 2.9 km (1.8 mi) south of Reynolds Highway. The overall length of this alternative would be approximately 9.3 km (5.8 mi). The estimated cost for Alternative LT is $130 million (2002 dollars).

South Segment: Like the other center valley alternatives, Alternative LT would diverge from existing U.S. 101 at the proposed Haehl Creek Interchange and head northwesterly on the embankment constructed with excess fill from a previous freeway project. The alignment would run along the east side of the Northwestern Pacific Railroad tracks, turn north to pass Little Lake Valley Cemetery and across East Hill Road. The alignment would lie immediately west of Bray Road as the alternative crossed Center Valley and Hearst-Willits Roads. Alternative LT then would turn westerly and continue across the valley north of the city's wastewater treatment plant. The alignment then would cross Outlet and Mill creeks. Mill Creek is just east of the node that separates the south and north segments of this alternative.

North Segment: After crossing the Northwestern Pacific Railroad, Alternative LT would provide access to the north side of Willits with the Quail Meadows Interchange. The roadway would reduce from four to two lanes and conform to existing U.S. 101 just north of the old truck scales and just south of the at-grade crossing of the Northwestern Pacific Railroad. Alternative LT would be identical to Alternative J1T after crossing the access road for the proposed Quail Meadows Interchange. The alignment would continue on the existing two-lane highway to the end of the project study area.

Engineering Features: The vertical alignment would begin with a gentle downgrade and head northwesterly from the existing freeway section to approximately East Hill Road. Between East Hill Road and the Quail Meadows Interchange, the flat valley floor would allow nearly flat grades except at bridge approaches and departures. Throughout the valley, Alternative LT would cross the 100-year floodplain. The profile of Alternative LT

mainline would remain at least 1 m (3 ft) above the estimated 100-year water surface level.

Alternative LT would include two interchanges to direct motorists to Willits and Fort Bragg. The Haehl Creek Interchange would be located at the south terminus of the project. The northbound exit ramp would tie into existing U.S. 101, which would become S.R. 20 at this location.

Approximately 6.6 km (4.1 mi) northwest of the proposed Haehl Creek Interchange, the Quail Meadows Interchange would provide access to Willits and Fort Bragg toward the north end of the project. For this interchange, the ramps would terminate at a realigned U.S. 101 that would become a local road in this area. Between the point where existing U.S. 101 would be realigned and where Alternative LT would connect to existing U.S. 101, the former highway (existing U.S. 101) would become an access road for the mobile home parks and other parcels that had direct access to U.S. 101 severed.

This alternative would conform to existing U.S. 101 approximately 1.7 km (1.1 mi) north of the Quail Meadows Interchange. The existing highway would remain in service as U.S. 101 north of this point and retain the existing at-grade crossing with the Northwestern Pacific Railroad.

Structures: Alternative LT would include seven mainline structures and four ramp structures. Its floodway viaduct would span the Little Lake Valley floodway over Outlet and Mill Creeks. This viaduct would be designed to convey the base flood without substantially increasing the 100-year water surface elevation. Smaller bridges or culverts would be constructed over other creeks in the area.

5.3.6 Alternative L/C

Each of the valley alternatives (C1T, J1T, and LT) were divided into smaller sections for evaluation purposes. This “nodal approach” allowed for combining sections of different alternatives, thus providing greater flexibility in identifying a preferred alternative. The nodal approach allowed Caltrans to study each segment of the valley alternatives separately, so that any hybrid combination would thus be included in the analysis, such as Alterantive L/C. The hybrid Alternative L/C, which is composed of the south segment of Alternative L1T and the north segment of Alternative C1T, was analyzed at the request of the City of Willits and community representatives. Atlas Maps 4 and 7 depict the alignment and structures for Alternative L/C.

Alignment Description: Alternative L/C would start approximately 0.9 km (0.6 mi) south of the Haehl Overhead and end approximately 2.9 km (1.8 mi) south of Reynolds Highway. The overall length of this alternative would be approximately 10.3 km (6.4 mi). The estimated cost for Alternative L/C is $130 million (2002 dollars).

South Segment: Like the other center valley alternatives, Alternative L/C would diverge from existing U.S. 101 at the proposed Haehl Creek Interchange and head northwesterly on the embankment constructed with excess fill from a previous freeway project. The alignment would run along the east side of the Northwestern Pacific Railroad tracks, turn north to pass Little Lake Valley Cemetery and across East Hill Road. The alignment would lie immediately west of Bray Road as the alternative crossed Center Valley and Hearst-Willits Roads. Alternative L/C then would turn westerly as it continued across the valley north of the city's wastewater treatment plant. The alignment then would cross Outlet and Mill creeks. Mill Creek is just east of the node that separates the south and north segments of this alternative.

North Segment: The alignment would turn north along the east side of the Northwestern Pacific Railroad tracks. Near the railroad crossing with existing U.S. 101, Alternative L/C would begin paralleling the existing highway. The proposed Truck Scales Interchange would provide an access point along a northeasterly reach of the existing highway. Just north of the interchange near the existing lumber mill, the four-lane alternative would conform to the existing two-lane section of U.S. 101.

Engineering Features: The vertical alignment would begin with a gentle downgrade and head northwesterly from the existing freeway section to approximately East Hill Road. Between East Hill Road and the Quail Meadows Interchange, the flat valley floor would allow nearly flat grades except at bridge approaches and departures. Throughout the valley, Alternative L/C would cross the 100-year floodplain. The profile of Alternative L/C mainline would remain at least 1 m (3 ft) above the estimated 100-year water surface level. Alternative L/C would include two interchanges to direct motorists to Willits and Fort Bragg. The Haehl Creek Interchange would be located at the south terminus of the project. The northbound exit ramp would tie into existing U.S. 101, which would become S.R. 20 at this location.

A second interchange called the Truck Scales Interchange would be located approximately 8.5 km (5.3 mi) north of the Haehl Creek Interchange. For the Truck Scales Interchange, the ramps would terminate at existing U.S. 101, which would become a local road in this

area. South of the Truck Scales Interchange, the existing highway would serve as a local road, providing access to Willits from the interchange. The roadway would retain the existing at-grade crossing with the Northwestern Pacific Railroad.

Structures: Structures for the Alternative L/C would be the same as for the south segment of Alternative LT and the north segment of C1T.

5.3.7 No-Build Alternative

Under the No-Build Alternative, conditions along U.S. 101 would remain as they currently exist. The No-Build Alternative would not cause adverse environmental impacts identified for the proposed project and no mitigation measures would be needed.

With the No-Build Alternative, no improvements would be made to the existing facilities though traffic volumes would increase. The No-Build scenario evaluates future traffic conditions with no capacity increasing improvements to the study area. Routine maintenance would continue.

If the No-Build Alternative were chosen, congestion would increase substantially in and around the Willits area. If no bypass is constructed and U.S. 101 is not improved through Willits, as assumed in the No-Build scenario, delay would increase significantly over time. Northbound traffic queues approaching the intersection of U.S.101 at S.R. 20 is expected to back up past Evergreen Village during the peak hour. Congested conditions are expected to occur beyond the peak hour and queues would back up for several hours of the day. Average northbound speeds under the No-Build scenario are expected to be less than 8 miles per hour in the peak hour in downtown Willits (Baechtel Road to Sherwood Road), which is half the speed that northbound traffic currently experiences in downtown Willits. Traffic collisions increase these delays, and at these times, emergency vehicles are delayed even further in getting assistance to victims.

With the No-Build scenario, interregional travelers will continue to travel through downtown Willits and will experience increased delay as a result of increased congestion in Willits. Traffic congestion in Willits will worsen as traffic volumes increase. Northbound traffic will continue to queue-up south to Holly Street or beyond during peak hour periods. Although traffic operation at the Holly Street intersection is expected to improve with construction of a Holly Street signal in the near future, it will not reduce overall delay. Higher traffic congestion will increase friction associated with commercial driveways, side street traffic, parking and pedestrians. Side street traffic trying to access

U.S. 101 increasingly will experience delayed access to U.S. 101, further increasing congestion on the side streets leading to Main Street.

With no capital improvements, there is no capital cost for this alternative. As with any highway, there would be continued costs associated with maintenance, periodic rehabilitation, and any safety and operational improvements to the existing facility. Although difficult to quantify, there also would be costs born by the local community related to air quality, noise, social, and economic impacts; and regional costs associated with an inefficient transportation system.

6 Section 404(b)(1) Analysis of Alternatives

6.1 Criteria

Under the Guidance Papers (1994:13), the practicable alternative that is the least environmentally damaging to aquatic resources must be selected *unless* this alternative would have *other significant environmental consequences,* for example, Section 4(f) resources.

While the alternatives analysis must consider the impact to waters of the U.S. that would result from the alternative before compensatory mitigation, the alternatives selection process evaluates reasonable and prudent alternatives based on "net harm" (after mitigation) of the alternative to other environmental resources, such as Section 4(f) resources, water quality, or community resources. Therefore, if an alternative exists where the impacts to non-aquatic resources can be practicably mitigated, this alternative should generally be selected over one that would fill waters of the U.S.

6.1.1 Wetlands and Other Waters of the U.S.

The NEPA/Section 404 process places a high priority on the *avoidance* of impacts to wetlands and other waters of the U.S. Where this resource cannot be avoided, the evaluation of practicable alternatives must consider the impact to jurisdictional wetlands and other waters of the U.S. that would result from the alternative *before compensatory mitigation is considered*. Specific factors considered in the LEDPA analysis included the amount of jurisdictional wetlands acreage lost, the functions and values affected, indirect impacts, and cumulative impacts. Quantitative measures included, for example, the number of jurisdictional areas crossed (with bridges and culverts), linear feet of impacts, and acreage of impacts.

6.1.2 Water Quality Standards/Floodplain Encroachment

The alternatives analysis must ensure that the LEDPA is consistent with the Water Quality Control Plan for the North Coast Region and that it does not have the potential for significant degradation of waters of the U.S.

6.1.3 Sensitive Species

The NEPA/Section 404 process places a high priority on the *avoidance* of impacts to associated sensitive species, including threatened and endangered species and other species of special concern. Impacts to riparian communities, special status plant, wildlife,

and fish species were evaluated and avoidance or minimization of impacts was considered in determining the LEDPA.

6.1.4 Section 4(f) Resources and Other Environmental Impacts

Public parklands and recreational resources, wildlife and waterfowl refuges, and historic properties listed on or eligible for listing on the National Register of Historic Places, are protected under the U.S. Department of Transportation Act of 1966. As with aquatic resources, avoidance (or minimization where avoidance is not feasible) is required. However, as with the Clean Water Act 404(b)(1) Guidelines, Section 4(f) allows the potential for other significant environmental impacts to override preservation of Section 4(f) resources.

As stated previously, impacts to non-aquatic resources are evaluated based on the "net harm" (after mitigation) of the alternative to Section 4(f) or other environmental resources.

6.1.5 Human Use Characteristics

Under Section 404 (b)(1) Subpart F, human use characteristics should be considered when making factual determinations and findings of compliance or non-compliance. These resources include parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves, that consist of areas designated under Federal and State laws or local ordinances to be managed for their aesthetic, educational, historical, recreational, or scientific value. The discharge of dredged or fill material into such areas may modify the aesthetic, educational, historical, recreational and/or scientific qualities thereby reducing or eliminating the uses for which such sites are set aside and managed. (Section 230.54)

6.2 Wetlands Functions and Values Assessment

A functions and values analysis was prepared to provide additional information on the wetlands affected by each of the proposed alternatives (Appendix B).

Wetlands are recognized as important features because they provide numerous beneficial services for people, and for fish and wildlife. Wetland "functions" are the physical, chemical, and biological characteristics of a wetland. The wetland functions evaluated in this analysis are based on the Wetland Evaluation Technique (WET) method, which is a relatively new method summarized in the "*National Water Summary on Wetland*

Resources: United States Geological Survey Water Supply Paper 2425" (on-line at http://water.usgs.gov). The eleven functions evaluated by the WET method for this project are: Groundwater Recharge, Groundwater Discharge, Flood-flow Alteration, Sediment Stabilization, Sediment/Toxicant Retention, Nutrient Removal/Transformation, Production Export, Wildlife Diversity/Abundance, Aquatic Diversity/Abundance, Uniqueness/Heritage, and Recreation.

Wetland "values" refer to the benefits that wetlands provide to the environment or to people, and include ecological, social or economic values. Not all wetlands perform the same functions or have the same values. Even within a given wetland type, such as Wet Meadow, the values may differ depending on their proximity to other habitats or if they support sensitive species.

Because a formal WET evaluation of wetland functions and values is a complex, technical and time-consuming process, the assessment of the functions and values of wetlands occurring within the Willits Bypass project alternatives was based on best professional judgment. The value of each function was identified as either low, moderate, or high; or as low to moderate, or moderate to high, with a numerical score given to each value category, consisting of: 1 for low, 2 for moderate, 3 for high; and 1.5 for low to moderate and 2.5 for moderate to high.

Table 6-1 Relative Value of Wetland Functions

Functions	Mixed Riparian Woodland[1]	Other Riparian Woodland[1]	Riparian Scrub[1]	Wet Meadow	Hay and Residential Meadow	Freshwater Marsh	Vernal Pools and Swales
	Relative Values[2]						
E3	152	4	0	54	6	0	3
C1T	382	365	204	1,774	115	171	37
J1T	110	147	31	551	133	120	34
LT	192	75	9	1,235	0	120	20
L/C	386	322	108	1,855	0	171	12
Mod J1T	11	63	5	830	35	150	2

1 Mixed Riparian Woodland occurs primarily along the edge streams. The Other Riparian Woodland and Riparian Scrub wetland types (Ash Riparian, Valley Oak Riparian, and Willow and Mixed Riparian Scrub habitats) occur primarily in Wet Meadow habitats, with some stands occurring along stream edges. Residential Meadow and Mixed Willow Scrub do not occur within the Modified Alternative J1T corridor.

2 The Relative Value of the wetland functions is based on the value of each function (low = 1, high = 3) multiplied by the acreage of each habitat affected (Relative Value calculations are rounded off). Relative Values are based on best professional judgment, not a formal analysis.

6.2.1 Riparian Woodland and Scrub Wetlands

Mixed riparian woodland and scrub communities consist of narrow stands along the creeks and drainages in Little Lake Valley, and as individual trees and dense to open stands in wet meadow wetlands. The riparian trees occur as mixed species stands, and as single species stands, consisting of valley oak, red alder, Oregon ash, Fremont's cottonwood, box elder, and willows.

In Little Lake Valley, the riparian woodland and scrub communities along the creeks likely provide short-term and long-term storage of peak flows by retaining or retarding overbank flows. Riparian habitats improve water quality by allowing sediments to settle on the water column, cycling nutrients, and transformation of nutrients, such as nitrogen. Riparian woodlands and scrub communities are important habitat for birds as nesting and foraging habitat, and are important to salmonids in providing shade that reduces water temperatures and cover for juvenile fish.

Overall, the functions of riparian woodland and scrub wetlands in the study corridor have a moderate to high value.

6.2.2 Wet Meadow Wetlands

Wet meadow wetlands (including Hay Meadow and Residential Meadow) are herbaceous communities dominated by mixtures of perennial grasses and forbs. Wet meadows are dominated by grass-like forbs, including rushes and sedges. These wetlands receive water from various sources, including ground water and overbank flooding. Hay meadow and residential meadow wetlands are similar to wet meadows, but receive water primarily from irrigation for livestock or horticultural purposes.

In Little Lake Valley the wet meadow wetlands likely provide ground water recharge and improve water quality by containing sediments deposited by overflow of streams. Flood control functions may be moderate. Wet meadow areas that support stands of Baker's meadowfoam, a state listed species, would have a high value. Overall, the functions of wet meadow wetlands in the study corridor have a moderate value.

6.2.3 Freshwater Marsh

Freshwater marsh habitat consists of mixed marsh and tule marshes and encompasses approximately 8.0 ha (19.94 ac) within the project corridor. Mixed marsh wetlands occur in internally drained basins and topographically low troughs, and is dominated by annual and perennial herbs and grass-like species with taller perennials scattered throughout, including aquatic knotweed, water plantain, spikerush, reed canary grass, cattail, common tule, and sedges.

Tule Marsh wetlands are associated with wet meadows and riparian woodlands, and form small to large patches within mixed marsh wetlands. Tule marsh wetlands are dominated by dense stands of one species, common tule.

In Little Lake Valley freshwater marsh wetlands probably have low flood control functions, because of the small area encompassed by marshes. However, they may provide water quality benefits by trapping sediments, cycling nutrients, and groundwater recharge. Freshwater marsh habitats provide important habitat for waterfowl and other birds, and amphibians.

Overall, the functions of freshwater marsh in the study corridor would have a moderate to high value.

6.2.4 Vernal Pools and Swales

Vernal pools in Little Lake Valley are small, internally drained basins with impermeable soils that allow these features to hold water from rainfall and surface runoff for long periods of time. Swales resemble vernal pools but are linear, generally narrow drainage features. In Little Lake Valley, vernal pools and swales are found primarily in wet meadow wetland habitats, and are dominated by annual hydrophytic forbs, including bracteate popcornflower, purslane, speedwell, downingia, and toadrush.

Vernal pools and swales are known to retard surface flows and reduce peak flows in areas where they occur. However, vernal pools and swales in the project area are not likely to contribute significantly to local flood control because of the small area and volume of the vernal pools present. The small size of the vernal pool watersheds in the project area, combined with the small surface area of the vernal pools and swales also limits their capacity to retain sediments, or cycle nutrients. However, vernal pools and swales support a unique and diverse aquatic biota, including plants and invertebrates.

Overall, the functions of vernal pools and swales in the study corridor have a relatively low to moderate value.

The complete wetland functions and values analysis is attached as Appendix B.

6.3 Wetlands Delineation Verification Update

The ACOE verified the wetlands delineation for Alternatives E3, C1T, J1T, and LT on April 6, 1998. This verification expired in April 2003.

Because the signatory agencies agreed informally that Alternatives E3, C1T, and L/C do not meet LEDPA criteria,[7] another wetlands delineation was prepared for only Alternatives J1T and LT in 2003. (However, this delineation was not verified, due to the eventual development of the Modified Alternative J1T, discussed below.) Caltrans and FHWA continued coordination with the signatory agencies on the remaining Alternatives J1T and LT to determine which of these alternatives meet LEDPA criteria.

While Alternative J1T has the least direct impacts to jurisdictional wetlands and other waters of the U.S. of the valley alternatives with 27.1 ha (67.0 ac) of direct impacts to this resource, this alternative would result in adverse impacts to the local and regional park/recreation complex (a Section 4(f) resource) and would result in removal of the city's only business park and the loss of businesses that would not or could not relocate in Willits.

Alternative LT, on the other hand, would avoid these community resources. However, it would directly impact approximately 36.2 ha (89.3 ac) of jurisdictional wetlands and other waters of the U.S., which is 9.1 ha (22.3 ac) more wetlands impacts than Alternative J1T. Additionally, Alternative LT would result in the fragmentation of the largest stand of Valley oak riparian woodland in the valley, and its alignment would extend further into Little Lake Valley, resulting in greater habitat fragmentation.

Working together, Caltrans, FHWA, and the signatory agencies developed the Modified Alternative J1T. While Modified Alternative J1T would impact approximately 3.8 ha (9.4 ac) more wetlands than Alternative J1T, it avoids human use characteristics/Section 4(f)

[7] USEPA letter dated 9/9/2002 and 1/30/04; NOAA Fisheries letter dated 8/22/2002 and 1/23/04; USFWS letter, dated 11/21/2002. Verbal informal agreement at January and April 2003 Project Development Team (PDT) meetings.

resources, and other environmental resources that would be impacted by the other alternatives. As a result of signatory agency support to study the Modified Alternative J1T, a wetlands delineation was prepared for this alternative and ACOE verification was provided on March 1, 2005.

This alternatives analysis discusses wetland impacts for Alternatives E3, C1T, J1T, LT and L/C based on the 1998 ACOE-verified wetlands delineation and for the Modified Alternative J1T based on the 2005 ACOE-verified wetlands delineation.

ACOE verification letters are included in Appendix H.

7 Section 404(b)(1) Evaluation of Alternatives

The NEPA 404 resource agencies have provided informal concurrence that Alternatives E3, C1T, L/C, LT and No Build do not meet LEDPA criteria.[8] Table ES-1 compares the impacts of the following alternatives. The factual determinations herein demonstrate that:

- Alternative E3 is not a practicable alternative because it is not feasible from a technical and economic standpoint and would create unacceptable impacts, including the greatest potential to jeopardize the continued existence of local populations of three federally listed salmonid species, the largest direct impact to foraging habitat for Northern spotted owl, the greatest potential to degrade water quality, high residential and business relocation impacts, and potential impacts to the highest number of archaeological sites.

Table 7-1. Impacts to Listed Fish Species

	Direct impacts to listed fish species habitat		Erosion & sedimentation impacts to EF&CH	# of listed salmonid species impacted
	Estimated creek crossings	Estimated realignment of creek(s) that support listed fish species (m/ft)		
E3	8	880 (2,890)	Ongoing*	3 (direct & indirect)
C1T	7	2,000 (6,560)	Minimizes*	3 (direct & indirect)
L/C	7	2,000 (6,560)	Minimizes*	3 (direct & indirect)
J1T	8	-0-	Minimizes*	3 (temporary & indirect)
Mod J1T	8	-0-	Minimizes*	3 (temporary & indirect
LT	4	-0-	Minimizes*	3 (temporary & indirect

EF&CH – Essential Fish Habitat and Critical Habitat

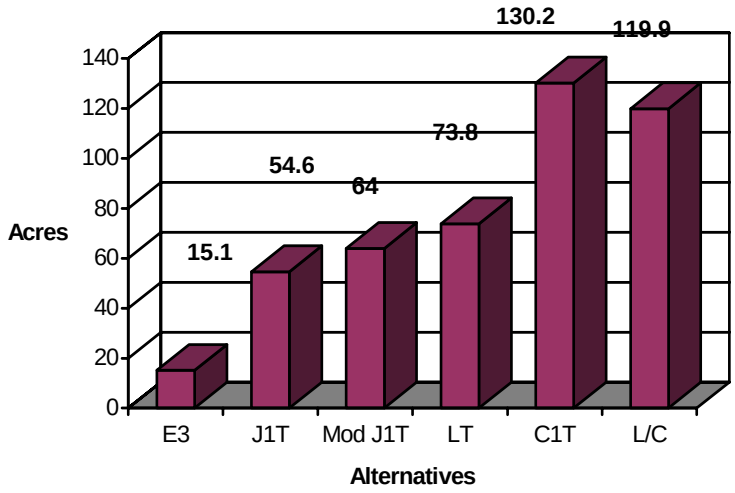
*Alternative E3 would result in "Ongoing" erosion and sedimentation due to highly unstable soils on the alignment. Each of the valley alternatives "Minimizes" erosion and sedimentation through implementation of standard BMPs during construction and operation of the facility.

- Alternatives C1T and L/C should be eliminated from consideration as LEDPA because of severe impacts to wetlands and other waters of the U.S. and to federally listed fish species. Because impacts to wetlands and salmonids at the northern section of Alternative C1T eliminate that alternative from consideration, the hybrid

[8] USEPA letter dated 9/9/2002 and 1/30/04; NOAA Fisheries letter dated 8/22/2002 and 1/23/04; USFWS letter, dated 11/21/2002. Verbal informal concurrence at January and April 2003 Project Development Team (PDT) meetings.

L/C, which consists of the northern section of Alternative C1T, also does not meet LEDPA criteria. Because of shared resource impacts, the analysis of Alternatives C1T and L/C are combined.

Figure 7-1. Impacts to Jurisdictional Wetlands and Other Waters of the U.S. (in acres)



- Alternative LT does not meet LEDPA criteria primarily for its greater impacts to wetlands as compared to Alternatives J1T and Modified J1T, and for its severe impacts to a riparian oak woodland.

- Alternative J1T does not meet LEDPA criteria because, while it has the least impacts to wetlands and other waters of the U.S. of the valley alternatives, it creates unacceptable impacts to "human use characteristics." Thus, even though it would fill fewer wetlands than Modified Alternative J1T, Alternative J1T is the more environmentally damaging of the two alternatives.

Table 7-2. Impacts to Socioeconomic and Human Use Characteristics

	Residential Relocation	Affordable Housing	Business Relocation	Business Park	Section 4(f) Resource*
E3	114	76	19	Avoids	Avoids
C1T	3	1	0	Avoids	Avoids
L/C	2	1-2	1	Avoids	Avoids
LT	7	2	5	Avoids	Avoids
J1T	13	3	20	Results in removal of City's only business park	Impacts regional park museum complex
Modified J1T	10	3	10	Avoids	Avoids

*Human use characteristic (Section 404 (b)(1) Subpart F)

- Modified Alternative J1T meets LEDPA criteria because it would result in the least overall environmental harm. Modified Alternative J1T minimizes impacts to wetlands while avoiding important community resources that would be impacted by Alternative J1T.

- The No-Project alternative is not practicable because it does not meet the purpose and need of the project.

Table 7-3 provides a side-by-side comparison of the alternatives' impacts to jurisdictional wetlands. See Table ES-1 (in the Executive Summary) for a side-by-side comparison of the alternatives' impacts to other resources, including wetlands.

Table 7-3. Direct Impacts to Jurisdictional Waters of the U.S./Wetlands
Units in hectare (acre)

	C1T*	L/C*	E3*	J1T*	Mod.J1T**	LT*	OWH
Jurisdictional Waters of the U.S./Wetlands							
Mixed riparian woodland	6.4 (15.9)	6.5 (16.1)	2.9 (7.1)	1.9 (4.5)	0.19 (0.47)	3.2 (7.9)	-
Ash riparian woodland	0.2 (0.4)	0.2 (0.4)	0.1 (0.2)	1.5 (3.7)	1.17 (2.9)	0.4 (1.1)	-
Valley oak riparian woodland	0.7 (1.8)	0.7 (1.8)	-	1.0 (2.5)	0.03 (0.08)	0.3 (0.7)	-
Valley oak-ash riparian woodland	5.2 (13.0)	4.5 (11.1)	-	0.1 (0.2)	-	0.6 (1.4)	-
Mixed willow scrub	3.1 (7.6)	1.4 (3.4)	-	-	-	-	-
Mixed riparian scrub	0.5 (1.1)	0.5 (1.1)	-	0.6 (1.4)	0.23 (0.56)	0.2 (0.4)	-
Willow riparian scrub	-	-	-	-	0.02 (0.06)	-	-
Montane riparian woodland	-	-	0.2 (0.5)	0.04 (0.1)	-	0.04 (0.1)	-
Wet meadow ***	29.9 (73.9)	31.3 (77.3)	1.3 (3.2)	9.9 (24.5)	20.7 (51.05)	22.2 (54.9)	-
Residential meadow	0.1 (0.2)	-	0.2 (0.5)	0.1 (0.2)	-	-	-
Hay meadow	2.9 (7.2)	-	-	3.4 (8.4)	-	-	-
Mixed marsh	2.4 (6.0)	2.4 (6.0)	-	1.7 (4.3)	0.4 (6.37)	1.7 (4.3)	-
Tule marsh	0.04 (0.1)	0.04 (0.1)	-	-	-	-	-
Vernal pool	0.1 (0.2)	0.2 (0.5)	0.1 (0.2)	0.4 (1.0)	0.04 (0.11)	0.2 (0.5)	-
Swale	0.8 (1.9))	0.3 (0.7)	-	0.4 (1.0)	-	0.3 (0.7)	-
Stock pond	-	-	0.4 (1.0)	0.3 (0.6)	-	0.2 (0.4)	-
Other waters	0.5 (1.3)	0.6 (1.5)	0.9 (2.2)	-	-	0.1 (0.2)	-
Open water	-	-	-	-	-	-	-
Subtotal	**52.3 (129.2)**	**48.1 (118.9)**	**6.1 (15.1)**	**21.1 (52.4)**	**24.9 (61.6)**	**29.4 (72.8)**	**-**
Access Roads						-	-
Valley oak riparian woodland				.06 (0.15)	.06 (0.15)		
Wet meadow	0.4 (1.01)	0.4 (1.01)		0.8 (2.08)	0.8 (2.08)	0.4 (1.01)	-
Access Roads Total**	0.4 (1.01)	0.4 (1.01)	-	0.9 (2.2)	0.9 (2.2)	0.4 (1.01)	-
Total	**52.7 (130.2)**	**48.5 (119.9)**	**6.1 (15.1)**	**22.0 (54.6)**	**25.9 (64.0)**	**29.9 (73.8)**	

NOTE: numbers may not add due to rounding and Metric/English conversion

*Based on wetlands delineation, verified 1998.

**Modified Alt J1T and access roads are based on 2005 ACOE-verified delineation.

7.1 Factual Determinations: Alternative E3

The following information summarizes why Alternative E3 does not meet LEDPA criteria because of its overall environmental impacts.

7.1.1 Wetlands and Other Waters of the U.S.

Alternative E3 would have the least direct impact of the build alternatives to wetland resources: 6.1 ha (15.1 acres), but Alternative E3 would have the greatest potential indirect impact to jurisdictional aquatic resources that are habitat to federally listed salmonid species, due to the potential for large amounts of erosion-related sediments to enter major salmonid streams. See Sections 7.1.2 and 7.1.3 below. Table 7-3 above shows direct impacts to jurisdictional wetlands and other waters of the U.S.

7.1.2 Water Quality

Alternative E3 traverses an area that the soil survey classifies as having highly erosive soils. Although Caltrans would use best available technology, cutting and filling in these highly erodible soils would have the greatest potential for short-term construction-related residual sedimentation, as well as long-term sedimentation from possible slip outs, slumps, and landslides that could enter the downstream waters.

Alternative E3 would create the greatest impacts to water quality due to the potential for erosion relative to other alternatives. Alternative E3 would directly impact or degrade 3.6 ha (8.9 ac) of riparian habitat, most of which is along Haehl Creek, due to channel realignment. Also, several intermittent drainages that qualify as waters of the U.S. would require culverts ranging in length from 150 m (492 ft) to 300 m (984 ft). These long culverts would potentially increase velocities and concentrate flows affecting downstream reaches.

Alternative E3 would traverse the largest extent of the surrounding foothills that are mostly classified by the soil survey as having highly erosive soils. The highly erosive soils located along Alternative E3 have a greater potential to result in unpredictable slides. Even with specialized foundation treatments, specialized cut slope and fill slope design, mechanically reinforced embankments, stabilization trenches, catchment areas, and specialized subsurface drainage techniques, the potential for landslides remains high for Alternative E3. Ongoing storm damage maintenance is expected to be a major contributor to sediment loads in downstream waters that provide high quality spawning habitat for local populations of three federally-listed fish species, discussed below.

Construction of Alternative E3 would require 12 million cubic yards of cut and fill. In contrast, the valley alternatives would require from between 2.4 to 3.4 million cubic yards of cut and fill. Although Caltrans would use the best available technology (Best Management Practices), cutting-and-filling in highly erodible soils would have the greatest potential for short-term construction related residual sedimentation, as well as long-term sedimentation from possible slip outs, slumps, and landslides that could enter the downstream waters. Alternative E3, which would traverse the wooded hills west of Willits, would require 9.1 million cubic meters (12 million cubic yards) of total earthwork. It would be a "balanced" job, meaning that the material excavated in construction of the alignment would be used as fill material along other portions of the alignment.

7.1.3 Special Status Species

Adverse impacts to federally listed and non-listed species of concern that could result from construction of Alternative E3 are discussed below.

7.1.2.1 Federally listed species

Salmonids

The greatest concern of Alternative E3 would be its impact on the water quality of the upper reaches of Haehl, Baechtel, Broaddus and Mill Creeks, which provide spawning and rearing habitat for three listed salmonids: Coho and Chinook salmon, and Steelhead trout; and critical habitat for Coho salmon.

Alternative E3 would require seven crossings over streams identified as salmon bearing streams, which consist of the upstream reaches of Haehl, Baechtel, Broaddus, Mill, Upp, and Outlet Creeks. Alternative E3 also could potentially affect downstream reaches of these creeks from increases in sedimentation. The majority of potentially affected stream reaches is located in the foothills above Little Lake Valley and contains important habitat for salmon and steelhead.

In addition, tributaries upstream of Alternative E3's construction footprint, including Willits Creek and segments of Mill, Broaddus, and Baechtel Creeks, support salmonid populations that could be indirectly affected in the short term as a result of construction activities that inhibit spawning migration.

Alternative E3 would have the greatest impacts to federally listed salmonids resulting from potential project-related erosion, discussed above under Water Quality. The proposed alternative would directly impact or degrade 3.6 ha (8.9 ac) of riparian habitat (Table 7-1), most of which is along Haehl Creek due to channel realignment. Soil disturbance associated with the cut-and-fill slopes at the stream crossings would have the potential of soil sedimentation during storm events.

The impacts on fish habitat and the distribution and abundance of fish associated with Alternative E3 are considered extensive because a high potential for permanent impacts to fish populations and suitable salmonid habitat resulting from the proposed stream crossings, and the potential for increased erosion from project related activities.

Northern Spotted Owl

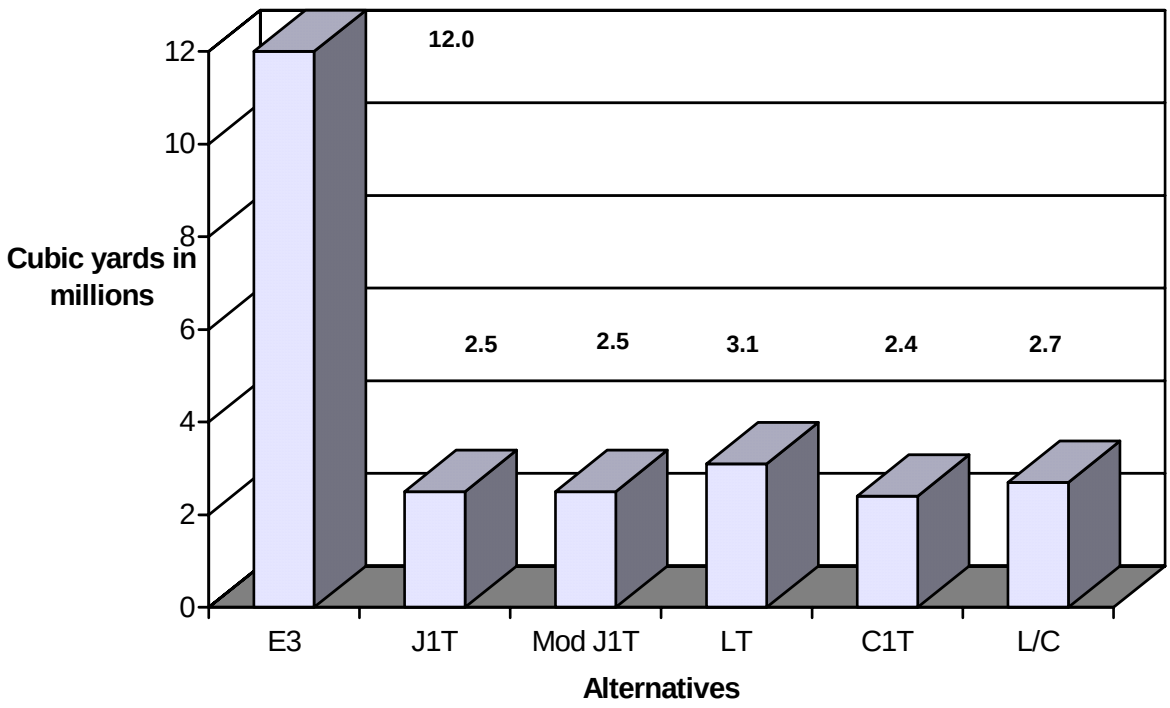
The earthwork required for Alternative E3 would result in an adverse impact on approximately 127 ha (313 ac) of forest habitat that could provide suitable foraging habitat for Northern spotted owl, particularly in the northern portion of the alternative.

Table 7-4. Comparison of Estimated Earthwork/Borrow Requirements (Potential Impacts to Northern Spotted Owl Foraging Habitat) Cubic meters (cubic yards) in millions

E3*	C1T**	L/C**	LT**	J1T**	Mod. J1T**
9.1 (12)	1.8 (2.4)	2.1 (2.7)	2.4 (3.1)	1.9 (2.5)	1.9 (2.5)

*Earthwork, both cut and fill, occurs entirely on the alignment of Alternative E3.
**The valley alternatives require borrow material. Numbers reflect the amount of excavation required at Oil Well Hill if no other borrow site is used.

Figure 7-2 Estimated Earthwork/Borrow Requirements



7.1.2.1 Federal species of concern

Wildlife

Haehl, Baechtel, Broaddus, Mill, Upp, Outlet Creeks and other streams in the project area provide habitat for foothill yellow-legged frog and Northwestern pond turtle. Construction of Alternative E3 would require bridge structures and culverts ranging in length from 150 m (492 ft) to 300 m (984 ft) in some intermittent streams, which would adversely affect foothill yellow-legged frog and Northwestern pond turtle. These long culverts would directly impact habitat and have potential indirect impacts by increasing velocities and concentrating flows, thus affecting downstream reaches.

Plant Species

Alternative E3 would not impact Baker's meadowfoam.

7.1.4 Other Environmental Factors

The impact of Alternative E3 would remain adverse after mitigation to a number of other environmental resources, which are discussed below.

7.1.4.1 Sensitive Plant Communities

Construction of Alternative E3 would result in the loss of 22.7 ha (56.1 ac) of oak woodlands. The loss of oak woodlands would be adverse because of the length of time required for oak trees to grow into stands of mature trees that could provide higher quality functions and values for nesting birds, raptors, and other wildlife such as deer.

Alternative E3 could directly or indirectly impact three small populations of Baker's navarretia, which is a California Native Plant Society (CNPS) List 1B species.

7.1.4.2 Other Wildlife

Alternative E3 would create barriers to the movement of deer and other wildlife, and would result in the fragmentation of wildlife habitats in the project area. Construction of Alternative E3 would result in more deer mortality due to vehicle collisions. Steep-cut banks along the alignment could force deer to the shoulder of the road, where they are more susceptible to collisions from vehicles.

The forest habitats occurring in Alternative E3 could provide suitable habitat for red tree vole, a State special concern species. Alternative E3 also could impact red tree vole by removing nests and killing individuals during construction.

7.1.4.3 Socioeconomic Impacts

Alternative E3 is considered infeasible due to unacceptable socioeconomic impacts. Alternative E3 would require relocation of 114 households and 19 businesses, as opposed to from 3 to 34 household and business relocations for Alternatives C1T, J1T, Modified J1T, and LT. Besides adverse impacts associated with disruption of community cohesion, relocation, and lack of suitable replacement housing, Alternative E3 would also cause disproportionately high and adverse impacts to minority or low-income populations (discussed under Section 7.1.4.4 below).

Alternative E3 would not result in the removal of the city's industrial park, however, Alternative E3 would impact two major employers along its alignment. There are not enough adequate replacement locations to reestablish these businesses within Willits.

The costs of right of way purchase and relocation have escalated the cost of this alternative (see Section 7.1.4.11 Estimated Construction Cost, below).

7.1.4.4 Environmental Justice (EO 12898)

Alternative E3 would require the disproportionate displacement of residents living in areas identified as having high proportions of low-income or minority residents. The majority (77) of the residences displaced by this alternative are low-income residents. Thus, the impact of relocation would fall disproportionately on low-income and minority residents.

7.1.4.5 Human Use Characteristics

Under Section 404(b)(1) Subpart F, human use characteristics should be considered when making factual determinations and findings of compliance or non-compliance. These resources include parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves, that consist of areas designated under Federal and State laws or local ordinances to be managed for their aesthetic, educational, historical, recreational, or scientific value. The discharge of dredged or fill material into such areas may modify the aesthetic, educational, historical, recreational and/or scientific qualities thereby reducing or eliminating the uses for which such sites are set aside and managed (CFR 230.54).

Alternative E3 does not impact human use characteristics.

7.1.4.6 Section 4(f) Resources

Alternative E3 does not impact Section 4(f) resources.

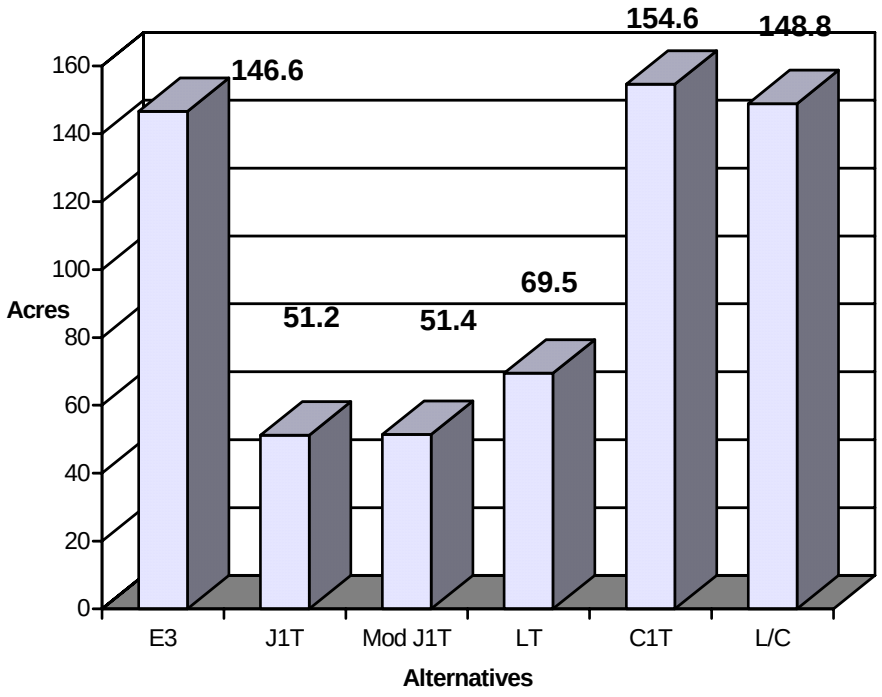
7.1.4.7 Cultural Resources

Alternative E3 has the greatest potential to affect cultural resources. Construction along this alignment could affect 18 identified archaeological sites and this is considered potentially significant (under Section 106, National Historic Preservation Act eligibility criteria) unless further and more detailed examination of the sites are made. Specifically, two historical, seven prehistoric, and five prehistoric sites with a historical component were in or adjacent to the ROW limits for Alternative E3. Alternative E3 would require an estimated expenditure of $900,000 for contracted Phase II and III archaeological studies, which is 2-1/2 times more than for the other build alternatives.

7.1.4.8 Williamson Act Contract Farmland Conversion

Alternative E3 exceeds the farmland conversion impact rating[9] by 10 points (170 points versus a 160-point threshold) and would result in a large conversion of Williamson Act Contract farmland (59.3 ha/146.6 ac) to other uses.

Figure 7-3 Land Removed from Williamson Act Contract



7.1.4.9 Growth Inducement

Alternative E3 would construct an additional interchange, which could result in growth-inducing impacts. An interchange at S.R. 20 would likely result in the construction of fuel stations, fast-food restaurants, and other interchange-compatible businesses. Impacts due to development in this area would be similar to direct impacts that would result from construction of Alternative E3, including removal of oak woodland, habitat fragmentation,

[9] Pursuant to Section 1541(a) of the Farmland Protection Policy Act (1984), the Farmland Conversion Impact Rating for Corridor-Type Projects uses a numerical indicator and a 160-point threshold to assess the extent of farmland impacts relative to federally established criteria. The assessment of the Willits Bypass alternatives was developed in consultation with the Natural Resources Conservation Service.

farmland impacts, water quality impacts to creeks due to the highly erosive soils, and indirect impacts to listed fish habitats.

7.1.4.10 Erosion and Landslide Potential

Construction of Alternative E3 would require 12 million cubic yards of earthwork. This is roughly the same excavation that was required for construction of the Redwood National Park Bypass project, the largest roadway excavation project ever completed in Northern California.

Even with specialized foundation treatments, specialized cut slope and fill slope design, mechanically reinforced embankments, stabilization trenches, catchment areas, and specialized subsurface drainage techniques, the potential for landslides remains high for Alternative E3. The highly erosive soils located along Alternative E3 alignment have a greater potential to result in unpredictable, unpreventable slides. Ongoing storm damage maintenance is expected to be a major contributor to sediment loads in downstream waters that provide high quality spawning habitat for federally listed fish species.

7.1.4.11 Construction Cost

The cost for Alternative E3 greatly exceeds the reasonable expected funds. At an estimated $301 million (2002 dollars), this alternative is approximately 2.5 times more than budgeted for the project. The total cost includes an estimated $23 million in right-of-way expenditures (in 2002 dollars), which is $10 million to $18 million more than the valley alternatives. In addition, Alternative E3 would require ongoing storm damage maintenance due to the highly unstable soils on this alignment.

7.1.5 Conclusion

Alternative E3 does not meet LEDPA criteria because of its overall environmental impacts. While Alternative E3 has the least direct impacts to jurisdictional wetlands and other waters of the U.S. (6.1 ha [15.1 ac]), it would have the greatest potential to indirectly impact jurisdictional aquatic resources that are habitat to federally listed species, due to the potential for large amounts of erosion-related sediments to enter major salmonid streams. Ongoing storm damage maintenance on this alternative is expected to be a major contributor to sediment loads in downstream waters that provide high quality spawning habitat for local populations of three federally listed fish species.

Construction of Alternative E3 would result in the following adverse environmental effects: 1) it has the greatest potential to jeopardize the continued existence of local

populations of three federally listed salmonid species; 2) it would have the largest direct impact to foraging habitat for Northern spotted owl because of this alignment's massive earthwork requirements; 3) it has the greatest potential to degrade water quality because of highly erosive soils and extensive number of stream crossings; 4) it displaces the highest number of homes and businesses (133); 5) it has the potential to affect the highest number of archaeological sites (18); 6) it converts a large amount of Williamson Act Contract farmland (59.3 ha/146.6 ac); and 7) it would impact larger areas of upland/foothill habitats than the other alternatives, including oak woodland, a habitat type that is very difficult to replace.

Further, Alternative E3 is not a practicable alternative because it cannot be accomplished "within the financial resources that could reasonably be made available and it is [not] feasible from the standpoint of technology and logistics." (Guidance Papers 1994:12). Specifically, Alternative E3 is not practicable because: 1) it requires 12 million cubic yards of roadway excavation during construction; 2) even with specialized foundation treatments, specialized cut slope and fill slope design, mechanically reinforced embankments, stabilization trenches, catchment areas, and specialized subsurface drainage techniques, the potential for unpredictable landslides on the highly erosive soils on this alignment would remain high; 3) the highly unstable soils would require ongoing maintenance; and 4) the high estimated cost ($301M in 2002 U.S. dollars) to construct Alternative E3 makes it infeasible.

7.2 Factual Determinations: Alternatives C1T and L/C

7.2.1 Wetlands and Other Waters of the U.S.

Alternatives C1T and hybrid L/C would have the largest direct impact to jurisdictional aquatic resources. Alternative C1T would impact approximately 52.7 ha (130.2 ac) and Alternative L/C would impact approximately 48.5 ha (119.9 ac) of wetlands and other waters of the U.S. These impacts are nearly twice that of Alternatives J1T and Modified J1T which would impact approximately 22 ha (54.6 ac) and 25.9 ha (64 ac), respectively, of wetlands and other waters of the U.S.

Alternatives C1T and L/C also would require the realignment of approximately 400 m (1,300 ft) of Mill Creek and a 1,600 m (5,250 ft) reach of Outlet Creek bordering the east side of the Northwest Pacific Railroad tracks, in the northern portion of Little Lake Valley. Alternatives C1T and L/C would fill large areas of wetland habitat (29.9 ha [74.9 ac] and 31.6 ha [78.3 ac], respectively, of wet meadow; and 16.1 ha [39.8 ac] and 13.8 ha [33.9 ac], respectively, of riparian woodland and scrub habitats), which has the potential

to directly and indirectly alter surface and groundwater hydrologic conditions of several flood basins in Little Lake Valley that provide habitat for several special-status species found in Little Lake Valley (see Section 7.2.3, below). Because of the magnitude of direct and indirect effects to wetlands that Alternatives C1T and L/C could cause, these would be significant adverse impacts.

7.2.2 Water Quality

The risk of degraded water quality (including soil erosion and increased stream temperatures) is high for the northern portion of Alternatives C1T and L/C due to the proposed creek realignments and removal of riparian vegetation along these creeks. The adverse affect of degraded water quality is discussed below under "Endangered Species Act Sensitive Species."

Alternative C1T would span the floodway with an 820 m (2,690 ft) viaduct; the remainder of the alignment would be built on embankment. Alternative L/C would span the floodway with an 840 m (2,755 ft) viaduct, and the remainder of the alignment would be built on embankment.

7.2.3 Special Status Species

In addition to having the greatest impacts to wetlands and other waters of the U.S., Alternatives C1T and L/C could jeopardize the continued existence of local populations of three federally listed salmonid species: coho and chinook salmon and steelhead trout. These significant adverse impacts to salmonids and other Endangered Species Act protected species are discussed below.

7.1.2.1 Federally listed species

Salmonids

The northern segment of both Alternatives C1T and L/C would require realignment of approximately 400 m (1,300 ft) of Mill Creek, and 1,600 m (5,250 ft) of Outlet Creek on the east side of the railroad tracks. These creeks are habitat for the listed Chinook salmon and steelhead trout and are designated as critical habitat for the listed coho salmon. Outlet Creek provides the only route for salmonids to move upstream to spawning habitat located in streams tributary to Outlet Creek. Channel realignments also would remove riparian vegetation and construction of the new channels would degrade water quality (increased water temperature and sedimentation), resulting in potential direct and indirect impacts to coho and chinook salmon and steelhead trout.

Northern spotted owl

Excavation in the Oil Well Hill area would impact a maximum of approximately 12 to 16 ha (30 to 40 ac) of potential foraging habitat for Northern spotted owl. Minimizing the amount of habitat removed would reduce impacts to this species.

7.1.2.1 Federal species of concern

Wildlife

The realignment of Mill Creek and Outlet Creek, discussed above, could adversely affect foothill yellow-legged frog and Northwestern pond turtle. Direct impacts could result from construction of realigned channel and indirect impacts could result from water quality degradation during construction.

Plant Species

Alternative C1T would directly impact three Baker's meadowfoam populations, one population located just south of Center Valley Road and two populations located near the northern portion of the alignment. These consist of nearly 1.3 ha (3.2 ac) of occupied habitat (1991-1992 survey data). Alternative L/C would directly impact two Baker's meadowfoam populations, consisting of nearly 1.2 ha (3.0 ac) of occupied habitat at the north segment of the alternative (1991-1992 survey data). The populations remaining in these locations, and other populations not directly affected, could be subject to potential indirect hydrologic and fragmentation effects, due to separation of flood basins from other areas. Because of the rarity of this species, this impact would be considered adverse and difficult to mitigate.

7.2.4 Other Environmental Factors

Alternative C1T has high impacts to farmland and both Alternatives C1T and L/C have high impacts to wintering waterfowl. Unlike Alternative E3, Alternatives C1T and L/C do not have adverse impacts related to socioeconomics, cultural resources, growth inducement, or cost.

7.2.4.1 Sensitive Plant Communities

In addition to impacts to the plant species discussed above, Alternative L/C would bisect the largest stand of riparian valley oak woodland, located in the southern portion of the alternative, which would result in the removal of a significant number of valley oaks. Alternative C1T would avoid this riparian valley oak woodland.

Alternatives C1T and L/C would not impact Baker's navarretia, a California Native Plant Society (CNPS) List 1B species.

7.2.4.2 Other Wildlife

Alternatives C1T and L/C would result in removal of 16.1 ha (39.8 ac) and 13.8 ha (34.0 ac), respectively, of riparian woodland and scrub habitat that provide nesting and foraging habitat for white-tailed kite (a California fully protected species) and Cooper's hawk, California yellow warbler, yellow-breasted chat (all California listed special concern species). Measures are proposed to reduce these impacts. However, the magnitude of impact to this habitat type would remain high even after mitigation. For comparison purposes, Alternative J1T impacts 5.07 ha (12.5 ac) and Modified Alternative J1T impacts 1.7 ha (4.21 ac) of riparian woodland and scrub habitat (Table 7-3).

Excavation in the Oil Well Hill area could affect red tree vole that could occur in the general vicinity of the project area. Impacts to red tree vole could include the removal of red tree vole nests and the direct injury or death of individual tree voles. Minimization measures proposed for Northern spotted owl, above, would reduce impacts to this species.

The north segment of Alternatives C1T and L/C would result in fragmentation of habitat used by wintering waterfowl.

Construction of either of these alternatives also would have the potential to block corridors used by wildlife, such as deer, that make seasonal and daily movements between the valley and hills west of the valley. Measures are proposed to reduce impacts to wildlife passage.

7.2.4.3 Socioeconomics

Alternatives C1T and L/C would require the relocation of three and two residences, respectively. Sufficient replacement housing exists within Willits to accommodate these displaced residents.

Alternative C1T would not require relocation of any business, while Alternative L/C would require relocation of one business. Thus, these alternatives would not have a negative impact on the local economy or employment patterns. Suitable replacement sites are available for the one business impacted by Alternative L/C. Alternatives C1T and L/C do not impact the city's industrial park.

7.2.4.4 Environmental Justice (EO 12898)

There are no disproportionate impacts to low-income or minority residents as a result of Alternatives C1T or L/C. Alternative C1T would require the relocation of one minority or low-income residence, which does not represent a disproportionate impact on residents living in areas identified as having high proportions of low-income or minority residents. Alternative L/C does not require the relocation of any low-income or minority residence.

7.2.4.5 Human Use Characteristics

Alternatives C1T and L/C do not impact human use characteristics.

7.2.4.6 Section 4(f) Resources

Alternatives C1T and L/C do not impact Section 4(f) resources.

7.2.4.7 Cultural Resources

Three archaeological sites are located within the proposed ROW limits of Alternatives C1T and L/C.

7.2.4.8 Williamson Act Contract Farmland

Alternative C1T would convert 62.6 ha (154.6 ac) of Williamson Act Contract farmland to other uses and Alternative L/C would convert 60.3 ha (148.8 ac) of Williamson Act Contract farmland to other uses, which is similar in magnitude to the impact of Alternative E3 to Williamson Act Contract farmland. Alternative C1T has a farmland conversion impact rating of 153 (the established threshold is 160). The farmland conversation rating for Alternative L/C would be from 153 to 155.

7.2.4.9 Growth Inducement

Alternatives C1T and L/C are not expected to be growth inducing and they do not remove barriers to growth.

The potential for commercial development at southern and northern interchanges is constrained by a number of factors. Caltrans would maintain full access control at the southern interchange and there are no driveways from adjacent parcels to the facility at this area, except to a ranch to the east. Any future requests for changes to access from the southern interchange to this property would require a decision by the California Transportation Commission.

The potential for commercial development at the northern Truck Scales interchange is limited due to geotechnical constraints to the east, wetlands and agricultural uses to the west, and existing county zoning designations (AG-Agriculture). While there may be some limited potential for commercial development at the northern interchange to the west, any large-scale commercial development would be constrained, so an impact on the City's tax revenue is not anticipated. In any event, commercial growth at this location could occur with or without construction of the bypass.

7.2.4.10 Erosion and Landslide Potential

Alternatives C1T, L/C, J1T, Modified J1T, and LT would have similar low-level geotechnical challenges. These alternatives avoid the Holocene deposits with the highest liquefaction potential and they avoid major road cuts and embankment in soils that are prone to landsliding. These alternatives do not cross the Alquist-Priolo Special Study Zone (Maacama Fault Zone).

7.2.4.11 Construction Cost

Alternative C1T: $128 million (2002 dollars); Alternative L/C: $130 million (2002 dollars)

7.2.5 Conclusion

Both Alternatives C1T and L/C are practicable because they can be accomplished "within the financial resources that could reasonably be made available and [they are] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12), however, these two alternatives do not meet LEDPA criteria because of their overall environmental impacts, including the greatest direct impact to jurisdictional wetlands and other waters of the U.S.; extensive creek realignment; adverse impacts to habitat of three federally listed fish species and critical habitat of one federally listed fish species; as well as other impacts listed below.

Alternatives C1T and L/C have the greatest direct impact to jurisdictional wetlands and other waters of the U.S. of all the build alternatives: 52.7 ha (130.2 ac) for Alternative C1T and 48.5 ha (119.9 ac) for Alternative L/C. Both alternatives would require over one-half mile of creek realignment.

Alternatives C1T and L/C would result in the following adverse environmental effects: 1) The extensive creek realignment would result in adverse impacts to habitat of three federally listed fish species and critical habitat of one federally listed fish species; 2)

direct impacts to Baker's meadowfoam, a federal species of concern (three populations / 1.3 ha (3.2 ac) on Alternative C1T and two populations / 1.2 ha (3.0 ac) on Alternative L/C); 3) habitat fragmentation would likely reduce waterfowl use, including nesting for five waterfowl species; 4) Alternative C1T would impact 62.6 ha (154.6 ac) of farmland currently enrolled in Williamson Act Contracts; 5) both alternatives extend furthest to the east into Little Lake Valley, resulting in greater habitat fragmentation than Alternatives J1T or Modified J1T.

7.3 Factual Determinations: Alternative LT

7.3.1 Wetlands and Other Waters of the U.S.

Alternative LT would impact approximately 29.9 ha (73.8 ac) of habitat that qualifies as waters of the U.S., including wetlands. This magnitude of impact is intermediate among the alternatives, but is substantial from a local and regional perspective. Most of the wetlands affected by Alternative LT consist of 22.6 ha (55.9 ac) of wet meadows. Impacts to wetlands associated with Alternative LT are summarized in Table 7-3.

7.3.2 Water Quality

Alternative LT would require crossing Haehl, Outlet, Mill, and Upp Creeks. The stream crossings would directly affect the upper reach of Haehl Creek and the lower reaches of Outlet, Mill and Upp Creeks. These streams contain habitat for federally listed salmonids and critical habitat for one federally listed fish species. The stream crossings proposed for this alignment would be located primarily in valley locations. Habitat values would be similar to those occurring in Alternative J1T. Construction of this alternative would remove or degrade approximately 4.7 ha (11.6 ac) of riparian woodland and scrub habitat along streams that could provide habitat for salmonids. Alternative LT would include construction of an estimated 840 m (2,755 ft) viaduct to span the floodway. Alternative LT would cause less erosion than Alternatives C1T, L/C, and E3 and would have similar water quality impacts as Alternatives J1T and Modified J1T. Mitigation measures are proposed to reduce these impacts.

7.3.3 Special Status Species

7.3.3.1 Federally listed species

Salmonids

Alternative LT would require crossing Haehl, Outlet, Mill, and Upp Creeks. The stream crossings would directly affect the upper reach of Haehl Creek and the lower reaches of,

Mill and Upp Creeks. These streams contain habitat for three listed salmonids, including critical habitat for one listed salmonid. The stream crossings proposed for this alignment would be located primarily in valley locations. Construction of this alternative would remove or degrade approximately 3.2 ha (7.9 acre) of mixed riparian woodland habitat along streams that could provide habitat for salmonids. Measures are proposed to reduce these impacts. Mitigation measures and Best Management Practices (BMPs) will reduce impacts to these species.

Northern spotted owl

The removal of a maximum of 12 to 16 ha (30 to 40 ac) of fill at Oil Well Hill would impact potential foraging habitat of Northern spotted owl. Minimizing the amount of habitat removed would reduce impacts to this species.

7.3.3.2 Federal species of concern

Plant Species

Alternative LT would directly impact one population of Baker's meadowfoam located in the proposed Quail Meadow Interchange area, affecting approximately 0.2 ha (0.5 ac) of habitat (1991-1992 survey data). Mitigation measures are proposed to reduce impacts to this species.

Wildlife

Alternative LT could impact foothill yellow-legged frog and Northwestern pond turtle, which occur in the streams in Little Lake Valley. Mitigation measures and Best Management Practices (BMPs) will reduce impacts to these species.

7.3.4 Other Environmental Factors

Alternative LT could result in adverse impacts to riparian oak woodland. Unlike Alternative E3, Alternative LT does not have adverse impacts related to socioeconomics, cultural resources, growth inducement, or cost. Compared to Alternatives C1T and L/C, Alternative LT does not have high impacts to Williamson Act Contract farmland.

7.3.4.1 Sensitive Plant Community

The south end of Alternative LT would impact the largest remaining stand of Valley oak woodland in Little Lake Valley and would result in habitat fragmentation with the construction of the alignment on a continuous berm through the woodland. The habitat fragmentation and the creation of a barrier to wildlife would be difficult to mitigate.

7.3.4.2 Other Wildlife

Alternative LT could block corridors used by wildlife that make seasonal and daily movements between the valley and the hills to the west. Measures are proposed to reduce impacts to wildlife passage.

The removal of large numbers of valley oaks (discussed in Section 7.3.4.1 Sensitive Plant Community, above) would reduce nesting habitat for raptors, including white-tailed kite.

Construction of this alternative would remove or degrade approximately 4.7 ha (11.6 ac) of riparian woodland and scrub habitat that benefit yellow-breasted chat, a California listed special concern species. Measures that place riparian woodland and scrub habitat will reduce impacts to these species.

Excavation in the Oil Well Hill area could affect red tree vole that could occur in the general vicinity of the project area. Impacts to red tree vole could include the removal of red tree vole nests and the direct injury or death of individual tree voles. Minimization measures proposed for Northern spotted owl, above, would reduce impacts to this species.

7.3.4.3 Socioeconomics

Alternative LT would require the relocation of seven residences. Sufficient replacement housing exists within Willits to accommodate these displaced residents. Alternative LT would require the relocation of five commercial properties, which would not have a negative impact on the local economy or employment patterns. Suitable replacement sites are available for these businesses so they would be expected to continue operating effectively. Alternative LT would not impact the city's industrial park.

7.3.4.4 Environmental Justice (EO 12898)

There are no disproportionate impacts to low-income or minority residents as a result of Alternative LT. This alternative would require the relocation of two minority or low-income residences, which does not represent a disproportionate impact to residents living in areas identified as having high proportions of low-income or minority residents.

7.3.4.5 Human Use Characteristics

Alternative LT does not impact human use characteristics.

7.3.4.6 Section 4(f) Resources

Alternative LT does not impact Section 4(f) resources.

7.3.4.7 Cultural Resources

Three archaeological sites are within the ROW limits for Alternative LT.

7.3.4.8 Williamson Act Contracts

Alternative LT would convert 28.1 ha (69.5 ac) of Williamson Act Contract farmland to other uses. Alternative LT has a farmland conversion impact rating of 155 (the established threshold is 160).

7.3.4.9 Growth Inducement

Alternative LT would not be growth inducing nor would it remove barriers to growth. The potential for commercial development at southern and northern interchanges is constrained by a number of factors. Caltrans would maintain full access control at the southern interchange and there are no driveways from adjacent parcels to the facility at this area, except to a ranch to the east. Any future requests for changes to access from the southern interchange to this property would require approval by both Mendocino County and the California Transportation Commission. The potential for commercial development at the northern Quail Meadows interchange is limited due to geotechnical constraints to the east, wetlands and agricultural uses to the west, and existing zoning designations (AG-Agriculture). A few parcels next to the southwest quadrant of the northern interchange are zoned for commercial use (C-1), and an RV park and mini-storage occupy this area. Any additional commercial use on these commercially zoned parcels could benefit the City since these parcels are located within the City limits. While there may be some potential for commercial development at the northern interchange, any large-scale commercial development would be constrained, so an impact on the City's tax revenue is not anticipated. In any event, commercial growth at these locations could occur with or without construction of the bypass.

7.3.4.10 Erosion and Landslide Potential

Alternatives C1T, L/C, J1T, Modified J1T, and LT would have similar low-level geotechnical challenges. These alternatives avoid the Holocene deposits with the highest liquefaction potential and they avoid major road cuts and embankment in soils that are prone to landsliding. These alternatives do not cross the Alquist-Priolo Special Study Zone (Maacama Fault Zone).

7.3.4.11 Construction Cost

$130 million (2002 dollars)

7.3.5 Conclusion

Alternative LT is practicable because it can be accomplished "within the financial resources that could reasonably be made available and [they are] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12), however, Alternative LT would have high overall impacts compared to the remaining build alternatives.

Alternative LT would directly impact approximately 29.9 ha (73.8 ac) of jurisdictional wetlands and other waters of the U.S.

Alternative LT also would result in the following additional adverse impacts: 1) fragmentation of the largest stand of valley oak riparian woodland in the valley; 2) extends further into the valley than Alternatives J1T and Modified J1T, resulting in habitat fragmentation. In addition, Alternative LT would require approximately 2.4 million cubic meters (3.1 million cubic yards) of borrow material; Alternatives J1T and Modified J1T, on the other hand, would require 0.5 million cu m (0.6 million cu yds) less of fill material, which would represent a reduction in loss of suitable foraging habitat for Northern spotted owl, if Oil Well Hill is the only borrow site used for the project.

7.4 Factual Determinations: Alternative J1T

7.4.1 Wetlands and Other Waters of the U.S.

Alternative J1T would impact approximately 22.0 ha (54.6 ac) of habitat that qualifies as waters of the U.S., including wetlands. This magnitude of wetland impact is intermediate among the alternatives, but is extensive from a local and regional perspective. Nearly half of the affected wetlands on this alternative consists of wet meadow habitat – 10.75 ha (26.58 ac). Impacts to wetland types associated with Alternative J1T are summarized in Table 7-3.

7.4.2 Water Quality

Alternative J1T would cross Haehl Creek, and the lower sections of Baechtel, Broaddus, Mill and Upp creeks. Like the other valley alternatives, this alternative crosses areas inundated by 100-year flood events and areas of FEMA-defined floodways. Construction of this alternative would remove or degrade approximately 5.07 ha (12.5 ac) of riparian woodland and scrub habitat along streams that could provide habitat for salmonids. This alternative would include the construction of a viaduct approximately 1,600 m (5,250 ft) long, which would limit the potential for the alteration of surface and groundwater

hydrologic conditions. The viaduct would also reduce potential indirect effects to nearby wetlands, and to plant and wildlife species dependent on these aquatic habitats. Mitigation measures are proposed to minimize water quality and temperature impacts.

7.4.3 Special Status Species

7.4.3.1 Federally listed species

Salmonids

Alternative J1T would require the crossing of Haehl, Baechtel, Broaddus, Mill, and Upp Creeks. The stream crossings would directly affect the upper reach of Haehl Creek. The crossings would affect the lower reaches of Baechtel, Broaddus, and Mill creeks. All of the affected stream channels contain habitat for three listed salmonids and critical habitat for one listed salmonid, including riparian vegetation that would be removed or trimmed at the crossing locations. However, because the crossings would be located in the valley, farther downstream from the higher quality spawning habitat located in the upper reaches of these streams, they would have less severe effects on salmonids than Alternative E3 because of the smaller amount of high-quality habitat exposed to sedimentation impacts. Also, Alternative J1T would not require the filling of over a mile of Outlet Creek, which would be required for Alternatives C1T and L/C.

Although the stream reaches affected by this alternative are located primarily in Little Lake Valley, and are characterized by lower salmonid habitat quality than reaches located upstream in the foothills, these reaches are important for fish migration and rearing and are considered to be critical habitat for one listed salmonid. Construction of this alternative would remove or degrade approximately 1.9 ha (4.5 ac) of mixed riparian woodland along streams that could provide habitat for salmonids. Mitigation measures are proposed to minimize impacts to fish species.

Northern spotted owl

Excavation in the Oil Well Hill area would impact a maximum of approximately 12 to 16 ha (30 to 40 ac) of potential foraging habitat for Northern spotted oil. Minimizing the amount of habitat removed would reduce impacts to this species.

7.4.3.2 Federal species of concern

Plant species

Alternative J1T would directly impact two populations of Baker's meadowfoam. One is located on the Colli Ranch and the other is located in the proposed Quail Meadow

Interchange area. These populations include approximately 1.6 ha (4.0 ac) of habitat (1991-1992 survey data). These two affected populations could be exposed to hydrologic and fragmentation effects. Mitigation measures are proposed to reduce impacts to this species.

Wildlife

Alternative J1T could impact foothill yellow-legged frog and western pond turtle, which occur in the streams in Little Lake Valley. Mitigation measures are proposed to reduce impacts to these species.

Excavation in the Oil Well Hill area could affect red tree vole that could occur in the general vicinity of the project area. Impacts to red tree vole could include the removal of red tree vole nests and the direct injury or death of individual tree voles. Minimization measures proposed for Northern spotted owl, above, also would reduce impacts to this species.

7.4.4 Other Environmental Factors

Alternative J1T could result in significant adverse impacts to community resources. Appropriate mitigation is not available to reduce or compensate for these impacts. Unlike Alternative E3, Alternative J1T does not have adverse impacts related to cultural resources, growth inducement, or cost, nor does it have high impacts to Williamson Act Contract farmland or sensitive species. Appendix C provides detailed information on the following issues.

7.4.4.1 Sensitive Plant Communities

Other than the sensitive plant communities discussed above, Alternative J1T would require removal of individual oaks in the large valley oak woodland (noted earlier). These oaks would be removed to construct a relatively narrow access road for the landowner (see Section 9.4.6 Width of Access Roads for description). Alternative J1T would not impact Baker's navarretia, a California Native Plant Society (CNPS) List 1B species that is located on Alternative E3.

7.4.4.2 Other Wildlife

Alternative J1T could block corridors used by wildlife that make seasonal and daily movements between the valley and the hills to the west. Measures are proposed to reduce impacts to wildlife passage.

Alternative J1T would remove approximately 5.07 ha (12.5 ac) of riparian woodland and scrub habitat along streams that provide nesting and foraging habitat for white-tailed kite, a California fully protected species, and California yellow warbler, a California listed special concern species.

7.4.4.3 Socioeconomic Impacts

Alternative J1T would require the relocation of 13 residences. Sufficient replacement housing exists within Willits to accommodate these displaced residents.

Alternative J1T would require the relocation of 20 commercial properties, which would not have a negative impact on the local economy or employment patterns. Suitable replacement sites are available for these businesses so they would be expected to continue operating effectively. Three manufacturers, however, would be impacted (discussed separately, below).

However, Alternative J1T would result in removal of the San Hedrin Circle Industrial Park, a valuable resource for local and regional efforts to retain manufacturing jobs. The industrial park was built using a state grant to keep manufacturing jobs in the City of Willits. Given local employment trends, an industrial park in Willits represents an extremely valuable resource. Options for replacing this resource are severely constrained by infrastructure limitations, a lack of suitable available land, and financial factors.

Removal of the industrial park also would impact three manufacturing businesses located there. Interviews with City staff and with owners of these businesses indicate that suitable replacement sites are not available in Willits. Relocation of these businesses out of the Willits area represents an economic loss to the city, would remove employment opportunities from Willits, and would result in disproportionate impacts to a minority group (discussed in Section 7.4.4.4 below).

7.4.4.4 Environmental Justice (EO 12898)

An Environmental Justice determination has not been made but is a potential issue on Alternative J1T. Impacts of removing the business park would fall disproportionately on the 30 Hispanic workers at MCI Transformer. MCI Transformer's Hispanic workers represent 11 percent of the total Hispanic workforce in Willits. The unemployment rate among Hispanic workers in Willits is 11 percent. If MCI Transformer's workers lost their jobs, the unemployment rate among Hispanic workers would double. Although replacement jobs would be available, the expanding job market is represented by jobs with

lower wages such as retail salespersons, maids and housekeepers, janitors, and groundskeepers. Therefore, Alternative J1T could have a disproportionate impact to low-income or minority populations.

7.4.4.5 Human Use Characteristics

Alternative J1T impacts human use characteristics (Section 404(b)(1) Subpart F).

Alternative J1T crosses City property that is the location for a regional park/recreation complex (Figure 7-4). The complex includes the Mendocino County Museum, the Roots of Motive Power/Redwood Empire Railroad History Project, a rodeo arena, baseball fields, and soccer fields. The railroad museum includes an exhibition and learning center, which includes a loop track that eventually will surround a 10-acre portion of the parcel for public exhibition of steam powered locomotives. The rodeo arena houses the longest running continuously operated rodeo in California. The City currently is rehabilitating East Commercial Street to create a continuous pedestrian- and bicycle-friendly recreational corridor that ties in with the museum/recreation complex.

Recently, the City constructed a skate park within the recreation complex, which is planned as a family facility including several picnic areas and walkways. The viaduct of Alternative J1T would tower over the skate park, casting a shadow on the facilities.

The viaduct of Alternative J1T also would pass over a planned wildlife-viewing trail that will extend through the recreation complex to the wetlands mitigation area of the City's expanded wastewater treatment facility.

Alternative J1T is not compatible with these regional recreation facilities and would impact the park-like setting and rural character of the area with the introduction of this urban element. Because the elevated freeway would be the dominant feature of the viewshed looking east from the County Museum, Roots of Motive Power demonstration track, rodeo grounds, baseball and soccer fields, and because it would pass directly over the new skate park and wildlife viewing trails, it would severely detract from the enjoyment of this recreation and cultural complex. The City has invested over a million dollars in the development of the complex, with street widening, sidewalk installation and parking lot construction, lighting and landscaping which began Summer 2003. Alternative J1T would severely impact the character and appeal of the recreation and cultural complex, which serves the City and the region and which is critical to the success of the City's tourism development plan.

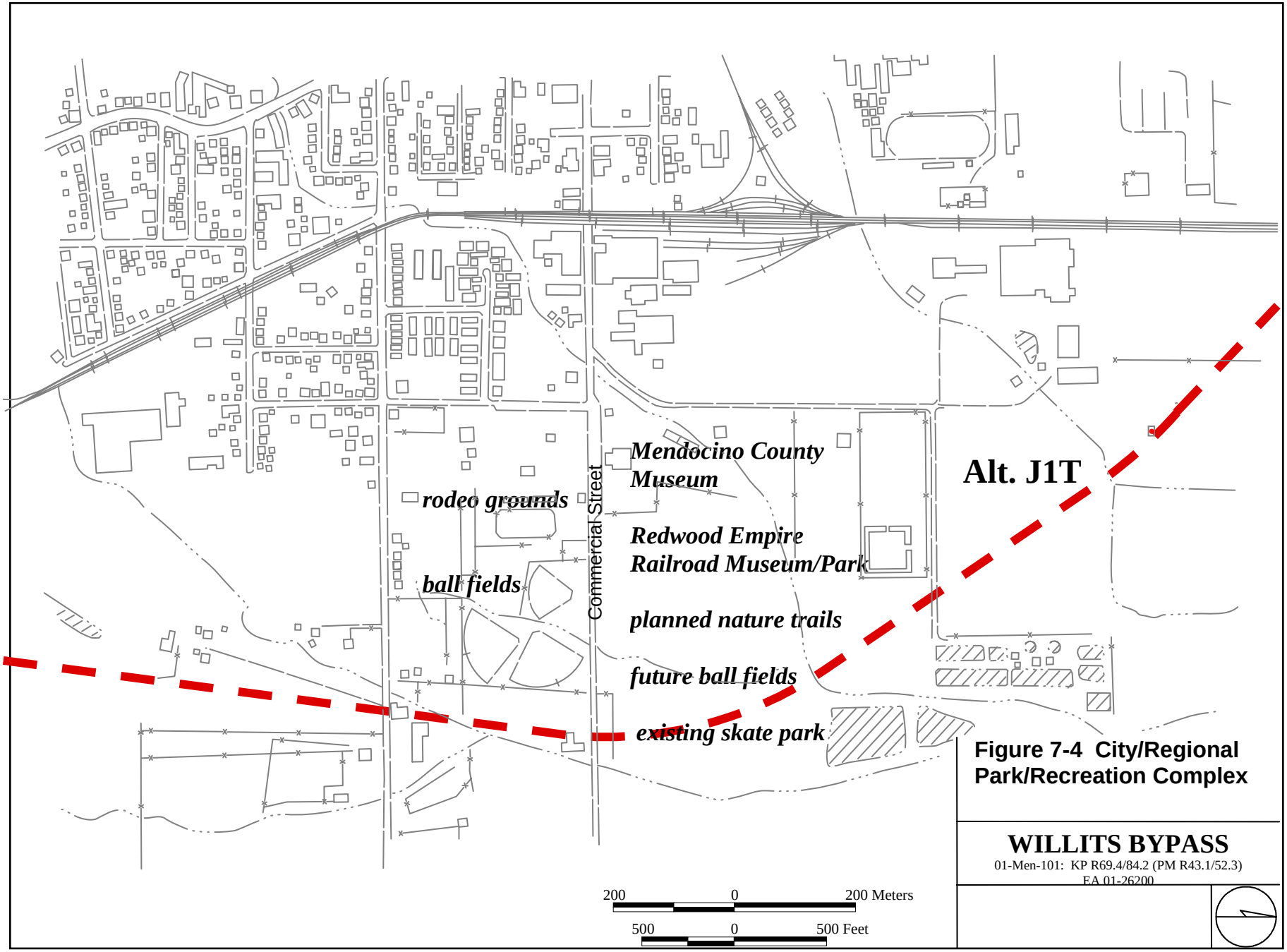


Figure 7-4 City/Regional Park/Recreation Complex

WILLITS BYPASS
01-Men-101: KP R69.4/84.2 (PM R43.1/52.3)
EA 01-26200

7.4.4.6 Section 4(f) Resource

The City of Willits informed Caltrans (letter dated April 26, 2001) that additional future facilities of the park/recreation complex discussed above would be jointly planned in conjunction with the bypass. Based on the letter indicating the City's desire to jointly plan the concurrent development of the recreational facilities and the transportation project, FHWA determined that there would not be a use of the property normally protected under 49 U. S. C. Section 303, commonly referred to as Section 4(f), and that a Section 4(f) Evaluation was not necessary. Caltrans and FHWA then continued with the required environmental studies and preparation of the DEIS/EIR.

During the circulation of the DEIS/EIR, the City of Willits informed Caltrans that the City had proceeded with plans for additional development of the northwest parcel to construct a skate park. The skate park is located in the footprint of Alternative J1T and includes picnic areas, benches, landscaping, walkways, parking and restrooms.

Based on the additional information developed during the circulation of the DEIS/EIR, FHWA determined that a Section 4(f) evaluation would be required if there were to be a use of the parklands and an avoidance alternative would have to be developed. Caltrans and the FHWA coordinated extensively with the local government and community representatives, with regular coordination meetings and the NEPA 404(b)(1) agency meetings. These meetings were instrumental in developing the Modified Alternative J1T to avoid the park. Since this modified alternative does not have a use of a protected resource, a formal Section 4(f) Evaluation will not be required.

Under the NEPA/Section 404 Integration Process Guidance Papers, the alternatives analysis should reflect the equal consideration of Section 4(f) and Section 404 concerns, and the alternative that would result in the least overall environmental harm as determined through coordination with regulatory agencies needs to be selected.

7.4.4.7 Cultural Resources

Three archaeological sites are within the ROW limits for Alternative J1T.

7.4.4.8 Williamson Act Contract

Alternative J1T would convert 20.7 ha (51.2 ac) of Williamson Act Contract farmland to other uses, which is similar in magnitude to the impact of Modified Alternative J1T to

Williamson Act Contract farmland. Alternative J1T has a farmland conversion impact rating of 158 (the established threshold is 160).

7.4.4.9 Growth Inducement

Alternative J1T would not be growth inducing nor would it remove barriers to growth. See growth inducement discussion in Section 7.3.4.9 for Alternative LT.

7.4.4.10 Erosion and Landslide Potential

Alternatives C1T, L/C, J1T, Modified J1T, and LT would have similar low-level geotechnical challenges. These alternatives avoid the Holocene deposits with the highest liquefaction potential and they avoid major road cuts and embankment in soils that are prone to landsliding. These alternatives do not cross the Alquist-Priolo Special Study Zone (Maacama Fault Zone).

7.4.4.11 Construction Cost

$162 million (2002 dollars)

Existing Condition

Proposed Condition

Figure 7-5. Visual Simulation of Alternative J1T at Park/Recreation Complex

Photosimulation within Viewshed F, Alternative J1T
At the Baseball Fields

7.4.5 Conclusion

Alternative J1T is practicable because it can be accomplished "within the financial resources that could reasonably be made available and [it is] feasible from the standpoint of technology and logistics" (Guidance Papers 1994:12), however, it would have overall adverse environmental impacts.

Alternative J1T has the least direct impacts to jurisdictional wetlands and other waters of the U.S. of the valley alternatives with 22 ha (54.6 ac) of direct impacts to this resource.

However, Alternative J1T would result in the following adverse impacts: 1) construction of Alternative J1T through the local and regional park/recreation complex would result in adverse impacts to "human use characteristics"/Section 4(f) resource and 2) construction of the alternative would result in removal of the city's only business park and the loss of businesses that would not or could not relocate in Willits.

The NEPA/Section 404 Integration Process Guidance Papers explains that when evaluating harm to non-aquatic (i.e., Section 4(f)) resources versus jurisdictional aquatic resources is that the alternatives selection process evaluates reasonable and prudent alternatives based on the "net harm" (after mitigation) of the alternative to Section 4(f) properties or other environmental resources. Feasible mitigation is not available to reduce or compensate for impacts to the Section 4(f) resource or the business park in the project area, so Caltrans and FHWA coordinated extensively with local government and community representatives and NEPA 404(b)(1) agencies to develop the Modified Alternative J1T to avoid the potential Section 4(f) resource and the business park (see Sections 7.4.4.5 and 7.4.4.6 above).

7.5 Factual Determinations: Modified Alternative J1T

7.5.1 Wetlands and Other Waters of the U.S.

Caltrans and FHWA coordinated extensively with local government, community representatives and with NEPA/404 agencies at regular coordination meetings, which were instrumental in developing the Modified Alternative J1T to avoid the city's only business park and the park/recreation complex, while minimizing impacts to wetlands and other waters of the U.S. Modified Alternative J1T would result in direct impacts to

approximately 25.9 ha (64 ac) of wetlands and other waters of the U.S. This is approximately 3.9 ha (9.4 ac) acres of wetland impacts than Alternative J1T.

7.5.2 Water Quality

Like the other valley alternatives, this alternative crosses areas inundated by 100-year flood events and areas of FEMA-defined floodways. The Modified Alternative J1T would include a slightly longer viaduct than the original Alternative J1T (approximately 1,600 m/5,250 ft). The viaduct would limit the potential for the alteration of surface and groundwater hydrologic conditions. The viaduct would also reduce potential indirect effects to nearby wetlands, and to plant and wildlife species dependent on these aquatic habitats. Construction of this alternative would remove or degrade approximately 1.7 ha (4.21 ac) of riparian woodland and scrub habitat along streams that could provide habitat for salmonids. Mitigation measures are proposed to minimize water quality and temperature impacts.

7.5.3 Special Status Species

7.5.3.1 Federally listed species

Salmonids

Modified Alternative J1T would require the crossing of Haehl, Baechtel, Broaddus, Mill, and Upp Creeks. The stream crossings would directly affect the upper reach of Haehl Creek. The crossings would also directly affect the lower reaches of Baechtel, Broaddus, and Mill creeks, which contain habitat for three listed salmonids, including critical habitat for one listed salmonid. However, they would be located farther downstream from the high quality spawning habitat located in the upper reaches of these streams, and thus would have less severe effects on salmonids because of the smaller amount of high-quality habitat exposed to sedimentation impacts.

The affected reaches under this alternative are located primarily in Little Lake Valley, and pass through residential areas of the City of Willits. Hence, they are characterized by lower habitat quality than reaches located upstream in the foothills. Nonetheless, these reaches are important for fish migration and rearing and are considered to be critical habitat for one listed salmonid. Construction and maintenance Best Management Practices and compliance with Caltrans statewide NPDES permit will reduce impacts to fish species.

Northern spotted owl

Excavation in the Oil Well Hill area would impact a maximum of approximately 12 to 16 ha (30 to 40 ac) of foraging habitat for Northern spotted owl. Minimizing the amount of habitat removed would reduce impacts to this species.

7.5.3.2 Federal species of concern

Plant species

Modified Alternative J1T would impact two populations of Baker's meadowfoam or 0.2 ha (0.5 ac). One population is on the Colli Ranch and the other population is in the proposed Quail Meadow Interchange area. However, Modified Alternative J1T would have less impact to the Colli Ranch population than Alternative J1T because most of the alignment would be west of this population (see Figure 7-6). Modified Alternative J1T would have similar hydrologic and fragmentation effects as Alternative J1T. Mitigation measures are proposed to reduce impacts to these species.

Construction of bridges over streams for Modified Alternative J1T could impact foothill yellow-legged frog and western pond turtle, which occur in the streams in Little Lake Valley. Mitigation measures that would reduce impacts to salmonids, referred to above, would reduce impacts to these species.

Excavation in the Oil Well Hill area could affect red tree vole that could occur in the general vicinity of the project area. Impacts to red tree vole could include the removal of red tree vole nests and the direct injury or death of individual tree voles. Mitigation measures are proposed to reduce these impacts.

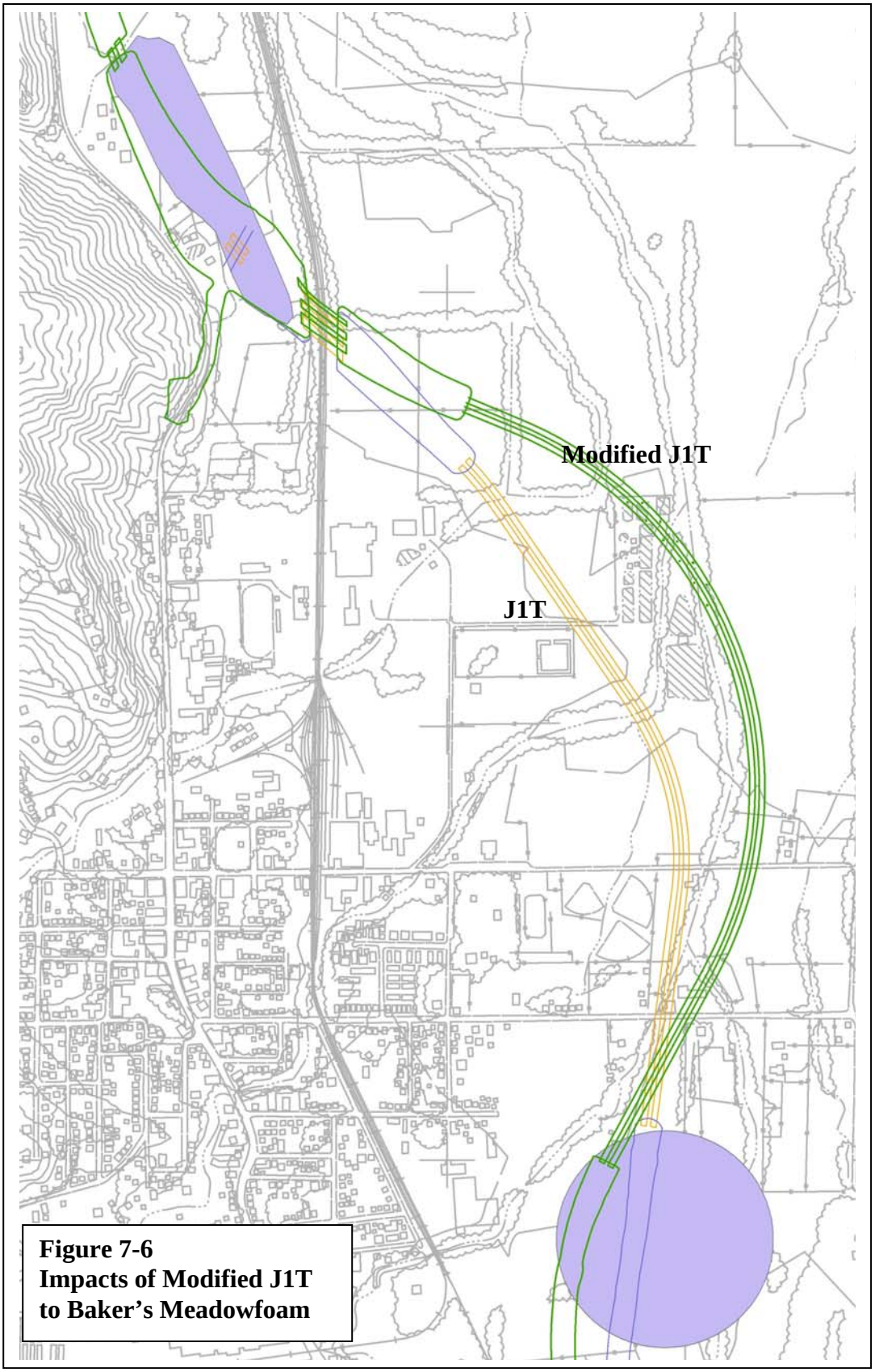


Figure 7-6
Impacts of Modified J1T to Baker's Meadowfoam

7.5.4 Other Environmental Factors

Modified Alternative J1T does not result in adverse impacts to other environmental resources, including the Sanhedrin Industrial Park and the regional park/recreation complex on Commercial Street.

7.5.4.1 Sensitive Plant Communities

The routing of Modified Alternative J1T eastward to avoid the business park on East Hill Road would require removal of valley oaks and other trees in the vicinity of an intermittent stream south of East Hill Road. While Modified Alternative J1T avoids adverse impacts to the large riparian Valley oak woodland on the Colli Ranch, the construction of an access road for the ranch will require the removal of some individual oak trees.

7.5.4.2 Other Wildlife

The south segment of Modified Alternative J1T could block corridors used by wildlife that make seasonal and daily movements between the valley and the hills to the west. Measures are proposed to reduce impacts to wildlife passage.

Modified Alternative J1T would remove approximately 1.7 ha (4.21 ac) of riparian woodland and scrub habitat along streams that provide nesting and foraging habitat for white-tailed kite, a California fully protected species, and California yellow warbler, a California listed special concern species.

7.5.4.3 Socioeconomics

Modified Alternative J1T would require the relocation of 10 residences. Sufficient replacement housing exists within Willits to accommodate these displaced residents. Modified Alternative J1T would require the relocation of 10 commercial properties, which would not have a negative impact on the local economy or employment patterns. Suitable replacement sites are available for these businesses so they would be expected to continue operating effectively. Modified Alternative J1T was designed to avoid the city's industrial park.

7.5.4.4 Environmental Justice (EO 12898)

Modified Alternative J1T was designed to avoid the city's industrial park, so there are no disproportionate impacts to low-income or minority residents as a result of this alternative. This alternative does not result in any disproportionate impacts to areas identified as having high proportions of low-income or minority residents.

7.5.4.5 Human Use Characteristics

Modified Alternative J1T was designed to avoid Human Use Characteristics, specifically the regional park/recreation complex.

7.5.4.6 Section 4(f) Resources

Modified Alternative J1T was designed to avoid Section 4(f) resources, specifically, the regional park/recreation complex.

7.5.4.7 Cultural Resources

Three archaeological sites are located within the proposed ROW limits of Modified Alternative J1T.

7.5.4.8 Williamson Act Contracts

Modified Alternative J1T would convert 20.8 ha (51.4 ac) of Williamson Act Contract farmland to other uses, which is similar in magnitude to the impact of Alternative J1T to Williamson Act Contract farmland. However, Modified Alternative J1T has a farmland conversion impact rating of 161.5, which is slightly higher than Alternative J1T (the established threshold is 160). Mitigation measures are proposed to reduce farmland impacts.

7.5.4.9 Growth Inducement

Modified Alternative J1T would not be growth inducing nor would it remove barriers to growth. See Section 7.3.4.9 Growth Inducement discussion for Alternative LT.

7.5.4.10 Erosion and Landslide Potential

Alternatives C1T, L/C, J1T, Modified J1T, and LT would have similar low-level geotechnical challenges. These alternatives avoid the Holocene deposits with the highest liquefaction potential and they avoid major road cuts and embankment in soils that are prone to landsliding. These alternatives do not cross the Alquist-Priolo Special Study Zone (Maacama Fault Zone).

7.5.4.11 Construction Cost

$162 million (2002 dollars).

7.5.5 Conclusion

Modified Alternative J1T meets LEDPA criteria because it is a practicable alternative that minimizes impacts to jurisdictional wetlands and other waters of the U.S., compared to

Alternatives E3, C1T, L/C, and LT, while minimizing impacts to sensitive species. While Modified Alternative J1T would impact approximately 3.8 ha (9.4 ac) more wetlands than Alternative J1T, it avoids human use characteristics/Section 4(f) resources, and other environmental resources that would be impacted by the other alternatives. The proposed fill activity from Modified Alternative J1T would not result in significant adverse impacts on human health and welfare, including effects on aesthetic, educational, historical, recreational, and/or scientific values. Modified Alternative J1T would not reduce or eliminate the uses of the regional park/recreation complex, including the skate park. Caltrans and FHWA coordinated extensively with local government and community representatives and NEPA 404(b)(1) agencies to develop the Modified Alternative J1T to avoid the Section 4(f) resource and industrial park that would be impacted by Alternative J1T. The proposed placement of fill will comply with the Guidelines, to the extent practicable, following implementation of appropriate mitigation and monitoring measures to minimize adverse effects on the aquatic ecosystem.

7.6 Factual Determinations: No Build Alternative

As required, the No Build alternative is included to provide an objective evaluation of all alternatives and to provide a baseline for comparison of impacts of the proposed build alternatives. The No-Build alternative does not satisfy the purpose of the project " to reduce delays, improve safety and achieve a level of service (LOS) of at least "C" for interregional traffic on U.S. 101 within the vicinity of Willits." The No Build alternative would maintain U.S. 101 at its existing location, with the current facility being used as both an interregional through route and the main street of the City of Willits. With the No-Build Alterative, congestion would continue to increase on the current facility. Existing congestion results in increased travel time for motorists and delayed response time for emergency vehicles; without the project, this condition would worsen.

7.6.1 Conclusion

Although the No Build alternative would have no impact to wetland resources, traffic on existing U.S.101/Main Street is projected to increase in the future based on regional transportation demands, which would result in increased delays and safety concerns for interregional and local traffic on U.S. 101 within the City of Willits.

Therefore, the No Build alternative is rejected as a LEDPA because it does not meet the purpose and need of the project to alleviate current and projected traffic demand and safety concerns on U.S. 101 within the project limits.

7.7 Summary and Conclusion

This Section 404(b)(1) analysis clearly demonstrates that Modified Alternative J1T meets criteria for LEDPA because it would result in the least overall environmental harm. This Section 404(b)(1) clearly demonstrates, as well, that Alternatives E3, J1T, LT, C1T, L/C and No Build do not meet LEDPA criteria.

8 Description of Fill Discharge to Occur in Jurisdictional Areas

Section 7, above, compared the overall environmental impacts of the build alternatives. Calculations were based on the bypass roadway and the entire (100 percent) viaduct as permanent impacts or fill of wetlands and other waters of the U.S.

Since the factual determination of Modified Alternative J1T concluded that it is the LEDPA (Section 7.5), additional design information has been prepared to make a preliminary estimate distinguishing between permanent and temporary impacts of this alternative to jurisdictional wetlands (Table 8-1). Permanent fill would be the roadway, access roads, and viaduct piers (which would compose an estimated 20 percent of the viaduct structure). Temporary fill/impacts would be areas under the viaduct not impacted by piers (an estimated 80 percent of the viaduct structure). Additional temporary impacts would be staging areas and haul roads.

If this formula (20 percent permanent impacts/80 percent temporary impacts with the viaduct) were applied to Alternatives C1T, L/C, LT, and J1T, their wetland impacts would show a commensurate reduction. There is no viaduct on Alternative E3.

Table 8-1 Modified Alternative J1T Permanent and Temporary Impacts (ha/ac)

Permanent Impacts			
Wetland habitat types[1]	**Roadway and viaduct piers**	**Access roads**	**Total permanent impacts**
WRS	0.02 / 0.06	0	0.02 / 0.06
MRS	0.07 / 0.18	0	0.07 / 0.18
MRW	0.19 / 0.47	0	0.19 / 0.47
ARW	1.0 / 2.49	0	1.0 / 2.49
VORW	0.03 / 0.08	0.06 / 0.15	0.09 / 0.23
VOARW	0	0	0
MM	2.17 / 5.35	0	2.17 / 5.35
TM	0	0	0
WM	14.9 / 36.9	0.8 / 2.08	15.8 / 38.98
VP	0.04 / 0.11	0	0.04 / 0.11
Pond[3]	--	--	--
Total	18.5 / 45.64	0.9 / 2.23	19.4 / 47.87
Temporary Impacts			
Wetland habitat	**Area under**	**Staging areas**	**Total temporary**

types[1]	viaduct, not impacted by Piers		impacts
WRS	0.004 / 0.01	0	0.004 / 0.01
MRS	0.15 / 0.38	0	0.15 / 0.38
MRW	0.38 / 0.93	0.0004 / 0.001	0.38 / 0.931
ARW	1.17 / 2.90	0	1.17 / 2.90
VORW	0.15 / 0.38	0.08 / 0.19	0.23 / 0.57
VOARW	0	0	0
MM[2]	3.0 / 7.40	0	3.0 / 7.40
TM	0.55 / 1.37	0	0.55 / 1.37
WM	13.87 / 34.28	5.5 / 13.66	19.4 / 47.94
VP	0.05 / 0.13	0	0.05 / 0.13
Pond[3]	--	--	--
Total	19.3 / 47.78	5.6 / 13.85	24.9 / 61.63

1 Wetland Habitat Types

WRS	Willow Riparian Scrub
MRS	Mixed Riparian Scrub
MRW	Mixed Riparian Woodland
ARW	Ash Riparian Woodland
VORW	Valley Oak Riparian Woodland
VOARW	Valley Oak-Ash Riparian Woodland
MM	Mixed Marsh
TM	Tule Marsh
WM	Wet Meadow (includes Hay Meadow)
VP	Vernal Pool
Pond[3]	Colli Pond/Niesen Pond

2 The higher acreage of MM (Mixed Marsh) is based on changes at the north end of the project where areas previously mapped as ARW (Ash Riparian Woodland) and MRW (Mixed Riparian Scrub) are now dominated primarily by MM.

3 Temporary impacts to ponds are approximately 0.37-acre; permanent impacts to ponds are approximately 0.57-acre.

A variety of fill types would be used in jurisdictional wetlands (mostly in wet meadow). The most prevalent type of fill would be earth fill. Modified Alternative J1T would place approximately 2.2 million cubic meters (2.9 million cubic yards) of fill material at the south end of the project to construct embankment. The roadway prism is approximately 50 m (165 ft) wide at the base in primarily wet meadow wetlands that are in agricultural use (grazing). Once the material is transported to its desired location, heavy equipment shapes the embankment on which the freeway would be constructed. Compaction occurs simultaneously with this process. The embankment must be constructed to a required height to elevate the road above the 100-year flood elevation; the height and slope ratio define the base width (Section 9.4.3 Slope Ratios discusses reduced slope ratios to minimize impacts to aquatic resources). When the embankment is completed, aggregate is brought in with "belly dumps" and spread as a base where the pavement will be placed.

The aggregate is then watered and compacted to its design specifications. Trucks then haul in asphalt concrete paving and it is spread with specialized paving equipment and then rolled and compacted into its specified dimensions and densities.

Culverts would be placed under the roadway in various locations to avoid impacts from storm runoff. The size and location of culverts will be determined during final design.

Stream crossings will consist of culverts, bridges, or viaducts. The bridges and viaduct structures will require placing abutments or piers in or near Haehl, Baechtel, Broaddus, and Mill creeks. It is possible that the number of structures that are placed in or near the creeks may change with future design modifications.

Each bridge is poured-in-place concrete and possibly rock-slope protection placed around the abutments that are adjacent to streams. There may also be rock slope protection placed at the outlets of roadside drainage facilities to dissipate hydraulic energy and to treat storm water as part of the National Pollution Discharge Elimination System (NPDES) requirements. The exact quantities of each type of fill will be determined during final design.

Construction of some bridges will require a temporary bridge, which will be constructed to span the creeks and not require the use of temporary culverts. This work is expected to occur above the line of ordinary high water, but may require the placement of pads in the creek channels to support piers for the temporary bridges. The pads would be in-place during the summer months, when water levels are low, and are not likely to affect water flows in the creek channels. The bridges will have separate southbound and northbound structures. When one of the bridge structures is completed, it will be used as a temporary haul road during construction of the adjacent structure. This will reduce the use of temporary bridges and associated temporary impacts.

Viaduct will be constructed at the north end of the project with piers in wetland that are primarily wet meadow. The 2,120 m (6,950 ft) viaduct will consist of separate northbound and southbound elevated structures that would reduce the amount of fill in the floodplain in comparison to earth embankment. Each of the elevated viaduct structures will be approximately 12.5 m (40 ft) wide. The viaducts will require permanent piers, approximately 1.8 m (6 ft) in diameter, in the floodplain to support them. The number of piers and the distance between the sets of piers has yet to be determined. The installation of the piers and deck construction will require a 30.5 m (100 ft) wide work area on the

east side of the viaduct, and a 17 m (55 ft) wide work area on the west side of the viaduct. Access will also be required underneath the viaduct structure. The larger work area on the east side of the viaduct is required for access by large cranes that will be used to construct the deck sections. The temporary work areas will also be used for vehicle access and for storage of equipment and materials, and will also be used for foundation, pier and false-work erection and removal. Permanent impacts to the floodplain will be limited to the total surface area encompassed by the piers (estimated to be approximately 1% of the area under the viaduct). The piers for the viaduct will either be placed via drilling or pile driving. It is likely that the northbound and southbound viaduct structures will be constructed simultaneously. When each span is completed the material and equipment will be moved to the next span.

Most of the viaduct structures and work activities, including the abutments at each end, will occur away from any creeks. Temporary impacts to the valley floor habitats affected by the access roads and area underneath the viaduct will consist primarily of soil compaction.

The structures at Haehl Creek near the Colli Ranch also would require permanent supports within the 100-year floodplain. The Haehl Creek falsework may require the placement of falsework supports below the line of ordinary high water. All work within the stream channels will comply with a work window established through consultation with NOAA Fisheries, approximately June 15 through October 15.

Construction of Modified Alternative J1T would require filling approximately 2,800 feet of Other Waters consisting of a non-fish-bearing intermittent stream south of East Hill Road.

Access roads will be constructed on compacted fill material.

Haul roads will be constructed either within the footprint of the bypass roadway fill section or within the work areas designated for the structures construction. Any material imported for constructing haul roads outside of the roadway fill section will be removed during winter months and after construction is completed.

9 Compliance with 40 CFR 230.10 (a)-(d)

9.1 Must Select the Practicable Alternative with Less Impacts to Aquatic Ecosystem, Unless the Alternative would result in Other Significant Adverse Environmental Impacts

40 CFR 230.10(a) A discharge is not allowed if there is a practicable alternative that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences

This Section 404(b)(1) Alternatives Analysis clearly demonstrates that Modified Alternative J1T is the LEDPA to the overall environment. Modified Alternative J1T minimizes impacts to the aquatic ecosystem compared to the other alternatives, while avoiding significant and adverse environmental consequences to human use characteristics/Section 4(f) resources and other environmental resources.

9.2 Must Comply with State Water Quality Standards, Toxic Effluent Standards, and Endangered Species Act

40 CFR 230.10(b)(1): The alternative must not cause or contribute to violations of any applicable State water quality standards

The following measures will be implemented to ensure that water quality standards will not be violated with the construction of Modified Alternative J1T:

- Best Management Practices (BMPs) will be required to stabilize disturbed soil, minimize erosion, and capture and remove sediment suspended in runoff before it leaves the site. Temporary sedimentation barriers, such as sandbags or siltation fencing, shall be installed to minimize the amount of silt entering creeks and ephemeral drainages. Special provisions will include the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) and other project specific Standard Special Provisions (SSPs) which reduce pollutants in storm water discharges from construction sites both during construction and after construction is completed. The SSPs will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters.

- Where vegetation is removed or severely trimmed back, Caltrans will plant replacement vegetation for shading of creeks. Caltrans will carry out pre-construction planting along certain creeks to establish shade where feasible. The

project will be constructed using the Storm Water Quality Handbook Planning and Design Staff Guide (June 2000), which provides detailed procedures for design of permanent slope stabilization controls.

- As part of standard operation and maintenance procedures, Caltrans has developed a standard Hazardous Waste and Spill Response Plan (HW&SRP) that Caltrans will ensure is implemented during the project, in the case of accidental spills.

- Any dewatering during construction or other point source discharges will be subject to waste discharge requirements imposed under the National Pollutant Discharge Elimination System (NPDES). A Section 401 Certification or Waiver will be obtained from the Regional Water Quality Control Board prior to initiating work on the project. In addition to the statewide general NPDES from the State Water Resources Control Board, a project specific NPDES permit will also be required for this project. The Plan requires that pollution sources be identified and it commits to implementing storm water pollution prevention measures to reduce pollutants in storm water discharges from construction sites both during construction and after construction has been completed.

- Pursuant to Fish and Game Code Section 1602, the project will require a Streambed Alteration Agreement from the California Department of Fish and Game for any work that may occur within the natural flow or bed, channel or bank of streams in the project area.

- The project will comply with all conditions required by state and federal permitting agencies. Caltrans will have a qualified biologist monitor construction activities in sensitive biological resource areas as necessary to ensure permit conditions and mitigation requirements are implemented and enforced.

40 CFR 230.10(b)(2): The alternative may not violate any applicable toxic effluent standard or prohibition under Section 307 of the Act.

Measures will be implemented (bulleted items above) to ensure that no toxic effluent standards or prohibitions are violated with construction of Modified Alternative J1T.

40 CFR 230.10(b)(3): The alternative must comply with the Endangered Species Act (ESA) and not jeopardize the continued existence of species listed as endangered or threatened under the 1973 ESA.

Federally Listed Species

Salmonids

Stream crossings that would be constructed for Modified Alternative J1T would affect reaches that are important for migration and rearing for local populations of three federally listed salmonid species, and are considered critical habitat for one listed salmonid. Construction and maintenance Best Management Practices and compliance with Caltrans statewide NPDES permit will reduce impacts to fish species by minimizing water quality degradation and sedimentation to the streams during construction.

Measures to avoid or minimize potential effects on listed fish species will include implementing in-stream work windows identified by NOAA Fisheries and restoration measures to compensate for habitat losses. Caltrans/FHWA will compensate for direct impacts to riparian vegetation through restoration and enhancement of existing degraded riparian habitat at a ratio agreed upon in consultation with CDFG, USFWS, NOAA Fisheries, and USEPA. See Section 9.4.2 and 9.4.9 below for minimization measures.

Northern Spotted Owl

The contractor may choose Oil Well Hill, at the north end of the project, for borrow material to construct the project. Excavation activities at Oil Will Hill would impact potential foraging habitat for Northern spotted owl. Minimization measures could include the following: all large trees that can be avoided will be protected; vegetation removal will occur between October 1 through February 1, during the non-breeding season, to minimize potential impacts to spotted owls; and vegetation will be removed incrementally, i.e., only on those portions of the site that are needed for borrow material, rather than removing all vegetation on the approximately 16 ha (40 ac) site prior to excavation. In addition, all appropriate Best Management Practices (BMPs) will be implemented to minimize impacts to spotted owls and other sensitive resources in the area. Vegetation at the site will be restored by planting trees species that occurred at the site prior to excavation.

A two-year protocol-level survey will be conducted prior to construction to determine that status of spotted owls in the vicinity of the borrow site prior to excavation. If spotted owls

are found nesting within 0.8 km (0.5-mile) of the borrow site, Caltrans will consult with the USFWS to develop a strategy for minimizing impacts to NSO.

Federal Species of Concern

Plant Species

Modified Alternative J1T would impact one population of Baker's meadowfoam located n the proposed Quail Meadows Interchange area. Modified Alternative J1T would reduce impacts to a population of Baker's meadowfoam on the Colli Ranch, compared to Alternative J1T, because the alignment of Modified Alternative J1T has been moved to the west of this population (see Figure 2). Measures are proposed to reduce impacts to these species. Environmentally Sensitive Area (ESA) fencing will be installed to avoid construction-related impacts to stands of Baker's meadowfoam adjacent to the construction areas. Caltrans will comply with Fish and Game Code Section 1900-1913 for mitigation for State listed rare plant species, and will coordinate with CDFG in identifying appropriate mitigation measures.

Wildlife

Excavation in the Oil Well Hill area could affect red tree vole that could occur in the general vicinity of the project area. Mitigation measures implemented for Northern spotted owl are expected to minimize impacts to the red tree vole.

Construction of the bridges and viaducts could affect Northwestern pond turtle and foothill yellow-legged frog that could occur in the streams within the project corridor. Mitigation measures implemented for salmonids would minimize impacts to these two species.

Documentation

A biological assessment has been prepared, and consultation with USFWS and NOAA Fisheries will be initiated under Section 7 of the Endangered Species Act. Appropriate mitigation measures will be developed under the consultation process to assure that the project does not jeopardize the continued existence of the special status species noted above.

9.3 Must Not Cause Significant Degradation of Waters of U.S.

40 CFR 230.10(c) No discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of waters of the U.S.

Alternative J1T was designed to avoid or minimize impacts to aquatic resources to the maximum extent practicable, but because of its adverse impacts to human use characteristics/Section 4(f) resource, this alternative was modified. The Modified Alternative J1T would impact approximately 3.8 ha (9.4 ac) more wetlands than Alternative J1T but will be designed to further increase its avoidance or minimization of impacts to aquatic resources to the maximum extent practicable. See discussion above under Section 9.2 for additional avoidance and minimization measures.

9.4 Must Minimize Adverse Impacts to Aquatic Ecosystem

40 CFR 230.10(d) The alternative must include appropriate and practicable steps to minimize adverse impacts on the aquatic ecosystem.

The project would result in indirect impacts to federally listed salmonid species and to critical and Essential Fish Habitat (EFH) for salmonids because of impacts to riparian vegetation and activities in the creek channels for bridge and viaduct construction. Selection of Modified Alternative J1T would minimize these impacts, requiring the least excavation (4.24 ha (10.2 ac)) compared to Alternative E3. The design will be refined with further attempts to avoid or minimize impacts to significant aquatic resources. Several steps have been taken to avoid and minimize impacts of the LEDPA to waters of the U.S. through design and construction methods. These are listed below.

9.4.1 Floodway Viaduct

Construction of the viaduct on Modified Alternative J1T would reduce impacts to wetlands by approximately 80 percent, since an estimated 20 percent of the viaduct would be piers while the remaining 80 percent would be the superstructure. Therefore, the permanent impacts of Modified Alternative J1T (discussed in Section 7 and Table 7-3) are reduced from 25.9 ha (64 ac) to 19.4 ha (47.87 ac). See Section 8 Description of Fill Discharge to Occur in Jurisdictional Areas for more information on permanent/temporary impacts of Modified Alternative J1T.

Impacts to both groundwater and surface water hydrology are minimized by constructing the planned 1.3-mile floodway viaduct, which spans the entire Little Lake Valley Floodway. The viaduct is designed to ensure flood flows are not redirected, to limit increases of the 100-year floodplain water surface elevation to less that 0.15-foot, and to prevent any increase to the floodway water surface elevation. Further, Caltrans and FHWA do not expect the construction of freeway fill to have an effect on groundwater in

the Little Lake Valley Groundwater Basin. Caltrans and FHWA have concluded that detailed groundwater modeling is not warranted on this project.

In support of these conclusions, the following data is available from the Department of Water Resources (DWR) webpage; http://www.dwr.water.ca.gov, which monitors eight groundwater wells in the Little Lake Valley Groundwater Basin semi-annually. DWR measures the groundwater surface elevation generally in spring and fall and presents this data in hydrographs of groundwater levels. Hydrographs of the eight wells in the Little Lake Valley Groundwater Basin show typical seasonal water level fluctuations with no significant long-term trends. The groundwater surface measurements demonstrate that groundwater surface fluctuates annually from 0 foot to 5 feet below the ground surface in spring to 15 feet to 30 feet below the ground surface in fall.

The eight wells in the Little Lake Valley Groundwater Basin date back to 1953 and were drilled in the following years; four were installed during the 1950s, one was installed in 1965, one was installed in 1977, and the two most recent were installed in 1986 and 1988. Little variation in the groundwater surface elevations has occurred over the past 70 years while development including road building has taken place in the Little Lake Valley. Also, because groundwater recharges to the maximum extent possible each fall, it does not appear development over the past 70 years has reduced groundwater flow capacity.

A subsurface investigation conducted at the former Remco facility, located at 934 South Main Street in Willits, and reviewed by the North Coast Regional Water Quality Control Board (Order No. R1-2003-086) describes the aquifers of the Little Lake Valley Groundwater Basin:

> There are three groundwater bearing zones at the site where permeable lenses of sand and gravel have been identified. The A-zone exists from the water table to a depth of approximately 15 to 25 feet below ground surface (bgs), the B-zone from 20 to 40 feet bgs, and the C-zone, which begins at 35 to 60 feet bgs. The A-zone is largely unconfined. However, the B- and C- zones are largely confined. The direction of groundwater flow at the site is predominately to the east-northeast, while in the lower aquifers a more north-northeasterly trend exists.

Little Lake Valley is comprised of Holocene alluvial deposits consisting of a thick sedimentary sequence of uncemented fine-textured silt and clay interlaced with sand and gravel. The thickness of the formation may be as much as 250 feet in parts of the valley and it has a large capacity to store groundwater. The annual precipitation of approximately 49 inches in the valley provides adequate surface water to fully recharge the alluvial deposits. The DWR asserts that most of the groundwater recharge occurs at the southern margin of the Little Lake Valley alluvial plain.

DWR estimates the groundwater storage capacity of the alluvial deposits in the Little Lake Valley at between 35,000 and 90,000 acre-feet. Dry season groundwater flow to Outlet Creek is estimated at 2,000 acre-feet based on creek flow measurements. Thus accounting for extraction from the basin of 2,000 acre-feet per year, 6 percent of the Little Lake Valley Groundwater Basin's storage capacity flows to Outlet Creek during the dry season.

Caltrans and FHWA review of the current literature documenting the relationship between groundwater flow and surface water hydrology indicates that current models are highly complex, dependent upon numerous simplifying assumptions and must be calibrated to site-specific data. The majority of these models focus on contaminant transport. The literature is devoid of studies evaluating groundwater flow and how it may be related to changes in surfaces water hydrology. Thus, Caltrans and FHWA conclude that detailed modeling of the Little Lake Valley Groundwater Basin will not generate additional definitive information about this relationship.

9.4.2 Stream Crossings and Culverts

Stream crossings will consist of culverts, bridges, and viaducts to minimize impacts to streams within the project corridor.

Activities in Haehl Creek, at the proposed southern interchange consist of removing the large culvert under the existing access road adjacent to the Schmidbaur property. Replacement of this culvert with a bridge will require the channel to be stabilized (typically by placing wiers) for an undetermined length upstream of the culvert, to prevent back-cutting erosion. In addition, a second existing culvert upstream of the above culvert may be replaced for the proposed new Schmidbaur access road. This culvert would be designed to prevent future channel erosion. The restoration of this Haehl Creek channel reach to its normal configuration and gradient would reduce future erosion in Haehl Creek, which would likely enhance essential fish habitat in Haehl Creek and other creeks downstream of Haehl Creek. The culvert removal and stream channel restoration at the

Haehl Creek site would occur during the summer months when this reach of Haehl Creek is normally dry.

Approximately 2,800 feet of one unnamed intermittent stream, located south of East Hill Road, will be filled. This stream will be realigned to the east of its current location.

9.4.3 Slope Ratios

The Caltrans Highway Design Manual (Fifth Edition, page 300-49, (a) Safety) suggests a side slope of 1:6 or flatter for high-speed roadways and states that side slopes of 1:10 are desireable. A side slope of 1:10 would increase the project's footprint by approximately 24 hectares (60 acres) where the alignment is built on fill. The project proposes side slopes varying between 1:2 and 1:4.

9.4.4 Truncated Alternatives

In Fall 2000, due to budget constraints, Caltrans truncated (shortened) all of the valley alternatives, which reduced impacts to natural resources. Alternative J1T which eventually became the Modified Alternative J1T was shortened by approximately 5.1 km (3.2 mi).

9.4.5 Redesign of Southern Interchange

The proposed interchange at the south end of the project has been redesigned and will no longer require the realignment of 275 m (902 feet) of Haehl Creek, which represents a significant reduction of impacts to salmonid bearing streams in the project area.

9.4.6 Width of Access Roads

Roadway width for access roads has been estimated at 7.2 m (24 ft) to allow for a two-lane roadway with no shoulders. It may be possible to reduce this width to about 5 m (16 ft), however, the design will need to conform to Caltrans right-of-way requirements to "replace in kind or better" and to be constructed adequately for the intended purpose. These access roads will need to accommodate hay trucks and other farming equipment.

9.4.7 Median Width

During the early stages of the development of the alternatives, the standard minimum median width for rural freeways was 46 feet. The current Caltrans design standard for minimum median width for rural freeways is 18.6 m (61.0 ft). As part of its effort to lower environmental impacts of the project, Caltrans retained the old standard, which

when adapted to metric units is 13.8 m (45.3 ft). Caltrans policy requires a design exception approval for the proposed median.

Further reductions in the median width would compromise the purposes of the median and reduce the safety benefits offered by the median. In addition, if a median barrier were constructed, it would exacerbate problems for emergency workers responding to incidents, restrict emergency vehicle operations, present an obstacle to animals crossing the highway, and increase difficulties in maintenance work.

For these reasons, Caltrans continues to propose the unpaved 13.8 m (45.3 ft) median for use in the Willits Bypass project.

9.4.8 Borrow/Excavation Requirements

A SMARA permit may be required if embankment material is excavated from Oil Well Hill, which has been identified as suitable foraging habitat for Northern spotted owl. The SMARA application requires preparation and implementation of a reclamation plan, which includes steps for maintaining water and air quality, minimizing flooding, erosion and damage to wildlife and aquatic habitats caused by the surface mining. The reclamation plan will include topsoil replacement and revegetation with suitable plant species. Because suitable foraging habitat for northern spotted owl would not be replaceable during the assumed life span of the proposed action, Caltrans and FHWA propose measures to minimize impacts at the Oil Well Hill borrow site.

Minimization measures for excavation at Oil Well Hill will include the following: all large trees that can be avoided will be protected; vegetation removal will occur between October 1 through February 1, during the non-breeding season, to minimize potential impacts to spotted owls; and vegetation will be removed incrementally, i.e., only on those portions of the sit that are needed for borrow material, rather than removing all vegetation on the approximately 40-acre site prior to excavation. In addition, all appropriate Best Management Practices (BMPs) will be implemented to minimize impacts to spotted owls and other sensitive resources in the area. Tree species that occurred at the site prior to excavation will be used to re-vegetate the area.

A two-year protocol-level survey will be conducted prior to construction to determine that status of spotted owls in the vicinity of the borrow site prior to excavation. If spotted owls are found nesting within 0.8 km (0.5-mile) of the borrow site, Caltrans will consult with the USFWS to develop a strategy for minimizing impacts to NSO.

Contractors may choose to use other SMARA-approved sites when advantageous to them (e.g., savings in time or money). Other commercial sources for embankment or fill material are in the project area. Use of other sources of fill material would reduce impacts at Oil Well Hill and could reduce other impacts associated with trucking fill material from Oil Well Hill to the south end of the project.

The closest permitted source of fill material to the project area is the Harris Quarry, which is located south of Willits at the Ridgewood Grade. The quarry currently is pursuing a permit for an additional 600 acres adjacent to its existing holdings. To minimize visual impacts and to meet other SMARA requirements, not all of the 600 acres would be excavated. Currently, the full capacity of the site (depth of excavation) cannot be predicted; however, if half the site (300 acres) were excavated at a depth of 5 feet, nearly 2.5 million cubic yards, or 100 percent of the fill material required for Modified Alternative J1T, would be available. The quarry expects to have its permit in place by 2007. Please note that Caltrans cannot direct the contractor to use a specific borrow site. The contractor may use the SMARA-approved borrow site of his choice.

9.4.9 Construction Activities

Potential construction-related impacts can be reduced or avoided by maintaining buffer areas and employing seasonal construction constraints (e.g., no work during active nesting periods). A Storm Water Pollution Prevention Plan will be implemented to protect aquatic resources and BMPs will be required to stabilize disturbed soil, minimize erosion, and capture and remove sediment suspended in runoff before it leaves the site. At Oil Well Hill, SWPPPs and BMPs will be implemented to minimize the potential for sediments to enter Outlet Creek.

Mitigation for riparian vegetation removed at the bridge and viaduct crossings would include minimizing the amount of vegetation removed and restoration of vegetation at each of the structures. However, taller vegetation under the structures will have to be trimmed periodically to avoid contact with the structures. A vegetation planting and monitoring plan will be developed to restore vegetation adjacent to the bridges/viaducts, and possibly in other reaches where riparian vegetation is absent. The plan will include planting fast growing species, such as willows and alders, which should reduce potential long-term effects of vegetation removal at the bridge/viaduct sites. Riparian vegetation at the stream crossings that is not affected by the project will be designated as Environmentally Sensitive Areas (ESAs) on project plans and will be fenced to prevent access during the construction phase of the project. In addition, bridge construction at

each of the crossings may take only one season to complete, which would hasten early re-establishment of riparian vegetation, which would minimize temporal losses. The viaduct would take up to four years to construct.

If stream flow is present at the time of construction, construction areas may require dewatering and fish relocation. Dewatering methods will be developed through consultation with NOAA Fisheries. If fish relocation is required, a qualified biologist who has authorization from NOAA Fisheries shall be on-site to capture and relocate salmonids trapped in dewatered areas and pools.

Caltrans/FHWA will have a qualified biologist monitor construction activities in sensitive biological resource areas, as necessary, to ensure permit conditions and mitigation requirements are implemented and enforced.

In-stream work windows for this project will be developed through consultation with NOAA Fisheries, but will likely be between June 15 and October 15 of each year. This in-stream work window could be extended on a yearly basis if the NOAA Fisheries determines that an extended work window would not adversely affect salmon and steelhead.

Implementation of these measures is expected to minimize potential impacts to aquatic ecosystems.

9.4.10 Compensatory Mitigation

Caltrans will develop a comprehensive mitigation and monitoring plan (MMP) in coordination with resource and regulatory agencies. As part of this effort, Caltrans and FHWA also propose to mitigate for any unavoidable impacts by implementing a Habitat Development Plan with wetlands mitigation measures consistent with ACOE requirements.

If Caltrans and FHWA implement compensatory mitigation at a minimum of 2:1 ratio for Modified Alternative J1T's estimated 19.4 ha (47.87 ac) of permanent wetlands impacts[10]

[10] Construction of the viaduct on Modified Alternative J1T would reduce impacts to wetlands by approximately 80 percent, since an estimated 20 percent of the viaduct would be piers while the remaining 80 percent would be the superstructure. Therefore, the permanent impacts of Modified Alternative J1T are reduced from 25.9 ha (64 ac) to 19.4 ha (47.87 ac). See Section 8 for discussion.

(as shown in Table 8-1), approximately 38.7 ha (95.7 ac) of wetland habitat at a minimum would need to be created, if suitable wetland creation sites exist in the project area.

Currently, Caltrans is preparing a feasibility study of potential wetlands mitigation locations in the Little Lake Valley. The study will determine if wetland creation and/or restoration/enhancement on the properties is feasible to satisfy wetland mitigation requirements for the project. The emphasis of the study will be the identification of feasible wetland *creation* opportunities. The information from the feasibility study will be used to narrow the range of candidate wetlands creation and/or restoration/enhancement sites to feasible sites for which a conceptual mitigation plan can be prepared.

10 Indirect And Cumulative Effects To Aquatic Resources And Sensitive Species

The indirect and cumulative effects to aquatic resources and sensitive species from construction of Alternatives E3, J1T, Modified J1T, LT, C1T, and L/C are outlined below.

10.1 Indirect Impacts

10.1.1 Construction-Related Erosion at Designated Borrow Site

The designated borrow site at Oil Well Hill consists of rocky material. The existing slope ratios along the existing highway are approximately 3/4:1 and are very stable. These cut slopes have not experienced landslides or rock slides since construction in 1936, and Caltrans and FHWA have no reason to expect instability of cut slopes created during excavation for borrow material. The proposed borrow excavation would remove material from Oil Well Hill and establish a variable cut slope no steeper than 1:1, which reduces the steepness of the existing cut slope. Sediment transport offsite would be minimal because of the rocky nature of the material, and by using standard excavation techniques and best management practices (BMPs) for erosion control. Both permanent and temporary BMPs will be employed, such as soil stabilization mulches and blankets, linear sediment controls, and drainage diversion channels to reduce surface water contact with soils.

Potential excavation activities at the designated borrow site at Oil Well Hill for fill material for Alternatives C1T, J1T, Modified J1T, LT, or L/C would not directly or indirectly affect any wetlands or other waters of the U.S.

Potential excavation activities at Oil Well Hill would not directly affect any streams that support listed salmonids. Potential indirect impacts to salmonids could include erosion of disturbed soils that could enter Outlet Creek during major storm events. However, due to the rocky nature of the substrate, and the proposed use of BMPs, indirect impacts to fisheries to Outlet Creek are expected to be minimal.

10.1.2 Construction-Related Erosion on Proposed Alignments

Soil disturbance from the cut-and-fill slopes associated with Alternative E3 would have significant potential for sediment to enter streams during storm events. This would adversely affect higher quality salmon spawning and rearing habitat.

The lower potential for erosion associated with the valley alternatives in Little Lake Valley would result in considerably lower potential impacts to salmonids than Alternative E3. The quantity of sediments that could enter the streams due to construction-related erosion and lineal extent of habitat impacts occurring in Alternatives LT, J1T and Modified J1T would be less than for Alternatives E3, C1T, and L/C. The greatest impact to fish populations and habitat quality associated with Alternatives J1T and Modified J1T would be the number of stream crossings, consisting of bridges and viaducts, and the potential for sedimentation of downstream reaches, and loss of riparian woodland and scrub habitat in the area of the bridges.

Any of the valley alternatives would impact or degrade mixed riparian woodland and shrub habitat along streams that provide critical habitat for one listed salmonid. Removal of riparian vegetation can affect stream temperature and result in sedimentation.

10.1.3 Minimization Measures

The following measures will minimize the potential for erosion and project-generated sediments from entering surface waters resulting from road construction:

- Caltrans will require the contractor to use a combination of Best Management Practices (BMPs) during construction through the contract. The purpose of the BMPs is to stabilize the disturbed soil, minimize erosion, and capture and remove sediment suspended in runoff before it leaves the site. Caltrans will include special provisions in the contract for this project requiring the contractor to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP), and other project specific Standard Special Provisions (SSPs), which reduce pollutants in storm water discharges from construction sites both during construction and after construction has been completed.

- Caltrans' Standard Special Provisions (SSPs) will prohibit the contractor from discharging oils, greases, chemicals, or spillage of concrete and grout into receiving waters. For example, on this project, equipment will be maintained in a clean condition during the length of activities.

- Where vegetation is removed or severely trimmed back along creek channels, Caltrans will plant replacement vegetation for shading of creeks per the requirements provided in Section 5-8, Biological Resources, Draft EIS/EIR.

- Following the construction process, Caltrans will stabilize disturbed areas through permanent re-vegetation and other measures. The Storm Water Quality Handbook Planning and Design Staff Guide (June 2000) provides detailed procedures for design of permanent slope stabilization controls. Caltrans will perform a detailed analysis of downstream channel stability during the design phase of the project. The procedures are intended to ensure that an appropriate design is developed that will allow all finished slopes to achieve stabilization, even under severe conditions.

In addition to preparing a Storm Water Pollution Prevention Plan (SWPPP), Caltrans will implement the following measures to minimize disturbances of aquatic resources:

- All construction-related materials shall be stored in designated staging areas at least 100 feet from perennial waterways and drainages.

- Refueling and vehicle maintenance shall be performed at least 100 feet from creeks and other water bodies.

- Operation of heavy equipment shall be minimized in perennial creeks (to the greatest extent possible).

- Temporary sedimentation barriers, such as sandbags or siltation fencing, shall be installed to minimize the amount of silt entering the creeks and any ephemeral drainages with water present in the channel. The location of these barriers shall be determined by the resident engineer and environmental monitor, and shall be clearly marked in the field before construction activities begin.

- Additional Best Management Practices shall be implemented to prevent runoff from adjacent lands from flowing across construction areas; slow down the runoff traveling across construction sites; remove sediment from onsite runoff before it leaves the site; and provide soil stabilization.

10.1.4 Baker's Meadowfoam

Potential indirect impacts to Baker's meadowfoam could include habitat fragmentation or habitat degradation caused by changes in drainage patterns and groundwater hydrology. Habitat degradation could result in changes in the amount and timing of standing surface water. Runoff from impermeable surfaces could increase the amount of standing water in

Baker's meadowfoam habitat located near the highway. If the project impacts groundwater levels, surface water could remain for longer or shorter periods of time. These changes could inhibit the establishment and/or viability of Baker's meadowfoam seeds.

10.2 Cumulative Impacts

The Modified Alternative J1T was examined for its possible incremental contribution to cumulative impacts to aquatic resources and sensitive species: wetlands and other waters of the U.S.; Baker's meadowfoam; salmonids, foothill yellow-legged frog, and western pond turtle; white-tailed kite, California yellow warbler; Northern spotted owl and Red tree vole; and oak woodland. This discussion concludes that Modified Alternative J1T's incremental contribution to cumulative impacts to these resources is minimal and would not contribute to the decline of these habitats or the species they support.

10.2.1 Wetlands

The watershed of Outlet Creek is the study area for the cumulative wetlands impact analysis. Wetlands may be affected not only by direct impacts to wetlands themselves, but also by changes in the flow of water in the area, which can change the degree to which water reaches traditionally "wet" areas.

The City of Willits Wastewater Treatment Plant (WWTP) expansion project would result in the loss of approximately 40 acres of seasonal wetlands (for oxidation ponds and berms). The new treatment and enhancement wetlands would represent a change in wetlands from a seasonal wetland type to a perennial wetland type. To meet ACOE requirement of "no net loss" of wetlands, the City purchased a 50 ha (125 ac) parcel north of the existing WWTP and will create approximately 16 ha (40 ac) of new seasonal wetlands to compensate for the loss of approximately 16 ha (40 ac) of wetlands due to the construction of ponds and berms. The proposed WWTP expansion and mitigation will result in an overall increase in wildlife habitat value since there is little existing perennial water habitat within the project vicinity. The WWTP expansion project EIR concludes that the proposed WWTP expansion project's treatment and enhancement wetlands would represent a net benefit in the functional value of onsite wetlands because there would be an increase in both plant and animal species diversity and increased habitat diversity.

Modified Alternative J1T would result in permanent impacts to 19.0 ha (47.9 ac) of jurisdictional wetlands. Compensatory mitigation required by ACOE, which would

require wetland replacement at a minimum 2:1 ratio would result in no net loss of wetlands in the project area. If wetland creation is not possible in the project area, then out-of-kind or off-site mitigation may be considered. The inability to replace wetlands in-kind and on site could be considered an incremental contribution to cumulative wetland losses. However, 19.0 ha (47.9 ac) of wetlands impacted by Modified Alternative J1T is a small percentage of the entire Little Lake Valley landscape, which is dominated by wetlands. Further, mitigation for Modified Alternative J1T could result in a benefit to the overall wetland ecology of Little Lake Valley if mitigation strategies include restoration to pre-agricultural wetland habitat types or restoration of dredged and channelized fish-bearing streams.

10.2.2 Baker's Meadowfoam

Because Baker's meadowfoam is a rare plant limited to Mendocino County, the cumulative impact study area includes the known populations in the Little Lake Valley, Laytonville, Hulls Valley, Summit Valley, and near Ukiah. The California Department of Fish and Game reports that a population of Baker's meadowfoam near Covelo was destroyed by development.

The proposed WWTP expansion project would result in the loss of approximately 0.18 ha (0.45 ac) of Baker's meadowfoam as a result of the construction of the treatment and enhancement wetlands. The majority of the existing Baker's meadowfoam populations on-site would be avoided and the City has set aside this area as a Baker's meadowfoam preserve. The newly created 16 ha (40 ac) of wetlands, plus the 6 ha (15 ac) of existing wetlands to be preserved will provide 22 ha (55 ac) of potential and existing habitat for Baker's meadowfoam. The City intends to establish a conservation easement or fee title transfer to CDFG to protect the mitigation areas once CDFG determines the success of the Baker's meadowfoam mitigation. The City also proposes to compensate for the loss of 0.18 ha (0.45 ac) of Baker's meadowfoam by implementing a seed collection and transplant program to re-establish, at a minimum, 0.18 ha (0.45 ac) of new meadowfoam populations within the City's 6 ha (15 ac) preserve. The City also proposes to preserve 0.5 ha (1.3 ac) of meadowfoam currently on the site so that it will not be impacted by the proposed WWTP expansion project. The City also plans to adopt an invasive plant species elimination/control plan to create new areas for the establishment of Baker's meadowfoam. The WWTP EIR concluded that the expansion project would not have an incremental contribution, after mitigation, to cumulative impacts to Baker's meadowfoam.

A search of projects for which CEQA documentation has been filed (using the California Office of Planning and Research's online CEQANet query) did not result in any projects in Hulls Valley or Summit Valley, two of the other known locations of Baker's Meadowfoam. This database search found a high school construction project in Laytonville, another known location of Baker's meadowfoam, but this project did not involve the use of this species' habitat.

The Modified Alternative J1T would impact two populations of Baker's meadowfoam or 0.2 ha (0.5 ac) of this species. A mitigation and monitoring plan developed in coordination with CDFG will includes creation and preservation. With successful implementation of a mitigation and monitoring plan for Baker's meadowfoam, the project's incremental impacts would not contribute to the decline of this species and may in fact improve conditions for the plant.

10.2.3 Northern Spotted Owl (NSO) and Red Tree Vole (RTV)

Suitable foraging and dispersal habitat for NSO is present in the study area, which is defined as a 2.6 km (1.6 mi) radius around Oil Well Hill, the designated borrow site for the proposed bypass project. No NSO nesting habitat is present in the study area. The study area could also support RTV. Two activities, besides the proposed bypass, were examined for their possible incremental contribution to habitat for these species: timber harvest plans and a proposed Brooktrails Township second access road. The California Department of Forestry and Fire Prevention (CDF) has records of six Timber Harvest Plans (THPs) within, or partially within, a 2.6 km (1.6 mi) radius of Oil Well Hill. These are 1-90-364 MEN (50 acres), 1-90-631 MEN (665 acres), 1-94-155 MEN (20 acres), 1-94-591 MEN (238 acres), 1-95-487 MEN (50 acres), and 1-99-051 MEN (11 acres). Portions of two THP's, 1-90-631 and 1-94-591, extend outside the 2.6 km (1.6-mile) radius. The majority of these logging activities involved seed tree and shelter wood cuts.

Because of the existing market, the current value of timber is low and there are no immediate future plans to harvest timber within the Oil Well Hill area. However, all of the land within the 2.6 km (1.6 mi) radius is privately owned, and logging could occur in the future if timber prices are more favorable.

At the time of preparation of the Brooktrails Specific Plan and its EIR (in 1997), NSO was not known to occur in this area. However, because DFG and the USFWS are of the opinion that this area could become habitat within 30 years of plan preparation, the

Brooktrails Specific Plan EIR includes mitigation measures to ensure that planned development would not affect NSO territory that could become established.

Three of the six routes being considered for the proposed Brooktrails Second Access Project would pass through identified NSO habitat within a 2.6 km (1.6 mi) radius of Oil Well Hill. Because no studies have been carried out on this project to date, the magnitude of this potential impact cannot be determined accurately, but would not exceed an estimated 32 ha (80 ac) of habitat loss. (Based on a worst-case assumption of 76 m (250 ft) of forest clearing along the entire length of the longest alternative under consideration.)

Given known past and proposed future projects, approximately 1,000 ha (2,480 ac) of suitable habitat would continue to be available within a 2.6 km (1.6 mi) radius of Oil Well Hill (69% of suitable habitat). This would be above the 40% minimum acreage of habitat within a 2 km (1.3 mi) radius that is required to maintain a nesting pair of NSO.

Measures are proposed for Modified Alternative J1T, to minimize harm to NSO foraging and dispersal habitat. Minimization measures include avoiding the removal of large trees when possible, incremental vegetation removal, and not removing vegetation during the breeding season. All appropriate Best Management Practices (BMPs) will be implemented and the area will be revegetated with tree species that occurred at the site prior to excavation. Also, if the contractor chooses to use other approved borrow sites, potential impacts to NSO habitat and RTV would be reduced further.

Modified Alternative J1T's incremental impact to NSO foraging and dispersal habitat and to RTV would not result in a cumulative impact or contribute to the decline of these species.

10.2.4 Salmonids

The proposed construction of a Brooktrails Township second access road could have both direct and indirect impacts to salmonids. Due to the highly erosive, unstable soils to the west of Willits, construction of a second access road could result in direct impacts to water quality and indirect impacts to aquatic resources due to sedimentation. This project is still in the planning process; no environmental studies have been completed and no permits or funding have been obtained.

Potential excavation activities at Oil Well Hill for the Modified Alternative J1T would not directly affect any streams that support listed salmonids. Potential indirect impacts to

salmonids could include erosion of disturbed soils that could enter Outlet Creek during major storm events. However, due to the rocky nature of the substrate, and the proposed use of BMPs, indirect impacts to fisheries to Outlet Creek would be minimal.

Modified Alternative J1T would require the crossing of Haehl, Baechtel, Broaddus, Mill, and Upp Creeks. The stream crossings would directly affect the upper reach of Haehl Creek. The crossings would also directly affect the lower reaches of Baechtel, Broaddus, and Mill creeks, which contain habitat for three listed salmonids, including critical habitat for one listed salmonid. However, they would be located farther downstream from the high quality spawning habitat located in the upper reaches of these streams, and thus would have less severe effects on salmonids because of the smaller amount of high-quality habitat exposed to sedimentation impacts.

The affected reaches under this alternative are located primarily in Little Lake Valley, and pass through residential areas of the City of Willits. Hence, they are characterized by lower habitat quality than reaches located upstream in the foothills. Nonetheless, these reaches are important for fish migration and rearing and are considered to be critical habitat for one listed salmonid. Construction and maintenance BMPs and compliance with Caltrans statewide NPDES permit will reduce impacts to fish species.

Also, the restoration of the Haehl Creek channel reach to its normal configuration and gradient (discussed in Section 9.4.2 above) would reduce future erosion in Haehl Creek, which would likely enhance essential fish habitat in Haehl Creek and other creeks downstream of Haehl Creek.

In addition, wetlands mitigation for Modified Alternative J1T may result in a benefit to fisheries if it includes out-of-kind strategies such as restoration of dredged and channelized fish-bearing streams.

Modified Alternative J1T would not have a direct impact on salmonids or their habitat, and its incremental contribution to indirect cumulative impacts (erosion) would be minimal. Modified Alternative J1T would not contribute to the decline of these species.

Cumulative impacts for foothill yellow-legged frog and western pond turtle would be the same for salmonids discussed above.

10.2.5 Other Sensitive Species

Modified Alternative J1T would require the removal of oak trees and of riparian vegetation. Another reasonably foreseeable project that might impact these same resources is the proposed Brooktrails Township second access road. The Brooktrails project is still in the planning process; no environmental studies have been completed and no permits or funding have been obtained. The impacts of this project have not been quantified, but avoidance, minimization, and mitigation measures for impacts to these resources would be required by resources agencies.

Modified Alternative J1T minimizes impacts to the oak riparian woodland that would have been impacted by Alternative J1T. Individual oaks that would be removed will be replaced at a ratio agreed to with CDFG.

Riparian vegetation that provides habitat for white-tailed kite and California yellow warbler would be removed or trimmed back at creek crossings for construction of Modified Alternative J1T. However, this is a temporary impact as these areas will be revegetated; further additional riparian habitat may be created if wetlands mitigation for the project includes out-of-kind strategies such as restoration of dredged and channelized fish-bearing streams.

Modified Alternative J1T's incremental contribution to cumulative impacts to these resources is minimal and would not contribute to the decline of these habitats or the species they support.

11 Conclusion

This analysis of the proposed Willits Bypass alternatives presents information that eliminates Alternatives E3, C1T, J1T, LT, L/C, and the No Project as the LEDPA. Alternatives E3, C1T, and L/C are rejected because of the magnitude of their direct and indirect impacts to aquatic resources and to their potential direct and indirect adverse impacts to federal listed species (salmonids). Alternative LT is rejected because of its high direct impacts to aquatic resources and its impact to a large oak riparian woodland and to wildlife due to greater habitat fragmentation and barrier creation. Alternative J1T is rejected for its impacts to critical community resources including the City's industrial park and the regional recreation/park complex.

Even where a practicable alternative exists, such as Alternative J1T, that would have less adverse impact on the aquatic ecosystem, the Guidelines allow it to be rejected if it would have "other significant adverse environmental consequences." 40 CFR 230.10(a). Hence, Modified Alternative J1T was developed. In applying the alternatives analysis required by the Guidelines, it is not appropriate to select an alternative where minor impacts on the aquatic environment are avoided at the cost of substantial impacts to other natural environmental and community values. While Modified Alternative J1T would impact 3.8 ha (9.4 ac) more of wetlands than Alternative J1T, it would have the least damage to the overall environment.

This analysis, therefore, identifies Modified Alternative J1T as the LEDPA. Following additional input from the resources and regulatory agencies, the public, and the Project Development Team, the final NEPA preferred alternative/Section 404 LEDPA will be identified in the Final EIS/EIR. Based on the preferred alternative/LEDPA, the final design will incorporate measures to minimize impacts further to resources within the project limits. In addition, a detailed compensatory mitigation and monitoring plan(s) will be finalized and approved by the resource agencies for all unavoidable impacts to aquatic resources based on the agreed upon preferred alternative.

Attachment 8: Names and Addresses of Adjoining Property Owners/Lessees

Adjoining Property Owners and Lessees

APN	OWNER	PROPERTY OWNER ADDRESS	CITY	STATE	ZIP	PROPERTY ADDRESS	CITY
00701002	WILLITS CITY OF			CA	00000		
00701003	WILLITS CITY OF			CA	00000		
00701004	BENBOW CHARLES 1/2	40 E BRANCH RD	GARBERVILLE	CA	95542		
00702003	BENBOW CHARLES 1/2	40 E BRANCH RD	GARBERVILLE	CA	95542	998 HEARST WILLITS RD	WI
00703204	SHUSTERS TRANSPORTATION INC	750 E VALLEY ST	WILLITS	CA	95490	750 CENTER VALLEY RD	WI
00703205	WILLITS HORSEMAN ASSOCIATION I	PO BOX 906	WILLITS	CA	95490		
00703210	JENSEN MARJORIE L C 1/9	507 W MILL ST	UKIAH	CA	95482		
00703211	HARMS GEORGE M TTEE	392 REDWOOD AVE	WILLITS	CA	95490		
00703213	HARMS GEORGE M TTEE	392 REDWOOD AVE	WILLITS	CA	95490		
00704006	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502	701 CENTER VALLEY RD	WI
00704007	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502	731 EA VALLEY ST	WI
00704008	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490	801 EA VALLEY ST	WI
00704009	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490		
00704010	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490	801 EA VALLEY ST	WI
00704014	WINDSOR MILL PROPERTIES LLC	7950 REDWOOD DR STE 4	COTATI	CA	94931		
00704017	TWEDDELL APRIL TTEE	651 E VALLEY ST	WILLITS	CA	95490	651 CENTER VALLEY RD	WI
00705002	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490		
00705007	GRIGGS MICHAEL A JR & KERRI M	511 E VALLEY ST	WILLITS	CA	95490		
00707001	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490	500 SHELL LN	WI
00710008	SEIBERLICH JEANETTE SUCCTTEE	40 ST TERESA CT	DANVILLE	CA	94526	311 SHELL LN	WI
00710009	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490		
00710011	FORD DELMAN & DONNA R TTEES	1750 HEARST RD	WILLITS	CA	95490		
00710029	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
00716017	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
00716018	HANDLEY MARGIE LEE TTEE 1/2	PO BOX 1329	WILLITS	CA	95490		
03802009	BURTON BRUCE EDWARD 1/2	220 FRANKLIN AVE	WILLITS	CA	95490	24850 NO HWY 101	WI
03802011	BROOKE CLIFFORD ALLEN & CARLA	2409 PINE KNOLL DR #1	WALNUT CREEK	CA	94595		
03802021	GARMAN BEDA H JR & SHARON A TT	389 N MAIN ST	WILLITS	CA	95490	24900 NO HWY 101	WI
03804009	BROOKE CLIFFORD A & CARLA R	2409 PINE KNOLL DR #1	WALNUT CREEK	CA	94595		
03806007	ANDERSON CHARLES & SYLVIA	PO BOX 302	WILLITS	CA	95490	24200 NO HWY 101	WI
03806008	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD #166-K	SEAL BEACH	CA	90740	24201 NO HWY 101	WI
03806010	WAGENET GORDON M & CATHARINE S	PO BOX 345	WILLITS	CA	95490		

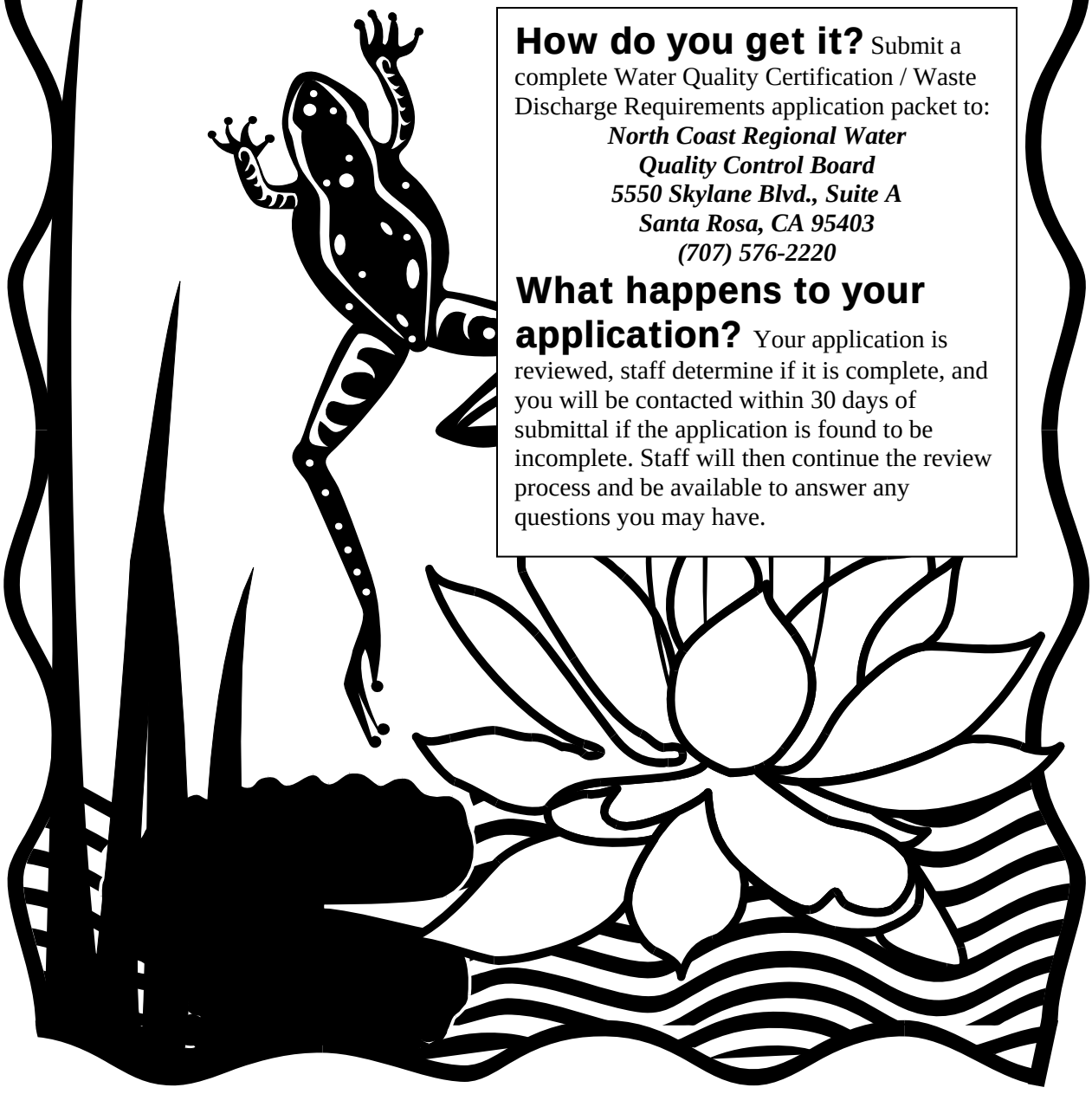
APN	OWNER	PROPERTY OWNER ADDRESS	CITY	STATE	ZIP	PROPERTY ADDRESS	CITY
03808009	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD 116-K	SEAL BEACH	CA	90740		
03808031	WAGENET GORDON M & CATHARINE S	PO BOX 345	WILLITS	CA	95490		
10315011	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10403018	MORRIS LAUREL A TTEE 1/4	801 E HILL RD	WILLITS	CA	95490	801 EAST HILL RD	WI
10403022	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10403023	HANDLEY MARGIE LEE TTEE	PO BOX 1329	WILLITS	CA	95490	701 EAST HILL RD	WI
10405010	MORRIS LAUREL A TTEE 1/4	801 E HILL RD	WILLITS	CA	95490		
10405015	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10405016	HANDLEY MARGIE LEE TTEE	PO BOX 1329	WILLITS	CA	95490		
10409004	SCHMIDBAUER EDWARD J & ERLYNE	19921 N HWY 101	WILLITS	CA	95490		
10411012	OCHOA LYNDA & MANUEL R	19873 N HWY 101	WILLITS	CA	95490	19873 NO HWY 101	WI
10412002	SCHMIDBAUER EDWARD J & ERLYNE	19921 N HWY 101	WILLITS	CA	95490		
10803003	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD 116-K	SEAL BEACH	CA	90740		
10804002	NIESEN WALTER A	24001 N HWY 101	WILLITS	CA	95490	24001 NO HWY 101	WI
10804003	CITY OF WILLITS THE	111 E COMMERCIAL	WILLITS	CA	95490	23731 NO HWY 101	WI
10804008	HUFFMAN RODNEY G 1/9	PO BOX 551	UKIAH	CA	95482	23731 NO HWY 101	WI
10804014	CITY OF WILLITS	111 E COMMERCIAL ST	WILLITS	CA	95490		

Attachment 9: Copies of Permit Applications

WATER QUALITY CERTIFICATION AND/OR WASTE DISCHARGE REQUIREMENTS (Dredge/Fill Projects)

What is it? A Clean Water Act (CWA) Section 401 Permit (Water Quality Certification) is a finding from the Regional Water Quality Control Board that the proposed project will comply with CWA Sections 301, 302, 303, 306 and 307, State laws, and will be protective of beneficial uses. At a minimum, any beneficial uses lost must be replaced by a mitigation project of at least equal function, value and area. Waste Discharge Requirements Permits are required pursuant to California Water Code Section 13260 for any persons discharging or proposing to discharge waste, including Dredge/Fill, that could affect the quality of the Waters of the State.

Who Needs It? Anyone proposing to conduct a project that requires a federal permit or may result in a discharge to U.S. surface waters and/or "Waters of the State", including wetlands (all types), year round and seasonal streams, lakes and all other surface waters.



How do you get it? Submit a complete Water Quality Certification / Waste Discharge Requirements application packet to:

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403
(707) 576-2220

What happens to your application? Your application is reviewed, staff determine if it is complete, and you will be contacted within 30 days of submittal if the application is found to be incomplete. Staff will then continue the review process and be available to answer any questions you may have.

Application for 401 Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill)

The following application must be submitted to the Regional Water Quality Control Board for dredge/fill projects that require Water Quality Certification and/or Waste Discharge Requirements. Submit this application and the appropriate documentation*, along with a check for $640.00 (Base Price) plus additional fees, if applicable, as required according to the CCR 23 Section 2200 (a)(2) Fee Schedule** to:

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403
(Make checks payable to: State Water Resources Control Board)

*Clarification of information may be requested by Regional Water Quality staff during application review.
**Additional fees may be imposed upon application review.
Fee calculator and additional information are available at
http://www.waterboards.ca.gov/northcoast/water_issues/programs/water_quality_certification.shtml

SECTION ONE – Applicant Information & Authorization

APPLICANT/PROPERTY OWNER(S) NAME Jason Meigs, California Department of Transportation (Caltrans)	AUTHORIZED AGENT NAME AND TITLE (an agent is not required)
APPLICANT/PROPERTY OWNER(S) MAILING ADDRESS Caltrans District 3 2800 Gateway Oaks Drive Sacramento, CA 95833	AUTHORIZED AGENT MAILING ADDRESS
APPLICANT/PROPERTY OWNER(S) PHONE & FAX NUMBERS (email optional) (916) 274-0564; FAX (916) 274-0602; Jason_Meigs@dot.ca.gov	AUTHORIZED AGENT PHONE & FAX NUMBERS (email optional)

STATEMENT OF AUTHORIZATION (if designating a specific agent)

I hereby authorize _____ to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

X_____ _____
APPLICANT'S SIGNATURE (not the authorized agent) DATE

SECTION TWO – Project Information

Please refer to the provided Project Plan Checklist for guidance and attach additional supporting documentation as necessary. Supplying detailed information will aid in expediting the review process. **Including an electronic copy of the required information will expedite the review process.**

<table>
<tr><td colspan="2">PROJECT NAME OR TITLE
U.S. Highway 101 Willits Bypass Project</td></tr>
<tr><td>PROJECT STREET ADDRESS (if applicable)

U.S. Highway 101</td><td>PROJECT LOCATION (Attach a topographic map and site map clearly indicating affected waters)
COUNTY CITY/TOWN

Mendocino Near Willits</td></tr>
<tr><td>CITY/STATE/ZIP

Willits, CA</td><td>LATITUDE LONGITUDE

See Attachment A (Supplemental Information)</td></tr>
<tr><td>ASSESSORS PARCEL NUMBER(S)

See Attachment B (Adjoining Property Owners)</td><td>SECTION, TOWNSHIP, RANGE, USGS QUADRANGLE MAP

Section 32, Township 18N, Range 13W, Willits & Laughlin Range USGS 7.5-minute Quadrangles</td></tr>
<tr><td colspan="2">DIRECTIONS TO THE SITE

From Santa Rosa, take U.S. Highway 101 north approximately 80 miles to Willits, California. The project site begins at the south of the Haehl Overhead and ends approximately 1.9 miles south of Reynolds Highway. The optional proposed borrow site at Oil Well Hill is located on the east side of Highway 101 approximately 0.85-mile north of the intersection of Reynolds Highway and Highway 101. Refer to See Attachment 1 (Supplemental Information) for additional location details.</td></tr>
<tr><td colspan="2">PROJECT PURPOSE (See attached checklist for guidance. Attach additional information as necessary.)

See Attachment 1 (Supplemental Information)</td></tr>
</table>

PROJECT DESCRIPTION (See attached checklist for guidance. Provide a full, technically accurate description of the entire activity and associated environmental impacts. Attach additional pages as necessary.)

See Attachment 1 (Supplemental Information)

PROPOSED START AND END DATES	**ESTIMATED DURATION**	Will the project take place during the wet season months of October 15 through May 15? X YES ☐ NO If YES, please discuss the proposed winterization strategies on Page 5, Non-compensatory Mitigation.
January 2011 – November 2015	Four full construction seasons	

FEDERAL PERMIT(S) (applied for or approved, i.e. Army Corps of Engineers 404 Permit – Individual or Nationwide)

PERMIT TITLE	FILE DATE	FILE NUMBER
USACE 404 Individual Permit	Concurrent with this application	194741N; 1991-194740N
PERMIT TITLE	FILE DATE	FILE NUMBER

STATE PERMIT(S) (applied for or approved, i.e. Streambed Alteration Agreement (1600-1608) from the California Department of Fish and Game)

PERMIT TITLE	FILE DATE	FILE NUMBER
Streambed Alteration Agreement	Concurrent with this application	Pending
PERMIT TITLE	FILE DATE	FILE NUMBER

CEQA COMPLIANCE (Submittal of completed, approved and/or signed CEQA documentation is required prior to approval of Water Quality Certification.)

TYPE OF DOCUMENT (EIR, Negative Declaration, etc.)	LEAD AGENCY INFORMATION
EIR/EIS	Caltrans/FHWA

STATE CLEARING HOUSE NUMBER	STATUS (pending, complete, etc.)	DATE COMPLETED (or expected to be complete)
1990030006	Complete	October 25, 2006

SECTION THREE – Affected Waters

Please refer to the provided Project Plan Checklist for guidance and attach additional supporting documentation as necessary. Supplying detailed information will aid in expediting the review process.

DREDGE AND FILL INFORMATION (The following must be completed for each action where fill or other material will be temporarily or permanently discharged to a wetland or other waterbody, and where material will be dredged from a waterway. Attach additional pages as necessary. Provide a map showing the location of all impacts. Provide all temporary and permanent impacts to waters of the U.S. and waters of the State.)

Types of Material Being Discharged and Amount of Each Type in Cubic Yards

The proposed project will affect 5.50 acres of "other waters" of the United States (streams, ditches, and ponds) by placing approximately 13,745. 79 cubic yards of fill along 10,608.45 linear feet (LF) of "other waters" of the United States " during project construction and mitigation activities. The fills include 8306.39 cubic yards of permanent fill along 8047.10 LF of other waters" of the United States and 5439.40 cubic yards of temporary fill along 2561.35 LF of other waters" of the United States. The surface area (in acres) of "other waters" of the United States are summarized in Table 2 below. Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 1, below, lists the volume (temporary and permanent) and types of fill material that will be discharged to "other waters" of the United States as a result of the proposed project. Maps depicting impacted wetlands and "other waters" of the United States" are included in Appendix a and Appendix B of this permit application.

Table 1: Willits Bypass "Other Waters" of the US - Locations of features

Map Sheet	LF Perm	LF Temp	Feature Type	Comment/Location	Fill Volume Perm	Fill Volume Temp	Fill Type	Roadway Work	Structure Work
					(cu-yards)	(cu-yards)			
B-04	400.8	0	EPH	South of haehl Interchange, parallels west side of 101	9.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), Rock Slope Protection (RSP), RSP Fabric	Roadway fill, roadside ditch, Drainage System No. 5 (STA "A" 102+43.645) & Drainage Basin No. 1 (STA "A" 102+61.854)	
B-04	155.3	0	EPH	South of haehl Interchange, on east side of 101 (across from FID 0)	14.7	0	Imported borrow (fill), concrete (DI), Alternative Pipe Culvert (APC), Alternative Flared End Section (AFES), RSP, RSP Fabric	Roadway fill & Drainage System No. 6 (STA "A" 102+67.835)	
B-06	605.5	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101	8.7	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 13 (STA "U1" 106+30.000) & 14 (STA "U1" 105+50.000)	

B-08	309.3	0	EPH	Trib To Haehl Creek in Roadway Ditch, parallels west side of hwy 101, east of FID 4	3.1	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), Concrete (DI), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 8 (STA "H" 97+61.686)	
B-08*	8.6	3.4	EPH	Trib To Haehl Creek from Roadway Ditch culvert, north side of hwy 101	0.2	0.1	Import borrow (fill)	Roadway fill Drainage System No. 9 (STA "H" 97+96.641)	
B-06	144.9	0	EPH	Trib To Haehl Creek, north side of hwy 101	4.1	0	Cut	Roadway excavation, Begin STA "H" 99+13.723 - End STA "H" 99+32.816 & Drainage System No. 11 ("H" 99+31.464)	
B-06	99.5	0	EPH	Trib To Haehl Creek, north side of hwy 101. extension of FID 7	3.4	0	Import borrow (fill)	Roadway fill, Begin STA "A" 106+77.199 - End STA "A" 106+97.700	
B-06	96.4	3.4	EPH	Trib To Haehl Creek, conflunecing with Haehl Cr from NE	80.5	2.8	Import borrow (fill), roadway excavation, concrete (headwall), APC, RSP, RSP Fabric	Roadway fill, roadway excavation, Drainage System No. 18 (STA "U4" 106+35.000)	
B-06	577.6	0	EPH	Trib To Haehl Creek, parallels dirt road on north side of hwy 101	71.2	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), concrete (bridge abutment), RSP, RSP Fabric, Turf Reinforcement Mat (TRM)	Roadway fill, Begin STA "A" 105+35.903 - End STA "A" 107+46.190	
B-12	1006.6	0	EPH	On NE side of J1T align, NW of haehl interchange, “Schmidbauer”	362.4	0	Imported borrow (fill), Hot Mix Asphalt, Hot Mix Asphalt (open graded), RSP, RSP Fabric	Roadway fill, roadside ditch & Drainage System No. 30 ("A" 110+71.840)	
B-12	12.6	12.6	EPH	On Nw side of J1T align, NW of haehl interchange	3.2	3.2	Imported borrow (fill), APC, AFES, RSP, RSP Fabric	Roadway fill & Drainage System No. 30 ("A" 110+71.840)	
B-12	0	74.5	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 13, “Schmidbauer”	0	36.7	Import borrow (fill)	Roadside ditch	

B-14	920.3	0	EPH	On NE side of J1T align, NW of haehl interchange, NW of FID 15, “Schmidbauer”	274.5	0	Imported borrow (fill), RSP, RSP Fabric	Roadside ditch & Drainage System No. 33 ("A" 114+44.741)	
B-14	77	3.4	EPH	Trib runs to the NE, to “Schmidbauer”	8.1	0.4	Cut	Median ditch	
B-34	149.2	3.4	EPH	Ditches in Log Yard	11.9	0.3	Import borrow (fill)	Roadway fill	
B-34	118.6	3.4	EPH	Ditches in Log Yard	9.4	0.3	Import borrow (fill)	Roadway fill	
B-34	71.7	3.4	EPH	Ditches in Log Yard	5.7	0.3	Import borrow (fill)	Roadway fill	
B-34	55.9	3.4	EPH	Ditches in Log Yard	4.5	0.3	Import borrow (fill)	Roadway fill	
B-34	58.7	3.4	EPH	Ditches in Log Yard	4.7	0.3	Import borrow (fill)	Roadway fill	
B-34	74.3	3.4	EPH	Ditches in Log Yard	5.9	0.3	Import borrow (fill)	Roadway fill	
B-34	41.8	3.4	EPH	Ditches in Log Yard	3.3	0.3	Import borrow (fill)	Roadway fill	

B-34	90.9	3.4	EPH	Ditches in Log Yard	7.2	0.3	Import borrow (fill)	Roadway fill	
B-34	17.2	3.4	EPH	Ditches in Log Yard	1.4	0.3	Import borrow (fill)	Roadway fill	
B-34	123.2	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	11.8	3.4	EPH	Ditches in Log Yard	0.9	0.3	Import borrow (fill)	Roadway fill	
B-34	122.6	3.4	EPH	Ditches in Log Yard	9.8	0.3	Import borrow (fill)	Roadway fill	
B-34	153.7	3.4	EPH	Ditches in Log Yard	12.2	0.3	Import borrow (fill)	Roadway fill	
B-06	59.3	1027.1	INT	Haehl Creek (Main Fork) – Re-Align	221.3	3832.6	Import borrow (fill), Concrete (headwall & wingwall), APC, RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (9402.7 m^3) 2. Sand & Gravel (1559.3 m^3) **Above OHW:** 1. RSP(4161.5 m^3) 2. Sand & Gravel (2611.3 m^3)	**Haehl Creek Bridges: Br No.** **10-0129F, 10-0129G & 10-0129RL** 1. Potential Temp. stream crossing (1 trestle bent in channel) at bridge 10-0129RL. 2. Potential Falsework (1 falsework bent in channel) at each structure . 3. Potential stream Diversion/temporary culvert.

B-18	188.6	160.25	INT	"Schmidbauer"	53.3	47	Import borrow (fill)	Roadway fill	
B-24	401	6.8	INT	Crosses align north of east Hill road	404.7	6.9	Imported borrow (fill), roadway excavation & concrete (headwall)	Roadway fill & Drainage Basin No. 3 ("A" 127+50.000)	
B-57	433	6.8	INT	RR Ditch at RR x-ing, east side of tracks	262.2	4.1	Import borrow (fill)	Abutment fill, new ditch (to be design by Design) & temp. culvert	**Quail Meadows OH (Br No. 10-0171)** 1. Temp. dirt road across RR tracks (Temp Haul Road) 2. Temp. Culvert crossing
B-26	514.1	6.8	INT	East Fork Haehl Creek, Handley parcel, south of Shell rd.	2324.5	30.7	Imported borrow (fill), roadway excavation, APC, AFES, RSP, RSP Fabric	Roadway fill, Drainage Basin No. 4 ("A" 132+00.000), Drainage System No. 45 ("A" 132+52.219)	
B-40	65.13	26.3	INT	Heahl Creek, Near Baechtel Confluence – Under Viaduct, Just north of East valley Street	260.0 (culvert work)	105.0 (culvert work)	Trestle/falsework construction		**Haehl Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-49	7	10	INT	Broadus, Baechtel, Outlet Confluence - Under Viaduct, NE of WWTP	54.0 (footing for bents)	77.2 (falsework)	Concrete (Bent 24), RSP, RSP Fabric, Trestle/falsework construction		**Confluence of Broaddus/Baechtel Creek** 1. Footing Impact (329.9 m3) 2. Potential temp. stream crosssing (Baechtel Creek - 2 falsework bents in channel, Broaddus Creek - 1 falsework bent in channel, & Outlet Creek- 2 trestle bents in channel)

B-51	0	429.8	INT	Mill Creek - Under Viaduct	0	0 (access and veg removal only, no temp fills below OHWM)	Trestle/falsework construction		**Mill Creek (Floodway Viaduct)** 1. Potential Temp. stream crossing (1 trestle bent in channel) 2. Potential Falsework (1 falsework bent in channel)
B-37	0	403.1	INT	Baechtel Creek, south of center valley road, west side of J1T align	0	595.7		Current Design does not show any impact at this location.	
B-26	0	270.5	INT	West (Main) Fork Haehl Creek, along west side of handley parcel	0	692.6	RSP (Fish Passage Design)	**Haehl Creek** **Below OHW:** 1. RSP (2857.9 m^3) 2. Sand & Gravel (348.1 m^3) **Above OHW:** 1. RSP(3444.9 m^3) 2. Sand & Gravel (2309.7 m^3)	**Haehl Creek (Br No. 10-0159)** 1. potential temp. stream crossing (4 trestle bents in channel). 2. potential temp. falsework (4 trestle bents in channel).
B-57	1172.6	82.4	INT	Upp Creek and RR ditch on west side of RR x-ing, and Mill Creek on the east side of RR x-ing	1817.5	127.7	Import borrow (fill), roadside ditch (RR), Concrete (bridge structures), APC, RSP (Fish Passage Design at Upp Creek)	**Upp Creek** **Below OHW:** 1. RSP (5848.5 m^3) 2. Sand & Gravel (1258.3 m^3) **Above OHW:** 1. RSP(3100.0 m^3) 2. Sand & Gravel (1325.1 m^3)	**Quail Meadows OH** **Br No. 10-0171** 1. Potential Temp. culvert crossing 2. Potential dirt road crossing over RR tracks (temp haul road) **Upp Creek Bridges** **Br No. 10-0305, 10-0174, 10-0174K & 10-0174S** 1. Potential Temp. stream crossing (1 trestle bent in channel) at Quail Meadows I.C. 2. Potential Falsework (1 falsework bent in channel) at each structure 3. Potential Stream Diversion at each structure

B-31 and B-34	139.8	3.4	POND	Rutledge Pond	2263.1	55	Class 3 Permeable Material Filter Fabric Embankment	Class 3 Permeable Material (3213 m^3) Filter Fabric (6802 m^2) Embankment (3505 m^3)	
C-86	**375.95**	288.16	EPH	Stream Entering Watson East Mitigation Parcel	29.59	0	Grading for wetland creation		
Totals:	**8860.48**	**2862.91**			**8306.39 yd^3**	**5439.40 yd^3**			

Surface Areas of Wetlands and Other Waters Filled

The proposed project will directly affect a total of 89.12 acres of wetlands and other waters of the United States, of which 56.23 acres will be permanently filled and 32.89 acres will be temporarily disturbed during project construction and mitigation activities. Fill types affecting wetlands include those listed in Table 1 for "other waters of the United States" (permanent fills consisting of roadway and structures fill, asphalt concrete, RSP, TRM and RECP, new culverts, culvert end and treatments; temporary fills consisting of temporary falsework and falsework supports, cofferdams, temporary roadway fills, stream re-alignments, and temporary access routes). Temporarily impacted areas will be returned to pre-project contours and elevations before completion of the project. Table 2 shows the surface area (acres) of the resources that will be affected by the bypass. Maps depicting impacted wetlands and "other waters" of the United States are included in Appendix A and Appendix B of this permit application.

Table 2. Summary of Project Construction Impacts on Wetlands and Other Waters of the United States

Wetland Type / Other Waters	Project Impacts on Wetlands and Other Waters (acres)			Mitigation Impacts on Wetlands and Other Waters (acres)			Total Impacts on Wetlands and Other Waters (acres)
	Temporary	Permanent	Total	Temporary	Permanent	Total	Total
Marsh	1.38	8.15	9.53	0.49	0.00	0.49	**10.02**
Riparian Scrub	0.17	0.21	0.38	0.00	0.00	0.00	**0.38**
Riparian Woodland	1.61	3.21	4.82	0.07	0.02	0.09	**4.91**
Swale	0.03	0.00	0.03	0.26	0.05	0.31	**0.34**
Vernal Pool	0.05	0.16	0.21	0.00	0.00	0.00	**0.21**
Wet Meadow	20.69	41.64	62.33	4.98	0.45	5.43	**67.76**
Subtotal Wetlands	**23.93**	**53.37**	**77.30**	**5.80**	**0.52**	**6.32**	**83.62**
Other Waters	3.10	2.25	5.35	0.06	0.09	0.15	**5.50**
Total	**27.03**	**55.62**	**82.65**	**5.86**	**0.61**	**6.47**	**89.12**

DELINEATION INFORMATION	
NAME OF PERSON DELINEATING EXTENT OF WATERS OF U.S. Jason Meigs, Caltrans; URS Corporation; IFC Jones and Stokes	DATE(S) OF WETLAND DELINEATION See Below
TITLE and DATE OF WETLAND VERIFICATION BY U.S. ARMY CORPS The U.S. Army Corps of Engineers (USACE) verified the U.S. Highway 101 Willits Bypass Project's (proposed project) delineation of waters of the United States on March 1, 2005 (File 194741N). This verification was for the Modified Alternative J1T Alignment study area. In January 2007 and April 2008, a request to amend the previously verified delineation was submitted to the USACE to include minor changes to the footprint of the proposed Haehl Creek interchange, the road alignment to the north, and the proposed borrow area at Oil Well Hill. The USACE confirmed the requested changes to the delineation on August 15, 2008 (File 191-19470N). In December 1, 2008, a request to verify a delineation was submitted to include the revision of the project footprint to avoid the expansion of the Willits wastewater treatment Plant (WWTP). The USACE provided a verification for this area on December 2, 2009. In addition to the delineations of waters of the United States associated with the bypass alignment, Caltrans also submitted delineations for various parcels that will be part of the project's mitigation plan. The USACE jurisdictional determinations are located in Attachment 3.	
AFFILIATION Caltrans	If a wetland delineation has been verified by the U.S. Army Corps, please submit the verification letter as well as a verified wetland delineation map. If the Corps did not assume jurisdiction over the wetlands present, please submit the denial letter.

AVOIDANCE OF INDIRECT IMPACTS

(Describe efforts to avoid and minimize indirect impacts to waters of the State such as upland impacts which might affect water quality. See checklist for guidance. Attach additional pages as necessary.)

Please refer to Attachment 1 "Supplemental Information"

Sections: "Avoidance and Minimization of Direct and Indirect Impacts" and "Non Compensatory Mitigation"

AVOIDANCE OF DIRECT IMPACTS (Describe efforts to **avoid** and **minimize direct impacts** to waters of the State. See checklist for guidance. Attach additional pages as necessary.)

Please refer to Attachment 1 "Supplemental Information"

Sections: "Avoidance and Minimization of Direct and Indirect Impacts" and "Non Compensatory Mitigation"

COMPENSATORY MITIGATION (Required when permanent and temporal impacts to Waters of the State occur. Describe the location, size, type, functions, and values of the proposed mitigation. Describe success criteria, monitoring, long-term funding, management, and protection of the mitigation site. Attach a Mitigation Plan if needed. Attach Mitigation Bank Bills-of-Sale for purchase credits if needed. See attached checklist for guidance.)

Caltrans has developed a Mitigation and Monitoring Proposal (MMP) that proposes compensatory mitigation for effects of the bypass on jurisdictional wetlands, other waters of the United States, riparian habitat, oak woodlands, and State-listed plants. In addition to compliance with Clean Water Act (CWA) Section 401, the MMP will be used to support compliance with CWA Section 404, Section 1602 of the California Fish and Game Code, and Section 2081 of the California Endangered Species Act (CESA). The overall goal of the MMP is to successfully compensate for impacts on sensitive biological resources resulting from bypass project construction by improving ecological functions and values to habitat in Little Lake Valley through a combination of restoration, creation, enhancement, and preservation. However, beyond this compensation, the MMP aims to restore and enhance many previously lost or degraded wetland functions and values, and to help offset past damage to parts of the Outlet Creek Basin. The table below presents the total amount of jurisdictional wetlands and other waters of the U.S. and/or State that would be created, enhanced, or preserved as compensation for the proposed project's impacts on jurisdictional waters and wetlands.

Resource	Mitigation Actions (acres)				Restoration
	Creation	Enhancement	Preservation	Total Mitigation Acres	
Wetlands	33.44	1,032.90	1,122.11	**2,188.45**	5.96
Other Waters	none	17.32	24.70	**42.02**	0.06
Total	**33.44**	**1,050.22**	**1,146.81**	**2,230.47**	**6.02**

The proposed project's MMP will be provided in its entirety in a separate transmission.

ALTERNATIVES ANALYSIS

Has an Alternatives Analysis been prepared? ☑ YES ☐ NO If you marked YES, please submit the appropriate documentation.

NON-COMPENSATORY MITIGATION (Required by all construction projects and projects which impact riparian vegetation.)

PROPOSED MINIMUM EROSION CONTROL MEASURES (Describe the methods proposed for erosion control, including winterization strategies to stabilize all bare soils and re-vegetation proposals. Please submit a map indicating the approximate locations of each method.)

Temporary Construction Site BMPs to be used on Project (info from SWDR and WPC SPI Plans)

Construction of the bypass is anticipated to last 5 construction seasons total, with four rainy seasons. The North Coast Regional Water Quality Control Board (NCRWQCB) has defined the rainy season as October 15th through May 15th.

Temporary Construction BMPs will be deployed as detailed in the Contractor prepared SWPPP approved by the Resident Engineer, in accordance with Standard Special Provision (SSP) 07-345 Water Pollution Control. The SWPPP would include appropriate Caltrans Construction Site Best Management Practices (BMPs) to reduce the potential for sediments and contaminants from entering the creeks.

Temporary Bid Line Items BMP's identified and include in the Contract Items are:

- Temporary Fence (Type ESA) & (Type ESA-Floodway)
- Temporary Erosion Control Blanket
- Temporary Fiber Roll
- Temporary Gravel Bag Berm
- Temporary Construction Entrance
- Temporary Cover
- Temporary Check Dam
- Temporary Hydraulic Mulch (BFM)
- Street Sweeping
- Temporary Concrete Washout (Portable)
- Move-in/Move-out (Temporary Erosion Control)
- Temporary Drainage Inlet Protection
- Construction Site Management

The WPC Contract items and strategy are as shown in the WPC handout to be included the Supplemental Project Information handout and available for the Contractor during project Advertisement.

Temporary Impacted areas will be revegetated to their pre-construction plant community type. They will be seeded and planted with plants native to Little Lake Valley. Temporary Hydraulic Mulch (Bonded Fiber Matrix) will be applied to temporary slopes and disturbed areas where necessary and prior to placement of final Erosion Control.

Contractor's work schedule will dictate the amount of soil disturbance and work activities that may take into affect at any particular time during the construction phase of the project. Bid item Move-in/Move-out (Temporary Erosion Control) will account for allowing the multiple mobilizations of the Contractor to stabilize the work area as portions of the work is completed.

Final Erosion Control (see Erosion Control Plans):

Non structural slopes will be stabilized with revegetation and erosion control measures. Disturbed slopes will be re-vegetated in accordance with plans developed by the District Landscape Architect or otherwise stabilized.

Permanently impacted areas such as cut and fill slopes adjacent to the roadway along interchange ramps, as well as median between the inside roadway shoulders will be revegetated with native plants appropriate to Little Lake Valley. Steeper embankment slopes located at structures approaches will be protected with Rolled Erosion Control Product (Netting) blanketing materials and all final slopes will be stabilized and revegetated with Duff and Erosion Control (Bonded Fiber Matrix) (Seed Type 1). In addition, finished slopes and ditches constructed greater than 1;3 (V:H) will be stabilized with Erosion Control (Rolled Erosion Control Product (Netting). Upon completion of construction of the Floodway Viaduct structure, the entire disturbed area will be regarded to pre-construction conditions and revegetated with Erosion Control (Bonded Fiber Matrix) (Seed Type 2). Bioswales will be constructed and revegetated with final Erosion Control (Rolled Erosion Control Product (Netting), Compost, and Erosion Control (Bonded Fiber Matrix) as part of Treatment BMPs at drainage outlet areas prior to run-off off site of the project. Turf Reinforcement Mat (TRM) will be utilized to line the inlet channel of Drainage System 54 at Center Valley Rd.

The Roundabout will include hardscape features, and plantings and irrigation & sprinkler system as a center for aesthetics and as revegetation around the pedestrian walkways. Final Erosion Control includes Mulch, Imported Topsoil, Boulder Placement, and Gravel (Miscellaneous Areas).

Oil Well Hill Optional Borrow Site:

During each construction season, the Contractor will limit the removal of vegetation to those portions of Oil Well Hill site necessary to provide fill material for that season's construction needs. The excavation activities at Oil Well Hill could result in long-term erosion of disturbed soils. Upon completion of excavation activities at the site, appropriate Temporary Construction Site BMPs will be employed by the Contractor for each season's use. And upon final completion of material excavation from the site, permanent erosion control and revegetation will be required as specified by the Caltrans Landscape Architect and as shown in the SPI handout WPC and Landscape Architecture plans.

PROPOSED POST-CONSTRUCTION STORM WATER TREATMENT MEASURES (Describe the methods proposed to treat storm water runoff from the project site prior to entering the storm drainage system, wetlands, streams, etc. Please include proper design calculations to indicate that the proposed methods will treat runoff from the 85th percentile/24-hour storm event. See SUSMP Guidelines available at: http://ci.santa-rosa.ca.us/doclib/Documents/SUSUMP.pdf, or upon request.

Refer to the Storm Water Calculations and Downstream Discharges informational handouts provided by Scott Foster by e-mail to Jeremiah Puget on 11/24/09 and in person in a meeting on 11/19/09, and included as Attachments 8 and 9 of this application

PROPOSED CONSTRUCTION AND POST-CONSTRUCTION POLLUTANT SOURCE CONTROLS (Describe the methods proposed to reduce sources of pollutants, fertilizers, pesticides, sediment, etc., from entering the water system.)

All remaining water pollution control related items will be deployed under SSP 07-346 Construction Site Management bid item, which will account for the miscellaneous "housekeeping" BMPs, such as *Spill Prevention and Control Management, Material Storage and Stockpile Management, Waste Management.* and *Non-Storm Water Management),* that would be implemented during construction activities. Additionally:

Construction Pollution Source Controls:

- Construction dewatering may be required for this project for structure footings at the Floodway Viaduct, concrete-contact water, accumulated storm water, and uncontaminated groundwater. Disposal methods may consider pumping into holding tanks for site reuse and as a water source for use in construction activities in embankment construction or dust control, discharge into ground (upland) infiltration, discharge into receiving waters, or off-site disposal, as determined by the Contractor. Dewatering activities will need to comply with the North Coast RWQCB Basin Plan, 401 Certification, and Caltrans NPDES permits.
- Landslide mitigation will be required at Abutment 1 of the proposed S101-W20 Connector Bridge (Br No 10-129F) at the Haehl Creek Interchange. Caltrans Office of Geotechnical Services has recommended the existing slide area be stabilized during the construction of Abutment 1. A Stabilization Trench is to be constructed and a portion of the slide material will be removed as unsuitable material and be replaced with suitable embankment material which will include a layer of permeable material and a subsurface drain collection system
- Petroleum Contaminated Material (No SSP No) has been identified at the Shuster's Transportation Trucking facility (located adjacent to the Floodway Viaduct on East Valley Rd) in the form of soil material and/or groundwater due to existing conditions of petroleum contamination due to former underground storage tanks. The material has a potential to be encountered at the excavations of Bent 2 and 3 and a worker Health and Safety Plan on the testing, work stockpiling, dewatering, and handling plan is required, and disposition of the material will be included in the Contract. Currently, Site Remediation is in progress at the property by the property owner and monitoring and reporting compliance with the NCRWQCB.

- The new deck surface of the Floodway Viaduct structure (Br No 10-165),will be ground and the resulting Portland Cement Concrete (PCC) grooving and grinding residues will be disposed of by the Contractor in accordance with the Contract specifications [SSP 42-600 Disposal of Portland Cement Concrete (PCC) Pavement and Bridge Deck Grooving and Grinding Residues] and RWQCB requirements.

Post Construction Pollution Source Controls:

- Post construction flows will be captured, routed into earthen ditches and channels, and detained prior to entering local waterways where feasible. Channel erosion control measures, such as willow cuttings, erosion control blankets, and rock lined channels will be deployed within the project limits. Energy dissipation devices such as flared ends and Rock Slope Protection (RSP) at culvert outlets are deployed where appropriate. The transition between culvert outlets/headwalls/wingwalls and channels will be smooth to reduce turbulence and scour. Detention facilities will be deployed as feasible to reduce peak discharges
- Cut and fill slopes are to be as flat as feasible, and concentrated flow will be collected in stabilized drains and channels whenever possible. The slope and surface protection systems deployed include; slope rounding, seeding and planting, temporary erosion control, fiber rolls, Rolled Erosion Control Protection (RECP), Bonded Fiber Matrix (BFM), and Rock Slope Protection (RSP). Hard surfaces are expected to be required, particularly at the bridge abutments and roundabout. The hard surfaces that will be used are rock slope protection and slope paving. Retaining walls will have RSP placed as scour protection

- Additional information regarding ditches, berms, dikes, and swales utilized on this project is contained in the project stormwater data report and hydro-modification report (attached).

SECTION FOUR – Additional Information

POTENTIAL FOR IMPACTS TO THREATENED AND ENDANGERED SPECIES (Please attach all Biological Assessments, Surveys, Formal Consultation Determination letters, and Mitigation Proposals as necessary.)

SPECIES AND/OR HABITAT	BIOLOGICAL ASSESSMENT (Y/N)	SURVEY CONDUCTED (Y/N)	DATES OF SURVEY CONDUCTED
Chinook salmon—California Coastal ESU	Y	Y	2004 (CDFG)
Steelhead—Northern California DPS	Y	Y	2004 (CDFG)
Coho salmon—Northern California/ Southern Oregon Coasts ESU	Y	Y	2004 (CDFG)
Northern spotted owl	Y	Y	2008, 2009 (Caltrans)
White-tailed kite	Y	N	
North Coast semaphore grass	Y	Y	2008, 2009 Caltrans (URS)
Baker's meadowfoam	Y	Y	1997 (Jones & Stokes); 2007 (URS); 2009 (Caltrans)

HAS ANY PORTION OF THE WORK BEEN INITIATED? ☐ YES ☑ NO If YES, describe the initiated work, and explain why it was initiated prior to obtaining a permit. Indicate whether any enforcement action has been taken against the project.

CUMULATIVE IMPACTS (List and describe other projects implemented or planned that are related to the proposed project, or that may impact the same waterbody. Attach additional pages as necessary.)

PROJECT NAME	DESCRIPTION	DATE IMPLEMENTED/PLANNED
Willits WWTP expansion	To accommodate projected growth in Willits & Brooktrails subdivision	2006
Brooktrails subdiv. 2nd access	Near Wild Oat Canyon	Unknown
Traffic signal at Holly & Main (US 101) Street	(self-explanatory)	2003
Northwestern Pacific Railroad improvements	Includes slide restoration to open railroad north of Willits	Unknown
Willits land use & zoning changes	SE from residential (estate) to manufacturing; downtown Specific Plan	1997; 2003
Enhanced pedestrian, bicycle & hiking trails	Within city limits	Unknown
Medocino County Museum Expansion	(at Commercial St.) 3 acres wetland creation for same acreage filled	2001

Application is hereby made for a permit or permits to authorize the work described in this application. I certify, under penalty of perjury, that this application is complete and accurate to the best of my knowledge. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT (OR AGENT) DATE

PRINT NAME OF APPLICANT (OR AGENT)

NCRWQCB Revised February 10, 2008. Questions, contact the 401 Certification Unit Supervisor at (707) 576-2220.
To download this form in Microsoft Word visit http://www.waterboards.ca.gov/northcoast/water_issues/programs/wqc_docs/060215-401-Application.doc

FOR DEPARTMENT USE ONLY				
Date Received	*Amount Received*	*Amount Due*	*Date Complete*	*Notification No.*
	$	$		

STATE OF CALIFORNIA

DEPARTMENT OF FISH AND GAME

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

1. APPLICANT PROPOSING PROJECT

Name	Jason Meigs		
Business/Agency	State of California, Department of Transportation - District 3		
Street Address	2800 Gateway Oaks Drive		
City, State, Zip	Sacramento, CA 95833		
Telephone	(916) 274-0564	Fax	(916) 274-0602
Email	jason_meigs@dot.ca.gov		

2. CONTACT PERSON (*Complete only if different from applicant*)

Name			
Street Address			
City, State, Zip			
Telephone		Fax	
Email			

3. PROPERTY OWNER (*Complete only if different from applicant*)

Name	Refer to Attachment 6 "Names and Adressess of Adjoining Property Owners/Lessees"		
Street Address			
City, State, Zip			
Telephone		Fax	
Email			

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name	U.S. Highway 101 Willits Bypass Project			
B. Agreement Term Requested	☑ Regular (*5 years or less*) ☐ Long-term (*greater than 5 years)*			
C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (*year*)	Ending (*year*)	Start Date (*month/day*)	End Date (*month/day*)	
2011	2015	04/15	10/30	

5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.

A.	☑ Standard *(Most construction projects, excluding the categories listed below)*	
B.	☐ Gravel/Sand/Rock Extraction (*Attachment A*)	*Mine I.D. Number:* _____
C.	☐ Timber Harvesting (*Attachment B*)	THP *Number:* _____
D.	☐ Water Diversion/Extraction/Impoundment (*Attachment C*)	*SWRCB Number:* _____
E.	☐ Routine Maintenance (*Attachment D*)	
F.	☐ DFG Fisheries Restoration Grant Program (FRGP)	*FRGP Contract Number:* _____
G.	☐ Master	
H.	☐ Master Timber Harvesting	

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: The Department may not process this notification until the correct fee has been received.***

	A. Project	B. Project Cost	C. Project Fee
1	U.S. Highway 101 Willits Bypass (40 x-ings x $4,482.75)		$179,310.00
2			
3			
4			
5			
		D. Base Fee *(if applicable)*	
		E. TOTAL FEE ENCLOSED	$179,310.00

7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?

☐ Yes (*Provide the information below*) ☑ No

Applicant: _____ Notification Number: _____ Date: _____

B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?

☑ No ☐ Yes (*Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.*)

☐ *Continued on additional page(s)*

8. PROJECT LOCATION

A. Address or description of project location.

(*Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway*)

Refer to Attachment 1 "Supplemental Information:; Block 8A

☑ *Continued on additional page(s)*

B. River, stream, or lake affected by the project.	Refer to Attachment 1 "Supplemental Information; Block 8B.
C. What water body is the river, stream, or lake tributary to?	Eel River, Pacific Ocean
D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts?	☐ Yes ☑ No ☐ Unknown
E. County	Mendocino County

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Willits	18N	13W	23	

☐ *Continued on additional page(s)*

K. Meridian (*check one*) ☐ Humboldt ☐ Mt. Diablo ☐ San Bernardino

L. Assessor's Parcel Number(s)

efer to Attachment 6 "Nams and Addresses of Adjoining Property Owners/Lessees".

☐ *Continued on additional page(s)*

M. Coordinates (*If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes)*

Latitude/Longitude	*Latitude:* sup info block 8A	*Longitude:*	
	☐ Degrees/Minutes/Seconds	☐ Decimal Degrees	☐ Decimal Minutes
UTM	*Easting:*	*Northing:*	☑ Zone 10 ☐ Zone 11
Datum used for Latitude/Longitude or UTM	☐ NAD 27	☑ NAD 83 or WGS 84	

9. PROJECT CATEGORY AND WORK TYPE *(Check each box that applies)*

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	☑	☐	☐
Bank stabilization – rip-rap/retaining wall/gabion	☑	☑	☐
Boat dock/pier	☐	☐	☐
Boat ramp	☐	☐	☐
Bridge	☑	☐	☐
Channel clearing/vegetation management	☑	☐	☐
Culvert	☑	☐	☐
Debris basin	☐	☐	☐
Dam	☐	☐	☐
Diversion structure – weir or pump intake	☑	☐	☐
Filling of wetland, river, stream, or lake	☑	☐	☐
Geotechnical survey	☐	☐	☐
Habitat enhancement – revegetation/mitigation	☑	☐	☐
Levee	☐	☐	☐
Low water crossing	☑	☐	☐
Road/trail	☑	☐	☐
Sediment removal – pond, stream, or marina	☐	☐	☐
Storm drain outfall structure	☑	☐	☐
Temporary stream crossing	☑	☐	☐
Utility crossing : Horizontal Directional Drilling	☐	☐	☐
Jack/bore	☐	☐	☐
Open trench	☐	☐	☐
Other *(specify)*: Place fill for roadway	☑	☐	☐

10. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., “bird’s-eye view”) showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

Refer to Attachment 1 "Supplemental Information"; Block 10A

☑ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

refer to Attachment 1 "Supplemental Information"; Block 10B

☑ *Continued on additional page(s)*

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).	☑ Yes ☐ No (*Skip to box 11*)
D. Will the proposed project require work in the wetted portion of the channel?	☑ Yes (*Enclose a plan to divert water around work site*) ☐ No

11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

Refer to Attachment 1 "Supplemental Information"; Block 11A

☐ *Continued on additional page(s)*

B. Will the project affect any vegetation? ☑ Yes (*Complete the tables below*) ☐ No

Vegetation Type	Temporary Impact	Permanent Impact
Refer to Attachment 1 "Supplemental Information"; Block 11B	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____
	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____

Tree Species	Number of Trees to be Removed	Trunk Diameter (range)
"Supplemental Information"; Block 11B		

☐ *Continued on additional page(s)*

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☑ Yes *(List each species and/or describe the habitat below)* ☐ No ☐ Unknown

"Supplemental Information"; Block 11C

☑ *Continued on additional page(s)*

D. Identify the source(s) of information that supports a “yes” or “no” answer above in Box 11.C.

Natural Environment Study, Biological Assessment, Individual Take Permit Application

☑ *Continued on additional page(s)*

E. Has a biological study been completed for the project site?

☑ Yes (*Enclose the biological study*) ☐ No

Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.

F. Has a hydrological study been completed for the project or project site?

☑ Yes (*Enclose the hydrological study*) ☐ No

Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.

12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.

Refer to Attachment 1 "Supplemental Information"; Block 12A

☑ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Refer to Attachment 1 "Supplemental Information"; Block 12B

☐ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

Refer to Attachment 1 "Supplemental Information"; Block 12C

☐ *Continued on additional page(s)*

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

A. _____ ☑ Applied ☐ Issued

B. _____ ☑ Applied ☐ Issued

C. Attachment 1 "Supplemental Information"; Block 13 ☑ Applied ☐ Issued

D. Unknown whether ☐ local, ☐ state, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☑ *Continued on additional page(s)*

14. ENVIRONMENTAL REVIEW

A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)?

☑ Yes (*Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each*)

☐ No (*Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared*)

☐ Notice of Exemption	☐ Mitigated Negative Declaration	☐ NEPA document (*type*): EIS
☐ Initial Study	☑ Environmental Impact Report	☐ CESA document (*type*): 2081 and 2080.1
☐ Negative Declaration	☑ Notice of Determination *(Enclose)*	☐ ESA document (*type*): Sect 7
☐ THP/ NTMP	☑ Mitigation, Monitoring, Reporting Plan	

B. State Clearinghouse Number (*if applicable*)	1990030006		
C. Has a CEQA lead agency been determined?	☑ Yes (*Complete boxes D, E, and F*)	☐ No (*Skip to box 14.G*)	
D. CEQA Lead Agency	Caltrans		
E. Contact Person	Jason Meigs	F. Telephone Number	(916) 274-0564

G. If the project described in this notification is part of a larger project or plan, briefly describe that larger project or plan.

The proposed U.S. 101 Willits Bypass project is a single and complete project and is not part part of a larger project or plan.

☐ *Continued on additional page(s)*

H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid?

☑ Yes (*Enclose proof of payment*) ☐ No (*Briefly explain below the reason a filing fee has not been paid)*

Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.

15. SITE INSPECTION

Check one box only.

☐ In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry.

☑ I request the Department to first contact (*insert name*) Jason Meigs at (*insert telephone number*) (916) 274-0564 to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.

16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

☑ Yes (Please enclose the information via digital media with the completed notification form)

☐ No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

_____ _____

Signature of Applicant or Applicant's Authorized Representative Date

Jason Meigs, Caltrans District 3 Associate Env. Planner - NS

Print Name

Application for
Section 401 Water Quality Certification and/or Waste Discharge Requirements

California Department of Transportation
U.S. Highway 101 Willits Bypass Project
Mendocino County, California

Submitted to:

North Coast Regional Water Quality Control Board
5550 Skyline Boulevard, Suite A
Santa Rosa, CA 95403
Contact: Jeremiah Puget
707/576-2835

Applicant:

California Department of Transportation
District 3—Office of Environmental Management
2800 Gateway Oaks Drive
Sacramento, CA 95833
Contact: Jason Meigs
916/274-0564

November 2009

For individuals with sensory disabilities, this document is available in alternate formats. Please write to Jason Meigs, California Department of Transportation, District 3—North Region Environmental Division, 2800 Gateway Oaks Drive, Sacramento, CA 95833, or call (916) 274-0564 or use the CA Relay Service TTY number (800) 735-2929.

Contents

Application for 401 Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill)

Attachment A Supplemental Information

Attachment B Adjacent Property Owners and Lessees

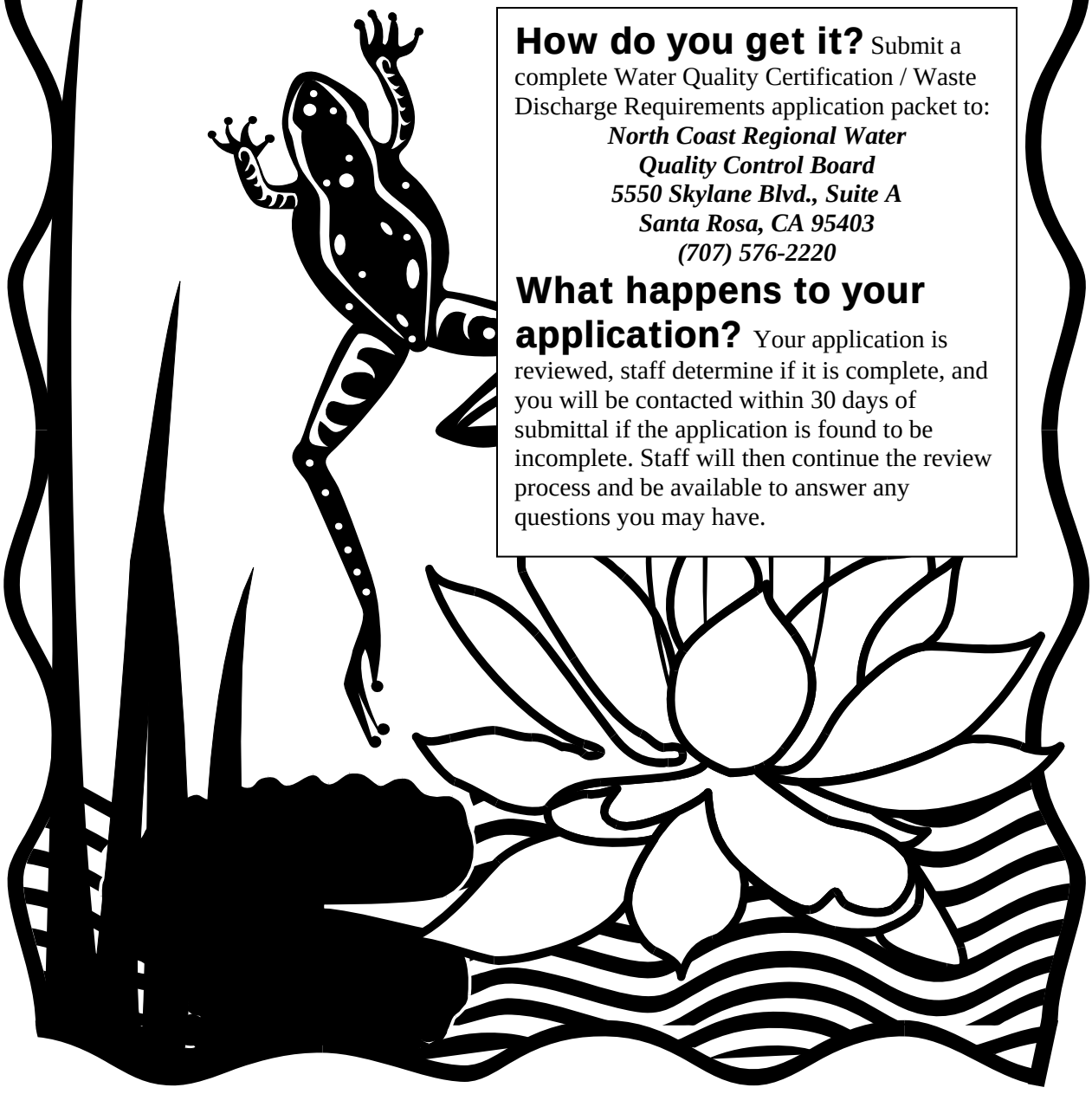
Attachment C Draft Habitat Mitigation and Monitoring Plan

Attachment D Final EIS/EIR, Record of Decision, and Notice of Determination

WATER QUALITY CERTIFICATION AND/OR WASTE DISCHARGE REQUIREMENTS (Dredge/Fill Projects)

What is it? A Clean Water Act (CWA) Section 401 Permit (Water Quality Certification) is a finding from the Regional Water Quality Control Board that the proposed project will comply with CWA Sections 301, 302, 303, 306 and 307, State laws, and will be protective of beneficial uses. At a minimum, any beneficial uses lost must be replaced by a mitigation project of at least equal function, value and area. Waste Discharge Requirements Permits are required pursuant to California Water Code Section 13260 for any persons discharging or proposing to discharge waste, including Dredge/Fill, that could affect the quality of the Waters of the State.

Who Needs It? Anyone proposing to conduct a project that requires a federal permit or may result in a discharge to U.S. surface waters and/or "Waters of the State", including wetlands (all types), year round and seasonal streams, lakes and all other surface waters.



How do you get it? Submit a complete Water Quality Certification / Waste Discharge Requirements application packet to:

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403
(707) 576-2220

What happens to your application? Your application is reviewed, staff determine if it is complete, and you will be contacted within 30 days of submittal if the application is found to be incomplete. Staff will then continue the review process and be available to answer any questions you may have.

Application for 401 Water Quality Certification and/or Waste Discharge Requirements (Dredge/Fill)

The following application must be submitted to the Regional Water Quality Control Board for dredge/fill projects that require Water Quality Certification and/or Waste Discharge Requirements. Submit this application and the appropriate documentation*, along with a check for $640.00 (Base Price) plus additional fees, if applicable, as required according to the CCR 23 Section 2200 (a)(2) Fee Schedule** to:

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403
(Make checks payable to: State Water Resources Control Board)

*Clarification of information may be requested by Regional Water Quality staff during application review.
**Additional fees may be imposed upon application review.
Fee calculator and additional information are available at
http://www.waterboards.ca.gov/northcoast/water_issues/programs/water_quality_certification.shtml

SECTION ONE – Applicant Information & Authorization

APPLICANT/PROPERTY OWNER(S) NAME Jason Meigs, California Department of Transportation (Caltrans)	AUTHORIZED AGENT NAME AND TITLE (an agent is not required)
APPLICANT/PROPERTY OWNER(S) MAILING ADDRESS Caltrans District 3 2800 Gateway Oaks Drive Sacramento, CA 95833	AUTHORIZED AGENT MAILING ADDRESS
APPLICANT/PROPERTY OWNER(S) PHONE & FAX NUMBERS (email optional) (916) 274-0564; FAX (916) 274-0602; Jason_Meigs@dot.ca.gov	AUTHORIZED AGENT PHONE & FAX NUMBERS (email optional)

STATEMENT OF AUTHORIZATION (if designating a specific agent)

I hereby authorize _____ to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

X_____ _____
APPLICANT'S SIGNATURE (not the authorized agent) DATE

SECTION TWO – Project Information

Please refer to the provided Project Plan Checklist for guidance and attach additional supporting documentation as necessary. Supplying detailed information will aid in expediting the review process. **Including an electronic copy of the required information will expedite the review process.**

PROJECT NAME OR TITLE U.S. Highway 101 Willits Bypass Project	
PROJECT STREET ADDRESS (if applicable) N/A	**PROJECT LOCATION** (Attach a topographic map and site map clearly indicating affected waters) COUNTY: Mendocino CITY/TOWN: Near Willits
CITY/STATE/ZIP Willits, CA	LATITUDE / LONGITUDE See Attachment A (Supplemental Information)
ASSESSORS PARCEL NUMBER(S) See Attachment B (Adjoining Property Owners)	SECTION, TOWNSHIP, RANGE, USGS QUADRANGLE MAP Section 32, Township 18N, Range 13W, Willits & Laughlin Range USGS 7.5-minute Quadrangles

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To download this form in Microsoft Word visit http://www.waterboards.ca.gov/northcoast/water_issues/programs/wqc_docs/060215-401-Application.doc

DIRECTIONS TO THE SITE

From Santa Rosa, take U.S. Highway 101 north approximately 80 miles to Willits, California. The project site begins at the south of the Haehl Overhead and ends approximately 1.9 miles south of Reynolds Highway. Refer to See Attachment A (Supplemental Information) for additional location details.

PROJECT PURPOSE (See attached checklist for guidance. Attach additional information as necessary.)

See Attachment A (Supplemental Information)

PROJECT DESCRIPTION (See attached checklist for guidance. Provide a full, technically accurate description of the entire activity and associated environmental impacts. Attach additional pages as necessary.)

See Attachment A (Supplemental Information)

PROPOSED START AND END DATES	**ESTIMATED DURATION**	Will the project take place during the wet season months of October 15 through May 15? ☐ YES ☐ NO If YES, please discuss the proposed winterization strategies on Page 5, Non-compensatory Mitigation.

FEDERAL PERMIT(S) (applied for or approved, i.e. Army Corps of Engineers 404 Permit – Individual or Nationwide)

PERMIT TITLE	FILE DATE	FILE NUMBER
USACE 404 Individual Permit	Concurrent with this application	Pending

STATE PERMIT(S) (applied for or approved, i.e. Streambed Alteration Agreement (1600-1608) from the California Department of Fish and Game)

PERMIT TITLE	FILE DATE	FILE NUMBER
Streambed alteration agreement	Concurrent with this application	Pending

CEQA COMPLIANCE (Submittal of completed, approved and/or signed CEQA documentation is required prior to approval of Water Quality Certification.)

TYPE OF DOCUMENT (EIR, Negative Declaration, etc.)	LEAD AGENCY INFORMATION
EIR/EIS	Caltrans/FHWA

STATE CLEARING HOUSE NUMBER	STATUS (pending, complete, etc.)	DATE COMPLETED (or expected to be complete)
1990030006	Complete	October 25, 2006

SECTION THREE – Affected Waters

Please refer to the provided Project Plan Checklist for guidance and attach additional supporting documentation as necessary. Supplying detailed information will aid in expediting the review process.

DREDGE AND FILL INFORMATION (The following must be completed for each action where fill or other material will be temporarily or permanently discharged to a wetland or other waterbody, and where material will be dredged from a waterway. Attach additional pages as necessary. Provide a map showing the location of all impacts. Provide all temporary and permanent impacts to waters of the U.S. and waters of the State.)

TYPE OF WATERBODY (i.e. stream, wetland, ephemeral drainage)	**FILL and/or DREDGE VOLUME (CY) AND TYPE**	**FILL and/or DREDGE SURFACE AREA**	**FILL and/or DREDGE LINEAR FEET**	**TYPE OF IMPACT** (Temporary or Permanent)
Wetlands: wet meadow	?	?	?	?
Wetlands: vernal pool	?	?	?	?
Wetlands: marsh	?	?	?	?
Wetland swale	?	?	?	?
Wetlands: riparian woodland	?	?	?	?
Wetlands: riparian scrub	?	?	?	?
Total wetland impacts:	?	**16.9 acres**	?	**Temporary**
	?	**26.72 acres**	?	**Permanent**
Intermittent drainage		?	?	?
Ephemeral drainage		?	?	?
Total other waters of the U.S. impacts:		**0.32 acre**		**Temporary**
		0.6 acre		**Permanent**

DELINEATION INFORMATION	
NAME OF PERSON DELINEATING EXTENT OF WATERS OF U.S.	DATE(S) OF WETLAND DELINEATION January 2004
TITLE Modified J1T Alignment Study Area for the U.S. Highway 101 Willits Bypass Project	DATE OF WETLAND VERIFICATION BY U.S. ARMY CORPS March 1, 2005 (194741N); August 15, 2008 (1991-194740N)
AFFILIATION Caltrans consultant	If a wetland delineation has been verified by the U.S. Army Corps, please submit the verification letter as well as a verified wetland delineation map. If the Corps did not assume jurisdiction over the wetlands present, please submit the denial letter.

AVOIDANCE OF INDIRECT IMPACTS (Describe efforts to **avoid** and **minimize indirect impacts** to waters of the State such as upland impacts which might affect water quality. See checklist for guidance. Attach additional pages as necessary.)

See Attachment A (Supplemental Information)

AVOIDANCE OF DIRECT IMPACTS (Describe efforts to **avoid** and **minimize direct impacts** to waters of the State. See checklist for guidance. Attach additional pages as necessary.)

See Attachment A (Supplemental Information)

COMPENSATORY MITIGATION (Required when permanent and temporal impacts to Waters of the State occur. Describe the location, size, type, functions, and values of the proposed mitigation. Describe success criteria, monitoring, long-term funding, management, and protection of the mitigation site. Attach a Mitigation Plan if needed. Attach Mitigation Bank Bills-of-Sale for purchase credits if needed. See attached checklist for guidance.)

Caltrans developed a habitat mitigation and monitoring plan (HMMP) that proposes compensatory mitigation for effects of the bypass on jurisdictional wetlands, other waters of the United States, riparian habitat, and state-listed plants. In addition to compliance with Clean Water Act (CWA) Section 404 permitting, the HMMP would be used to support compliance with CWA Section 401 , Section 1602 of the California Fish and Game Code, and Section 2081 of the California Endangered Species Act. The overall goal of the HMMP is to successfully compensate for impacts on sensitive biological resources resulting from bypass construction by restoring some of the historical ecological functions and values to habitat in Little Lake Valley through a combination of habitat restoration, creation, enhancement, and preservation efforts. The table below presents the total amount of waters of the United States that would be created, enhanced, or preserved as compensation for the proposed project's impacts on jurisdictional waters and wetlands.

Resource (Order of Mitigation Importance)	**Mitigation Acres**		
	Creation	**Enhancement**	**Preservation**
Wetlands	48.659	907.855	1,117.857
Other Waters of the United States	–	8.694	24.625
Total	**48.659**	**916.549**	**1,142.482**

The proposed project's HMMP is provided in its entirety as Attachment C.

ALTERNATIVES ANALYSIS

Has an Alternatives Analysis been prepared? ☑ YES ☐ NO If you marked YES, please submit the appropriate documentation.

NON-COMPENSATORY MITIGATION (Required by all construction projects and projects which impact riparian vegetation.)

PROPOSED MINIMUM EROSION CONTROL MEASURES (Describe the methods proposed for erosion control, including winterization strategies to stabilize all bare soils and re-vegetation proposals. Please submit a map indicating the approximate locations of each method.)

See Attachment A (Supplemental Information)

PROPOSED POST-CONSTRUCTION STORM WATER TREATMENT MEASURES (Describe the methods proposed to treat storm water runoff from the project site prior to entering the storm drainage system, wetlands, streams, etc. Please include proper design calculations to indicate that the proposed methods will treat runoff from the 85th percentile/24-hour storm event. See SUSMP Guidelines available at: http://ci.santa-rosa.ca.us/doclib/Documents/SUSUMP.pdf, or upon request.

See Attachment A (Supplemental Information)

PROPOSED CONSTRUCTION AND POST-CONSTRUCTION POLLUTANT SOURCE CONTROLS (Describe the methods proposed to reduce sources of pollutants, fertilizers, pesticides, sediment, etc., from entering the water system.)

See Attachment A (Supplemental Information)

SECTION FOUR – Additional Information

POTENTIAL FOR IMPACTS TO THREATENED AND ENDANGERED SPECIES (Please attach all Biological Assessments, Surveys, Formal Consultation Determination letters, and Mitigation Proposals as necessary.)

SPECIES AND/OR HABITAT	BIOLOGICAL ASSESSMENT (Y/N)	SURVEY CONDUCTED (Y/N)	DATES OF SURVEY CONDUCTED
Chinook salmon—California Coastal ESU	Y	Unknown	
Steelhead—Northern California DPS	Y	Unknown	
Coho salmon—Northern California/ Southern Oregon Coasts ESU	Y	Unknown	
Northern spotted owl	Y	Unknown	
White-tailed kite	Y	Unknown	
Roderick's fritillary	Y	Unknown	
North Coast semaphore grass	Y	Unknown	
Baker's meadowfoam	Y	Unknown	

HAS ANY PORTION OF THE WORK BEEN INITIATED? ☐ YES ☑ NO If YES, describe the initiated work, and explain why it was initiated prior to obtaining a permit. Indicate whether any enforcement action has been taken against the project.

CUMULATIVE IMPACTS (List and describe other projects implemented or planned that are related to the proposed project, or that may impact the same waterbody. Attach additional pages as necessary.)

PROJECT NAME	DESCRIPTION	DATE IMPLEMENTED/PLANNED
None		

Application is hereby made for a permit or permits to authorize the work described in this application. I certify, under penalty of perjury, that this application is complete and accurate to the best of my knowledge. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT (OR AGENT) DATE

PRINT NAME OF APPLICANT (OR AGENT)

NCRWQCB Revised February 10, 2008. Questions, contact the 401 Certification Unit Supervisor at (707) 576-2220.
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Project Plan Checklist

A detailed project plan is required with every application. Clarification of information may be requested by Regional Water Quality Control Board (Regional Water Board) staff during application review. This checklist is provided to aid applicants in providing a thorough project plan. Not all items on the checklist apply to each and every project, rather they are to be used as general guidelines for required information to be included. In addition, there may be items not covered on this checklist that may be requested on a project by project basis.

Project Description

- ☐ Project Description
- ☐ Summary of overall project area
  - Size and description of project area; type(s) of receiving water body(ies); brief list/description of applicant's previous and future projects related to the proposed activity or that may impact the same receiving water body(ies)
- ☐ Responsible Parties
  - Names and phone numbers of anyone participating in the project
- ☐ Jurisdictional Waters to be impacted
  - Include a detailed site plan clearly indicating proposed impacts and mitigation site areas, including acreages
- ☐ Type(s) of water body, flow duration (i.e. intermittent/perennial), inundation period, functions and values
- ☐ Location and size of project area
- ☐ Include site map and regional map of project location
- ☐ Species present within project site and/or upstream/downstream
- ☐ Threatened or endangered species present in streamcourse
- ☐ Existing functions and values
  - Wetted channel width, pool/riffle ratio, mean/maximum depths, complexity, shade/cover
- ☐ Current conditions at the site (mostly natural, degraded, heavily impacted)
- ☐ Construction methods to be used
- ☐ Adverse impacts
  - Include whether the adverse impacts will be temporary or permanent, and include amount of area to be affected (acres or linear feet)
- ☐ Schedule of construction activities
  - Include start and end dates for proposed activities
- ☐ Stockpile summary
  - Include amount of stockpile and proposed areas for storage
- ☐ Best management practices
  - Practices to be implemented to reduce potential water quality impacts during and after construction activities, aside from proposed mitigation activities
- ☐ Site dewatering
- ☐ Solid waste disposal for dredged material
- ☐ Mitigation and monitoring plans (refer to Streamcourse and Wetland Mitigation Checklists)

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To download this form in Microsoft Word visit http://www.waterboards.ca.gov/northcoast/water_issues/programs/wqc_docs/060215-401-Application.doc

Streamcourse Mitigation Checklist

If it is determined that a watercourse (intermittent and/or perennial) will be affected by the proposed development, mitigation will likely be necessary to preserve the function and beneficial uses of the site. Clarification of information may be requested by Regional Water Board staff during application review. This checklist is intended to aid applicants in submitting complete and proper information regarding mitigation plans, to enable staff to effectively evaluate the project for Water Quality Certification or Waste Discharge Requirements. Not all items on the checklist apply to each and every project, rather they are to be used as general guidelines for needed information to be included. In addition, there may be items not covered on this checklist that may be requested on a project by project basis.

1) Goals of Mitigation

- ☐ Variety of habitats to be created/restored
  - Pools, rearing sites, spawning sites, riparian habitat, etc.
- ☐ Functions and values of habitat to be created
  - Wetted channel width, pool/riffle ratio, mean/maximum depths, complexity, shade/cover, large woody debris recruitment, etc.
- ☐ Other mitigation steps taken
  - Avoid, minimize, compensate
- ☐ Functions and values of the created/restored habitat
  - Wildlife habitat, streambank stabilization through riparian habitat establishment, increased water quality, etc.
- ☐ Time schedule for mitigation
- ☐ Work plan
  - Project start date; length mitigation activities will take place; specific work to be done at particular times, area of stream-channel profile receiving mitigation

2) Proposed Mitigation Site

- ☐ Location and size of mitigation area
- ☐ Include site map and regional map of mitigation project
- ☐ Existing functions and values
  - Wetted channel width , pool/riffle ratio, mean/maximum depths, complexity, shade/cover
- ☐ Current conditions at the site (mostly natural, degraded, heavily impacted)
- ☐ If the site is degraded, explain past uses leading to degradation
- ☐ Present and proposed uses of mitigation area
  - Provide habitat for flora/fauna (plants/animals), recreation, open space, etc.
- ☐ Current uses of the area
  - Agriculture, development, recreation, open space, etc.

3) Implementation Plan

- ☐ Responsible Parties
- ☐ Rationale for expecting success
- ☐ Site Preparation Plan
- ☐ Planting Plan
  - Dates of proposed plantings, native species to be planted, density of plantings, etc.
- ☐ Irrigation Plan (if applicable)

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To download this form in Microsoft Word visit http://www.waterboards.ca.gov/northcoast/water_issues/programs/wqc_docs/060215-401-Application.doc

4) Maintenance During Monitoring Period

- ☐ Responsible Parties
- ☐ Maintenance activities
- ☐ Names and phone numbers of anyone performing maintenance activities at or near the site
- ☐ Schedule

5) Monitoring Plan

- ☐ Responsible Parties
- ☐ Names and phone numbers of individuals/contractors performing monitoring duties
- ☐ Performance Criteria
  - Wetted channel width, pool/riffle ratio, mean/maximum depths, complexity, shade/cover, large woody debris recruitment, riparian establishment, flora/fauna, etc.
- ☐ How will success be judged?
  - Increase in depths, decreased erosion rates, establishment of riparian species, recruitment of flora and fauna, increased pool/riffle ratio, increased shade, decreased water temperatures, increased water quality, etc.
- ☐ Is there a reference site?
  - If a reference site is incorporated in the plan, include where it is located and what the current conditions are (see performance criteria above)
- ☐ Monitoring methods
  - Describe in detail how the site will be monitored
- ☐ Reports
  - How often will monitoring reports be published?
- ☐ Schedule
  - How often will the site be monitored? How long will the site be monitored?

6) Completion of Mitigation

- ☐ Notice of completion (i.e. agencies to be contacted)
- ☐ Regional Board confirmation

7) Final Success Criteria

- ☐ Target functions and values achieved
  - Ultimate target functions and values of the mitigation (i.e. wetted channel width, pool/riffle ratio, complexity/cover, flora/fauna recruitment, etc.)
- ☐ Target hydrologic scheme achieved
  - Wetted width, bankfull width, mean/maximum depths, flow regime, etc.
- ☐ What are the ultimate hydrologic conditions for the site?
  - Based on conditions prior to any degradation or human impacts (best case scenario)
- ☐ Target jurisdictional acreage created/restored
- ☐ Total acres restored or created through mitigation project
- ☐ Establishment of native riparian species
  - Based on monitoring, reviewed after determined number of years

Wetland Mitigation Checklist

Wetlands should not be disturbed if at all possible. If it is determined that a wetland will be affected by the proposed development, mitigation will need to be done on at least a 1:1 ratio to preserve the function and values of the wetland and its associated beneficial uses. Clarification of information may be requested by Regional Water Board staff during application review. This checklist is intended to aid applicants in submitting complete and proper information regarding mitigation plans, to enable staff to effectively evaluate the project. Not all of the items on the checklist will apply to each and every project, rather they are to be used as general guidelines for needed information to be included. In addition, there may be items not covered on this checklist that may be requested on a project by project basis.

1) Goals of Mitigation

- ☐ Variety of habitats to be created/restored
  - What type of wetland will be created/restored? (i.e. seasonal, freshwater, saltwater, swale, vernal pool, etc.)
- ☐ Functions and values of habitat to be created
  - What are the functions and values of the created/restored wetland? (i.e. wildlife habitat, native plant communities, increased water quality, etc.)
- ☐ Other mitigation steps taken: **avoid**, minimize, compensate
- ☐ Time schedule for mitigation
- ☐ Work plan
  - Project start date; length mitigation activities will take place; specific work (exotic species removal, native species plantings, etc.) to be conducted during particular times of the year

2) Proposed Mitigation Site

- ☐ Location and size of mitigation area
- ☐ Include site map and regional map of mitigation project
- ☐ Existing functions and values
  - Flora/fauna (plants/animals) habitat, flora/fauna utilizing site, mean/ maximum depths, water quality parameters
  - Include a copy of delineation report of mitigation site
- ☐ Current conditions at the site (mostly natural, degraded, heavily impacted)
- ☐ If the site is degraded explain past uses leading to degradation
- ☐ Present and proposed uses of mitigation area
  - Provide habitat for flora/fauna, recreation, open space, etc.
- ☐ Current uses of the area

3) Implementation Plan

- ☐ Responsible Parties
- ☐ Rationale for expecting success
- ☐ Site Preparation Plan
- ☐ Planting Plan
  - Dates of proposed plantings, native species to be planted, density of plantings, etc.
- ☐ Irrigation Plan (if applicable)

NCRWQCB Revised February 10, 2008. Questions, contact the 401 Certification Unit Supervisor at (707) 576-2220.
To download this form in Microsoft Word visit http://www.waterboards.ca.gov/northcoast/water_issues/programs/wqc_docs/060215-401-Application.doc

4) Maintenance During Monitoring Period

- ☐ Responsible Parties
- ☐ Maintenance activities
- ☐ Names and phone numbers of anyone performing maintenance activities at or near the site
- ☐ Schedule

5) Monitoring Plan

- ☐ Responsible Parties
- ☐ Names and phone numbers of individuals/contractors performing monitoring duties
- ☐ Performance Criteria
  - Native species present, duration and season of water inundation, mean/maximum depths, water quality, etc.
- ☐ How will success be judged?
  - Establishment of native flora/fauna, ponding of water during appropriate portion of season, increased water quality, etc.
- ☐ Is there a reference site?
  - If a reference site is incorporated in the plan, include where it is located and what the current conditions are (see performance criteria above)
- ☐ Monitoring methods
  - Describe in detail how the site will be monitored
- ☐ Reports
  - How often will monitoring reports be published?
- ☐ Schedule
  - How often will the site be monitored? How long will the site be monitored?

6) Completion of Mitigation

- ☐ Notice of completion (i.e. agencies to be contacted)
- ☐ Regional Board confirmation

7) Final Success Criteria

- ☐ Target functions and values
  - Ultimate target functions and values of the mitigation (i.e. native flora/fauna recruitment, inundation of water during appropriate season)
- ☐ Target hydrologic scheme
  - Inundation period of area
- ☐ What are the ultimate hydrologic conditions for the site?
  - Based on conditions prior to any degradation or human impacts (best case scenario)
- ☐ Target jurisdictional acreage to be created/restored
- ☐ Total acres restored or created through mitigation project
- ☐ Establishment of native wetland species
  - Based on monitoring, reviewed after determined number of years

Attachment A

Supplemental Information

Project Location

The U.S. Highway 101 Willits Bypass Project would be located near the city limits of Willits in Mendocino County, California. The bypass would begin approximately 0.8 mile south the Haehl Overhead and end approximately 1.9 miles north of Reynolds Highway. The overall length of the proposed bypass would be approximately 5.8 miles with post mile limits ranging from R43.1 to R49.0 (Figure 1-1).

Bypass Alignment

The proposed bypass would diverge from existing U.S. Highway 101 (U.S. 101) at the Haehl Creek interchange and continue northwesterly on an embankment constructed with excess fill from a previous freeway project. The alignment would swing to the northeast to avoid the Sanhedrin industrial creek and border the railroad tracks north of East Hill Road to avoid the oak riparian forest on the Colli Ranch. Between Center Valley Road and the Willits Wastewater Treatment Plant (WWTP), the alignment has been placed east of a line of trees that would serve as a visual buffer between the viaduct and the City of Willits' park and recreation complex on Commercial Street. The alignment then travels back to the northwest, adjacent to the WWTP. Figures 1-2a to 1-2d illustrate the bypass alignment and locations of key project components.

Bypass Vertical Alignment

The vertical alignment of the bypass would begin with a gentle downgrade at the south end of the project and proceed northwesterly from the existing freeway section to approximately 0.5 mile of East Hill Road. From this point to the Quail Meadows interchange, the flat valley floor would allow grades that are nearly flat except at structure approaches and departures. Throughout the valley, the proposed project would cross the 100-year floodplain and would be constructed at least 3 feet above the estimated 100-year floodwater surface level.

Latitude/Longitude of Key Project Components (Approximate)

- **Haehl Creek interchange:** 39°22'28.48" N, 123°19'29.11" W
- **Quail Meadows interchange:** 39°25'31.29" N, 123°21'10.33" W
- **Viaduct structures:** 39°24'32.07" N, 123°20'21.36" W

Project Purpose

U.S. 101 is an important route for interstate and interregional travel and is considered the economic lifeline of California's North Coast. It is the principal arterial route for people and goods between the San Francisco Bay Area and the greater Eureka/Arcata area. Travel times and costs of transporting goods to and from the communities along U.S. 101 are high. Travel times and transportation costs

are exacerbated by congestion-related delays and delays caused by facility type at Willits where U.S. 101 passes through developed areas on surface streets.

Because U.S. 101 also serves as Main Street in Willits and is the only continuous north-south street traversing the city, U.S. 101 must accommodate nearly all local traffic traversing Willits as well as all interregional traffic intending to pass through. Traffic congestion has been a concern in Willits for a number of years, and it is becoming more prevalent as traffic volumes increase. The proposed project is needed to respond to a number of deficiencies that exist on the current facility.

As a solution to the above-mentioned traffic issues, the California Department of Transportation (Caltrans) and Federal Highway Administration (FHWA) propose to construct a new segment of U.S. 101 that would bypass Willits to reduce delays, improve safety, and achieve a minimum level of service (LOS) of C for interregional traffic on U.S. 101 within the project area though a 20-year design period. As a byproduct of the proposed project, the following benefits would occur:

- Improved traffic safety on Main Street in Willits.
- Reduced noise and vibration experienced by nearby homes, businesses, schools, and other community facilities in Willits due to interregional commercial truck and other through traffic. Removing the constant stream of U.S. 101 interregional truck traffic from Main Street would enhance the local community aspects of Willits.
- Improved conditions for bicyclists and pedestrians, as well as less mobile groups such as the young, disabled, and elderly. Removing interregional traffic from Willits would improve the existing conditions for bicyclists and pedestrians, provide new opportunities for non-motorized circulation improvements, and enhance the friendly small-town character of Willits.
- Improved conditions for local residents who use Main Street for routine trips to workplaces, shops, and schools. Removal of interregional traffic from Main Street would reduce congestion for local traffic.

Project Description

Caltrans, in conjunction with the (FHWA, proposes to construct a new segment of U.S. 101 that would bypass Willits in Mendocino County. The project is being proposed to reduce delays, improve safety, and achieve an LOS of “C” for interregional traffic on U.S. 101.

The FHWA is the federal lead agency under the National Environmental Policy Act (NEPA), with Caltrans acting as liaison and providing oversight for the NEPA process. Caltrans is the state lead agency under the California Environmental Quality Act (CEQA). A joint environmental impact statement/environmental impact report (EIS/EIR) has been prepared for the proposed project.

The draft EIS/EIR was published in May 2002. According to regulations set forth in 23 Code of Federal Regulations (CFR) 771.129, a written evaluation of the draft EIS/EIR is required if the final EIS/EIR has not been submitted to the FHWA within 3 years of the date of the draft EIS/EIR circulation. Because 3 years have elapsed since circulation of the draft EIS/EIR, Caltrans submitted a written evaluation to the FHWA for review in April 2006. The purpose of this written evaluation was to determine whether it was necessary to circulate a new or supplemental EIS/EIR. Based on the information provided to the FHWA, it was determined that no new or supplemental EIS/EIR would be necessary for the project.

Caltrans approved the final EIS/EIR and filed a notice of determination on December 15, 2006. The FHWA approved the final NEPA document and filed a record of decision on December 18, 2006. A hard copy of the final EIS/EIR will be provided under separate cover. It can be also be viewed and downloaded at <http://www.dot.ca.gov/dist1/d1projects/willits/reports.feir.htm>. Copies of the record of decision and notice of determination are included as Attachment D of this application.

Background and Changes Since the Final EIS/EIR

Modified Alternative J1T (proposed project or bypass) was selected as the preferred alternative and evolved as a result of the NEPA/404 integration process. It was not specifically identified as an alternative in the draft EIS/EIR. Modified Alternative J1T shares similar project design elements of the J1T and LT alternatives discussed in the draft EIS/EIR, and was proposed to further reduce community and environmental impacts.

Since publication of the final EIR/EIS in December 2006, Modified Alternative J1T has undergone several design revisions. The primary reasons for the design revisions were: 1) to avoid conflicts with the WWTP expansion project and 2) to accommodate phasing the construction of the bypass, as discussed below. Overall, the design revisions are relatively minor changes to Modified Alternative J1T as presented in the final EIR/EIS. The project remains a four-lane freeway bypass with several bridge structures spanning creeks and local roads, floodway viaduct structures spanning the regulatory floodway, and interchanges on either end of the bypass. The location and design elements of project revisions are described in more detail below.

Avoidance of the Willits Wastewater Treatment Plant Expansion Project

To avoid conflicts with the WWTP expansion project, the alignment was shifted slightly to the northeast around the WWTP using a triple compound curve instead of the single curve that was originally planned. The alignment returns nearly to the original alignment near the Northwestern Pacific Railroad (NWPRR) track crossing. The profile over the railroad has also been lowered, resulting in a significant reduction of the embankment footprint (and therefore a reduction in impacts on wetlands) between the end of the viaduct structure (Huffman/City of Willits property line) and the railroad crossing.

Phasing of Bypass Construction

Because of funding constraints, the decision was made to construct the bypass in two phases such that a functional interim two-lane facility would be constructed initially, and when adequate funding becomes available in the future, the remaining lanes would be constructed to complete the four-lane bypass. The need to phase construction of the project has had design implications, resulting in the need to modify the Quail Meadows interchange. Phasing the construction of the original Quail Meadows interchange proved geometrically complex and wasteful of resources. Therefore, the interchange was shifted approximately 1,200 feet to the north and would be a two-lane interchange in Phase 1. In addition, a roundabout has been added to the west side of the interchange to connect two ramps to the local roads. One of the additional benefits of the roundabout is that an existing box culvert at Upp Creek can now be removed. In addition, all of the crossings of Upp Creek, which were previously planned as box culverts, would now be bridges.

Although the project would be constructed in two phases, the ultimate project remains a four-lane freeway bypass. As funding allows during Phase 1, Caltrans intends to construct as much of the four-

lane roadway embankment as possible to help facilitate the construction of Phase 2. The environmental study limits encompass the full four-lane project area. Right-of-way purchased for the project would satisfy the requirements of the full four-lane project and would be access-controlled. Although only the two southbound lanes would be constructed initially in Phase 1, Caltrans would implement mitigation for the impacts of the ultimate four-lane project with implementation of Phase 1. The project description below discusses the ultimate four-lane facility.

Description of Specific Design Elements

Roadway Design

The proposed project is designed to accommodate the predicted interregional average annual daily traffic in 2028 at a LOS C or better. The bypass would be a four-lane freeway with a 45.3-foot median separating the northbound and southbound lanes. Each lane would be 12 feet wide. The inside shoulder width (nearest the median) would be 5 feet, while the outside shoulder width would be 10 feet. The freeway sections would maintain a minimum design speed of 68 miles per hour (mph) and would meet the purpose of providing at least an LOS of C. Where local roads would be improved or constructed, there would be two 12-foot lanes and shoulder width meeting local design standards.

Interchanges

There would be two interchanges constructed for the project. The Haehl Creek interchange would be located at the south end of the project near Haehl Creek and connect the existing freeway and highway into Willits with the new facility. The Quail Meadows interchange would be located near the north end of Little Lake Valley and connect the new facility to the existing two-lane conventional highway north of Willits. Interchange ramps would be single-lane.

Bridges and Structures

The bypass would traverse creeks, riparian corridors, streets, and railroad rights-of-way using 22 bridges and three retaining walls. The following structures would be constructed with this project:

- Six bridges/structures in the Haehl Creek interchange area, one for each of the following:
    - Northbound freeway lanes separation with State Route (SR) 20
    - Southbound freeway lanes separation with SR 20
    - Southbound off-ramp over Haehl Creek
    - Northbound on-ramp over Haehl Creek
    - Northbound freeway lanes over Haehl Creek
    - Southbound freeway lanes over Haehl Creek
- Two retaining walls in the Haehl Creek interchange area adjacent to Haehl Creek:
    - East side of northbound lanes
    - West side of northbound on-ramp
- Two structures to cross East Hill Road:
    - One bridge for the southbound roadway lanes (Phase 1)

  - One bridge for the northbound roadway lanes (Phase 2)
- Two bridges to cross the middle reach of Haehl Creek south of Shell Lane:
  - One bridge for the southbound roadway lanes (Phase 1)
  - One bridge for the northbound roadway lanes (Phase 2)
- One retaining wall on the west side of the southbound roadway lanes just south of Center Valley Road.
- Two viaduct structures to span the regulatory floodway:
  - Southbound (Phase 1)
  - Northbound (Phase 2)
- Two structures to cross over the NWPRR tracks in the Quail Meadows interchange area, one for each of the following:
  - Southbound roadway lanes (Phase 1)
  - Northbound roadway lanes (Phase 2)
- Two structures to cross the new connector road to existing U.S. 101 in the Quail Meadows interchange area
  - One for the southbound roadway lanes (Phase 1)
  - One for the northbound roadway lanes (Phase 2)
- Six bridges to cross Upp Creek directly north of the Quail Meadows interchange, one for each of the following:
  - Southbound roadway lanes (Phase 1)
  - Northbound roadway lanes (Phase 2)
  - Northbound on-ramp (Phase 1)
  - Northbound on-ramp (Phase 2)
  - Southbound off-ramp
  - Roundabout local intersection

  Note that the northbound on ramp bridge constructed in Phase 1 would be replaced in Phase 2 by a different bridge.

Viaducts

The proposed alignment encroaches upon the 100-year floodplain. The design includes two elevated structures, which make up the floodway viaduct. The purpose of this design feature is to span the regulatory floodway. The final floodplain evaluation report concludes that proposed project would not increase the base flood elevation of the regulatory floodway or floodplain, and does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105(q).

The proposed viaduct structures would be located in the central part of the project area and would span Center Valley Road, the lower reach of Haehl Creek just upstream of the confluence with

Baechtel Creek, Hearst-Willits Road, Baechtel and Broaddus Creeks at their confluence (beginning of the Outlet Creek designation), the WWTP, and Mill Creek.

The approximately 6,000-foot-long structures would consist of separate northbound and southbound elevated viaduct superstructures. The area of the viaducts would be 11.6 acres. Each of the viaduct structures would be approximately 42.6 feet wide. The edge-to-edge distance between the structures would be approximately 31.2 feet, and each would generally have at least a 16.5-foot minimum clearance underneath. The viaducts would require supporting columns, ranging in size from 4.5 to 7 feet in diameter.

Reinforced Concrete Box Culverts

Three large reinforced concrete box (RCB) culverts and numerous small culverts would be built as part of the proposed project. The first RCB culvert would cross Haehl Creek near the Haehl Creek interchange to provide access to a ranch isolated by the new bypass; the second and third would cross under Center Valley Road, near Shuster's Trucking, and would mitigate floodplain impacts due to roadway embankment south of Center Valley Road.

The Haehl Creek culvert for the ranch access would be a natural bottom arch culvert or a partially buried box culvert. The two culverts crossing Center Valley Road would be concrete boxes and would use turf reinforcement mats in lieu of rock slope protection (RSP) at the inlets and outlets where feasible.

Retaining Walls

Three concrete retaining walls would be constructed: two at the Haehl Creek interchange, and one just before the south end of the viaduct near Baechtel Creek. One of the Haehl Creek interchange walls would be located along the west side of the northbound on-ramp. The other would be located along the east side of the northbound lanes between the separation structure over SR 20 and the Haehl Creek bridge. The third retaining wall, near Baechtel Creek, would be built to avoid the potential for the roadway embankment to be undermined by Baechtel Creek.

Excavation (Cut), Embankment (Fill), and Imported Borrow

The estimated embankment requirement for Phase 1 of the proposed project is approximately 1.4 million cubic yards. Because all on-site excavation soil would be reused as embankment, no disposal sites would be required for the project. From just north of the Haehl Creek interchange to the south abutment of the viaduct, and from the north abutment of the viaduct to the terminus of the project, the alignment is on embankment. Cut slopes would generally vary between a 1:2 (vertical: horizontal) and 1:2.5 ratio. Fill slopes would vary between a 1:2 and 1:4 ratio. The plans would call for slope rounding at appropriate locations.

Because the bypass would be constructed largely on embankment, it would require imported borrow material from outside the project area in addition to on-site excavation material. The construction contractor would have the option to determine whether the source of material for earthwork fill would be the Caltrans-designated borrow site, a commercial borrow site, or another site.

Caltrans has designated a borrow site at Oil Well Hill, just north of Little Lake Valley, as an optional source of material that the contractor may use for the project. The material in this area is good-

quality and suitable for use in embankment construction. The right-of-way for U.S. 101 at the designated borrow site is sufficient to provide the necessary embankment material for earthwork. Potential excavation at the proposed designated borrow site at Oil Well Hill could result in the removal of up to 1.3 million cubic yards (1.0 million cubic meters) of material. The State Geology and Mining Board granted an exception to the State Mining and Reclamation Act (SMARA) permitting requirement on March 13, 2008.

The contractor may also choose to use available commercial borrow sites in the vicinity to obtain the required fill. Typically, commercial borrow sites hold pre-approved operating permits and do not require any additional environmental permitting when soil is exported. Should the contractor select an alternative, non-commercial borrow site for this project, a separate environmental review for the site would be required before the contractor begins construction.

Fish Passage

One existing culvert in the upper Haehl Creek channel, located under the proposed highway bridge (10-0129R/L), would be permanently removed. A second existing culvert in upper Haehl Creek would be replaced for improvement of the proposed new Schmidbauer Ranch access road. An existing RCB culvert located near the Quail Meadows interchange that passes under existing U.S. 101 would also be permanently removed.

Stabilization of both creek channels that pass through the interchange areas (Haehl and Upp Creeks) would consist of grade control structures located downstream of the culvert, at appropriate heights and intervals, for the distance necessary to stabilize the natural stream gradient. Fish passage design elements would comply with guidelines established by National Marine Fisheries Service (NMFS) and California Department of Fish and Game (CDFG).

An existing ranch road would be improved to provide access to the Schmidbauer Ranch. This access would be from the east side of the southern interchange. The existing culvert in upper Haehl Creek would be replaced with a natural bottom arch or box culvert. The culvert replacement would occur during summer, when this reach of Haehl Creek is normally dry. However, flows through the existing culvert have created an outfall pool that can retain water throughout the year. If water is present, a qualified fisheries biologist would survey the pool for the presence of salmonids. If present, the fish would be removed before removal and replacement of the culvert.

Landscaping

Permanently impacted areas such as the cut and fill slopes adjacent to the roadway and along interchange ramps, as well as the median between the inside roadway shoulders, would be revegetated with native plants appropriate for Little Lake Valley. For drivers' safety and in compliance with Caltrans design standards, no trees would be planted within the clear recovery zone where errant vehicles could hit them. Only soft shrubby and herbaceous native species may be planted throughout these areas to prevent abrupt slowing, redirection, or launching of stray vehicles.

Temporarily impacted areas would be revegetated to their pre-construction plant community type. They would be seeded and planted with plants native to Little Lake Valley.

Lighting

Highway lighting would be provided at both the Haehl Creek and Quail Meadows interchanges. No lighting would be provided along the viaduct.

Fencing

Fencing would be erected along the Caltrans right-of-way where appropriate.

Stream Bank Stabilization

To prevent bank erosion and damage to the bypass facilities, RSP would be required along short lengths of creek banks. The use of RSP is minimized through the substitution of turf reinforcement mats in appropriate locations.

At locations where Haehl and Upp Creeks pass through the right-of-way, the stream channel would be contoured, re-graded, and designed for fish passage following the guidelines set forth by NMFS and CDFG.

Description of Specific Construction Elements

Roadway Construction

Staging Areas

The first phase of construction is the establishment of staging areas. Three staging areas are proposed, located in the south-central, central, and northern portions of the project corridor. The south-central staging area is located on state-owned property (Assessor's Parcel Number [APN] 007-100-08). The central staging area is state-owned property (APN 007-040-09) located south of East Valley Street, east of the south abutment of the floodway viaduct, and west of Haehl Creek. The northern staging area is located on state-owned property (APN 108-040-02) east of existing U.S. 101, west of the Quail Meadows interchange, and south of the roundabout. In addition to the staging areas described, the contractor would have use of right-of-way not being actively used for highway purposes.

The staging areas would be used by the contractor to store equipment and materials, and would provide the contractor easy access to the project corridor. Access roads from the staging areas to the project corridor would be constructed where necessary. It is anticipated that work would begin at several areas at the same time. Where staging areas are located adjacent to salmon-bearing creeks, a sufficient buffer would be maintained along with appropriate best management practices (BMPs) to ensure that untreated storm runoff from these areas does not directly flow into any natural drainage. No riparian vegetation would be removed within the staging areas.

Imported Borrow

Before the construction of the embankments, all environmentally sensitive areas would be fenced to prevent encroachment from the contractor's operations.

The proposed project would be constructed largely on fill material imported to the site. The bypass requires approximately 2.5 million cubic yards of fill (1.4 million cubic yards in Phase 1). The construction contractor would determine the source of material for earthwork.

Caltrans has designated a borrow site in the project area as a possible source of material that the contractor may use for the project. The site is located at Oil Well Hill, just north of Little Lake Valley and the U.S. 101 bridge over Outlet Creek. Material from the Oil Well Hill site could be transported to the project corridor by trucks, via U.S 101. Once the haul trucks reach the project site near the Quail Meadows interchange, they would travel on a haul road constructed within the ultimate roadway prism. To reach the south end of the project, a temporary haul road would be constructed adjacent to the floodway viaduct. This haul road would be removed after construction of the viaduct is complete and the footprint of the haul road is restored to pre-construction condition.

Wick Drains

Before any of the structure abutments can be constructed, the embankment for the abutments must settle. The estimated settlement period ranges from 30 days to as long as 10 years. To facilitate the acceleration of the settlement period, the project would utilize wick drains.

Wick drains are vertical drains that provide an escape path for groundwater. The groundwater usually escapes to a subsurface permeable layer before reaching the surface, but some groundwater may reach the surface. Each drain is driven into the ground, and the surface ends of all the drains are connected with a strip drain that drains into a small catch basin. Any groundwater effluent captured in the catch basins would be pumped into holding tanks for disposal or used on the project for dust control.

Beginning with the north abutment of the floodway viaduct and continuing through the north abutments of the Upp Creek bridges, wick drains would be installed before the placement of embankment. Wick drains would be used for both the roadway embankment and the structure abutments.

Drainage

Highway drainage is classified as either on- or off-site. The on-site drainage is collected from the new impervious surfaces through the use of curbs and dikes, overside drains, drop inlets, and culverts. This runoff is routed to detention basins, then treated and discharged.

The off-site drainage consists of natural flows passing through the right-of-way that would exist before the project. These natural flows are perpetuated through the placement of cross culverts in strategic locations. Temporary cross culverts would be placed where they pass though embankments requiring settlement periods. After the settlement has been attained, the permanent culvert would be jacked and bored through the embankment.

Pavement Construction

Pavement construction for the project consists primarily of placing and compacting layers of pavement materials consisting of aggregate base (AB), hot mix asphalt (HMA), and hot mix asphalt (open graded). The pavement would be placed sometime toward the end of construction, after the structures have been completed and all embankments have settled. Aggregate for both the AB and HMA layers would most likely be obtained from a commercial rock quarry located near Ridgewood

Grade south of Willits. The contractor may choose to construct a temporary HMA batch plant on-site to minimize haul time.

Structures Construction

General Discussion

The bridge sites would be cleared of vegetation before construction for a distance of approximately 75 feet upstream and downstream of the structures. Removal of vegetation below the top of banks would be required to provide access for large equipment, but would be minimized to the extent possible to maintain bank slope stability and to provide some shade for salmonids.

Bridge construction would begin with the approach fills, where necessary, followed by construction of the abutments. The abutment work would include excavation for the footings, pile driving or drilling for the foundations, formwork for concrete placement, steel reinforcement bar placement, concrete pouring, finishing, and curing. After the concrete for the abutments has cured, the forms would be removed and construction of the superstructure falsework would begin. The temporary falsework would be constructed during the low-flow work window. Falsework supports may consist of hollow steel pipe piles, H piles, or timber pads. Installation of these supports may require pile driving. The permanent bridge superstructure forms would then be erected and the concrete poured, finished, and cured. After a suitable time to allow the concrete to set and strengthen, the falsework would be removed and other work, including bridge rail and approach work, would be completed.

The use of temporary culverts for construction of the structures crossing salmonid-bearing streams is not anticipated. If dewatering is required at any of these stream crossings, it is possible that cofferdams could be constructed in the channel. The permanent bridges would consist of separate southbound and northbound structures. Each of the permanent bridge abutments may require 20 or more H piles, which would be placed by pile drivers, at or near the top of bank. The floodway viaduct bents would require 240-inch hollow steel pipe piles, with approximately 9 piles per footing or column.

Erosion protection would be required on disturbed slopes where new crossings would be constructed. RSP could also be required where scour potential is higher, on the banks of upper Haehl Creek, at the southbound off-ramp, and the northbound on-ramp (on both banks). It would also likely be required on the south bank at the highway crossing over the middle reach of Haehl Creek, south of Shell Lane.

Floodway Viaduct

The installation of the columns and deck construction would require a 100-foot-wide work area on the east side of the viaduct, and a 55-foot-wide work area on the west side of the viaduct. Access would also be required underneath the viaduct structure. The larger work area on the east side of the viaduct is required for access by large cranes and other equipment. Constraining the work area to 55 feet on the west side of the viaduct would serve to avoid loss of riparian habitat along Baechtel Creek. The temporary work areas would be used for vehicle access and for storage of equipment and materials, and would also be used for foundation, column, and falsework erection and removal. Permanent fill in the floodplain would be limited to the total surface area encompassed by the columns (estimated to be approximately 1% of the area under the viaduct). When each frame

(consisting of multiple spans) is completed, work would begin on the next frame, where material and equipment would be located.

The viaduct construction over lower Haehl Creek would require removal of vegetation for a distance of 100 feet upstream and 55 feet downstream of the viaduct overcrossings. No piles would be located at or below the top of banks, but would likely require pile driving within 50 feet of the top of bank to install the columns.

The viaduct crossing over Baechtel and Broaddus Creeks would require the removal of vegetation for a distance of 100 feet downstream and 55 feet upstream of the viaduct structures. A single bent (two columns) would be constructed at the confluence of Baechtel and Broaddus Creeks. Dewatering would be necessary for installation. This would include the installation of a cofferdam for concrete footing construction. The top of the foundation footing would be 8 feet below the bottom of the creek. This may require RSP that would be located on both banks under the structures and for a maximum distance of 25 feet upstream and downstream of the structures. The footing of the RSP could be placed below the ordinary high water mark (OHWM).

The viaduct crossing over Mill Creek would require vegetation removal only, for a distance of 100 feet downstream and 50 feet upstream of the structure. Piles could be located within 10 to 50 feet of top of bank, and RSP is not expected to be required.

The floodway viaduct has 32 two-column supports (bents), which require the installation of two footings each. Each footing is approximately 16 by 16 feet and encapsulate eight or nine 2 foot-diameter steel pipe piles. Depending on the time of year each footing is constructed, groundwater may be encountered during the excavation of the footings.

Retaining Walls

To construct the retaining walls, some riparian vegetation would be removed and later replaced. A portion of these walls may require RSP. The RSP would be “vegetated” RSP and is included in the fish passage design. The wall foundation would require the installation of H piles by pile driving.

Concrete Batch Plant

It may be necessary to supplement the current commercial production of Portland cement concrete and minimize haul time by allowing contractors to construct a temporary plant near the project site. One possible site for a batch plant is state-owned property located south of East Valley Street, east of the south abutment of the floodway viaduct, and west of Haehl Creek (APN 007-040-09).

Temporary Bridge Construction

Approximately 10 temporary bridges may be required to access portions of the project site at the initial stages of construction. If it were necessary to use temporary bridges, the type and location of the temporary bridges would be determined by the contractor. However, each temporary bridge would likely consist of a Bailey Bridge, railroad flatcar, or similar type of structure. Information on Bailey Bridges can be found at <http://www.baileybridge.com>. These bridges would not require placing any piers in the stream channels or banks. No access into the live stream channels would be required.

Temporary bridges would be located generally where minimal removal of vegetation would be required. If riparian vegetation is present, placement of these bridges would require removal of

vegetation for a distance of 10 feet on both sides of the structure. The bridges would be installed during the low-flow season, usually June 15 through October 15. All areas of disturbed soil would be stabilized at the end of each season through implementation of BMPs in the storm water pollution prevention plan (SWPPP) and National Pollutant Discharge Elimination System (NPDES) permit.

Pile Driving

Driven piles would support the bridge abutments, columns, and retaining walls, and may be used to support the temporary falsework. Table 1 details the numbers and sizes of piles to be driven for the permanent structures under Phase 1 construction. Caltrans expects the numbers and sizes of piles in Phase 2 construction to be similar to those described here. All the bridge abutments would be located above the top of the bank. The number of columns within 50 feet of the stream channels for Phase 1 construction is shown in Table 1. Except at Bent 24 of the floodway viaduct, any piles located within the stream banks would be above the OHWM.

Table 1. Pile Driving Information

Structure	No. of Structures	Piles				Stream Name
		Type	No.	Size (Feet)	No. within 50 Feet of Stream[a]	
US 101/SR 20 Separation (10-128RL)	2	H	72	250 x 85	0	Haehl Creek (Upper)
		H	72	360 x 132	0	
Haehl Creek (Upper) (10-0129RL-F-G)	4	H	38	250 x 62	38	Haehl Creek (Upper)
		H	14	250 x 85	14	
		H	114	360 x 132	114	
		H	30	360 x 174	30	
Retaining Walls at Haehl Creek (10E0001-2)	2	H	160	250 x 85	160	Haehl Creek (Upper)
East Hill Rd UC	1	H	34	250 x 85	–	–
Haehl Creek (Middle) (10-0159)	1	H	6		6	Haehl Creek (Middle)
		Pipe	50	360 x 11.12	50	
Retaining Wall at Floodway Viaduct (10E0009)	1	H	108	250 x 62	62	Baechtel Creek
Floodway Viaduct (10-0165)	1	H	26	250 x 85	0	Baechtel Creek
		Pipe		610 x13	16	Haehl Creek
		Pipe		610 x 16	36	Mill Creek
(Bent 24 uses 18 piles)		Pipe		610 x 19	34	Baechtel, Broaddus, and Outlet Creeks

Structure	No. of Structures	Piles				Stream Name
		Type	No.	Size (Feet)	No. within 50 Feet of Stream[a]	
Quail Meadows OH	1	H	216	250 x 62	–	–
		H	118	360 x 132		
Quail Meadows UC	1	H	32	250 x 85	–	–
Upp Creek (10-0174S) (10-0174K) (10-0174)	4	H	46	250 x 62	46	Upp Creek
		H	16	250 x 85	16	
		H	22	360 x 132	22	

[a] Numbers of piles within 50 feet of the stream is approximate and measured from the footing to the stream bank.

In past projects, contractors have used pre-formed concrete pads or timber-grade beams set on the earth, or driven piles to support falsework. The contractor would be responsible for selecting the supporting system for falsework, although that must be approved by the resident engineer. Generally, when contractors use piles to support the falsework, the piles are relatively small (about 15 inches or smaller in diameter) or equivalently sized H piles.

Avoidance of Indirect and Direct Impacts

In addition to the creation, enhancement, and preservation strategies included in the HMMP, Caltrans has incorporated numerous minimization measures as part of project design. The two minimization measures incorporated into the design since the final EIS/EIR are listed below:

- Bypass re-alignment will avoid conflicts with the planned WWTP expansion project
- Design modifications to accommodate phased construction of the bypass

In addition to preparing a SWPPP, Caltrans would implement the following measures to minimize disturbances of aquatic resources:

- All construction-related materials would be stored in designated staging areas at least 100 feet from perennial waterways and drainages.
- Refueling and vehicle maintenance would be performed at least 1,000 feet from creeks and other water bodies.
- Operation of heavy equipment would be minimized in perennial creeks to the greatest extent possible.
- Temporary sedimentation barriers, such as sandbags or siltation fencing, would be installed to minimize the amount of silt entering the creeks and any ephemeral drainages with water present in the channel. The locations of these barriers would be determined by the resident engineer and environmental monitor, and would be clearly marked in the field before construction activities begin.

- Additional BMPs would be implemented to prevent runoff from adjacent lands from flowing across construction areas, slow down the runoff traveling across construction sites, remove sediment from on-site runoff before it leaves the site, and provide soil stabilization.

Non-Compensatory Mitigation

See the discussion in the above "Project Description" section under the heading "Description of Specific Construction Elements" for details regarding proposed minimum erosion control measures, post-construction stormwater treatment measures, and construction and post-construction pollutant source controls for individual project components and general project construction activities.

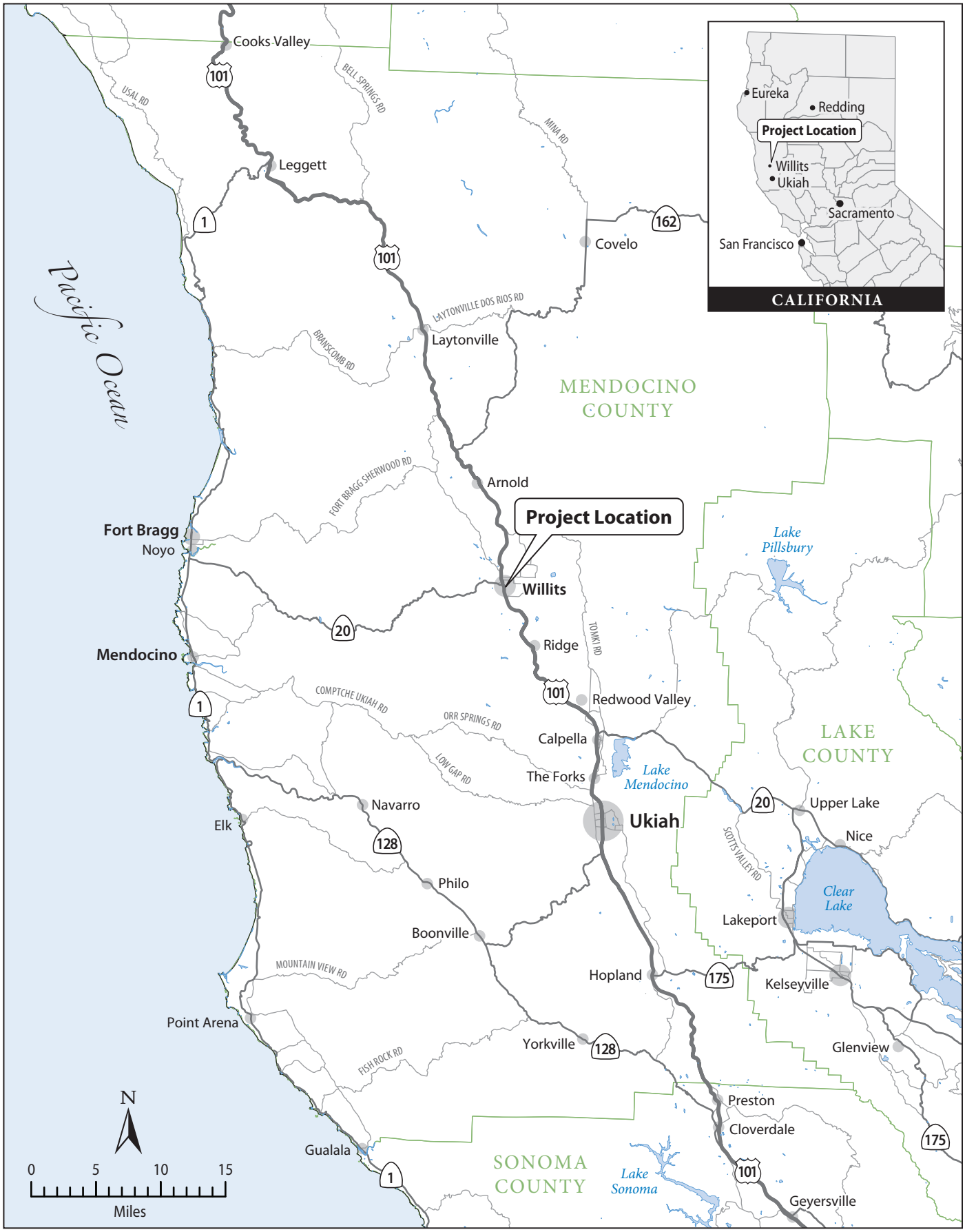

Figure 1-1
Regional Location

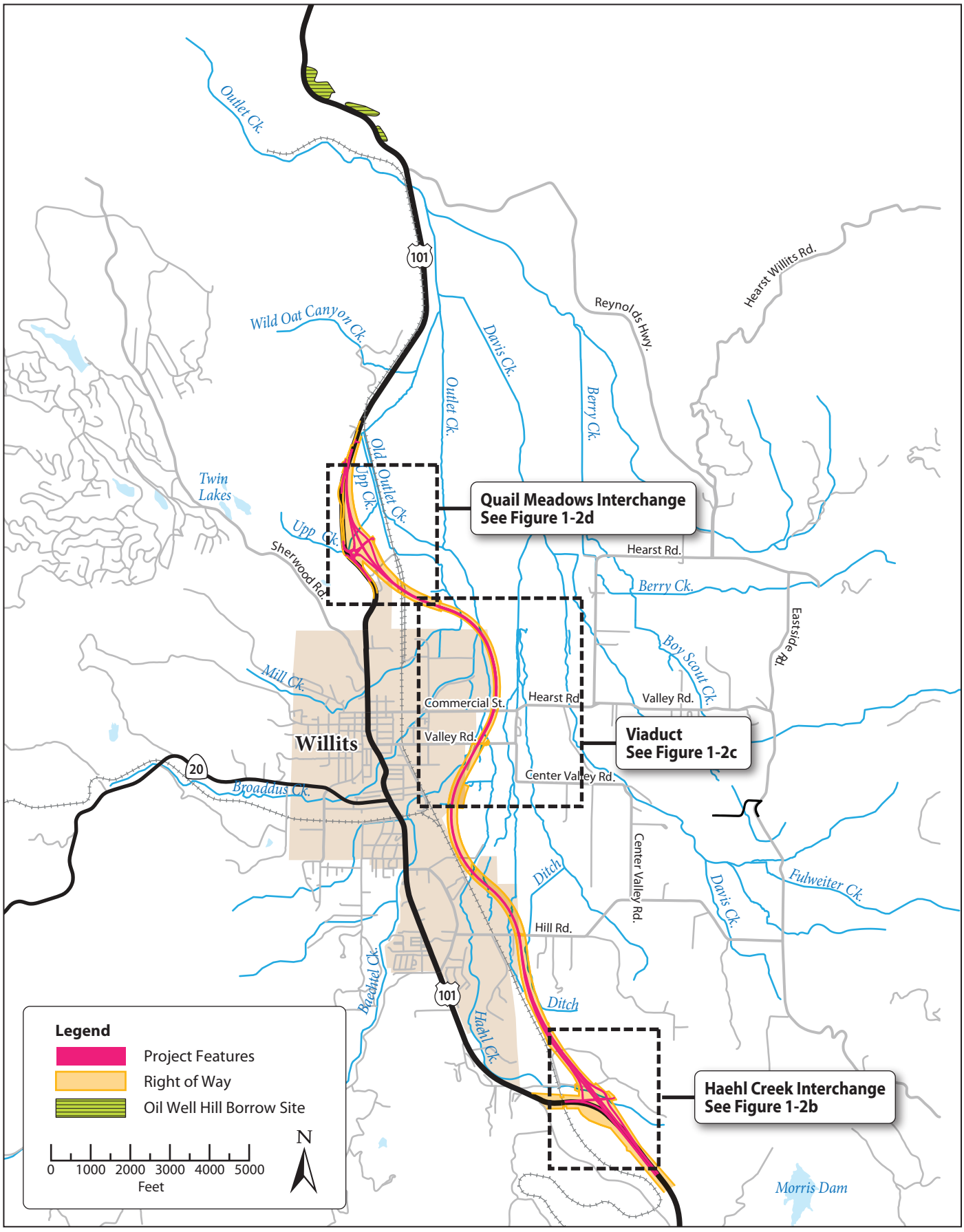

Figure 1-2a
Project Features—Overview Phase 1

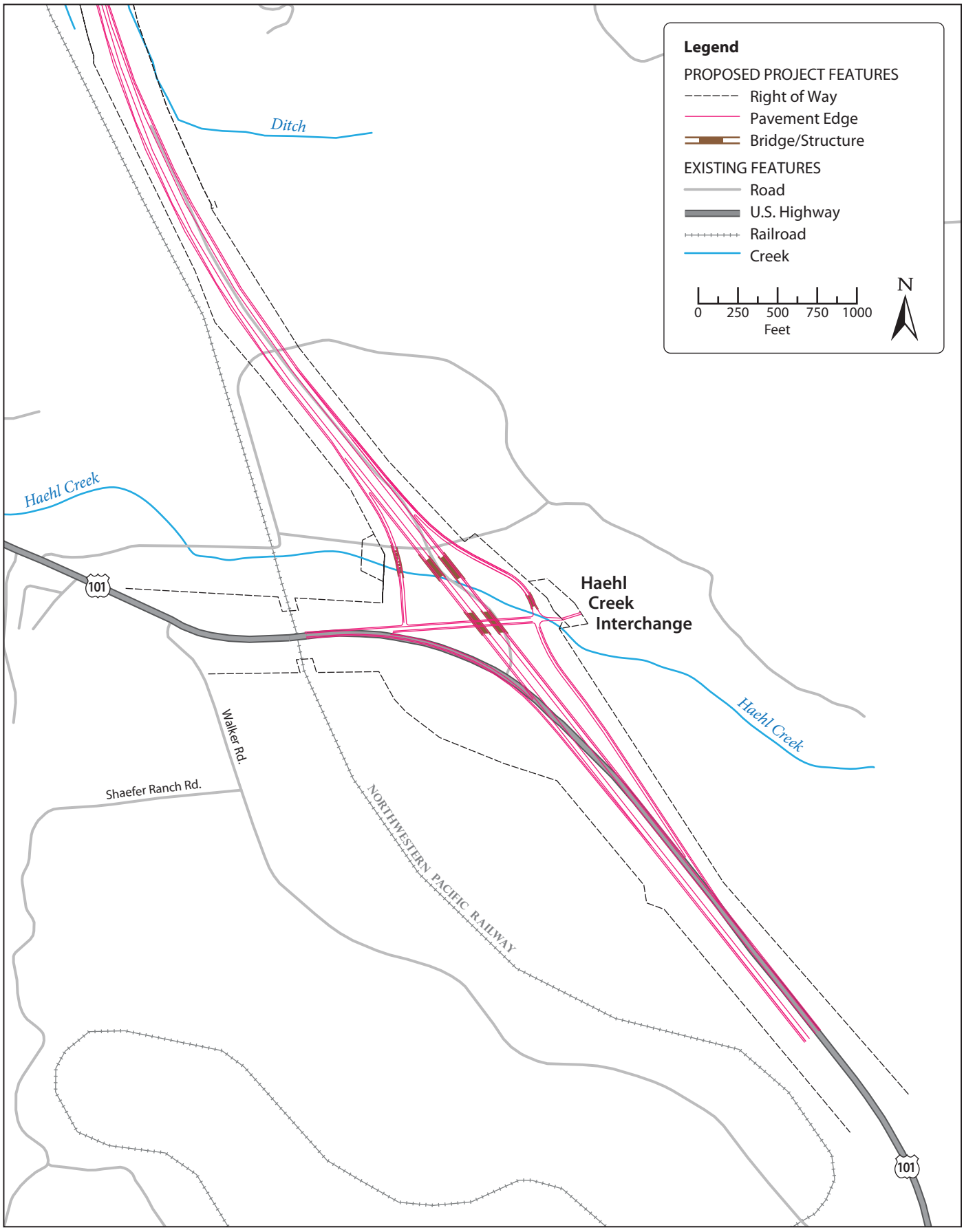

Figure 1-2b
Southern End Project Features—Haehl Creek Interchange Phase 1

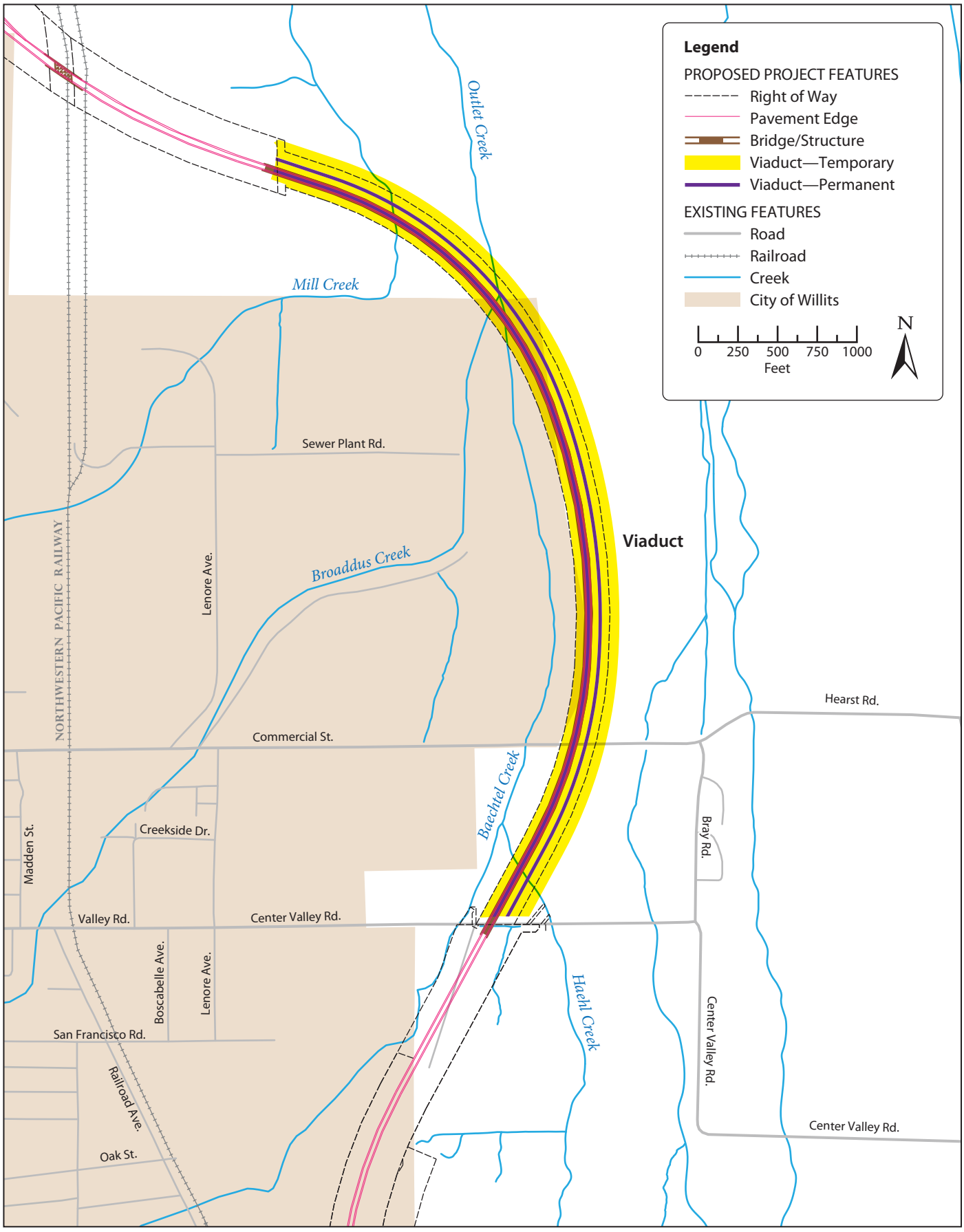

Figure 1-2c
Middle Project Features—Viaduct Phase 1

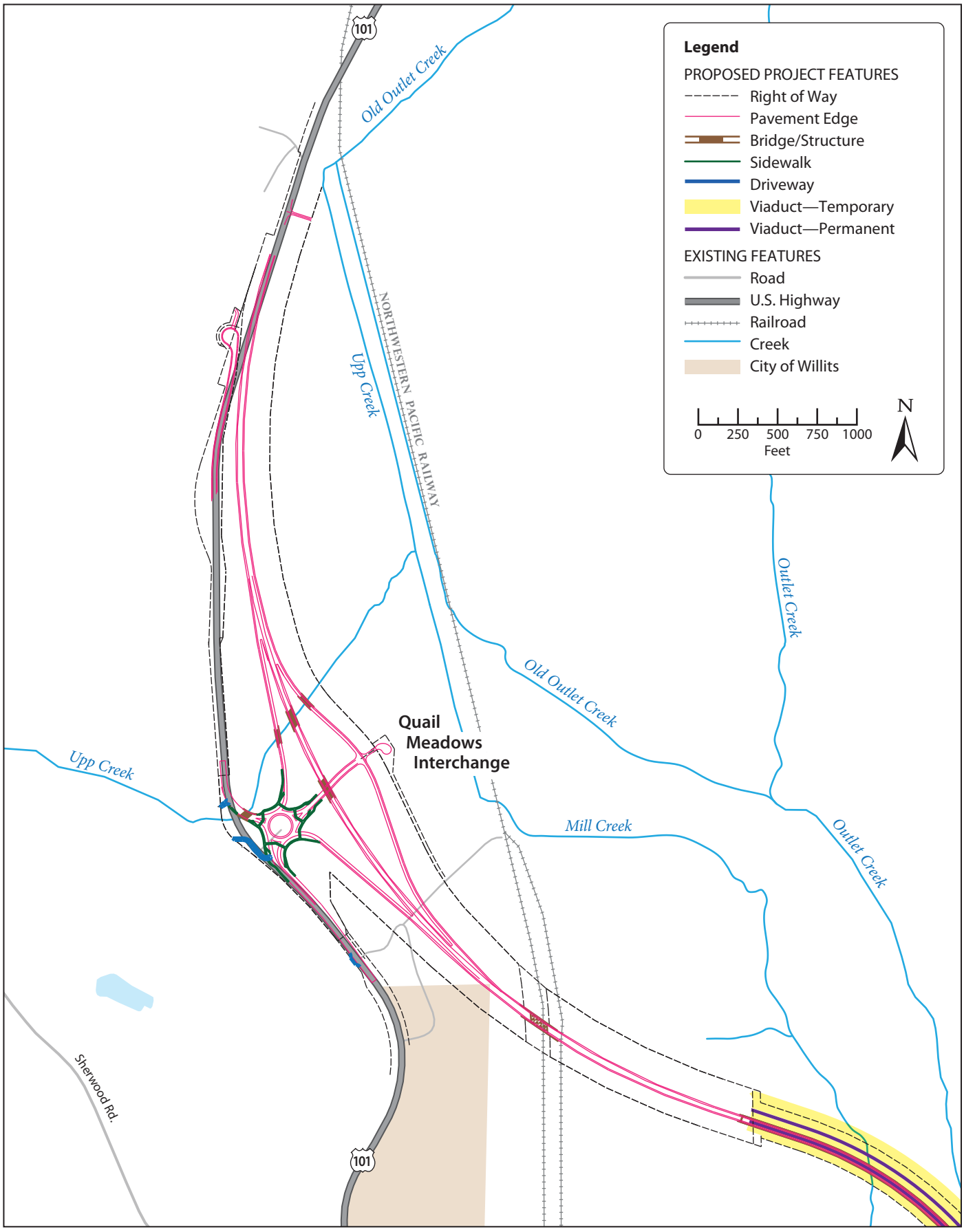

Figure 1-2d
North End Project Features—Quail Meadows Interchange Phase 1

Attachment B

Adjacent Property Owners and Lessees

Adjoining Property Owners and Lessees

APN	OWNER	PROPERTY OWNER ADDRESS	CITY	STATE	ZIP	PROPERTY ADDRESS	CITY
00701002	WILLITS CITY OF			CA	00000		
00701003	WILLITS CITY OF			CA	00000		
00701004	BENBOW CHARLES 1/2	40 E BRANCH RD	GARBERVILLE	CA	95542		
00702003	BENBOW CHARLES 1/2	40 E BRANCH RD	GARBERVILLE	CA	95542	998 HEARST WILLITS RD	WI
00703204	SHUSTERS TRANSPORTATION INC	750 E VALLEY ST	WILLITS	CA	95490	750 CENTER VALLEY RD	WI
00703205	WILLITS HORSEMAN ASSOCIATION I	PO BOX 906	WILLITS	CA	95490		
00703210	JENSEN MARJORIE L C 1/9	507 W MILL ST	UKIAH	CA	95482		
00703211	HARMS GEORGE M TTEE	392 REDWOOD AVE	WILLITS	CA	95490		
00703213	HARMS GEORGE M TTEE	392 REDWOOD AVE	WILLITS	CA	95490		
00704006	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502	701 CENTER VALLEY RD	WI
00704007	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502	731 EA VALLEY ST	WI
00704008	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490	801 EA VALLEY ST	WI
00704009	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490		
00704010	GILSTRAP NORENE T TTEE	801 E VALLEY ST	WILLITS	CA	95490	801 EA VALLEY ST	WI
00704014	WINDSOR MILL PROPERTIES LLC	7950 REDWOOD DR STE 4	COTATI	CA	94931		
00704017	TWEDDELL APRIL TTEE	651 E VALLEY ST	WILLITS	CA	95490	651 CENTER VALLEY RD	WI
00705002	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490		
00705007	GRIGGS MICHAEL A JR & KERRI M	511 E VALLEY ST	WILLITS	CA	95490		
00707001	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490	500 SHELL LN	WI
00710008	SEIBERLICH JEANETTE SUCCTTEE	40 ST TERESA CT	DANVILLE	CA	94526	311 SHELL LN	WI
00710009	RUTLEDGE PAMELA K SUCCTTEE	500 SHELL LN	WILLITS	CA	95490		
00710011	FORD DELMAN & DONNA R TTEES	1750 HEARST RD	WILLITS	CA	95490		
00710029	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
00716017	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
00716018	HANDLEY MARGIE LEE TTEE 1/2	PO BOX 1329	WILLITS	CA	95490		
03802009	BURTON BRUCE EDWARD 1/2	220 FRANKLIN AVE	WILLITS	CA	95490	24850 NO HWY 101	WI
03802011	BROOKE CLIFFORD ALLEN & CARLA	2409 PINE KNOLL DR #1	WALNUT CREEK	CA	94595		
03802021	GARMAN BEDA H JR & SHARON A TT	389 N MAIN ST	WILLITS	CA	95490	24900 NO HWY 101	WI
03804009	BROOKE CLIFFORD A & CARLA R	2409 PINE KNOLL DR #1	WALNUT CREEK	CA	94595		
03806007	ANDERSON CHARLES & SYLVIA	PO BOX 302	WILLITS	CA	95490	24200 NO HWY 101	WI
03806008	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD #166-K	SEAL BEACH	CA	90740	24201 NO HWY 101	WI
03806010	WAGENET GORDON M & CATHARINE S	PO BOX 345	WILLITS	CA	95490		

APN	OWNER	PROPERTY OWNER ADDRESS	CITY	STATE	ZIP	PROPERTY ADDRESS	CITY
03808009	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD 116-K	SEAL BEACH	CA	90740		
03808031	WAGENET GORDON M & CATHARINE S	PO BOX 345	WILLITS	CA	95490		
10315011	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10403018	MORRIS LAUREL A TTEE 1/4	801 E HILL RD	WILLITS	CA	95490	801 EAST HILL RD	WI
10403022	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10403023	HANDLEY MARGIE LEE TTEE	PO BOX 1329	WILLITS	CA	95490	701 EAST HILL RD	WI
10405010	MORRIS LAUREL A TTEE 1/4	801 E HILL RD	WILLITS	CA	95490		
10405015	STATE OF CALIFORNIA	PO BOX 3700	EUREKA	CA	95502		
10405016	HANDLEY MARGIE LEE TTEE	PO BOX 1329	WILLITS	CA	95490		
10409004	SCHMIDBAUER EDWARD J & ERLYNE	19921 N HWY 101	WILLITS	CA	95490		
10411012	OCHOA LYNDA & MANUEL R	19873 N HWY 101	WILLITS	CA	95490	19873 NO HWY 101	WI
10412002	SCHMIDBAUER EDWARD J & ERLYNE	19921 N HWY 101	WILLITS	CA	95490		
10803003	LUSHER ARTHUR & BETTY TRUST	1590 HOLMEWOOD RD 116-K	SEAL BEACH	CA	90740		
10804002	NIESEN WALTER A	24001 N HWY 101	WILLITS	CA	95490	24001 NO HWY 101	WI
10804003	CITY OF WILLITS THE	111 E COMMERCIAL	WILLITS	CA	95490	23731 NO HWY 101	WI
10804008	HUFFMAN RODNEY G 1/9	PO BOX 551	UKIAH	CA	95482	23731 NO HWY 101	WI
10804014	CITY OF WILLITS	111 E COMMERCIAL ST	WILLITS	CA	95490		

Attachment C

Draft Habitat Mitigation and Monitoring Plan

To be provided.

Attachment D

Final EIS/EIR, Record of Decision, and Notice of Determination

To be provided—EIS/EIR under separate cover.