



County of Santa Cruz

Department of Community Development and Infrastructure

701 Ocean Street, Fourth Floor, Santa Cruz, CA 95060

Planning (831) 454-2580

Public Works (831) 454-2160

sccoplanning.com

dpw.co.santa-cruz.ca.us

Riparian Exception Permit for Rebuilding Stream Crossings on Properties in Santa Cruz County affected by the 2022-2023 Winter Storms.

Project Description and Location

The proposed project consists of performing necessary stream crossing work in riparian corridors related to properties affected by the 2022-2023 winter storm damage in Santa Cruz County.

The project includes work related to repairing or reconstructing stream crossings such as culverts and bridges, necessary for property owners to access their properties, as well as repairs within the riparian corridor necessary to support a roadway. Work associated with such projects may include installation of water diversion systems in creeks, removal of the collapsed bridge debris and other materials from stream channels, and installation of replacement structures to restore or maintain access to private residences.

By signing on to this permit, a property owner will be permitted to conduct work necessary to reestablish stream crossings and failed roadways damaged by the 2022-2023 storm damage provided they perform that work consistent with the attached conditions. This permit does not grant state or federal permission to conduct work in a stream channel, and it is the property owner's responsibility to contact those agencies and secure those permits as necessary.

Analysis

On January 4th, 2023, the Governor of California, Gavin Newsom, declared a state of emergency due to damage from the winter storms throughout California. The Santa Cruz County declared a local emergency due to damage to county roads and infrastructure on December 30th due to an Atmospheric River Winter Storm. Several more storms from December 29th-January 16th caused widespread flooding, partially due to significant debris in the waterways, mudslides and debris flows, road washouts and road collapses, and power outages throughout the County. On January 14, 2023, President Biden approved a federal disaster declaration for California, including Santa Cruz County.

A property owner who does work within a stream channel is required to get approval from the County of Santa Cruz under chapters 16.30 and 16.32 of the County Code, as well as approval from the California Department of Fish and Wildlife (CDFW), the Regional Water Quality Control Board (RWQCB), and the U.S. Army Corps of Engineers (ACOE)

prior to conducting disturbance activities. Streams are regulated under the Clean Water Act Section 404 by USACE and Section 401 by RWQCB. The associated banks of the drainage may be subject to regulation RWQCB under the Porter-Cologne Water Quality Act as "Waters of the State", and under California Fish and Game Code Section 1602 by CDFW. In addition, many of the creeks and Riparian Corridors in the burn area are considered Environmentally Sensitive Habitat Areas (ESHA) under the California Coastal Act.

The CDFW has an emergency provision that allows for notification with 14 days of initiating the minimum work necessary to restore or stabilize access. The ACOE has Regional General Permit 5 (RGP 5) for emergency situations that allows for emergency work only after notification to, and approval by, the San Francisco office of the ACOE. Certain other agencies, including RWQCB, USFWS, NMFS are participants in this Regional Permit. There are general conditions associated with emergency construction activities, and sometimes additional measures are issued on a project by project basis. Separate notification to RWQCB is still required.

Additional information regarding outside agency permits may be found using the following web links:

ACOE: Information regarding the RGP5:

<https://www.spn.usace.army.mil/Missions/Regulatory/Emergency-Permits/>

RWQCB: Application and other resources:

https://www.waterboards.ca.gov/centralcoast/water_issues/programs/401wqcert/
(scroll to the **Fire Response and Emergency Project Application Form** link).

CDFW: Emergency notification for SAA:

<https://epims.wildlife.ca.gov/index.do>

It is the intent of Santa Cruz County to include conditions in this permit that conform with the majority of the requirements of the other agencies. This permit does not negate the responsibility of a property owner to conform with State and Federal regulations nor does it permit such work under any authority other than the County of Santa Cruz. It is the intention that incorporating these conditions into a project design will assist in expediting review and approval by other agencies. To that end, two practices by the Natural Resource Conservation Service (NRCS) are attached and incorporated into this permit; practice 396 on fish passage and practice 578 on stream crossings.

Conditions are included below that require any load-bearing structures be designed and signed off by a civil engineer, and any project that will disturb a stream with flowing water to have a biologist review and sign off on the design of the structure with regards to fish passage and the dewatering plan, and ensure other conditions are implemented minimize impacts to listed species.

All work performed must adhere to all relevant conditions in this permit. Both the property owner and the project engineer must review all conditions and sign a statement that have read and agree to abide by the conditions of this permit.

Staff Recommendation

The Planning Department has taken administrative action on your application as follows:

- Approved (if not appealed).
 Approved with Conditions (if not appealed).
 Denied (based on the attached findings).

NOTE: This decision is final unless appealed.

See signature page for information regarding appeals. You may exercise your permit after signing the permit and meeting any conditions which are required to be met prior to exercising the permit. If you file an appeal of this decision, permit issuance will be stayed and the permit cannot be exercised until the appeal is decided.

Please note: This permit is valid for all stream crossings directly impacted by the 2022-2023 storm damage. Work covered under this Riparian Exception must be initiated within one year of the date of this permit.

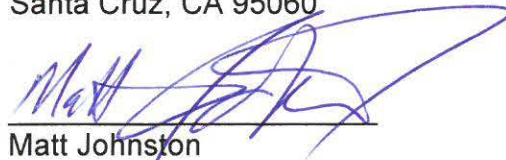
If you have any questions about this project, please contact Logan Thompson at: (831) 454-2530 or Logan.Thompson@santacruzcounty.us

Report Prepared By:



Logan Thompson
Resource Planner
Santa Cruz County Planning Department
701 Ocean Street, 4th Floor
Santa Cruz, CA 95060

Report Reviewed By:



Matt Johnston
Principal Planner
Environmental Planning
Santa Cruz County Planning Department

Riparian Exception Findings

1. That there are special circumstances or conditions affecting the property.

The special circumstance affecting the property is that due to the catastrophic storm damage, multiple stream crossings that have been destroyed must be rebuilt or rehabilitated in order for homeowners to access their properties.

2. That the exception is necessary for the proper design and function of some permitted or existing activity on the property.

The exception is necessary for the proper design and function of the permitted use and existing activity, as the replacement of stream crossing serves is a fundamental requirement to access the property or properties to reestablish a permitted use.

3. That the granting of the exception will not be detrimental to the public welfare or injurious to other property downstream or in the area in which the project is located.

The granting of the exception will not be detrimental to the public welfare or injurious to other property downstream or in the area in which the project is located. Crossing designs must show that the flow capacity of the channel meets or exceeds pre-flood capacity, and measures to protect water quality must be in place at all times during construction-related activities. All disturbed areas will be covered with appropriate erosion control and revegetated with native riparian plantings as necessary.

4. That the granting of the exception, in the Coastal Zone, will not reduce or adversely impact the riparian corridor, and there is no feasible less environmentally damaging alternative.

Where this project falls within the Coastal Zone, structures will be rebuilt within the general area where a previously flood-damaged crossing existed. The decision of the location and the method of construction will be determined by qualified professionals who will make decisions that will not adversely affect the riparian corridor. There is no feasible less environmentally damaging alternative, as the construction of this crossing is necessary for access to this/these properties.

5. That the granting of the exception is in accordance with the purpose of this chapter, and with the objectives of the General Plan and elements thereof, and the Local Coastal Program Land Use Plan.

The granting of the exception is in accordance with the purpose of the Riparian Corridor and Wetlands Protection Ordinance, and with the objectives of the General Plan. The General Plan and County Code allow for development within the riparian corridor under permit for allowed uses. In each case to be covered by this permit, the purpose is to reestablish legal access to a developed parcel. All disturbed areas will be revegetated with native riparian plantings as necessary, thereby minimizing the potential for erosion while maintaining riparian plant species.

Conditions of Approval

Reference: 2022-2023 Winter Storms Stream Crossing Permit (231043)

Attachments: NRCS Conservation Practice Standards
Native Riparian Plant Palette

- I. This permit authorizes work in the riparian corridor to rebuild necessary stream crossings such as bridges, culverts and roadway stabilizations affected by the 2022-2023 Winter Storms. This approval does not confer legal status on any existing structure(s) or existing use(s) on the subject property that are not specifically authorized by this permit. Prior to exercising any rights granted by this permit including, without limitation, any construction or site disturbance, the applicant/ owner shall:
 - A. Sign, date, and return to the Planning Department one copy of the approval to indicate acceptance and agreement with the conditions thereof.
- II. All construction shall be performed according to the approved plans for the Riparian Exception permit. Prior to commencement of construction, the applicant/owner must meet the following conditions:
 - A. The project proponent is responsible for obtaining all necessary approvals and permits from the USACE, RWQCB, NMFS, CDFW, and USFWS, and for complying with all measures and conditions included in those permit approvals. Projects will conform with the attached practices from the NRCS on stream crossings and fish passage.
 - B. To minimize impacts to riparian corridor and aquatic habitat and to avoid/minimize impacts to special-status species, the following shall be adhered to unless otherwise advised by the above regulatory agencies:
 1. Prior to commencement of construction, high visibility fencing and/or flagging shall be installed, with the assistance of a qualified biologist, to indicate the limits of work and the boundaries of sensitive habitat areas to be avoided. During construction, no grading, construction or other work shall occur outside the designated limits of work.
 2. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored outside the designated limits of work.
 3. Hand tools shall be used to trim vegetation to the extent necessary to gain access to the work area
 - C. Implement standard erosion control BMPs to prevent construction materials from entering the nearby creek and adjacent riparian areas. Install perimeter silt fencing and construction area limit-of-work fencing.

- D. All staging of equipment and materials, and refueling of equipment, shall be located in existing roadways, logging landings, and parking areas. The contractor shall prepare and implement a fuel spill prevention and clean-up plan.
- E. The project shall remove all old bridge debris from the stream channel and restore the bed and banks to pre-disaster contours and conditions to the maximum extent possible.
- F. Any work in or near an active watercourse shall conform to the following conditions:
 - 1. The project shall be monitored by a biologist familiar with Santa Cruz County Sensitive Habitat regulations and qualified to handle species known to be in the project area (hereinafter referred to as "qualified biologist". Biologists meeting these criteria are provided on the *Consultants for Biotic Reports, Restoration Work and Native Plants and Seeds* list maintained by the County of Santa Cruz Planning Department.
 - 2. A qualified biologist shall oversee the installation of the diversion/dewatering system to divert stream flow around the active construction area. Construction activity other than installation of water diversion/dewatering systems shall occur only within dry or dewatered areas. Any necessary fish salvage and relocation shall be done in accordance with guidance from NMFS.
 - 3. A biologist shall be on site during dewatering and initial ground disturbing activities to ensure that adverse effects to special-status species or their habitat does not occur and shall periodically inspect the project site during construction for compliance with permit conditions.
 - 4. If a special-status species is identified at any time prior to or during construction, work shall cease immediately in the vicinity of the individual. The animal shall either be allowed to move out of harm's way on its own or the qualified biologist shall move the animal out of harm's way to a safe relocation site. The biologist shall have the authority to stop work that may result in the "take" of special-status species, and shall be given enough time to move the animal out of harm's way.
 - 5. Every individual working on the Project must attend biological awareness training prior to working on the job site. The training shall be delivered by a USFWS approved biologist and shall include location and identification of sensitive habitats and all special-status species with potential to occur in the project area including information specific to identifying these species and the measures being implemented to protect them, the importance of avoiding impacts to special-status species and their habitat, and the steps necessary if any special-status species is encountered at any time, best management practices to be implemented, identification of the limits of work, and project-specific

avoidance measures and permit conditions that must be followed.

- G. The project proponent shall implement a native species revegetation plan to provide replacement vegetation. Please refer to the attached Native Riparian Plant Palette for appropriate species.
 - H. If the construction plan proposes the use of temporary coffer dams for isolating the work areas at the upstream and downstream extent of the project, installation and removal of the temporary coffer dams will be monitored by the biologist. The following conditions shall apply;
 - 1. Following initial construction of the coffer dams and initiation of bypass flows via the existing diversion system, isolated standing water shall be pumped from the work area to adjacent vegetated terraces, settling tanks or back into the creek, if turbidity is not elevated more than 10% of background turbidity levels.
 - 2. Pumps used to draw water out of the secured area shall be installed with fish screens.
 - 3. The installation and removal of the coffer dam structures shall be controlled to minimize turbidity in the water.
 - I. The project civil engineer shall provide a letter to the Resource Planner at the preconstruction conference that provides an outline for the submittal of final grading and drainage plans for the crossing.
 - J. The property owner, applicant or other responsible party shall email Environmental Planning at EnvironmentalPlanningInfo@santacruzcounty.us four working days prior to site disturbance.
- III. The following inspections are required (at a minimum) for all work proposed:
- A. Preconstruction meeting with the Contractor, Civil and Soils Engineers and biotic and erosion consultants.
 - B. All erosion and sediment control must be inspected by the entity responsible for completing the erosion control plans.
 - C. After completion of work a final inspection will occur by all engineers and consultants involved and a submittal of all final acceptance letters to the Planning Department, Environmental Section, will serve as the project final. All bare slopes shall be treated per the biotic and erosion consultant recommendations.
 - D. The project must comply with all recommendations of the technical reports or consultant recommendations (soils, geologic, biotic, etc.) and of 16.40.040 and 16.42.100 of the County Code. If at any time during site preparation, excavation, or other ground disturbance associated with this development, any artifact or other evidence of an historic archaeological resource or a Native American cultural site is discovered, the responsible persons shall immediately

cease and desist from all further site excavation and notify the Sheriff-Coroner if the discovery contains human remains, or the Planning Director if the discovery contains no human remains. The procedures established in Sections 16.40.040 and 16.42.100, shall be observed.

- E. Final acceptance letters must be submitted before final inspection from the appropriate engineers and earthwork contractor certifying the project was constructed in conformance with the approved project plans.

IV. Conditions of Outside Agencies

- A. All property owners and engineers must acknowledge that all conditions and practices attached herein have been read in their entirety and that those conditions will be met in the project development as they are intended.

V. Operational Conditions

- B. In the event that future County inspections of the subject property disclose noncompliance with any Conditions of this approval or any violation of the County Code, the owner shall pay to the County the full cost of such County inspections, including any follow-up inspections and/or necessary enforcement actions, up to and including permit revocation.
- C. No future work shall occur within the Riparian Corridor without a County Permit.
- E. As a condition of this development approval, the holder of this development approval ("Development Approval Holder"), is required to defend, indemnify, and hold harmless the COUNTY, its officers, employees, and agents, from and against any claim (including attorneys' fees), against the COUNTY, its officers, employees, and agents to attack, set aside, void, or annul this development approval of the COUNTY or any subsequent amendment of this development approval which is requested by the Development Approval Holder.
 - A. COUNTY shall promptly notify the Development Approval Holder of any claim, action, or proceeding against which the COUNTY seeks to be defended, indemnified, or held harmless. COUNTY shall cooperate fully in such defense. If COUNTY fails to notify the Development Approval Holder within sixty (60) days of any such claim, action, or proceeding, or fails to cooperate fully in the defense thereof, the Development Approval Holder shall not thereafter be responsible to defend, indemnify, or hold harmless the COUNTY if such failure to notify or cooperate was significantly prejudicial to the Development Approval Holder.
 - B. Nothing contained herein shall prohibit the COUNTY from participating in the defense of any claim, action, or proceeding if both of the following occur:
 - A. COUNTY bears its own attorney's fees and costs; and

- B. COUNTY defends the action in good faith.
 - C. Settlement. The Development Approval Holder shall not be required to pay or perform any settlement unless such Development Approval Holder has approved the settlement. When representing the County, the Development Approval Holder shall not enter into any stipulation or settlement modifying or affecting the interpretation or validity of any of the terms or conditions of the development approval without the prior written consent of the County.
 - D. Successors Bound. "Development Approval Holder" shall include the applicant and the successor'(s) in interest, transferee(s), and assign(s) of the applicant.
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In accordance with Chapter 18.10 of the County Code, minor variations to this permit which do not affect the overall concept, intensity, or density may be approved by the Planning Director at the request of the applicant or staff.

Please note: This permit is applicable to work done within one year from the effective date below, or the date a structure was damaged, by subsequent debris flow. In all cases the permit shall expire three years after the approval date below.

Approval Date: 2/2/2023
Effective Date: 2/2/2023
Expiration date: 2/2/2026

2022-2023 Winter Storms Stream Crossing Permit (231043)

Attachments to Conditions of Approval

NRCS Conservation Practice Standards

Reference: Streambank and Shoreline Protection (Ft.) Code 580

NRCS Conservation Practice Standards

Reference: Condition II.A

Native Riparian Plant Palette

Reference: Condition II.G

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

STREAMBANK AND SHORELINE PROTECTION

(Ft.)
CODE 580

DEFINITION

Treatment(s) used to stabilize and protect banks of streams or constructed channels, and shorelines of lakes, reservoirs, or estuaries.

PURPOSE

- To prevent the loss of land or damage to land uses, or facilities adjacent to the banks of streams or constructed channels, shoreline of lakes, reservoirs, or estuaries including the protection of known historical, archeological, and traditional cultural properties.
- To maintain the flow capacity of streams or channels.
- Reduce the offsite or downstream effects of sediment resulting from bank erosion.
- To improve or enhance the stream corridor for fish and wildlife habitat, aesthetics, recreation.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to streambanks of natural or constructed channels and shorelines of lakes, reservoirs, or estuaries where they are susceptible to erosion. It does not apply to erosion problems on main ocean fronts, beaches or similar areas of complexity.

CRITERIA

General Criteria Applicable to All Purposes

Treatments shall be in accordance with all applicable local, state and federal laws and regulations.

Treatments applied shall seek to avoid adverse effects to endangered, threatened, and candidate species and their habitats, whenever possible.

Treatments applied shall seek to avoid adverse effects to archaeological, historic, structural, and traditional cultural properties, whenever possible.

An assessment of unstable streambank or shoreline sites shall be conducted in sufficient detail to identify the causes contributing to the instability (e.g. livestock access, watershed alterations resulting in significant modifications of discharge or sediment production, in channel modifications such as gravel mining, head cutting, water level fluctuations, boat-generated waves, etc.).

Proposed protective treatments to be applied shall be compatible with improvements being planned or installed by others.

Protective treatments shall be compatible with the bank or shoreline materials, water chemistry, channel or lake hydraulics, and slope characteristics above and below the water line.

End sections of treatment areas shall be adequately anchored to existing treatments, terminate in stable areas, or be otherwise stabilized to prevent flanking of the treatment.

Protective treatments shall be installed that result in stable slopes. Design limitations of the bank or shoreline materials and type of measure installed shall determine steepest permissible slopes.

Designs will provide for protection of installed treatments from overbank flows resulting from upslope runoff and flood return flows.

Internal drainage for bank seepage shall be provided when needed. Geotextiles or properly designed filter bedding shall be incorporated with structural measures where there is the potential for migration of material from behind the measure.

Treatments shall be designed to account for any anticipated ice action, wave action, and fluctuating water levels.

All disturbed areas around protective treatments shall be protected from erosion. Disturbed areas that are not to be cultivated shall be protected as soon as practical after construction.

Vegetation shall be selected that is best suited for the site conditions and achieves the intended purpose(s).

The establishment of vegetation on channel banks and associated areas shall be in accordance with conservation practice standard Channel Bank Vegetation, Code 322.

Additional Criteria for Streambanks

Stream segments to be protected shall be classified according to a system deemed appropriate by the state. Segments that are incised or that contain the 5-year return period (20 percent probability) or greater flows shall be evaluated for further degradation or aggradation.

A site assessment shall be performed to determine if the causes of instability are local (e.g. poor soils, high water table in banks, alignment, obstructions deflecting flows into bank, etc.) or systemic in nature (e.g. aggradation due to increased sediment from the watershed, increased runoff due to urban development in the watershed, degradation due to channel modifications, etc.). The assessment need only be of the extent and detail necessary to provide a basis for design of the bank treatments and reasonable confidence that the treatments will perform adequately for the design life of the measure.

Changes in channel alignment shall not be made without an assessment of both upstream and downstream fluvial geomorphology that evaluates the affects of the proposed alignment. The current and future discharge-sediment regime shall be based on an assessment of the watershed above the proposed channel alignment.

Bank protection treatment shall not be installed in channel systems undergoing rapid and extensive changes in bottom grade and/or alignment unless the treatments are designed to control or accommodate the changes. Bank treatment shall be constructed to a depth at or below the anticipated lowest depth of streambed scour.

If the failure mechanism is a result of the degradation or removal of riparian vegetation, stream corridor restoration shall be implemented, where feasible, (see Additional Criteria for Stream Corridor Improvement) as well as treating the banks.

Toe erosion shall be stabilized by treatments that redirect the stream flow away from the toe or by structural treatments that armor the toe. Additional design guidance is found in the NEH Part 650, Chapter 16, Streambank and Shoreline Protection.

Where toe protection alone is inadequate to stabilize the bank, the upper bank shall be shaped to a stable slope and vegetated, or shall be stabilized with structural or soil-bioengineering treatments.

Channel clearing to remove stumps, fallen trees, debris, and sediment bars shall only be performed when they are causing or could cause unacceptable bank erosion, flow restriction, or damage to structures. Habitat forming elements that provide cover, food, pools, and water turbulence shall be retained or replaced to the extent possible.

Treatments shall be functional and stable for the design flow and sustainable for higher flow conditions.

Treatments shall not induce an increase in natural erosion.

Treatments shall not limit stream flow access to the floodplain.

Where flooding is a concern, the effects of protective treatments shall not increase flow levels above those that existed prior to installation.

Additional Criteria for Shorelines

All revetments, bulkheads or groins are to be no higher than 3 feet (1 meter) above mean high tide, or mean high water in non-tidal areas

Structural shoreline protective treatments shall be keyed to a depth to prevent scour during low water.

For the design of structural treatments, the site characteristics below the waterline shall be evaluated for a minimum of 50 feet (15 meters) horizontal distance from the shoreline measured at the design water surface.

The height of the protection shall be based on the design water surface plus the computed wave height and freeboard. The design water surface in tidal areas shall be mean high tide.

When vegetation is selected as the protective treatment, a temporary breakwater shall be used during establishment when wave run up would damage the vegetation.

Additional Criteria for Stream Corridor Improvement

Stream corridor vegetative components shall be established as necessary for ecosystem functioning and stability. The appropriate composition of vegetative components is a key element in preventing excess long-term channel migration in re-established

stream corridors. The establishment of vegetation on channel banks and associated areas shall be in accordance with conservation practice standard Channel Bank Vegetation, Code 322.

Treatments shall be designed to achieve habitat and population objectives for fish and wildlife species or communities of concern as determined by a site-specific assessment or management plan. Objectives shall be based on the survival and reproductive needs of populations and communities, which include habitat diversity, habitat linkages, daily and seasonal habitat ranges, limiting factors and native plant communities. The type, amount, and distribution of vegetation shall be based on the requirements of the fish and wildlife species or communities of concern to the extent possible.

Treatments shall be designed to meet aesthetic objectives as determined by a site-specific assessment or management plan. Aesthetic objectives shall be based on human needs, including visual quality, noise control, and microclimate control. Construction materials, grading practices, and other site development elements shall be selected and designed to be compatible with adjacent land uses.

Treatments shall be designed to achieve recreation objectives as determined by a site-specific assessment or management plan. Safety requirements shall be based on type of human use and recreation objectives.

CONSIDERATIONS

When designing protective treatments, consider the changes that may occur in the watershed hydrology and sedimentation over the design life of the treatments.

Consider utilizing debris removed from the channel or streambank into the treatment design when it is compatible with the intended purpose.

Use construction materials, grading practices, vegetation, and other site development elements that minimize visual impacts and maintain or complement existing landscape uses such as pedestrian paths, climate controls, buffers, etc. Avoid excessive disturbance and compaction of the site during installation.

Utilize vegetative species that are native and/or compatible with local ecosystems. Avoid introduced or exotic species that could become nuisances. Consider species that have multiple values such as

those suited for biomass, nuts, fruit, browse, nesting, aesthetics and tolerance to locally used herbicides. Avoid species that may be alternate hosts to disease or undesirable pests. Species diversity should be considered to avoid loss of function due to species-specific pests. Species on noxious plant lists should not be used.

Treatments that promote beneficial sediment deposition and the filtering of sediment, sediment-attached, and dissolved substances should be considered.

Consider maintaining or improving the habitat value for fish and wildlife by including treatments that provide aquatic habitat in the treatment design and that may lower or moderate water temperature and improve water quality.

Consider the need to stabilize side channel inlets and outlets and outlets of tributary streams from erosion.

Consider aquatic habitat when selecting the type of toe stabilization.

Consider maximizing adjacent wetland functions and values with the project design and minimize adverse effects to existing wetland functions and values.

Livestock exclusion shall be considered during establishment of vegetative treatments and appropriate grazing practices applied after establishment to maintain plant community integrity. Wildlife may also need to be controlled during establishment of vegetative treatments. Temporary and local population control methods should be used with caution and within state and local regulations.

When appropriate, establish a buffer strip and/or diversion at the top of the bank or shoreline protection zone to help maintain and protect installed treatments, improve their function, filter out sediments, nutrients, and pollutants from runoff, and provide additional wildlife habitat.

Consider conservation and stabilization of archeological, historic, structural and traditional cultural properties when applicable.

Consider safety hazards to boaters, swimmers, or people using the shoreline or streambank when designing treatments.

Protective treatments should be self-sustaining or require minimum maintenance.

Cultural Resources Considerations

NRCS's objective is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice will have any effect on any cultural resources.

Document any specific considerations for cultural resources in the design docket and the Practice Requirements worksheet.

GM 420, Part 401, the California Environmental Handbook and the California Environmental Assessment Worksheet provide guidance on how the NRCS must account for cultural resources. The Field Office Technical Guide, Section II contains general information, with Web sites for additional information.

Endangered Species Considerations

Determine if installation of this practice, along with any others proposed, will have an effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern, or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates that the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Some species are year-round residents in some streams, such as, freshwater shrimp. Other species, such as steelhead and salmon, utilize streams during various seasons. Be aware that critical periods, such as spawning, eggs in gravels and rearing of young may preclude activities in the stream that may directly affect the stream habitat during those periods. For example, there should be no disturbance of stream gravel beds that may have eggs in them. That could include any equipment in the stream or

NRCS, CA
July 2005

even walking in the stream or work upstream that may result in sediment depositing in the gravel beds. Document any special considerations for endangered species in the Practice Requirements Worksheet.

PLANS AND SPECIFICATIONS

Plans and specifications for streambank and shoreline protection shall be prepared for specific field sites and based on this standard and shall describe the requirements for applying the practice to achieve its intended purpose. Plans shall include treatments to minimize erosion and sediment production during construction and provisions necessary to comply with conditions of any environmental agreements, biological opinions or other terms of applicable permits.

OPERATION AND MAINTENANCE

An operation and maintenance plan shall be prepared for use by the owner or others responsible for operating and maintaining the system. The plan shall provide specific instructions for operating and maintaining the system to insure that it functions properly. It shall also provide for periodic inspections and prompt repair or replacement of damaged components or erosion.

REFERENCES

- NEH Part 650, Chapter 16, Streambank and Shoreline Protection,
<http://www.info.usda.gov/CED/ftp/CED/EFH-Ch16.pdf>
- NRCS Conservation Practice Standard, Channel Bank Vegetation, Code 322
- NRCS Technical Note-Engineering-CA-14, September 2003

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE SPECIFICATION

**580 - STREAMBANK AND SHORELINE
PROTECTION**

The work shall consist of furnishing of materials and constructing streambank protection measures to the lines, grades, elevations and dimensions as shown on the drawings or as staked in the field.

I. SITE PREPARATION

Trees and brush on the banks as marked in the field or shown on the drawings shall be removed and disposed of in designated areas. Removal of any trees and brush shall be done in such a manner as to avoid damage to other trees and property. Disposal of trees, brush, and other materials shall be performed to have the least detrimental effect on the environment.

Fallen trees, stumps, debris, minor ledge outcroppings and sand and gravel bars as shown on the drawings shall be removed and disposed of in designated areas.

Clearing and disposal methods shall be in accordance with state and county laws with due regard to the safety of persons and property.

II. BANK PROTECTION MEASURES

The type and extent of bank protection measures shall conform to the structural requirements of the specifications listed on the Practice Requirements sheet.

III. FENCING

Fencing shall be installed at locations and of the materials shown on the drawings.

IV. VEGETATIVE COVER

Unless otherwise specified, a protective cover of vegetation shall be established on the disturbed area. The planting of vegetative materials shall conform to the requirements of Practice Specification 342, Critical Area Planting.

V. SPECIAL MEASURES

Measures and construction methods shall be incorporated as needed and practical that enhance fish and wildlife values. Special attention shall be given to protecting visual resources and maintaining key shade, food and den trees.

VI. CONSTRUCTION OPERATIONS

Construction operations shall be done in such a manner that erosion and air and water pollution are minimized and held within legal limits. The owner, operator, Contractor or other persons will conduct all work and operations in accordance with proper safety codes for the type of construction being performed with due regards to the safety of all persons and property.

The completed job shall be workmanlike and present a good appearance.

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARDS**

For use in compliance with Condition of Approval II.A
Projects will conform with the attached practices from the NRCS on stream crossings and fish passage.

A complete list of NRCS Practice Standards may be found online at:
<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/cp/ncps/>

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
FISH PASSAGE
(Mi.)
CODE 396**

DEFINITION

Modification or removal of barriers that restrict or impede movement or migration of fish or other aquatic organisms.

PURPOSE

Improve or provide upstream and downstream passage for fish and other aquatic organisms.

CONDITIONS WHERE PRACTICE APPLIES

All aquatic habitats where barriers impede passage for fish and other aquatic organisms.

CRITERIA

Planning and Evaluation

Evaluate sites for variations in stage and discharge, tidal influence, hydraulics, geomorphic impacts, sediment transport and continuity, and organic debris movement. Design passage features to account for the known range of variation resulting from this evaluation. Minimize any foreseeable channel plan or profile shifts resulting from the modification or removal of a passage barrier. Plan and locate passage for compatibility with local site conditions and stream geomorphology, to the extent possible. Barrier removal, especially dams and road crossings, can significantly affect wetlands, flooding potential, existing infrastructure, and social and cultural practices. Evaluate and address the full range of impacts when planning or designing barrier removal projects. Avoid locating fishway entrances and exits in areas that will obstruct function, increase harassment or predation, or result in excessive operation and maintenance requirements. In the case of low-water crossings, water quality impacts from vehicular pollutants and erosion caused by tire action can be severe. Where possible, reroute roadways or install hardened instream crossings.

Design Requirements

Design passage to accommodate present and reasonably anticipated changes in watershed conditions. Design passage structures according to known swimming and leaping capabilities of target species or a similar species with comparable swimming abilities. Utilize hydraulic computations to document how designs satisfy the physiological requirements of target organisms. Design and locate features to improve or provide passage for as many different aquatic species and age classes as possible. Design and evaluate passage structures for hydraulic performance and structural integrity at the bankfull and 25-year peak flow events (at a minimum). Replacing or removing an existing instream structure may trigger channel

adjustments (e.g., aggradation and/or degradation) upstream and/or downstream of the work site. Install grade controls or other slope modifications to mitigate adverse physical or ecological consequences (see Channel Stabilization – Code 584 and Grade Stabilization Structure – Code 410). Design passage features to minimize or avoid energy deficits, physical stress, and harm to migratory organisms. Design passage features to minimize or avoid excessive delays during migration periods. Analyze any potentially negative interactions, including hybridization, disease, competition, or predation, between target and aquatic nuisance species when passage is provided above a barrier. If serious consequences are likely, take steps to minimize adverse effects. Provide adequate attraction flow into a passage facility across the full range of discharge during which target species will move.

Fish passage facilities are often associated with water diversions or intakes that injure or kill aquatic species. Prevent fish entrainment, particularly juveniles, into diversions, penstocks, or pumps by installing screens. Use trashracks on culverts only if required or necessary. Ensure that trashracks are self-cleaning and/or easily maintained. Select construction materials and methods that are non-toxic, minimize adverse consequences to aquatic organisms, and are resistant to degradation.

CONSIDERATIONS

Develop or adopt a quantitative method to identify and evaluate passage barriers (see References). Information derived from this method can assist planning and budgeting activities. Consider removing a passage barrier before installing or retrofitting a new facility or structure. Complete or partial barrier removal usually provides better passage conditions, and is more economical than designing, constructing, operating, and maintaining many passage structures. Culverts or bottomless arches that incorporate natural streambed substrates throughout their length are preferred over other culvert configurations for passage purposes. Natural streambeds provide numerous passage and habitat benefits to many life stage requirements for fish and other aquatic organisms compared to man-made surfaces. Where possible, consider the habitat requirements of other aquatic or terrestrial species that may be affected by a passage project. Some passage facilities may improve survival for terrestrial vertebrates by providing safe migration routes under roadways. Consider the amount of habitat upstream and downstream of a barrier to evaluate into project feasibility, cost effectiveness, and/or potential for connecting fragmented habitats. Using a watershed approach whenever possible provides a framework for project planning. Passage projects can affect water management practices such as diversion, power generation, or storage. Strive to balance aquatic organism passage with other water management objectives. Consider upstream and larger watershed issues that may affect passage. Common solutions may include maintaining or restoring adequate instream flow and/or other water quality parameters (e.g., temperature, dissolved oxygen). Floodplain and water development often alter historic river channel pattern and location. Consider bypassing a barrier by restoring streamflow to former, stable natural channels. Passage facilities can assist population recovery and management. Where applicable, consider local, state, or federal brood stock collection and species management initiatives when planning passage features. Consider using self-regulating tidegates in marine environments. These structures can be adjusted to automatically regulate saltwater intrusion into estuaries, and often improve estuarine functions and passage conditions.

Cultural Resources

NRCS policy is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice or associated practices in the plan could have an effect on cultural resources. The National Historic Preservation Act may require consultation with the California State Historic Preservation Officer. <http://www.nrcs.usda.gov/technical/cultural.html> is the primary website for cultural resources information. The California Environmental Handbook and the California Environmental

Assessment Worksheet also provide guidance on how the NRCS must account for cultural resources. The e-Field Office Technical Guide, Section II contains general information, with Web sites for additional information. Document any specific considerations for cultural resources in the design docket and the Practice Requirements worksheet.

PLANS AND SPECIFICATIONS

Provide site-specific plans for this practice. Plans will specify passage structure design, layout, and overall objectives, and include (at a minimum):

- Location map and plan view of site;
- Detailed construction drawings showing site elevations (including headwater and tailwater fluctuations), description and analyses of design flows, and structural operating criteria;
- Construction specifications describing materials, logistics (including erosion control), and timing.
- Guidance for post-construction evaluation and monitoring to assess structural integrity and compliance with design criteria.

OPERATION AND MAINTENANCE

Develop an operation and maintenance plan for all applications of this standard. Within the plan, provide for periodic inspection and corrective action should passage conditions become impaired because a structure is damaged or inoperable. Typical operation and maintenance items include:

- Specify what entity is responsible for the daily operation and maintenance of a passage structure.
- Check a passage structure at regular intervals to ensure it is operating within design criteria.
- Clean trashracks and debris collectors or remove debris accumulations regularly.
- Adjust gates, orifices, valves, or other control devices as needed to regulate flow and maintain a passage structure within operating criteria.
- Periodically check staff gages or other flow metering devices for accuracy.
- Annually inspect passage structures for structural integrity and disrepair.
- Inspect gate and valve seals for damage.
- Replace worn or broken stoplogs, baffles, fins, or other structural components.
- Remove sediment accumulations from within passage structure where applicable.

NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE STANDARD

STREAM CROSSING

(No.)

CODE 578

DEFINITION

A stabilized area or structure constructed across a stream to provide a travel way for people, livestock, equipment, or vehicles.

PURPOSE

- Improve water quality by reducing sediment, nutrient, organic, and inorganic loading of the stream.
- Reduce streambank and streambed erosion.
- Provide crossing for access to another land unit.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all land uses where an ephemeral, intermittent or perennial watercourse

exists and a ford, bridge, or culvert type crossing is desired for livestock, people, and /or equipment.

CRITERIA

General Criteria Applicable to all Purposes.

All federal, state and local requirements shall be addressed in the design. Location and overall design of stream crossings shall be compatible with local conditions and stream geomorphology. Watercourse crossings associated with timber harvesting or anadromous fish streams shall be designed to accommodate the estimated 100 year, 24 hour storm, including debris and sediment. Location. Stream crossings shall be located in areas where the streambed is stable or where grade control can be provided to create a stable condition. Avoid sites where channel grade or alignment changes abruptly, excessive seepage or channel aggradation, degradation or lateral instability is evident, overfalls exist, or large tributaries enter the stream. Wetland areas shall be avoided if at all possible. Crossings shall be installed perpendicular to the direction of flow of the stream. Skews should be avoided. Locate crossings, where possible, out of shady riparian areas to discourage cattle loafing time in the stream. Stream crossings shall provide a way for normal passage of water, fish and other aquatic animals within the channel during all seasons of the year. Access Roads. Where high rates of erosion of the adjacent roadways that slope towards the crossing threaten to deliver an excessive amount of sediment to the drainage, install measures to minimize erosion of the roadside ditch, road surface, and/or cut slopes. Where the stream crossing is installed as part of a roadway, the crossing shall be in accordance with NRCS Conservation Practice Standard, 560, Access Road. Width. The stream crossing shall provide an adequate travel-way width for the intended use. A multi-use stream crossing shall have a travel-way no less than 10 feet wide. "Livestock only" crossings shall be no less than 6 feet wide. Width shall be measured from the upstream end to the downstream end of the stream crossing and shall not include the side slopes. Side Slopes. All cuts and fills for the stream crossing shall have side slopes that are stable for the soil involved. Side slopes of earth cuts or fills shall be no steeper than 2 horizontal to 1 vertical. Rock cuts or fills shall be no steeper than 1.5 horizontal to 1 vertical. Stream Approaches. Approaches to the stream crossing shall blend with existing site conditions where possible, and shall not be steeper than 4 horizontal to 1 vertical. Unless the foundation geology is otherwise acceptable, the approaches shall be stable, have a gradual ascent or descent grade, and be underlain with suitable material, as necessary, to withstand repeated and long term use. The minimum width of the approaches shall be equal to the width of the crossing surface. Surface runoff shall be diverted around the approaches to prevent erosion of the approaches. Roadside ditches shall be directed into a diversion or away from the crossing surface. Where high rates of erosion of the adjacent roadways that slope towards the crossing threaten to deliver an excessive amount of sediment to the drainage, install measures to minimize erosion of the roadside ditch, road surface, and/or cutslopes.

Materials.

Materials selected for stream crossings shall be non-toxic to fish and other aquatic life. Asphalt and other petroleum products shall not be used. Rock shall be chosen to withstand exposure to air, water, freezing and thawing. When rock is used, it shall be sufficiently large and dense so that it is not mobilized by design flood flows. Avoid rock with excessive fines that will impact the fisheries resource.

Fencing.

Areas adjacent to the stream crossing shall be permanently fenced or otherwise excluded as needed to manage livestock access to the crossing. Cross-stream fencing at fords shall be accomplished with breakaway wire, swinging floodgates, hanging electrified chain or other devices to allow the passage of floodwater debris during high flows.

All fencing shall be designed and constructed in accordance with NRCS Conservation Practice Standard 382, Fence.

Vegetation.

All areas to be vegetated shall be planted as soon as practical after construction. When necessary, use of NRCS Conservation Practice Standard 342, Critical Area Planting shall be considered where vegetation is unlikely to become established by natural regeneration, or acceleration of the recovery of vegetation is desired.

Safety.

Evaluate the need for safety measures such as guardrails at culvert or bridge crossing, or water depth signage at ford crossings.

Criteria for Culvert and Bridge Crossings

Culverts or bridges are used where deeper flows preclude a safe low-water crossing, on high-traffic roads, and where year-round access is required. Design of culverts and bridges shall be consistent with sound engineering principles and shall be adequate for the use, type of road, or class of vehicle. Culverts and bridges shall have sufficient capacity to convey the design flow without appreciably altering the stream flow characteristics. Culverts shall be sized to accommodate at least the 10 year, 24 hour storm, and shall be a minimum of 18 inches in diameter and include adequate capacity to pass the anticipated woody debris load. Culverts or bridges shall also have adequate capacity so that the 25 year, 24 hour storm doesn't erode channel beds and energy dissipaters are not needed. Crossings shall be adequately protected so that out-of-bank flows safely bypass without structure or streambank damage, or erosion of the crossing fill. Additional culverts may be used at various elevations to maintain terrace or floodplain hydraulics. The length of the culvert shall be adequate to extend the full width of the crossing, including side slopes. At least one culvert pipe shall be placed on or below grade with the existing stream bottom. Acceptable culvert materials include concrete, corrugated metal, corrugated plastic, new or used high quality steel and other materials approved by the engineer. Acceptable bridge materials include concrete, steel, and wood.

Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened, or Endangered species or their habitat. NRCS' objective is to benefit these species and others of concern, or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicated the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments for installation; or at the request of the landowners, the NRCS may initiate consultation with the U.S. Fish and Wildlife Service, NOAA Fisheries (National Marine Fisheries Service), and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet. Some species are year-round residents in some streams, such as freshwater shrimp. Other species, such as steelhead and salmon, utilize streams during various seasons. Be aware that during critical periods, such as spawning, eggs in gravels, and rearing of young, may preclude activities in the stream that may directly affect the stream habitat during those periods. For example, there should be no disturbance of stream gravel beds that may have eggs in them. That could include any equipment in the stream or even walking in the stream or work upstream that may result in sediment depositing in the gravel beds. Document any special considerations for endangered species in the Practice Requirements Worksheet.

PLANS AND SPECIFICATIONS

Plans and specifications for stream crossings shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

An operation and maintenance plan shall be developed and implemented for the life of the practice. The stream crossing, appurtenances, and associated fence should be inspected after each major storm event, with repairs made as needed.

NATIVE RIPARIAN HABITAT PLANT PALATTE

For use in compliance with Condition of Approval II.G

(Please read notes for plant availability & property and habitat protection)

Scientific Name	Common Name	Form	Notes	Sun
<i>Acer negundo</i>	Box Elder	tree	Max. Height 35 - 66 ft Max. Width 40 ft	Part Shade, Sun
<i>Aer macrophyllum</i>	Big Leaf Maple	tree	Max. Height 30 - 114.8 ft Max. Width 65 ft	Part Shade, Sun
<i>Aesculus californica</i>	Buckeye	tree	Max. Height 13.1 - 39.4 ft Max. Width 40 ft	Part Shade, Sun
<i>Alnus rhombifolia</i>	White Alder	tree	Max. Height 49-82 ft Max. Width 40 - 70 ft	Part Shade, Sun
<i>Alnus rubra</i>	Red Alder	tree	Max. Height 40 - 50 ft	Part Shade, Sun
<i>Platanus racemosa</i>	Sycamore	tree	Max. Height 20 - 115 ft Max. Width 50 ft	Sun
<i>Populus trichocarpa</i>	Black Cottonwood	tree	Max. Height 98 to 164 ft Max. Width 25 - 30 ft	Sun
<i>Achillea millefolim</i>	Yarrow	rhizomatous perennial	Max. Height 1 - 3 ft Max. Width .5 - 1.5 ft	Sun, Part Shade, Full Shade
<i>Acmispon glaber</i>	Deer Weed	bunching perennial	Max. Height 1.6 - 3 ft Max. Width 3 ft	Sun
<i>Agrostis pallens</i>	Dune Bent Grass	rhizomatous perennial	Max. Height 0.33 - 2.3 ft Max. Width 3 ft	Sun, Part Shade, Full Shade
<i>Anisocarpus madioides</i>	Woodland Tarweed	bunching perennial	Max. Height 2.5 ft	Shade
<i>Aquilegia formosa</i>	Columbind	bunching perennial	Max. Height 1.5 - 3 ft Max. Width 1 ft	Sun, Part Shade, Full Shade
<i>Artemisia douglasiana</i>	Mugwort	rhizomatous perennial	Max. Height 3-5 - 3 ft Max. Width 3-5 ft	Sun
<i>Asarum caudatum</i>	Wild Ginger	rhizomatous perennial	Max. Height 1 ft	Full Shade, Part Shade
<i>Baccharis pilularis</i>	Coyote Bush	shrub	Max. Height 1.5 - 10 ft Max. Width 12 ft	Sun, Part Shade
<i>Bromus carinatus</i>	California Brome	bunching perennial	Max. Height 1 - 4 ft Max. Width 4 ft	Sun, Part Shade
<i>Carex barbarae</i>	Santa Barbara Sedge	rhizomatous perennial	Max. Height 1.6 - 3.3 ft Max. Width 3 ft	Part Shade
<i>Carex bolanderi</i>	Bolander's Sedge	bunching perennial	Max. Height 2 ft Max. Width 2 ft	Sun, Part Shade
<i>Carex densa</i>	Dense Sedge	bunching perennial	Max. Height 2 ft Max. Width 2 ft	Sun, Part Shade
<i>Carex globosa</i>	Round-fruited Sedge	bunching perennial	Max. Height 2 ft Max. Width 2 ft	Sun, Part Shade
<i>Carex subbracteata</i>	Small-bracted Sedge	bunching perennial	Max. Height 2 ft Max. Width 2 ft	Sun, Part Shade
<i>Carex tumulicola</i>	Foothill Sedge	bunching perennial	Max. Height 0.5 - 1 ft Max. Width 2 ft	Sun, Part Shade
<i>Ceanothus thyrsiflorus</i>	Wild Lilac	large shrub/small tree	Max. Height 2 - 30 ft Max. Width 2 - 40 ft	Part Shade

NATIVE RIPARIAN HABITAT PLANT PALATTE

For use in compliance with Condition of Approval II.G

(Please read notes for plant availability & property and habitat protection)

Scientific Name	Common Name	Form	Notes	Sun
<i>Clinopodium douglasii</i>	Yerba Buena	layering perennial	Max. Height 3.6 - 7.2 in Max. Width 3 ft	Full Shade, Part Shade
<i>Cornus sericea</i>	Dogwood	colonial shrub	Max. Height 3-20 ft Max. Width 8-12 ft	Sun, Part Shade
<i>Corylus cornuta</i>	Hazelnut	large shrub	Max. Height 5 - 26.3 ft Max. Width 10 ft	Shade, Part Shade
<i>Cyperus eragrostis</i>	Umbrella Sedge	clumping perennial	Max. Height 3 ft Max. Width 30 ft	Sun
<i>Dicentra formosa</i>	Bleeding Heart	rhizomatous perennial	Max. Height 0.7 - 1.6 ft Max. Width 3 ft	Sun, Part Shade, Shade
<i>Elymus glaucus</i>	Blue Wild Rye	bunching perennial	Max. Height 4 - 5 ft Max. Width 5 ft	Part Shade, Sun
<i>Epilobium canum</i>	California Fuschia	rhizomatous perennial	Max. Height 0.25 - 1.5 ft Max. Width 2-3 ft	Sun
<i>Euonymus occidentalis</i>	Burning Bush	shrub	Max. Height 6.6 - 20 ft Max. Width 10 - 20 ft	Shade, Part Shade
<i>Euthamia occidentalis</i>	Western Goldenrod	rhizomatous perennial	Max. Height 3.5 - 7 ft	Sun
<i>Fragaria vesca</i>	Wood Strawberry	stoloniferous perennial	Max. Height 0.1 - 1 ft Max. Width 3 ft	Sun, Part Shade
<i>Frangula californica</i>	Coffeeberry	large shrub/small tree	Max. Height 6 - 15 ft Max. Width 5- 15 ft	Sun, Part Shade
<i>Heracleum maximum</i>	Cow Parsnip	bunching perennial	Max. Height 4-8 ft	Part Shade
<i>Heteromeles arbutifolia</i>	Toyon	large shrub/small tree	Max. Height 6 - 30 ft Max. Width 10- 15 ft	Sun
<i>Heuchera micrantha</i>	Small-flowered Alum-rod	bunching perennial	Max. Height 1 - 3 ft Max. Width 1 ft	Full Shade, Part Shade
<i>Holodiscus discolor</i>	Oceanspray	shrub	Max. Height 3 - 16.4 ft Max. Width 10 - 15 ft	Shade, Part Shade
<i>Iris douglasiana</i>	Douglas' Iris	bunching perennial	Max. Height 0.6 - 2.6 ft Max. Width 2 - 4 ft	Sun, Part Shade, Full Shade
<i>Iris fernaldii</i>	Fernalds Iris	bunching perennial	Max. Height 1.3 ft	Shade, Part Shade
<i>Juncus patens</i>	Grey Rush	bunching perennial	Max. Height 1 - 3 ft Max. Width 3 ft	Sun
<i>Lonicera hispidula</i>	Hairy Honeysuckle	vine, groundcover	Max. Height 4 ft Max. Width 8 ft	Part Shade
<i>Maianthemum racemosum</i>	False Solomon's Seal	rhizomatous perennial	Max. Height 1.6 - 3 ft	Part Shade
<i>Maianthemum stellatum</i>	Slim Solomon's Seal	rhizomatous perennial	Max. Height 2.5 ft	Full Shade, Part Shade
<i>Mimulus aurantiacus</i>	Sticky Monkeyflower	small shrub	Max. Height 4 - 5 ft Max. Width 5 ft	Part Shade, Sun
<i>Monardella villosa subsp. v.</i>	Coyote Mint	bunching perennial	Max. Height 2 ft Max. Width 3 ft	Sun, Part Shade

NATIVE RIPARIAN HABITAT PLANT PALATTE

For use in compliance with Condition of Approval II.G

(Please read notes for plant availability & property and habitat protection)

Scientific Name	Common Name	Form	Notes	Sun
<i>Morella californica</i>	Wax Myrtle	large shrub/small tree	Max. Height 6 - 30 ft Max. Width 20 ft	Part Shade, Sun
<i>Oenothera elata</i>	Evening Primrose	self-seeding biennial	Max. Height 5 ft Max. Width 3 ft	Part Shade, Sun
<i>Oxalis organa</i>	Redwood Sorel	rhizomatous perennial	Max. Height 0.16 - 1.3 ft	Part Shade
<i>Petasites frigidus var. palmatus</i>	Western Sweet Coltsfoot	rhizomatous perennial	Max. Height 2 ft	Shade, Part Shade
<i>Polypodium californicum</i>	California Polypody	rhizomatous fern	Max. Height 1.5 ft Max. Width 3 ft	Full Shade, Part Shade
<i>Polypodium calirhiza</i>	Nested Polypody	rhizomatous fern	Max. Height 1-1.5 ft	Full Shade, Part Shade
<i>Polypodium glycyrrhiza</i>	Licorice Fern	rhizomatous fern	Max. Height 1 ft Max. Width 1-2 ft	Full Shade, Part Shade
<i>Polystichum munitum</i>	Sword Fern	bunching fern	Max. Height 1.6 - 5.9 ft Max. Width 2 - 3 ft	Full Shade
<i>Prosartes hookeri</i>	Hooker's Fairy Bells	bunching perennial	Max. Height 2.6 - 3.3 ft	Part Shade
<i>Ribes menziesii var. m.</i>	Canyon Gooseberry	shrub	Max. Height 9.8 ft	Part Shade
<i>Ribes sanguineum var. glutinosum</i>	Pink-flowering Currant	large shrub	Max. Height 13 ft Max. Width 7 ft	Sun, Part Shade
<i>Rosa californica</i>	California Rose	rhizomatous perennial	Max. Height 6-10 ft Max. Width 6-10 ft	Sun
<i>Rosa gymnocarpa</i>	Wood Rose	bunching perennial	Max. Height 3 - 6.6 ft Max. Width 6-9 ft	Sun, Part Shade, Full Shade
<i>Rubus parviflorus</i>	Thimbleberry	rhizomatous perennial	Max. Height 4 - 8.2 ft	Part Shade
<i>Rubus ursinus</i>	California Blackberry	layering perennial	Max. Height 2-5 ft Max. Width 6-8 ft	Sun, Part Shade, Full Shade
<i>Salix exigua var. hindsiana</i>	Hind's Willow	colonial shrub	Max. Height 15-20 ft Max. Width 15-20 ft	Sun, Part Shade
<i>Salix laevigata</i>	Red Willow	large shrub/tree	Max. Height 25-50 ft Max. Width 15-35 ft	Sun, Part Shade
<i>Salix lasiandra var. lasiandra</i>	Shining Willow	large shrub/tree	Max. Height 3-30 ft Max. Width 3-9 ft	Sun, Part Shade
<i>Salix lasiolepis</i>	Arroyo Willow	large shrub/tree	Max. Height 3-5 ft Max. Width 3-7 ft	Sun, Part Shade
<i>Salix scouleriana</i>	Scouler's Willow	large shrub/tree	Max. Height 12 ft Max. Width 30 ft	Sun, Part Shade
<i>Salix sitchensis</i>	Sitka Willow	large shrub/tree	Max. Height 3-25 ft Max. Width 3-25 ft	Sun, Part Shade
<i>Salvia spathacea</i>	Hummingbird Sage	rhizomatous perennial	Max. Height 1 - 3 ft Max. Width 3 ft	Full Shade, Part Shade
<i>Sambucus nigra</i>	Blue Elderberry	large shrub/small tree	Max. Height 13.1 - 30 ft Max. Width 10-20 ft	Part Shade, Sun

NATIVE RIPARIAN HABITAT PLANT PALATTE

For use in compliance with Condition of Approval II.G

(Please read notes for plant availability & property and habitat protection)

Scientific Name	Common Name	Form	Notes	Sun
<i>Scrophularia californica</i>	Bee Plant	rhizomatous perennial	Max. Height 2 - 4 ft Max. Width 6 - 12 ft	Part Shade
<i>Stachys bullata</i>	Hedge Nettle	rhizomatous perennial	Max. Height 1.3 - 2.6 ft	Shade, Part Shade
<i>Struthiopteris spicant</i>	Deer Fern	bunching fern	Max. Height 1-3 ft Max. Width 1 - 3 ft	Full Shade, Part Shade
<i>Symphoricarpos albus var. laevigatus</i>	Snowberry	shrub	Max. Height 4-6 ft Max. Width 8-12 ft	Shade, Part Shade
<i>Symphotrichum chilense</i>	California Aster	rhizomatous perennial	Max. Height 1.3 - 3.3 ft	Part Shade, Sun
<i>Tellima grandiflora</i>	Fringe Cups	bunching perennial	Max. Height 1.3 - 3 ft Max. Width 2 ft	Shade, Part Shade
<i>Tiarella trifoliata var. unifoliata</i>	Sugar Scoop	rhizomatous perennial	Max. Height 5.9 - 8.4 in	Shade, Part Shade
<i>Vaccinium ovatum</i>	Huckleberry	shrub	Max. Height 1.6 - 8 ft Max. Width 15 ft	Part Shade, Sun
<i>Verbena lasiostachys var. l.</i>	California Vervain	bunching perennial	Max. Height 2.6 ft	Sun
<i>Woodwardia fimbriata</i>	Giant Chain Fern	bunching fern	Max. Height 4 - 6 ft Max. Width 4 - 6 ft	Full Shade, Part Shade

PLANT AVAILABILITY, PROPERTY & HABITAT PROTECTION:

- After a fire, revegetating riparian areas with native plants can prevent erosion and restore habitat
- Consider consulting with a native plant expert from the area such as Central Coast Wilds, UC Santa Cruz Arboretum, Rana Creek or Grassroots Ecology
- Riparian habitats should be restored with local native plant nursery stock and should ideally be watershed specific to maintain genetic integrity
- Consider using species that are consistent with the guidelines of defensible space