

National Park Service

Marin County Community Development Agency



Wetland and Creek Restoration at Big Lagoon, Muir Beach, Marin County

Record of Decision
November 2008



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U. S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

RECORD OF DECISION

WETLAND AND CREEK RESTORATION AT BIG LAGOON, MUIR BEACH
FINAL ENVIRONMENTAL IMPACT STATEMENT

Golden Gate National Recreation Area
Marin County, California

INTRODUCTION

Pursuant to §102 (2) (c) of the National Environmental Policy Act of 1969 (P.L. 91-190, as amended), and the regulations promulgated by the Council on Environmental Quality (at 40 CFR 1505.2), the Department of Interior, National Park Service has prepared this Record of Decision regarding the Wetland and Creek Restoration at Big Lagoon Final Environmental Impact Statement / Environmental Impact Report (Final EIS/EIR) for Golden Gate National Recreation Area (GGNRA). Included is a description of background of the project, a statement of the decision made, synopses of other alternatives considered, a description of the environmentally preferred alternative, the basis for the decision, findings on impairment of park resources and values, measures to minimize or avoid environmental harm, and an overview of public involvement and agency consultation in the decision-making process.

DECISION (Selected Action)

The NPS will adopt and implement actions described as the Agency Preferred in the Final EIS/EIR (December 2007); this course of action combines elements of several alternatives. In addition, minor modifications are incorporated as a result of final consultation with partner agencies. The approved course of action is summarized as follows:

Area Restoration

Interim Flood Reduction Measures. Interim flood reduction measures consist of excavating the Redwood Creek channel from a maximum of about 400 feet upstream of the Pacific Way Bridge to about 100 feet downstream of the bridge. Actions may be performed once, or repeated on a more limited basis if needed. Interim actions will include removing log jams in the project area only if they are shown to be obstructing flood flows or contributing to sediment aggradation that is worsening flooding or the risk of channel avulsion. These measures will be performed during the interim period prior to implementation of the Restoration and Bridge Alternatives, which may not be completed until 2010 or 2011.

Relocation of Redwood Creek Channel. The Redwood Creek channel from the upstream project boundary to approximately 100 feet downstream of Pacific Way will generally be relocated to the topographically lowest portion of the valley; because this low point is very close to the Pelican Inn, the new channel will be located approximately 150 feet from the Pelican Inn driveway at Pacific Way. Most of the existing channel upstream of Pacific Way will not be filled to create a backwater channel for use by salmonids and to increase flood storage capacity.

Construction of New Drainage Swale and Upper Pasture Modifications. A drainage swale will be constructed downstream of Pacific Way between the realigned creek channel and the eastern project boundary. Fencing around an equestrian ring on the southwestern side of the access road will be removed, and the area will be revegetated with seasonal wetland vegetation.

Backbeach Lagoon Enhancement, Channel Realignment, and Dune Restoration. Excavation will be done in the intermittently tidal lagoon along its landward side to expand its potential natural variation. Also, large woody debris (LWD) will be installed in the lagoon or at its edge to enhance habitat for juvenile steelhead and salmon. Finally, dune enhancement will occur through the possible natural lowering of the water table, combined with wind activity to develop dunes from newly dry (hence, erodible) sands. Fencing or other means will be used to restrict public access to dune restoration areas, and revegetation of native dune vegetation may be implemented to improve dune formation and quality. The removal of most fill shoreward of the parking lot where kikuyu grass occurs will be scraped about 1 foot deep, creating additional wetlands in the short-run and, possibly converting to dunes in the long-run with the build-up of wind-blown sand. Fill may be newly placed on a small portion of the area immediately adjacent to the reconfigured parking lot to function as a picnic area.

Removal of Levee Road. The 1,300 foot-long levee road will be removed to allow lateral channel migration and to reconnect Redwood Creek to the floodplain. An existing backwater channel will be lengthened to the northwest along the current route of the levee road. The area adjacent to this new backwater may be graded to an elevation slightly deeper than the existing grade to expand available floodplain habitat during base and peak winter flows.

Invasive Species Removal. Removal of invasive non-native plant species will occur both during the construction phase and throughout the project lifetime. In particular, Cape ivy, Himalayan blackberry, non-native invasive perennial grasses, such as kikuyu grass, Harding grass, and tall fescue, and other non-natives will be removed from various locations at the project site. Non-native species outside the project boundary that will be likely to spread to the project site will also be targeted for removal.

Removal of Tavern Remnants. Remnants of the Muir Beach Tavern between the parking lot and the mouth of Redwood Creek/inboard end of the tidal lagoon (southwest portion of the project site), will be removed including a buried retaining wall and concrete sidewalks. The tavern chimney will remain in place.

Removal and Relocation of Utility Lines. Removal and relocation of water, phone, and electric lines along the levee road and/or near Pacific Way will be done. Existing AT&T utility boxes will be relocated, and a decommissioned well pump adjacent to the levee road and associated above-ground power lines across Green Gulch pasture will be removed.

Removal of Concrete Channels and Revetment. Gabions and other channel armoring upstream of the existing footbridge will be removed to allow the restored channel to migrate more naturally. In addition, concrete channels along Green Gulch Creek and the unnamed tributary in the project area will be removed, as will concrete weir structure controlling flows between the existing emergent wetlands and Redwood Creek channel and the culvert from Green Gulch Creek under the levee road to Redwood Creek.

Modifications to Green Gulch Field 7. The windrow of Monterey cypress trees on the southwest edge of the field will be removed. Fencing around the perimeter of Field 7 will be adjusted to reflect the new project boundaries. An existing horse shelter will be relocated in the new boundary of Field 7.

Application of Traditional Ecological Knowledge. A traditional ecological knowledge study will be prepared in consultation with the Federated Indians of Graton Rancheria to compile and analyze the archaeological, ethnographic, and ethnohistoric data available to inform the restoration design, revegetation, and interpretation of the site.

Removal of Lower End of Existing Parking Lot and Picnic Area. The 90 feet at the southeast end of the existing parking lot, including the picnic area, to improve hydraulic conveyance of the creek will be removed. Minor parking lot modifications are described under the selected Public Access Approach and Minor Changes to the Selected Action.

Mosquito Management. Information will be provided to visitors and residents on how to reduce exposure to mosquitoes (e.g., wearing long sleeved shirts). Monitoring for larval mosquitoes will occur when surface water is present. Should numbers be present at levels sufficient to pose public health risks, the Park's IPM coordinator will treat ponded areas (using least-toxic controls). In the long term, colonization of the created wetland habitat by predatory insects should assist in reducing the risk posed by mosquitoes.

Public Access

Pedestrian Access from Hwy 1. A pedestrian trail, accessible by persons with disabilities, will be constructed along Pacific Way from Hwy 1 to the beach parking lot/drop-off. The portion of the trail closest to the parking lot will be separated from the road by up to about a 5 foot-wide buffer, and could also be grade-separated from the road by approximately 1 foot.

Pedestrian Access to Beach. The pedestrian boardwalk and bridge crossing from the new parking lot to the beach will be relocated to a location where its affects on channel function are minimized.

Interpretive Displays. Interpretive displays will be installed at the parking lot, and at the intersection of the Coastal Trail and Green Gulch Trail. In addition, an interpretive blind/overlook for bird watching could be constructed.

New Emergency Access Route. The existing road along the eastern edge of the site will be upgraded to serve as emergency access route from Pacific Way to the southern project boundary. This route will replace the levee road for access to the Coastal Trail and Coyote Ridge. The road will remain unpaved and the existing alignment will not be altered, but vegetation that has grown over the edges will be removed to extend width of the road to 11 feet to accommodate emergency access vehicles. A bridge crossing at the southern end of the Green Gulch pasture will be improved as necessary to facilitate vehicle passage.

Interpretation. Interpretive facilities will be provided during construction, including interpretive signage and possible kiosks located at strategic locations. Interpretation will also be an on-going activity at the site into the future.

Redwood Creek Restoration

The Creek Restoration Approach (Alternative 2) will relocate approximately 2,500 linear feet of Redwood Creek to the topographically lowest portion of the valley, while maintaining a habitat mix similar to current conditions. Creek relocation and restoration will be designed and graded to remove existing hydraulic constraints and minimize the need for ongoing maintenance. The new channel will include low sloping banks slightly higher than the adjacent floodplain to simulate the natural depositional levees that will occur in this reach. These low berms upstream of Pacific Way will accommodate bankfull flows, maintain the low flow channel, and support riparian vegetation, thus increasing sediment transport and channel sustainability. Downstream of Pacific Way, the channel will be designed to accommodate more frequent out-of-bank flows of at least a 1-year frequency to create frequent floodplain habitat for salmonids. Most of the existing primary channel of Redwood Creek upstream of Pacific Way will not be backfilled in order to retain its function as backwater habitat. Several other backwater features

downstream of Pacific Way will also remain unfilled, and new backwaters will be excavated and connected to the new channel. The area adjacent to the backwaters will be graded to expand available floodplain habitat during base and peak winter flows.

Two areas will be excavated to create emergent wetland habitat. One emergent wetland area will be in the upper pasture, and the other emergent wetland area will be adjacent to the Green Gulch tributaries, but outside the boundaries of existing cattail habitat. The excavated wetland areas will have gradual slopes to provide suitable habitat conditions for the CRLF under the expected range of groundwater levels. The two tributaries from Green Gulch will be realigned and allowed to dissipate into the newly excavated wetland, mirroring historic conditions in which the Green Gulch drainage was not connected to the main channel. Concrete lining in the southern-most Green Gulch drainage channel will be removed (complete details are described in the Final EIS/EIR at p.2-16).

Public Parking: 175 Cars Rotated Parallel to PacificWay

The existing 175-car parking lot will be replaced by a 175-car parking lot that will be rotated parallel to Pacific Way (Alternative B4). The lot will include a new turn-off from Pacific Way and stacking room for cars between the entrance and the first parking stall. The distance of the parking lot from the creek bank would exceed 350 feet. The Selected Public Access Approach has been slightly modified, as described below.

Bridge Option: 250 Foot-Long Bridge with Highest Road

The Selected Option for a new Pacific Way Bridge is an approximately 250 foot-long bridge with a raised road at either end (Alternative BR4). This alternative would be the longest bridge, and would span the entire available riparian zone and floodplain from the Pelican Inn on the north to the existing bridge on the south. This bridge would have the highest deck of all the alternatives, between 16.25 and 18 feet NGVD, compared to the elevation of Hwy 1 at about 16.5 NGVD (i.e., the bridge would be between 0.25 feet lower and 1.5 feet higher than Hwy 1). For purposes of analysis, two foot-wide piers, placed at approximately 40-foot intervals, would be used to support the span and allow for channel migration.

MINOR CHANGES INCORPORATED INTO THE SELECTED ACTION

During ongoing formal Endangered Species Act (ESA) Section 7 consultation with the National Marine Fisheries Service (NMFS) following issuance of the Final EIS/EIR, GGNRA agreed to add conservation measures and design guidelines to the project to further reduce potential for impacts to federally listed salmonid species and their habitat. These changes are minor. Furthermore, they do not cause any new impacts not analyzed in the Final EIS/EIR. These modifications are described below along with an updated impact discussion for relevant impact topics where appropriate.

Preferred Public Access Alternative (B4): The parking lot design for Alternative B4 will be modified to be longer and narrower than the version shown on Figure 2-24 of the Final EIS/EIR. This change is required by NMFS to further reduce the parking lot's intrusion into the floodplain and obstruction to high flows and sediment transport. The outer lane (furthest from Pacific Way) of the parking lot shown on Figure 2-24 will be eliminated, including the parking spaces on either side of the lane. Parking spaces will be regained by elongating the parking lot. Instead of a rectangular design about 310 feet long and 230 feet wide, as shown on Figure 2-24, the parking lot would be longer and narrower, with final dimensions to be determined during the design phase. This modified version of the parking lot will occupy about the same square footage as the version shown on Figure 2-24. The location of the new entrance to the parking lot will be determined during final design. There will be no change in the parking capacity of the redesigned lot. The revised version will still have stacking room for vehicles

waiting for parking spaces, although the number of stacking spaces could be reduced by about 50% from 15 cars to about 7 or 8 cars. The new parking lot will have vegetated swales, and there will be a vegetated buffer zone between Pacific Way and the new portion of the parking lot. A picnic area and new restroom facilities will still be designed to occur adjacent to the parking lot, while also meeting criteria to maintain an outer rounded edge of the total footprint of the parking lot/picnic area. A new trail along Pacific Way will still be designed around the outer edge of the parking lot. These changes would result in minor impact changes to the following impact topics:

- Impact WP-P1: Greater than 100' stream setback depending on the final design of the parking lot and picnic area. This would incrementally improve the water flow conveyance and floodplain storage than described in the Final EIS.
- VEG-P3: This change will result in loss of 1.35 acres (originally estimated in Final EIS as 1.18 acres) of riparian habitat north of the existing parking lot along Pacific Way and .26 acres (originally estimated in Final EIS as .5 acres) of loss of the remainder of the parking lot and picnic area.
- VEG-P6: The Final EIS describes two pines lining Pacific Way being removed. This change may result in an additional two pines being removed from this area, although during final design these trees may be retained for aesthetic value.
- VEG-P8: The amount of jurisdictional wetlands may be reduced slightly, although the quantity of this reduction will not be known until final designs have been completed.
- REC-P2: Although it was originally estimated that the B4 parking lot would accommodate stacking space for 15 cars, this change may reduce the stacking space by up to half. However, during final design other traffic relief features will be considered.
- REC-P5: It is estimated that the stacking may be reduced by up to half that estimated in the Final EIS. Less stacking space may result in less patience by visitors who are waiting for a parking space to become available. Although the Final EIS estimates that overflow visitors impatient to wait for a parking space may result in visitors parking illegally in the Muir Beach community or Pelican Inn, the reduction in stacking space would only negligibly exacerbate this condition.
- TC-P7: Due to the loss of some stacking space, more cars may be queuing along Pacific Way during summer peak visitation season.

Lagoon Water Surface Elevation (WSE): Seasonal spring and summer water surface elevations of the intermittent tidal lagoon will be managed during project implementation and for a subsequent period to be determined in consultation with NMFS. The water surface elevations of the lagoon will be managed after salmonid smolts have migrated out of the lagoon to the ocean in the spring. NMFS intends for this action to extend the seasonal duration and ponded water depth for good quality summer rearing habitat conditions for juvenile steelhead and coho salmon in the lagoon and the upstream reaches. To create these lagoon habitat conditions, native beach materials will be placed at the lagoon outlet to maintain a lagoon channel outlet that will not be easily breached. The exact timing of this action will be determined in consultation with NMFS and will be dependent on the seasonal geophysical processes contributing to lagoon formation.

Construction Sequence of New Channel Alignment: The portion of the new creek alignment through the Green Gulch pasture will be constructed two years in advance of fully diverting creek flows to it from the existing channel. When this creek reach is excavated, large and small woody debris will be placed in it, and a mixed palette of riparian vegetation will be planted. The purpose of this sequencing is to allow the new channel and its riparian cover to become established prior to abandoning the existing channel, thereby reducing potential impacts on salmonids. In the interim two-year period prior to full diversion of creek flows, this new reach would function as backwater habitat to the main channel. In addition, about 0.25 m of gravel and cobble will be placed in the new channel alignment upstream of Pacific Way. Native gravel will be used where possible. As is already planned, large woody debris will be incorporated into the new channel designs.

Elimination of Proposed Channel Relocation between the Footbridge and Tidal Lagoon: A 60-meter reach of Redwood Creek downstream of the beach footbridge had originally been proposed for relocation towards the beach, where it could become more mobile and responsive to changing conditions. However, due to the altered configuration of this reach after storm events in December 2005 and the substantial improvement in salmonid habitat conditions in this reach, it will not be relocated. This will eliminate the need to relocate salmonids in this reach during construction and maintain good habitat, thereby minimizing effects on salmonid populations during construction. The channel has already scoured into a subsurface sand layer, indicating it has already achieved the desired mobility.

Designs for Wetlands and Critical Habitat: Restoration designs will conform to federal guidelines and will specifically consider characteristics of substrates, organic matter, impervious soil layers, and groundwater interactions.

OTHER ALTERNATIVES CONSIDERED

No Action

Under the No Action Alternative, Redwood Creek would remain in its current alignment, and no large-scale physical modifications of the site would occur. Pacific Way road and bridge would remain unchanged in size and design and would continue to serve as the primary access route to the parking lot, which would also remain unchanged at its current location, as well as for residences along Pacific Way and Lagoon Drive. The No Action Alternative would allow for the continued periodic flooding of Pacific Way during storm events, resulting in the need for emergency intervention to prevent prolonged road closures. Periodic maintenance, including dredging, would continue to be needed to remove sediment and fallen trees from Redwood Creek, although its implementation would be hindered by the difficulty in obtaining permits from regulatory agencies for such actions. Channel avulsion of Redwood Creek (i.e., sudden relocation of the channel alignment during a large storm) would be likely under this alternative because the existing channel, in its confined condition, continues to aggrade (i.e., build up with sediment) in response to elevated sediment delivery from the watershed. Active seasonal management of the culvert and flashboards in the lower Green Gulch pasture would continue to be necessary to maintain ponded surface water for the CRLF.

Restoration Alternatives

In addition to the preferred Creek Restoration approach, two other restoration alternatives were analyzed:

- *Creek and Small Lagoon Restoration:* This restoration approach proposed to combine riparian restoration components with restoration of open water and wetland habitats. Specifically, two open-water lagoons would be created, one on either side of the new channel. The two small lagoons would be backwaters, connected to the creek near the downstream end of each lagoon. The banks of the lagoons would have varied slopes to favor a variety of habitats. The lagoons would maintain a minimum water depth of 3–4 feet year-round.
- *Large Lagoon Restoration:* This restoration approach proposed to create a periodically brackish open-water habitat similar to historic (1853) conditions, modified to reflect existing constraints of Pacific Way and private property. This approach would involve the creation of a large lagoon with fringing wetlands extending to the edge of the valley immediately landward of Muir Beach. The lagoon would be excavated with gentle side slopes to encourage colonization of emergent wetland vegetation. Like the small lagoons under Alternative 3, the large lagoon would maintain a minimum water depth of 3–4 feet year-round.

Public Access Alternatives

Public access alternative BR4 was the Selected Action. Other public access options considered were:

- *50 Cars at Beach* (Alt. B1) - . This alternative proposed to construct a 50-space parking lot at the beach at the site of the existing parking lot.
- *145 Cars at Beach* (Alt. B2) – This alternative proposed to retain the same footprint as the existing parking lot, but the lower 90 feet would be removed to accommodate a maximum of 145 vehicles.
- *175 Cars at Beach* (Alt. B3) – This alternative proposed to accommodate a maximum of 175 vehicles, the same number as the existing parking lot. The lot would be about the same size as the existing parking lot and would be pulled back from the creek about 180 feet.
- *200 Cars at Beach* (Alt. B5) – This alternative proposed the largest parking lot of all the alternatives, with a maximum of 200 vehicle spaces.
- *118 Cars at Alder Grove plus 14 Disabled-Accessible* (Alt. C) – This alternative proposed a new parking lot would be constructed at Alder Grove along Hwy 1, north of Pacific Way. This parking lot would accommodate a maximum of 118 vehicles. Pedestrians would walk the 0.5 mile from the lot to the beach on a new trail through the alder grove that would be developed as part of this alternative. Additionally, an area within the footprint of the existing parking lot at the beach would accommodate 14 parking spaces for persons with disabilities and a drop-off/turnaround. The parking lot would be generally visible from Hwy 1 through a 25 foot–deep screen of trees.

Bridge Alternatives

The 250 ft. bridge alternative (Alt. BR4) was the Selected Action. Other options considered were:

- *50 foot–Long Bridge with a Raised Road* (Alt. BR1) – The shortest bridge alternative analyzed, this bridge alternative spans the 35 foot–wide channel with a deck at 16.5 feet NGVD. To provide vehicular access to the deck that would have a similar level of flood protection as the bridge, the elevation of the north and south approaches would be raised. At the lowest point of the road, the elevation gain would be up to about 5 feet to 15.5 feet NGVD. The bridge would be free-span and would not need supporting piers.
- *50 foot–Long Bridge with a Low-Road* (Alt. BR2) – This bridge alternative to BR1 but the deck height is lower at approximately 15 feet NGVD (similar to the existing bridge) and would not require extensive elevation changes for the approach. The bridge would be free-span and would not need supporting piers. The existing road on each side of the bridge would remain at its current elevation.
- *150 foot–Long Bridge with Raised Road* - (Alt. BR3) - This proposed bridge would be longer than Alternatives BR1 and BR2. It proposed to span both the new 35 foot–wide channel and areas of riparian habitat and floodplain on either side of the channel. The bridge span would provide for approximately the same available floodplain passage as the existing condition, which is currently defined by the area between the Pelican Inn fill pad and a fill pad for AT&T utility boxes, which together eliminate about 200 feet of floodplain width. For purposes of analysis, it is assumed that 2 foot–wide piers, placed at approximately 40-foot intervals, would be used to support the span and allow for channel migration. The bridge height would be about 16.25 NGVD. The road approach north and south of the bridge would be raised to a maximum of about 14.5 NGVD to provide a similar level of flood protection as the bridge. The raised road approach would begin at Hwy 1 and be about 2 feet higher than the current entrance to the Pelican Inn.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

As disclosed in the Final EIS/EIR, the “environmentally preferred” alternative is the combination of Restoration Alternative 2 (Creek Restoration), Public Access Alternative B4 (a 175-car parking lot at the beach rotated parallel to Pacific Way, with minor refinements as noted above), Bridge Alternative BR4 (a 250 foot–long bridge with a raised road at each end), disposal of fill materials at the Unused Reservoir, and composting of appropriate materials on NPS property at the Upper Banducci Field. Rationale for this determination are summarized as follows:

Restoration Alternative 2: This environmentally preferred approach achieves similar long-term benefits with respect to ecological value and visitor/resident experience; however, construction will have a smaller footprint, will be of shorter duration than either Restoration Alternatives 3 or 4, and would require less haulage of fill off-site. Less haulage of fill reduce impacts to the physical environment, biological resources, cultural resources, and social resources.

Public Access Alternative B4 and Bridge Alternative BR4: These environmentally preferred approaches have superior benefits related to long-term hydraulic and sediment transport processes, which have been determined to be more beneficial to the long-term protection of habitats at the site. Specifically, Public Access B4 has superior geophysical and long-term ecological benefits related to hydraulic capacity under large storm events, improved sediment transport to the beach and nearshore environment, and improved flood protection than the other access alternatives. It also does not have the same potential for reduced visitor experience, and community and traffic effects related to reduced parking lot capacity. It also avoids the adverse effects to aesthetics and biological resource of the larger lot and the remote lot. The environmentally preferred bridge alternative (BR4) has similar construction related effects as the other bridge alternatives; however, the longer span would reduce upstream flooding to the greatest extent and will allow the greatest level of all-weather access. In summary, BR4 and B4 in combination provide the greatest level of natural stream function by allowing adequate room for natural hydrological processes such as channel migration to reestablish, which in turn will improve salmonid habitat. This combination of project features (Restoration Alternative 2, Public Access Alternative B4, and Bridge Alternative BR4) is most consistent with the NPS mission, offers the best combination of project benefits, including factors related to both the project's purpose and need and its impacts.

MEASURES TO MINIMIZE HARM

This section summarizes the actions that will be implemented to minimize or lessen the impacts associated with implementing the project. Also summarized are terms and conditions imposed by agencies that have regulatory oversight of certain aspects or resources of the project. A full description of all the measures to minimize harm is attached (Attachment A: Measures to Minimize Harm).

Water Quality

- WQ-MM-1: Obtain Coverage Under the General Construction Permit and Implement Best Management Practices
- WQ-MM-2: Implement Spill Prevention and Control Plan
- WQ-MM-3: Implement Turbidity Monitoring and Response Plan
- WQ-MM-4: Implement Water Quality Monitoring and Response Plan

Air Quality

- AIR-MM-1: Implement All Applicable BAAQMD Dust Control Measures
- AIR-MM-2: Reduce NO_x Emissions from Off- Road Diesel-Powered Equipment.
- AIR-MM-3: Limit the Daily Number of Fill Disposal Trips

Vegetation Communities

- VEG-MM-1: Conduct Follow-Up Weed Control and Revegetation Activities to Establish Appropriate Native Plant Species

Wildlife

- WLD-MM-1: Preconstruction Surveys and Possible Installation of Nest Boxes
- WLD-MM-2: Conduct Preconstruction Bird Surveys

- WLD-MM-3: Limit Construction Access Routes and Equipment Staging Areas and Conduct Preconstruction Surveys for CRLF in All Suitable Habitat That Will Be Disturbed by Construction
- WLD-MM-4: Augment CRLF Breeding Habitat
- WLD-MM-5: Implement Monitoring and Contingency Measures for CRLF
- WLD-MM-6: Reintroduce California Red-Legged Frog to Supplement Existing Population On Site
- WLD-MM-7: Implement Measures to Protect CRLF from Temporary Saltwater Intrusion
- WLD-MM-8: Implement Measures to Protect Bat Populations
- WLD-MM-9: Implement Measures to Prevent Increases in Corvid Populations

Fish

- FISH-MM-1: Riparian Shade Mitigation and Monitoring.
- FISH-MM-2: Optimization of Winter Rearing Habitat.
- FISH-MM-3: Avoidance and Monitoring of High Sound Pressure Levels during Pile-Driving Activities.

Cultural Resources

- CR-MM-1: Cultural Resources Education, Archaeological Monitoring, and Discovery Measures
 - Cultural Resources Education for Workers:
 - Archaeological Monitoring
 - Discovery of Archaeological Resources During Construction
- CR-MM-2: Educate the Workers Conducting the Harding Grass Removal and Have an Archaeological Monitor in the Vicinity of the Fan Site
- CR-MM-3: Limit Compaction Methods Above the Recorded Deposit; Consult with NPS, the County, and FIGR; and Clarify Site Disposition During the Design Process

Recreation

- REC-MM-1: Construction Exclusion Areas
- REC-MM-2: Horse and Equestrian Safety Measures

Traffic Control

- TC-MM-1: Construction Traffic Management Plan
 - Develop and Implement a Traffic Control Plan

Public Safety and Human Health

- PS-MM-1: Employ Sustainable Construction Practices
- PS-MM-2: Maintain Utility Services
- HS-MM-1: Stop Work and Implement Hazardous Materials Investigation/Remediation

Noise

- NZ-MM-1: Employ Noise-Reducing Construction Practices
- NZ-MM-2: Prepare a Noise Control Plan
- NZ-MM-3: Disseminate Essential Information to Residences and Implement a Complaint/Response Tracking Program

PUBLIC INVOLVEMENT AND AGENCY COORDINATION

Described below were the primary opportunities for the public to review and comment on the project. Overall the conservation planning effort complied with both NEPA and California Environmental Quality Act (CEQA) for public involvement, including: project scoping, preliminary drafting of alternatives and mitigation strategies, public review of environmental documents, and public hearings.

Project Scoping: The scoping process was formally initiated under NEPA on December 3, 2002 with the publication of a Notice of Intent in the Federal Register. The Notice identified goals for the project, and public scoping meetings were held on October 22, October 29, and November 2, 2002, with a site visit for the public held on November 9, 2002, to solicit input on the project and its potential impacts. Comments were provided by a number of agencies, organizations, and members of the public.

Between December 2002 and December 2004, 17 public meetings were held, as well as a variety of site visits and meetings with representatives of various agencies. Following these meetings, a Big Lagoon Working Group consisting of interested individuals, agencies, and organizations was formed to help develop project alternatives. The working group convened regularly in meetings that were open to the public. In addition, two alternatives workshops were held for the public on September 30 and October 4, 2003. The results of those workshops, as well as a more detailed summary of the scoping process, are presented in an Alternatives Public Workshops Report prepared in 2004.

During scoping, interested parties included local Muir Beach residents, local/state/federal environmental and regulatory agencies, and Green Gulch Farm. The issues brought up most consistently by local residents regarded the need to reduce flooding to their homes, but also the desire for the project to retain area's natural beauty and environmental qualities. Environmental organizations and regulatory agencies expressed concern that the project does not harm biological assets and physical processes of the area, including three federally listed species.

Public Review of the Draft EIS/EIR: The Draft EIS was also released as an Environmental Impact Report (EIR) for compliance under CEQA, and the combined document is referred to as a Draft EIS/EIR. The Draft EIS/EIR was circulated to local, state, and federal agencies and to interested organizations and individuals to review and comment on the report. Proactive public outreach included notices in local newspapers, over 4,000 notification flyers to the GGNRA mailing list, a press release (and local media coverage), and posting on the park's website. Over 100 paper copies were delivered to interested public, organizations and local libraries, and regulatory agencies. The opportunity for public review extended for a 75-day period, beginning on December 22, 2006, the date of EPA's notice of filing published in the Federal Register (the NPS's Notice of Availability was published on December 18). Twenty-six (26) people commented on the Draft EIS.

Following release of the Draft EIS/EIR, NPS and Marin County hosted public meetings on January 18 and 31, 2007 to present the project to interested parties and respond to questions. The meetings were well attended with close to 100 people attending. NPS and Marin County also conducted a public hearing at the Marin County Planning Commission in San Rafael, California, on February 26, 2007, to receive comments on the draft document. An interagency meeting was also held on February 17, 2007 to review the Draft EIS/EIR. On August 3, 2007 the EPA formally announced their favorable "LO" rating of the Draft EIS in the Federal Register, endorsing the initiative to restore ecosystem functions and values.

Public Release of the Final EIS/EIR: Over 100 copies of the Final EIS/EIR were distributed to federal, state, and local agencies and to interested groups and individuals. Public outreach included public notices in local newspapers, over 4,000 notification flyers to the GGNRA mailing list, a press release, and posting on the park's website. Pursuant to NEPA, the "no action" 30 days waiting period was initiated with the EPA's notice of filing published in the Federal Register on December 21, 2007 (the NPS's

Notice of Availability was published on December 20). Consistent with County environmental review procedures, also beginning on the date of EPA's notice, the Final EIS/EIR was circulated for a 45-day period concluding on February 4, 2008. Following release of the Final EIS/EIR, the NPS and the County held one public meeting to present the project to interested parties and to answer questions about the project. This meeting was held on January 22, 2008 at the Bay Model in Sausalito, CA. Approximately 20 people attended the public meeting. A total of 10 comment letters were received on the Final EIS/EIR. Consistent with County environmental review procedures, comments on the Final EIS/EIR (and responses) are hereby adopted as an Amendment to the Final EIS/EIR.

Additional public review and comment occurred during the CEQA lead agency's (Marin County) certification process. This process includes the county's Planning Commission making a recommendation to the County Board of Supervisors to certify the EIR as adequate and complete in compliance with CEQA. On March 24, 2008 Marin County Planning Commission conducted a public meeting and voted without objection to recommend that the Board of Supervisors certify the Final EIS/EIR. On May 13, 2008 the Marin County Board of Supervisors conducted a public meeting to consider certification of the Final EIS and to receive testimony on the adequacy of the Final EIS/EIR for certification. On this same date the Marin County Board of Supervisors certified the Final EIS/EIR (Resolution 2008-53) with a unanimous vote.

AGENCY CONSULTS AND COMPLIANCE STATUS

The following describes the project's compliance status with relevant federal and state laws, regulations, and executive orders.

Endangered Species Act of 1973 As Amended (PL 93-205, 87 Stat. 884, 16 USC §1531 et seq.)

Species occurring on the project site that are listed as threatened under the federal ESA include coho salmon, steelhead, and California red-legged frog. One other listed species has been observed at the project site, California brown pelican (federally endangered). The NPS has engaged in informal and formal consultation with the USFWS and NMFS throughout in the project planning process. Upon request, the USFWS sent the NPS a species list for the Big Lagoon site. NMFS sent a list of threatened and endangered fish under its jurisdiction that may be affected by the project. These lists include plant and animal species that may occur within, or be affected by activities within, the project area. A summary of consultation by agency is as follows:

USFWS: As part of Formal Consultation with the USFWS, NPS sent a Biological Assessment (BA) to the USFWS On December 11, 2007. Based on the BA, on February 5, 2008 the USFWS issued a Biological Opinion (BO) to the NPS. In the BO, USFWS concurred with NPS's determination that the project is not likely to adversely affect or have no effect on the threatened west coast population of the western snowy plover (*Charadrius alexandrinus nivosus*), threatened northern spotted owl (*Strix occidentalis caurina*), endangered tidewater goby (*Eucyclogobius newberryi*), endangered California freshwater shrimp (*Syncaris pacifica*), endangered Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*), endangered California brown pelican (*Pelcanus occidentalis californicus*), endangered Sonoma alopercurus (*Alopecurus aequalis var. sonomensis*), endangered beach layia (*Layia carnosa*), endangered clover lupine (*Lupinus tidestromii*), and the endangered Sonoma spineflower (*Chorizanthe valida*) due to the avoidance measures that will be implemented as part of the project, their biology and ecology, and/or a lack of suitable habitat for these listed species in the action area. Although the BO concurred that the project is not likely to jeopardize the continued existence of this species, because excavation and earthmoving activities associated with the project have the potential to kill or injure the California red-legged frogs, the BO authorized Incidental Take in the form of death or injury of one individual and harm, capture and harassment of all California red-legged frogs inhabiting the site. The BO outlines non-discretionary actions the NPS must perform to minimize the potential for harm, harassment, injury, or

mortality of the California red-legged frog. These actions are described above in the “Measures to Minimize Harm” section.

NMFS: As part of Formal Consultation, NPS sent a Biological Assessment (BA) to NMFS in February 2008. During formal consultation NMFS requested that the NPS incorporate modifications to the project actions. These actions are detailed above in the section titled, “Minor Changes to the Selected Action”. Based on the BA, on October 15, 2008 the NMFS issued a Biological Opinion (BO) to the NPS. In the BO, NMFS concluded that the project is not likely to jeopardize the continued existence of listed salmonid species or adversely modify designated critical habitat. However, NMFS anticipates take of listed salmonid species to occur as a result of project implementation. Because take of listed species is expected to occur, NMFS included an incidental take statement in their BO. The BO outlines non-discretionary actions the NPS must perform to minimize the potential for harm, harassment, injury, or mortality of endangered Central California Coast coho salmon (*Oncorhynchus kisutch*) and threatened Central California Coast steelhead (*Oncorhynchus mykiss*). These actions are described above in the “Measures to Minimize Harm” section.

The Magnuson-Stevens Fishery Conservation and Management Act As Amended by the Sustainable Fisheries Act of 1996 (PL 104-267)

The NPS consulted with NMFS on all proposed actions permitted, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH). NMFS provided recommendations to conserve EFH for activities that would adversely affect EFH. Redwood Creek is designated as EFH for coho salmon (*Oncorhynchus kisutch*). NMFS, in their October 15, 2008 Biological Opinion concluded that the project will only result in temporary or minimal adverse effects to EFH, and thus provided no EFH conservation recommendations.

Section 404 of the Clean Water Act (33 USC 1344) and Section 10 of the Rivers and Harbors Act of 1899 33 USC 403)

All proposed work and/or structures extending bayward or seaward of the line on shore reached by (1) mean high water in tidal water, or (2) ordinary high water in nontidal waters designated as navigable water of the United States must be authorized by USACE pursuant to §10 of the Rivers and Harbors Act. §404 of the Clean Water Act regulates discharge of dredged and fill material into waters of the United States, including wetlands. In May 2006 NPS submitted a revised jurisdictional delineation to USACE, and the delineation was confirmed by the USACE in March 2008. A permit application was submitted to USACE in February 2008 that outlined activities that would discharge into waters of the U.S. Authorizing a permit is considered a discretionary action subject to NEPA, as such the USACE solicited public review and comment on the proposed permit actions. Under §401 of the Clean Water Act, the 404 permit must be Certified by the California State Regional Water Quality Review Board. Both the USACE and the RWQCB are supportive of this restoration project, and have committed to finalizing the permitting process after more detailed construction drawings have been completed post ROD.

Archeological Resources Protection Act of 1979 (PL96-95, 93 Stat. 712, 16 USC §470aa et seq. and 43CFR 7, subparts A and B, 36 CFR)

This act secures the protection of archeological resources on public or American Indian lands and fosters increased cooperation and exchange of information among the private, government, and professional community in order to facilitate the enforcement and education of present and future generations. It regulates excavation and collection on public and American Indian lands, and requires notification of American Indian tribes who may consider a site of religious or cultural importance prior to issuing a permit. The NPS will meet its obligations under this act in all activities undertaken as part of the Big Lagoon restoration project.

National Historic Preservation Act of 1966 As Amended (PL 89-665, 80 Stat. 915, 16 USC §470 et seq. and 36 CFR 18, 60, 61, 63, 68, 79, 800) 36 CFR 800 is the set of regulations through which Section 106 is implemented.

§106 of the National Historic Preservation Act requires that agencies evaluate potentially historic properties for their eligibility for listing in the National Register of Historic Places and take into account the effects of the undertakings on properties listed in or eligible for listing in the National Register of Historic Places. For the proposed undertaking, in a February 25, 2007 NPS letter sent to SHPO, NPS made a determination that the project will not have an adverse affect on historic properties. In a letter dated April 2, 2008 from SHPO to the NPS, SHPO concurred with NPS's determination.

Native American Graves Protection and Repatriation Act Compliance

The Native American Graves Protection and Repatriation Act (NAGPRA) specifies the procedures that federal agencies must follow when burials of Native American origin are found on federal land (43 CFR, Part 10, Subpart B, Section 10.4). GGNRA has responsibility for complying with NAGPRA for the entire area of potential effect (APE). If human remains of Native American origin are discovered within the APE during archaeological excavation or during construction-related ground disturbing activities, the following provisions will be carefully observed: a) Notify, in writing, the responsible federal agency, and Cease activity in the area of discovery and protect the human remains. Upon notification that human remains have been discovered on federal land, NAGPRA requires that GGNRA will; b) Certify receipt of the notification; c) Take steps to secure and protect the remains; d) Notify the Native American tribes or tribes likely to be culturally affiliated with the discovered human remains within 1 working day; and e) Initiate consultation with the Native American tribe or tribes in accordance with regulations described in 43 CFR, Part 10, Subpart B, Section 10.5. If Native American human remains are encountered during excavation in the APE, work in the vicinity of the remains will halt immediately. The ultimate disposition of the remains will be determined in consultation with Native American representatives.

Executive Order 11988: Floodplain Management

Federal agencies must avoid, to the extent possible, adverse impacts associated with the occupancy and modification of floodplains, and will avoid development in floodplains whenever there is a practical alternative. All actions evaluated in the Final EIS/EIR are consistent with this executive order.

Executive Order 11990: Protection of Wetlands

This executive order established protection of wetlands and riparian systems as the official policy of the federal government. It requires all federal agencies to consider wetland protection as an important part of their policies; to take action to minimize the destruction, loss, or degradation of wetlands; and to preserve and enhance the natural and beneficial values of wetlands. All applicable actions evaluated in the Final EIS/EIR are consistent with this executive order.

Executive Order 13112: Invasive Species

This executive order proscribes the introduction of invasive species and directs federal agencies to not authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species. Actions evaluated in the Final EIS/EIR include measures to prevent introduction and spread of invasive species.

California Coastal Zone Management Act

This act protects coastal environments. While the act transferred regulatory authority to the states and excluded federal installations from the definition of the "coastal zone," it requires that federal actions be consistent with state coastal management plans. Activities taking place within the coastal zone under the definition established by the California Coastal Management Plan require a federal consistency determination. A Consistency Determination (CD) was submitted to the California Coastal Commission in March 2008 for consideration and approval at the Commission's hearing held in Marina Del Rey, California in May 2008. The Commission's Board approved the CD without stipulation on May 9, 2008.

IMPAIRMENT FINDINGS

The NPS has determined that implementation of the Selected Actions described herein will not constitute impairment to park resources and values. This conclusion is based on a thorough analysis of the environmental impacts described in the Final EIS/EIR, with due consideration for the public comments received and applicability of relevant scientific studies, and the professional judgment of the decision-maker guided by the direction in the NPS Management Policies (NPS 2006). Based on analyses in the Final EIS/EIR, all uses that may occur in the park as a result of implementing the Selected Actions are appropriate, and none of the foreseeable impacts are unacceptable. While the project may have some adverse impacts, in most cases, these adverse impacts are no more than moderate. In those cases where impacts are major, they are associated with construction and are temporary in nature and mitigation measures were developed to minimize impact. Overall, the project results in major benefits to park resources and values and would not lead to their impairment. While the plan has described adverse impacts, in all cases these impacts are related to actions that are necessary to preserve and restore park resources and values. Overall, the Selected Actions results in major benefits to park resources and values and it does not result in their impairment.

BASIS FOR DECISION

The decision to implement the Selected Action was based on careful consideration of the alternatives presented, the foreseeable environmental impacts, project's goals and objectives, and public comments received throughout the planning process. The Selected Action best accomplishes NPS policies, the legislated purpose of GGNRA, and the statutory mission of the NPS to provide long-term protection of park resources. The selected action best accomplishes the stated purpose of the project, and best addresses the purpose and conditions of need described in the EIS/EIR.

Consistency with Agency Policy and Land Management Plans

This project has two lead agency sponsors—the County of Marin (California) and NPS. Although it is a joint project, the County and NPS each will play a unique role in the project. The County's role is limited to actions related to improvements to Pacific Way and the Pacific Way Bridge. All other actions are the responsibility of NPS. All components of the project are related and necessary to achieve the overall goals and objectives of the project; for this reason, they have been included as the whole of the project. GGNRA. For both lead agencies the project was analyzed for consistency with their respective land management plans. For NPS, the General Management Plan (GMP) provides the foundation and framework for the management and use of lands and articulates the desired conditions for natural and cultural resources and visitor experiences to best fulfill the park's purpose.

This decision does not constrain nor condition non-NPS actions (a separate CEQA decision will be prepared). However, for Marin County, land use on the portions of the project site not owned by NPS is guided by the County's General Plan, the Marin Countywide Plan (Countywide Plan). Analysis in the Final EIS/EIR found that the selected action is consistent with both lead agencies' land management plans. Furthermore, the Final EIS/EIR analysis conducted a consistency review of NPS's management policies (2006) and found that the selected action is consistent with these policies.

Purpose and Need / Goals and Objectives

The purpose and need for the project is to restore a functional, self-sustaining ecosystem, including wetland, riparian, and aquatic components and to conduct the restoration in a manner that will re-create habitat for sustainable populations of special-status species, reduce flooding on Pacific Way, and provide a compatible visitor experience. The Selected Action promotes a high level of protection of life and property, and greater long- and short-term natural and cultural resource benefits than other alternatives considered. In combination, the selected actions will:

- Restore a functional, self-sustaining ecosystem to the maximum extent of any of the alternatives.
- Support sustainable populations of existing special status species.
- Ensure improved vehicle access for the Muir Beach community.
- Provide a visitor experience that is compatible with ecosystem restoration and historic preservation.
- Have a relatively small construction footprint, relatively short construction duration, and will minimize construction-related impacts such as dust, noise, and the need to haul and dispose of fill.

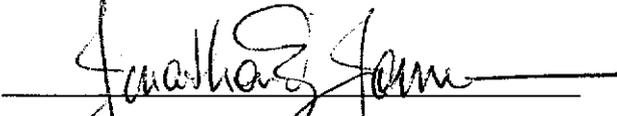
CONCLUSION

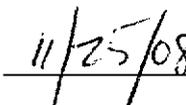
As documented in the Final EIS/EIR, the following key factors support implementation of the Selected Action:

- the environmental impact analyses demonstrate that the Selected Action will have short-term impacts but will ultimately secure long-term benefits for GGNRA's resources;
- the Selected Action will have a high likelihood of achieving the expressed purpose, need, goals and objectives;
- the Selected Action is fully compliant with NPS's mission and policies, GGNRA's management plans, and other pertinent laws and regulations;
- the Selected Action specifies all feasible and prudent measures to minimize environmental harm;
- the Selected Action is a reasonable and rational effort supported by park partners, researchers, local communities, other government regulatory agencies, and environmental organizations; and
- undertaking the Selected Action will not result in impairment of park resources and values.

I hereby approve the Selected Action for implementation by Golden Gate National Recreation Area.

Approved:


Jonathan B. Jarvis, Regional Director
Pacific West Region, National Park Service


Date

Attachment A

Measures to Minimize Harm

Water Quality	
<u>WQ-MM-1</u>	<p><u>Obtain Coverage Under the General Construction Permit and Implement Best Management Practices</u></p> <p>Prior to onset of construction activities, NPS, the County, and/or its contractors will obtain coverage under the NPDES General Construction Permit. As part of this process, a SWPPP will be prepared and BMPs identified in the SWPPP will be implemented to control soil erosion, in-channel turbidity, and discharges of other construction-related contaminants such as fuel, oil, grease, paint, concrete, and other hazardous materials. Routine monitoring and inspection of BMPs will be conducted to ensure that the quality of stormwater discharges is in compliance with the permit. Flows in the creek or wetland areas will be diverted around the active construction area, and ground-disturbing activities will be limited to the dry weather season to the extent possible. The SWPPP will be prepared prior to the start of construction activities and prescribe site-specific implementation of BMPs to avoid and reduce waste discharges. The SWPPP will include BMPs that address the following general categories of erosion and runoff control:</p> <ul style="list-style-type: none"> ▪ conduct construction activities during the dry season to the extent possible; ▪ conduct all construction work in accordance with site specific construction plans that minimize the potential for increased delivery of sediment to surface waters; ▪ tracking control measures to reduce sediments that leave the construction site on vehicle or equipment tires; ▪ cover all loads to reduce the potential for loss of materials during transit; ▪ ensure that concentrated runoff and concentrated discharge are diverted away from channel banks; ▪ minimize removal of and damage to native vegetation; ▪ install temporary construction fencing to identify all areas that require clearing, grading, revegetation, or recontouring, and minimize the extent of areas to be cleared, graded, recontoured, or otherwise disturbed; ▪ grade and stabilize or cover spoils sites to minimize erosion and sediment input to surface waters and generation of fugitive dust; routinely water dust-prone construction areas to reduce generation of fugitive dust and to control migration of sediment outside of the project area on construction vehicle tread; ▪ as appropriate, implement erosion and sediment control measures to prevent sediment from entering surface waters, including the use of willow wattles to trap sediments and erosion control blankets on slopes and channel banks; ▪ avoid operating equipment in flowing water by using temporary cofferdams and water diversion systems to divert flow around the channel and bank construction area; and monitor water quality of dewatering operations and hazardous material delivery, storage, and emergency spill response requirements. <p>As a performance standard, the BMPs shall represent the best available technology that is economically achievable and shall be selected to achieve maximum sediment removal. The contractor will select specific BMPs from each area, with NPS/County approval, on a</p>

	<p>site-specific basis. The construction contractor will ensure that the BMPs are implemented as appropriate throughout the duration of construction and will be responsible for subcontractor compliance with the SWPPP requirements. In the case of ground-disturbing activities that are of less than one acre in extent (e.g., possibly the routine maintenance dredging activities), coverage under the General Construction Permit will not be required, but NPS, the County and/or its contractors shall still be required to adhere to the BMPs and standards identified above.</p>
<p><u>WQ-MM-2</u></p>	<p><u><i>Implement Spill Prevention and Control Plan</i></u></p> <p>As part of the obtaining coverage under the NPDES General Construction Permit, the NPS and/or its contractors will develop and implement a spill prevention and control program to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction of the project. The plan will be completed before any construction activities begin and shall include provisions for preventing, containing, and reporting spills of hazardous materials. If a spill is reportable, the contractor's superintendent would notify the Marin County Department of Emergency Services and the California Department of Toxic Substances Control (DTSC).</p>
<p><u>WQ-MM-3</u></p>	<p><u><i>Implement Turbidity Monitoring and Response Plan</i></u></p> <p>NPS or its contractors will develop and implement a plan to monitor turbidity resulting from the restoration project. This will involve review of existing monitoring data and collection of turbidity measurements within the project site prior to the restoration activity, both during and immediately following storm events as well as during the dry season, to establish background turbidity levels. Following construction of the project, turbidity monitoring will be conducted as outlined above for up to 5 years, or until monitoring results indicate that turbidity has returned to background levels. Should elevated turbidity persist after the first three years following construction, specific areas on the restored site that are contributing to elevated sediment inputs will be identified, and these locations will be repaired by installing erosion control BMPs. As a performance standard, the BMPs shall represent the best available technology that is economically achievable and shall be selected to achieve maximum sediment removal.</p>
<p><u>WQ-MM-4</u></p>	<p><u><i>Implement Water Quality Monitoring and Response Plan</i></u></p> <p>NPS or its contractors will develop and implement a plan to monitor water quality resulting from the restoration project. Previously collected water quality measurements within the project site and upstream in the watershed will be used as the basis for baseline conditions. Similar sampling methodologies will be implemented after project construction, such as collection of samples immediately following storm events and during the dry season. Parameters to be evaluated will include, at a minimum, temperature, pH, DO, total dissolved solids/electrical conductivity, total suspended solids, nutrients, and bacteria. On the basis of this sampling, water quality conditions will be evaluated to determine whether applicable water quality standards have been exceeded or beneficial uses have been impaired for a sustained period (i.e., greater than 2 years) as a result of the restoration project, such as through excessive nuisance plant growth in the restored lagoons resulting in alterations of water temperature, low DO levels, and excessive nutrient levels. Hydrologic conditions and nutrient cycling at the project site will differ from existing conditions and thus require time to adjust to a new naturally functioning condition. Consequently, the thresholds may change to reflect different stages of project establishment. Violations of water quality standards or impairments of</p>

	beneficial uses as a result of the project shall be ameliorated through implementation of BMPs or other adaptive management actions as needed. Should long-term monitoring (greater than 5 years of consecutive data) indicate that the project is not having an adverse effect on water quality, monitoring may be ceased.
Air Quality	
<u>AIR-MM-1</u>	<u>Implement All Applicable BAAQMD Dust Control Measures</u> NPS shall implement all feasible and practicable control measures for construction emissions of PM10 as required by BAAQMD (Bay Area Air Quality Management District 1999). These control measures are summarized in Table 4.3.1.4-20 in the Final EIS.
<u>AIR-MM-2</u>	<u>Reduce NOx Emissions from Off- Road Diesel-Powered Equipment.</u> The project shall prepare and implement provide a plan, for approval by the lead agency and BAAQMD, a plan demonstrating that the heavy-duty (> 50 horsepower) off-road vehicles to be used in the construction project (including owned, leased, and subcontractor vehicles) will achieve a project-wide fleet average 20 percent NOx reduction and 45% particulate reduction compared to the most recent ARB fleet average at time of construction. Acceptable options for reducing emissions may include, but are not limited to: <ul style="list-style-type: none"> ▪ use of late model engines, ▪ low-emission diesel products, ▪ alternative fuels (e.g., aqueous diesel fuel), ▪ engine retrofit technology (e.g., diesel particulate filters, diesel oxidationcatalysts, lean-NOx catalysts), after-treatment products, and/or ▪ other options as they become available.
<u>AIR-MM-3</u>	<u>Limit the Daily Number of Fill Disposal Trips</u> Total PM10 emissions shall be maintained below the 80 ppd standard. One method for achieving this would be to limit the number of fill disposal trips to 46 round-trips per day (based on 10-CY trucks).
Vegetation Communities	
<u>VEG-MM-1</u>	<u>Conduct Follow-Up Weed Control and Revegetation Activities to Establish Appropriate Native Plant Species.</u> Prior to placing fill in any of the proposed locations, NPS will prepare a weed control and revegetation plan appropriate for the particular fill site to avoid establishing new populations of weeds that threaten native habitats. The plan will identify specific target species for control and methods of control. The plan will also identify appropriate native species to be revegetated onto the fill site and propagules to be used, such as either nursery-grown plant stock or native seed.
Wildlife	
<u>WLD-MM-1</u>	<u>Preconstruction Surveys and Possible Installation of Nest Boxes</u> Before riparian areas are cleared, a count of mature trees with available cavities should be

	<p>taken to roughly estimate the number of cavities being lost. If the survey and an analysis by a qualified individual demonstrates that inadequate habitat remains for cavity nesters, nest boxes will be erected to match, as closely as possible, the lost value. Should the findings of the surveys result in the conclusion that nest boxes are not necessary, this mitigation measure would not be needed.</p>
<p><u>WLD-MM-2</u></p>	<p><u>Conduct Preconstruction Bird Surveys</u></p> <p>Any vegetation (i.e., trees, shrub, grasses) that is not removed within the timing window specified in the GGNRA Standard Operating Procedures for vegetation cutting and removal will be surveyed for active bird nest(s) prior to its removal inside of the nesting period. This will include all vegetation to be disturbed and any areas that will be used to access the site or stage equipment. If active nests are found, no restoration related activities will occur within 50 feet of the nest while it is active.</p>
<p><u>WLD-MM-3</u></p>	<p><u>Limit Construction Access Routes and Equipment Staging Areas and Conduct Preconstruction Surveys for CRLF in All Suitable Habitat That Will Be Disturbed by Construction</u></p> <p>Construction access routes and equipment staging areas will be limited within the study area to the extent feasible. These access routes and all other areas to be disturbed by restoration activities will be surveyed for the presence of CRLF prior to the beginning of construction activities. These preconstruction surveys will be conducted within 48 hours of the beginning of ground disturbance and will be planned with a “one step ahead” approach relative to construction activities. All rodent burrows, leaf litter deeper than 2 inches, or other obvious refugia will be surveyed for the presence of the species. Once it is determined that no individuals are present, exclusion fencing will be erected and maintained around the construction areas to prevent CRLF from entering into the active construction area. The exclusion fence will be about 3.5 feet high and keyed into the subsurface about 6 inches deep. Exclusion fences used around existing frog habitat will be fitted with intermittent one-way entry devices to allow frogs to enter, but not exit, the protected area. These fences will be walked every morning to ensure that no frogs have become “stuck” or entangled during nighttime movements and all amphibians observed during these morning checks will be relocated to the nearest suitable aquatic habitat outside of the construction area. Any CRLF discovered will be relocated at least 1,000 feet from the area of disturbance and released into suitable aquatic habitat by a biologist permitted under the Endangered Species Act Section 10(a)(1)(A).</p>
<p><u>WLD-MM-4</u></p>	<p><u>Augment CRLF Breeding Habitat</u></p> <p>New emergent wetlands will be excavated to provide additional breeding habitat for CRLF. These wetlands will be sized and designed such that they can support a long-term, persistent population of CRLF. Under the action alternatives, since CRLF habitat would already be provided onsite, this additional pond would be provided upstream at the Banducci site prior to construction, and would be supported by groundwater and designed to facilitate successful CRLF breeding. Construction of this new 0.52-acre pond was completed at the Banducci Site in October 2007, and revegetation with native wetland species is currently underway. Reintroduction of CRLF to the Banducci site will be carried out in coordination with USFWS to reestablish a viable breeding population at the Banducci site. Individuals will be relocated from a well-established population in an</p>

	adjacent watershed, rather than from the local population, since it is so small. A strategy will be designed and implemented to ensure that the donor population is not adversely affected, the regional genetic integrity of CRLF is maintained, and that the newly established populations have the best chance to succeed.
<u>WLD-MM-5</u>	<u>Implement Monitoring and Contingency Measures for CRLF</u> CRLF populations and habitat conditions (duration of inundation at breeding site and cover) will be monitored at the Big Lagoon site on an ongoing (annual) basis. CRLF habitat will be monitored for both predators (fish) and to confirm that the existing habitat is occupied by CRLF and/or new habitat is colonized by CRLF. The GGNRA will work with the San Francisco Zen Center to remove all nonnative fish from their lands and within NPS lands. Should fewer than two CRLF be sighted in two consecutive years following construction, NPS will implement WLD-MM-6.
<u>WLD-MM-6</u>	<u>Reintroduce California Red-Legged Frog to Supplement Existing Population On Site</u> Reintroduction of CRLF will be undertaken in coordination with USFWS to reestablish a viable breeding population on the Big Lagoon site. Individuals will be relocated from a well-established population in nearby watersheds. A strategy will be designed and implemented to ensure that the donor population is not adversely affected, the regional genetic integrity of CRLF is maintained, and that the newly established populations have the best chance to succeed.
<u>WLD-MM-7</u>	<u>Implement Measures to Protect CRLF from Temporary Saltwater Intrusion</u> Restoration Alternatives 3 and 4 will be designed to provide areas of upland refuge from saltwater intrusion into aquatic environments. These areas will have low shrub or tree cover sufficient to maintain cool damp soils and leaf litter during all seasons. Established riparian areas can provide this function if such areas are already present adjacent to potential CRLF breeding pools.
<u>WLD-MM-8</u>	<u>Implement Measures to Protect Bat Populations</u> Preconstruction surveys for bat species will be conducted in areas of suitable habitat within the project area. For tree-roosting bats, all potential roost trees that must be removed will be surveyed and identified in the field, and the following procedures will be applied prior to felling: (1) trees will be removed under the warmest possible conditions practical, (2) sections of the exfoliating bark will be peeled off the tree gently to search for any roosting bats underneath, (3) noise and vibrations (e.g., striking the tree base) will be created on the tree itself. When cutting sections of the bole, if any hollows or cavities (such as woodpecker holes) are discovered, a biologist will carefully check for the presence of bats in those areas.
<u>WLD-MM-9</u>	<u>Implement Measures to Prevent Increases in Corvid Populations</u> The site will be supplied with enough trash receptacles to serve average visitor numbers depending on the time of year. Receptacles will be wildlife proof with lids that will default to a closed position. Trash collection will be done at a rate commensurate with the number of visitors in the area. Signage will be placed to educate visitors regarding the

	effect litter can have to wildlife, particularly in a sensitive coastal ecosystem such as Big Lagoon.
Fish	
<u>FISH-MM-1</u>	<p><u>Riparian Shade Mitigation and Monitoring.</u></p> <p>Water temperatures will be monitored at the site through Year 5, postconstruction, to ensure that they remain within the range of acceptable conditions for fish. Should temperatures be found to be outside the acceptable range for fish, NPS may use temporary, artificial means of shading during summer months while riparian vegetation matures. For example, long willow stakes may be tied together to create “rafts” that float on the water surface, thus creating shade and cool pockets of water. The rafts will appear natural and wash downstream on their own, and no on-site management of artificial materials will be needed. Additionally, riparian shade transects will be established to monitor and assess the recovery of riparian vegetation and the shade they provide.</p>
<u>FISH-MM-2</u>	<p><u>Optimization of Winter Rearing Habitat.</u></p> <p>Regardless of which alternative is selected, during the process of design, NPS will ensure that potential winter rearing habitat created by the project provides a net increase in the areal extent of habitat.</p>
<u>FISH-MM-3</u>	<p><u>Avoidance and Monitoring of High Sound Pressure Levels during Pile-Driving Activities.</u></p> <p>All permanent pile-driving activities will be conducted between July 15 and October 15 to avoid the peak migration of adult and juvenile coho salmon. All reasonable measures, including the use of vibratory hammers, dewatering, etc., will be incorporated to ensure that peak underwater SPLs in Redwood Creek remain below 180 dB at a distance of 10 meters from the pile; all temporary and permanent pile-driving activities will be monitored by a qualified fish biologist during the entire project.</p>
Cultural Resources	
<u>CR-MM-1</u>	<p><u>Cultural Resources Education, Archaeological Monitoring, and Discovery Measures</u></p> <p>NPS will conduct the following measures to ensure that there are no impacts to known and/or previously undiscovered cultural resources.</p> <ul style="list-style-type: none"> ▪ <u>Cultural Resources Education for Workers:</u> NPS will provide training to all members of the construction team. Training will involve information regarding what types of cultural materials are likely present in the project area, how to identify cultural materials, and the procedures for contacting the appropriate parties in the event that cultural materials are encountered during construction activities. All construction personnel will be required to participate in the training, and NPS will prepare written guidelines for identification of cultural materials and procedures to follow in case of a discovery or potential discovery. ▪ <u>Archaeological Monitoring:</u> NPS will ensure that there is an archaeological monitor and representative of the Federated Indians of the Graton Rancheria (Coast Miwok)

	<p>within 100 feet of recorded archaeological resources during ground disturbing activities. While the goal of the NPS is to preserve archaeological resources, this mitigation measure would ensure that if additional deposits associated with known sites are discovered, there will be an archaeologist and Native American representative on site to identify and assess the find and impacts immediately and to halt construction. An archaeologist will monitor all ground disturbances during construction to ensure that discoveries of previously unidentified resources are protected until they can be properly recorded and assessed, and management decisions can be made about their treatment. Avoidance in place or no adverse effect from project actions is the preferred approach to all discoveries that are potentially eligible for listing on the NRHP. Consultation with the State Historic Preservation Office will occur for any discoveries made during construction in accordance with 36 CFR 800.13.</p> <p><u>Discovery of Archaeological Resources During Construction:</u> If buried cultural resources such as chipped stone or groundstone, historic debris, building foundations, or human bone are inadvertently discovered during ground disturbing activities, work should stop in that area and within a 100-foot radius of the find until a qualified archaeologist can assess the significance of the find. Inadvertent discoveries will be treated in accordance with 36 CFR 800.13 (Protection of Historic Properties: Post-review discoveries). The archaeological resource will be assessed for its eligibility for listing on the NRHP in consultation with the SHPO and the Federated Indians of Graton Rancheria (if it is an indigenous archaeological site) and a determination of the project effects on the property will be made. If the site will be adversely affected, a treatment plan will also be prepared as needed during the assessment of the site’s significance. Assessment of inadvertent discoveries may require archaeological excavations or archival research to determine resource significance. Treatment plans will fully evaluate avoidance, project redesign, and data recovery alternatives before outlining actions proposed to resolve adverse effects. If human skeletal remains are encountered, protocols under either federal or state law may apply depending on the jurisdiction. Regardless, all work shall stop in the vicinity of the discovery, and the find will be secured and protected in place. The Marin County coroner and Park Archaeologist will both be immediately notified. If a determination finds that the remains are Native American, and that no further coroner investigation of the cause of death is required, the coroner will then be required to contact the NAHC (pursuant to Section 7050.5[c] of the California Health and Safety Code) and the County Coordinator of Indian Affairs. If the remains are on federal land or under federal jurisdiction, they will also be treated in accordance with the Native American Graves Protection and Repatriation Regulations at 43 CFR 10.4 (Inadvertent discoveries). According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052).</p>
<p><u>CR-MM-2</u></p>	<p><u><i>Educate the Workers Conducting the Harding Grass Removal and Have an Archaeological Monitor in the Vicinity of the Fan Site</i></u></p> <p>NPS will provide training for all personnel involved with nonnative species removal to facilitate recognition of potential archaeological materials and to avoid impacts to deposits. In addition, NPS will implement CR-MM-1 and retain an archaeologist to monitor in the vicinity of the Fan Site during Harding grass removal activities.</p>

<p><u>CR-MM-3</u></p>	<p><u>Limit Compaction Methods Above the Recorded Deposit; Consult with NPS, the County, and FIGR; and Clarify Site Disposition During the Design Process</u></p> <p>Compaction of the CA-MRN-674 may occur as a result of public access or bridge action alternatives. NPS will ensure that mechanical subsurface compaction does not occur in the vicinity of recorded deposits associated with CA-MRN-674. Consultation regarding project effects on CA-MRN-674 will be conducted between the National Park Service, the County of Marin, and the Federated Indians of Graton Rancheria as the final design for the bridge and access are in preparation, and may include additional subsurface surveys, possibly conducted as part of geotechnical borings, to clarify the status of CAMRN- 674 under portions of Pacific Way. If this assessment results in a finding of adverse effect, then the National Park Service will consult with the SHPO, in addition to the County of Marin and the Federated Indians of Graton Rancheria, to resolve the adverse effect.</p>
<p>Recreation</p>	
<p><u>REC-MM-1</u></p>	<p><u>Construction Exclusion Areas</u></p> <p>During construction, NPS will ensure that all active construction, staging, and stockpile areas are fenced to render them inaccessible to the public. Fencing will be a minimum of 8 feet high and will consist of chainlink or another equally secure material. To minimize visual intrusiveness of fencing, it will be designed and installed to blend into the surrounds as much as possible. All construction, staging, and stockpile access will be gated and gates will be kept locked except when in use. Signs will be conspicuously posted to inform the public about the need for caution. If it is necessary for construction vehicles or heavy equipment to travel outside the fenced construction area, flaggers, traffic cones and/or high visibility temporary construction fencing will be used to delineate construction equipment travel routes and alert the public to the presence of heavy equipment and/or slow-moving vehicles.</p>
<p><u>REC-MM-2</u></p>	<p><u>Horse and Equestrian Safety Measures</u></p> <p>In addition to, or in combination with, the general informational noticing for the project, NPS will ensure that public notices addressing horse and equestrian safety are posted on the NPS/GGNRA website, at all area equestrian facilities, at trailheads that serve equestrians, and on fencing at active construction sites. Notices will alert the public to the location, nature, and duration of construction activities and the potential for construction noise to frighten horses. Riders will be cautioned regarding the risk of horses shying and/or bolting, the risk of injury, and the risk of horses injuring themselves. Notices will provide information on alternate trail routes and other area equestrian facilities for use during construction, and will include a name, phone number, and e-mail address for an NPS staff member the public can contact with questions or concerns. Website and equestrian facility notices will be posted at least a month prior to construction each year, and will remain up throughout the construction season. Notices at the active construction site will be posted as soon as possible after exclusion fencing (see REC-MM-1) is erected.</p>
<p>Traffic Control</p>	

<p><u>TC-MM-1</u></p>	<p><u>Construction Traffic Management Plan</u></p> <p>As described in Chapter 2, appropriate signage would be placed at the intersection of Pacific Way and Hwy 1 to deter visitors from seeking parking at the beach during construction. Chapter 2 also outlines a communication strategy to keep residents and visitors apprised of the construction at Muir Beach, to help reduce parking demand and traffic conflicts. In addition to these measures, the following will be implemented:</p> <ul style="list-style-type: none">▪ <u>Develop and Implement a Traffic Control Plan:</u> NPS and the County, in coordination with Caltrans, will develop and implement traffic control plan(s) for construction of the project. The plan will reduce the effects of construction on the roadway system in the project area throughout the construction period. Construction contractors will follow the standard construction specifications of affected jurisdictions and obtain the appropriate encroachment permits. The conditions of the encroachment permit will be incorporated into the construction contract and will be enforced by the agency that issues the encroachment permit. The following travel lane widths, speeds, and conditions will be maintained during project construction as much as possible:<ul style="list-style-type: none">• For two-way traffic operations, the minimum width for the traveled way will be 20 feet, or a minimum of a 10-foot traffic lane in each direction.• For one-way operation, the minimum width for the traveled way will be 12 feet where some shoulder exists. In those areas where no shoulder is present, the minimum width for the traffic lanes will be 13 feet.• Any roadway or lane closures will be coordinated with the County and minimized during the morning and evening peak traffic periods.• Traffic control devices will be installed as specified in the California Department of Transportation's <i>Manual of Traffic Controls for Construction and Maintenance Works Zones</i> (California Department of Transportation 1996). Flaggers will be used as necessary for directional traffic controls.• The maneuvers of construction vehicles will not block or restrict the movement of adjacent traffic flows within the construction zone.• Safe pedestrian and bicyclist access will be maintained in or around the construction areas at all times. Construction areas will be secured as required by the applicable jurisdiction to prevent pedestrians and bicyclists from entering the work site. Alternate routes will be provided for bicyclists and pedestrians during sidewalk, bike lane, and recreation trail closures. Notification will be provided to the public of temporary closures of sidewalks, bike lanes, and recreation trails.• As part of the traffic control plan, a detailed construction traffic management plan will be developed to reduce the impacts of construction and employee traffic during construction. The plan will address such issues as employee parking and truck and equipment circulation around the work site. Written notification will be provided to all contractor employees regarding appropriate routes to and from the construction site, and the weight and speed limits on local roads used to access the construction site;• The traffic control plan will clearly identify staging areas, dump sites, operating hours, including the hours during which trucks will be traveling State Routes, project duration, scheduling and phasing. It will also identify the total number of construction vehicles and their respective haul routes, with hauling to be allowed on state routes only during off-peak hours.
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	<ul style="list-style-type: none"> • A notification plan will be developed to notify business and residents in the construction area prior to onset of construction, as well as anyone else who may be affected by project construction. Signs will be posted at the construction site giving the name and telephone number or e-mail address of the NPS or County staff person designated to receive complaints regarding construction traffic. • Access to adjacent development in or near the construction areas will be maintained at all times. Provisions for traffic control will be made to allow primacy for emergency vehicles. During non-construction times, all trenches and other construction features will be covered to allow safe access to adjacent development. • Response times for police, fire, and emergency services could be temporarily affected by the project, thereby increasing the potential for property losses or hazards to human health. Coordination with these agencies will be completed as part of development of the traffic control plan, and these service providers will be notified prior to onset of construction to reduce the potential for property losses and hazards to human health. Priority access will be given to emergency service vehicles on Pacific Way. • Roadway damage, such as potholes, minor fractures, will be repaired, and the overall roadbed will be maintained within the construction areas, to the extent that such damage is caused by project traffic that occurs during the period of hauling operations. Following construction within a particular roadway segment, roadway restoration will take place within six weeks of completion of construction. County Design Guidelines will be adhered to when reconstructing County roads. Agreements on restoration standards will be formalized with the relevant jurisdiction (Marin County Public Works, and/or Caltrans), prior to the issuance of the work authorization permit.
Public Safety	
<p><u>PS-MM-1</u></p>	<p><u>Employ Sustainable Construction Practices</u></p> <p>During the phases of site design, feature design and implementation, the NPS, its engineers and contractors shall implement the following mitigation measures:</p> <ul style="list-style-type: none"> ▪ Minimize job site waste and reuse and recycle demolition and construction debris. Haul full loads, and minimize unnecessary vehicle trips. ▪ Design and engineer the bridge, roads and other structures to an appropriate and effective degree to support the uses they require and avoid over engineering. ▪ Design the bridge, roads and other structures for a 100-year lifespan or longer, and consider the deconstruction and reuse of the items and its materials during the design process. ▪ Minimize the use of resources, and avoid to the highest degree possible the choice of non-renewable, non-reusable materials. ▪ Stage and manage the construction job effectively, and adhere to the highest safety practices.
<p><u>PS-MM-2</u></p>	<p><u>Maintain Utility Services</u></p> <p>A detailed study identifying locations of utilities within the proposed project shall be</p>

	<p>conducted during the design phase of the project. For areas with the potential for adverse impacts to utility services, the NPS or its contractors shall implement the following mitigation measures:</p> <ul style="list-style-type: none"> ▪ Utility excavation or encroachment permits shall be required from the appropriate agencies. The permits include measures to minimize utility disruption. The NPS and its contractors shall comply with permit conditions. Such conditions shall be included in construction contract specifications. ▪ Utility locations shall be verified through a field survey (potholing) and use of the Underground Service Alert services. ▪ Detailed specifications shall be prepared as part of the design plans to include procedures for excavation, support, and fill of areas around utility cables and pipelines. All affected utility services shall be notified of NPS’s construction plans and schedule. Arrangements shall be made with these entities regarding protection, relocation, or temporary disconnection of services. ▪ Residents and businesses in the project area shall be notified of planned utility service disruption 2 to 4 days in advance, in conformance with County and state standards. <p>Disconnected cables and lines shall be reconnected promptly.</p>
<p>Human Health and Safety</p>	
<p><u>HS-MM-1</u></p>	<p><u>Stop Work and Implement Hazardous Materials Investigation/Remediation</u></p> <p>Prior to onset of construction, all construction workers shall be trained in the identification of potentially contaminated soil and/or water, including information on characteristics of potential contamination such as discolored soil, oils or sheens on water, and unusual odors. In the event that hazardous materials are encountered during construction, all construction activities in the area of the discovery will stop, and NPS shall conduct hazardous materials investigations to identify the nature and extent of contamination and evaluate potential impacts on project construction. If necessary, NPS shall implement remediation measures consistent with all applicable local, state, and federal codes and regulations. Construction will not resume until remediation is complete. If waste disposal is necessary, NPS shall ensure that all hazardous materials removed during construction are handled and disposed of by a licensed waste-disposal contractor and transported by a licensed hauler to an appropriately licensed and permitted disposal or recycling facility, in accordance with local, state and federal requirements.</p>
<p>Noise</p>	
<p><u>NZ-MM-1</u></p>	<p><u>Employ Noise-Reducing Construction Practices</u></p> <p>The construction contractor will employ noise-reducing construction practices, including, but not limited to:</p> <ul style="list-style-type: none"> ▪ As much as possible, limiting hours of construction operation to the hours between 8:00 a.m. and 5:00 p.m., Monday through Friday and 10:00 a.m. and 4:00 p.m. on Saturdays, and no construction allowed on Sundays, ▪ Locating equipment as far as practical from noise sensitive uses, ▪ Using sound control devices such as mufflers on equipment, ▪ Using equipment that is quieter than standard equipment, ▪ Prohibiting vehicles and other gas- or diesel-powered equipment from unnecessary warming up, idling, and engine revving,

	<ul style="list-style-type: none"> ▪ Selecting haul routes that affect the fewest number of people, ▪ Using noise-reducing enclosures around stationary noise-generating equipment, ▪ Shield/shroud any impact tools, ▪ Use vibratory pile driving in place of impact pile driving if feasible, and ▪ Pre-drill pile holes.
<p><u>NZ-MM-2</u></p>	<p><u>Prepare a Noise Control Plan</u></p> <p>The construction contractor will prepare a detailed noise control plan based on the construction methods proposed. This plan will identify specific measurements that will be taken to minimize noise impacts, and ensure compliance with the identified noise limits where feasible. The noise control plan will be reviewed and approved by NPS staff before any noise-generating construction activity begins.</p>
<p><u>NZ-MM-3</u></p>	<p><u>Disseminate Essential Information to Residences and Implement a Complaint/Response Tracking Program</u></p> <p>The construction contractor will notify any residences within 1,000 feet of the construction areas of the construction schedule in writing, prior to construction. The construction contractor will designate a noise disturbance coordinator who will be responsible for responding to complaints regarding construction noise. The coordinator will determine the cause of the complaint and will ensure that reasonable measures are implemented to correct the problem. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the written notification of the construction schedule sent to nearby residents.</p>
<p>United States Fish and Wildlife Service</p>	
<p><u>USFWS</u></p>	<p>The following measures are conditions the National Park Service must implement to be in compliance with the Endangered Species Act. These conditions were promulgated under the February 5, 2008 Biological Opinion from the USFWS for this project.</p> <ul style="list-style-type: none"> ▪ The conservation measures in the project shall be implemented as described in the Final EIS/EIR and the Project Description of the Biological Opinion. The conservation measures are listed below and described more fully in the Biological Opinion: <ul style="list-style-type: none"> ○ Limit construction access routes and equipment staging areas and conduct preconstruction surveys for the California red-legged frog in all suitable habitat that will be disturbed by project construction. ○ Within 50 feet of the California red-legged frog habitat, progressive clearing of vegetation will be conducted where necessary for construction by cutting vegetation from the overstory to ground level to allow animals to move out of the work area. ○ California red-legged frog breeding habitat will be augmented by creating a new off-site pond prior to construction, and reintroduction of the frog will be carried out at that site in coordination with the USFWS. ○ California red-legged frog populations and habitat conditions will be monitored at the project site on an on-going basis. ○ The California red-legged frog will be reintroduced to the project site to reestablish a viable breeding population there. Reintroduction will be coordinated with the USFWS.

	<ul style="list-style-type: none"> ▪ If a California red-legged frog(s) are observed in the work areas, a qualified biologist or an individual trained in the biology and ecology of the listed amphibian and designated by the NPS shall capture it and move the animals(s) to an appropriate aquatic or upland location outside of the work area, or, if appropriate, the animal shall be allowed to leave the work area of its own volition. ▪ An education program for the field personnel involved with the project shall be conducted prior to the initiation of ground breaking. The program shall consist of a brief presentation by a person(s) knowledgeable in the California red-legged frog, and other appropriate listed species. The program shall include the following: a description of these species, and their ecology and habitat needs; an explanation of their legal status and their protection under the Act; and an explanation of the measures being taken to avoid or reduce effects to these species during the project. The education may be conducted in an informal manner (e.g., ranger and field personnel in a rural setting). ▪ If requested, during or upon completion of construction activities, the on-site biologist, and/or a representative from the NPS shall accompany Service and California Department of Fish and Game personnel at the project to review project effects to the California red-legged frog and its habitats. ▪ The NPS shall ensure compliance with the Reporting Requirements of the Biological Opinion. ▪ USFWS urges NPS to follow Conservation Recommendations outlined in the Biological Opinion.
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National Marine Fisheries Service (NMFS)

<u>NMFS</u>	<p>The following reasonable and prudent measures are necessary and appropriate to minimize take of Central California Coast coho salmon (<i>Oncorhynchus kisutch</i>) and Central California Coast steelhead (<i>Oncorhynchus mykiss</i>) the National Park Service must implement to be in compliance with the Endangered Species Act. These conditions were promulgated under the October 15, 2008 Biological Opinion from the NMFS for this project. In addition to the non-discretionary actions listed below, NMFS also suggested discretionary conservation recommendations that would minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or develop additional information. These conservation recommendations can be found in NMFS Biological Opinion.</p> <p><u>Reasonable and Prudent Measure 1:</u> Undertake measures to ensure that harm and mortality to listed salmonids resulting from fish relocation and dewatering activities is low when stream flow is diverted around instream construction projects.</p> <ul style="list-style-type: none"> • All screens used on equipment meant to divert flows must be screened in accordance with the NMFS Fish Screening Criteria for Anadromous Salmonids [available at: http://swr.nmfs.noaa.gov/hcd/fishscrn.pdf] and the Addendum for Juvenile Fish Screen Criteria for Pump Intakes [available at: http://swr.nmfs.noaa.gov/hcd/pumpcrit.pdf]. • The applicant 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. GGNRA shall ensure that all 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 NMFS Guidelines for Electrofishing Waters Containing
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<p>Salmonids Listed under the Endangered Species Act [available at: http://www.nwr.noaa.gov/1salmon/salmesa/4ddocs/final4d/electro2000.pdf].</p> <ul style="list-style-type: none">• Prior to construction commencing the applicant shall submit to NMFS for approval a plan for the cofferdams and diversion methods. The plan shall be sent to the NMFS Santa Rosa Area Office, Attention: John McKeon, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528.• A qualified biologist shall monitor the construction site during placement and removal of channel diversions and cofferdams to ensure that any adverse effects to salmonids are minimized. The biologist shall be on site during all dewatering events to ensure that all ESA-listed salmonids are captured, handled, and relocated safely. The biologist shall notify NMFS biologist John McKeon at (707) 575-6069 or john.mckeon@noaa.gov one week prior to capture activities in order to provide an opportunity for NMFS staff to observe the activities.• ESA-listed fish shall be handled with extreme care and kept in water to the maximum extent possible during relocation 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 in which suitable habitat conditions are present to allow for adequate survival of transported fish and fish already present.• If any salmonids are found dead or injured, the biologist shall contact NMFS biologist John McKeon by phone immediately at (707) 575-6069 or NMFS Santa Rosa Area Office at (707) 575-6050. The purpose of the contact is to review the activities resulting in take and to determine if additional protective measures are required. All salmonid mortalities shall be retained, placed in an appropriately-sized sealable plastic bag, labeled with the date and location of collection, fork length measured, and frozen as soon as possible. Frozen samples shall be retained by the biologist until specific instructions are provided by NMFS. The biologist may not transfer biological samples to anyone other than NMFS Santa Rosa Area Office without obtaining prior written approval from the Santa Rosa Area Office, Supervisor of the Protected Resources Division. Any such transfer will be subject to such conditions as NMFS deems appropriate. <p><u>Reasonable and Prudent Measure 2:</u> Undertake measures to minimize harm to listed salmonids resulting from channel and wetland restoration activities and development of infrastructure within the flood plain.</p> <ul style="list-style-type: none">• GGNRA shall ensure that the new channel design meets or exceeds the NMFS guidelines for salmonid passage and exceeds the upstream and downstream fish passage potential of the former channel.• GGNRA shall continuously monitor turbidity levels in the new channel at a minimum of two locations when the new channel is first occupied by full diversion of flows from the existing channel, and from October 15 through June 15 of the subsequent two years. NMFS shall be notified immediately if at any time the turbidity monitoring indicates exposure of salmonids to high levels of turbidity which (as detailed in Newcombe and Jensen, 1996) would be expected to cause changes in migratory behavior, significantly reduced growth rates, or mortality. Turbidity monitoring equipment data will be examined daily during the first two weeks after the initial channel diversion, and at a
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	<p>minimum on a weekly basis during the subsequent two winter seasons.</p> <ul style="list-style-type: none">• Silt curtains deployed to contain the elevated turbidity levels of newly excavated back water channels when connected to the main stream channel shall not be removed until the water in the new excavation has cleared to a minimum clarity of 18 inches as measured by secchi disk.• GGNRA shall notify NMFS Santa Rosa Area Office by letter, stating the project commencement date, at least 14 days prior to implementation. The letter shall be sent to NMFS Santa Rosa Area Office, Attention: Supervisor of Protected Resources Division, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528.• GGNRA shall allow any NMFS employee(s) or any other person(s) designated by NMFS, to accompany field personnel to visit the construction site during activities described in this opinion.• A fisheries 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 harm, injure, or kill salmonids. GGNRA will be responsible for identifying and rectifying these conditions.• Sediment shall be removed from sediment controls once it has reached one-third of the exposed height of the control. Whenever straw bales are used, they shall be staked and dug into the ground 12 centimeters (cm). Catch basins shall be maintained so that no more than 15 cm of sediment depth accumulates within traps or sumps.• Contractors must have a supply of erosion control materials onsite to facilitate a quick response to unanticipated storm events or emergencies.• 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), GGNRA, or their contractor will contain the spill and remove the affected soils.• Road, bridge and parking lot drainage infrastructure shall include drop-in inlets designed to CalTrans Tahoe Valley specifications. This will allow the drainage structures to be fitted with PAH sorbent materials during the first flush of winter rains to minimize contamination of the stream, wetlands and lagoon with toxic substances emitted by vehicle access to the floodplain. Monitoring of infrastructure runoff during first flush events shall occur for five years after project completion to insure the efficacy of the toxics containment system.• No stop work penalties for work stoppage resulting from Federal ESA issues shall be included or agreed to in construction contracts. NMFS is including this term and condition to avoid providing financial disincentives to minimizing and avoiding take of ESA-listed salmonids. <p><u>Reasonable and Prudent Measure 3:</u> Prepare and submit a report to document effects of construction and relocation activities, project minimization and performance enhancement measures, and overall project performance. GGNRA shall provide a written report to NMFS by January 15 following completion of construction each year and for a period of 5 years following construction completion. The report shall be submitted to NMFS Santa Rosa Area Office Attention: Supervisor of Protected Resources Division, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528. The report shall contain, at a minimum, the following applicable (depending on year) information:</p>
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	<ul style="list-style-type: none"> • <i>Construction related activities</i> – The report shall include the dates construction began and was completed; photographs taken before, during, and after the activity from photo reference points; a discussion of any unanticipated effects or unanticipated levels of effects on salmonids and their habitat, a description of any and all measures taken to minimize those unanticipated effects and a statement as to whether or not the unanticipated effects had any affect on ESA-listed fish or designated critical habitat; and the number of salmonids killed or injured during the project action. • <i>Fish Passage</i> – The report shall document how the new channel meets or exceeds the NMFS guidelines for salmonid passage and exceeds the upstream and downstream fish passage and rearing potential of the old channel. Also, the report shall document at what flows salmonid passage through the new channel is possible and a description of the frequency, duration, and timing of those flows at that site. • <i>Revegetation</i> - The report shall include a description of the locations planted or seeded, the area (m2) revegetated, a plant palette, planting or seeding methods, the efforts taken to ensure success of new plantings, performance or success criteria, and pre- and post-planting color photographs of the revegetated area. • <i>Fish Relocation</i> - The report shall include a description of the location from which fish were removed and the release site including photographs; the date and time of the relocation effort; a description of the equipment and methods used to collect, hold, and transport salmonids; if an electroshocker was used for fish collection, a copy of the logbook must be included; the number of fish relocated by species; the number of fish injured or killed by species and a brief narrative of the circumstances surrounding ESA-listed fish injuries or mortalities; and a description of any problems which may have arisen during the relocation activities and a statement as to whether or not the activities had any unforeseen effects. • <i>Lagoon Monitoring</i> – The report shall include monitoring results of lagoon conditions, and description and timing of barrier beach management activities and significant geophysical events such wave overwash events, lagoon closure, or natural or artificial breaching events. Water surface elevations and turbidity of the lagoon shall be continuously monitored. Twice-weekly dissolved oxygen and salinity profiles will be taken and results included in the report. Monitoring results for toxics in runoff from completed infrastructure during first flush events will be included in the report. <p>Reasonable and Prudent Measure 4: Seek NMFS technical assistance for development of, and final approval of designs for all major components of the project.</p> <p>NPS will seek technical assistance and approval of project designs at the 30 percent, 60 percent and 100 percent design completion phases. This will be accomplished with regularly scheduled interagency design discussion meetings with prior provision of design materials. Final designs will be provided to NMFS at least 60 days prior to anticipated construction activities. NMFS will respond to NPS within 30 days of receipt of project designs. NMFS’ response will either approve the project design or provide description of changes needed to remain within the anticipated take amounts described above.</p>
Clean Water Act	
<u>CWA</u>	<p><u>Section 404/401</u>: A permit application was submitted to USACE in February 2008 that outlined activities that would discharge into waters of the U.S. Following issuance of this Record of Decision, as the regulatory agencies request, the permit process will be</p>

	<p>finalized when more detailed construction drawings have been provided to agency regulators. It is anticipated that additional project conditions will be placed on the project by both the U.S. Army Corps of Engineers as part of Section 404, and the San Francisco Bay Regional Water Quality Control Board as part of Section 401 Certification. These permit conditions will be incorporated into the project's implementation.</p>
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