Chapter 6
# Comments and Responses

## Introduction

This chapter contains the written comments and oral testimony received on the Draft EIS/EIR, and NPS and the County's responses to each issue raised in the comments. Table 6-1 below identifies each comment letter and the page on which the comment letter and its responses begin. The chapter also contains Master Responses (MRs) that address several key topics in a comprehensive manner; they are presented before the comment letters.

Each comment letter has been assigned a letter, and comments within each letter are numbered consecutively (e.g., A-1, A-2, etc.) in the right margin adjacent to the individual comment. Each comment letter is followed by NPS and the County's response(s) to that letter. The responses are numbered to correspond with the comments as identified in the right margin of the letter. Where the response indicates that a change has been made to the EIS/EIR, revisions to the EIS/EIR are described briefly. The final EIS/EIR contains the revised text; text that has been deleted is shown in ~~strikeout~~, and text that has been inserted is <u>underlined</u>.

It should be noted that between circulation of the Draft EIS/EIR and publication of the Final EIS/EIR, the preferred Public Access and Bridge Alternatives have been changed from B3 to B4, and BR3 to BR4, respectively. These are minor technical changes that, pursuant to State CEQA Guidelines section 15088.5, "Recirculation of an EIR Prior to Certification," do not require recirculation of the Draft EIS/EIR.

**Table 6-1.** List of Commenters on the Draft EIS/EIR

| Comment Letter Number | Commenter | Date of Letter | Beginning on Page |
|---|---|---|---|
| A | Federated Indians of Graton Rancheria | February 27, 2007 | 6-18 |
| B | United States Environmental Protection Agency | February 28, 2007 | 6-20 |
| C | California Coastal Commission | March 6, 2007 | 6-24 |
| D | California Department of Fish and Game | February 28, 2007 | 6-33 |
| E | Office of Historic Preservation | March 14, 2007 | 6-38 |
| F | San Francisco Bay Regional Water Quality Control Board | March 6, 2007 | 6-41 |
| G | California State Clearinghouse and Planning Unit | February 6, 2007 | 6-59 |
| H | Marin Municipal Water District | December 29, 2006 | 6-62 |
| I | Environmental Action Committee of West Marin | March 6, 2007 | 6-64 |
| J | Greater Muir Beach Neighbors | February 15, 2007 | 6-68 |
| K | Greater Muir Beach Neighbors | March 2, 2007 | 6-72 |
| L | Green Gulch Farm Zen Center | March 5, 2007 | 6-76 |
| M | Ocean Riders of Marin | March 5, 2007 | 6-81 |
| N | Sierra Club Marin Group | March 5, 2007 | 6-87 |
| O | Tomales Bay Association | March 6, 2007 | 6-99 |
| P | C. Henry Barner | March 3, 2007 | 6-101 |
| Q | Margaret Kettunen Zegart | January 28, 2007 | 6-103 |
| R | Margaret Kettunen Zegart | February 26, 2007 | 6-114 |
| S | Margaret Kettunen Zegart | March 6, 2007 | 6-118 |
| T | David M. MacKenzie | March 6, 2007 | 6-120 |
| U | John and Cela O. O'Connor | March 7, 2007 | 6-127 |
| V | Walter Postle | January 5, 2007 | 6-131 |
| W | Christian Riehl | March 6, 2007 | 6-135 |
| X | Edward T. Sanford | January 8, 2007 | 6-139 |
| Y | David Schonbrunn | March 6, 2007 | 6-141 |
| Z | Planning Commission Public Hearing (various commenters) | February 26, 2007 | 6-147 |

# Master Responses

Numerous comments were received on the topics of the preferred Bridge Alternative, salmonid rearing habitat, and sea level rise. Although each comment has been responded to individually, Master Responses also have been prepared to address each of these topics in a comprehensive manner.

## MR-1 Preferred Bridge Alternative

Substantive comments on the preferred Bridge Alternative addressed concerns related to the bridge length, the width of the bridge, the aesthetic appearance, and the cost. NPS's responses to these concerns are addressed below.

### Selection of New Preferred Bridge Alternative

After further consideration, Marin County has chosen to select Bridge Alternative BR4, as opposed to Bridge Alternative BR3, as its preferred alternative. The County recognizes that a longer bridge will provide the best vehicular access and opportunity for natural hydrologic processes to reestablish. Concerns about the appearance and cost of the bridge are also discussed below.

#### Revised Bridge Alternative BR4

Bridge Alternative BR4 has been modified to reflect as realistic a conceptual design as possible prior to the actual design phase. The revised Bridge Alternative BR4 is slightly reduced in length compared with the alternative described in the Draft EIS/EIR (250 feet vs. 266–300 feet). The revised length of the bridge represents a refined analysis of design constraints, including a more realistic connection to existing roads and driveways on either side of Redwood Creek. The 250-foot bridge will allow the existing bridge to remain functional during construction. The elevation of Pacific Way in front of the Pelican Inn entrance will be raised to approximately the same elevation as the Pelican Inn driveway. The hydraulic modeling conducted for the Draft EIS/EIR is still valid for these bridge parameters; conservative assumptions were used in the modeling that are not affected by this change. For the purposes of evaluating the modeling results, the redesigned Bridge Alternative BR4 is anticipated to perform somewhere in between Bridge Alternative BR3 and the longer Bridge Alternative BR4 (as modeled).

The height of the revised bridge will be determined during the design phase but is anticipated to be between the heights of Bridge Alternative BR3 (16.25 feet NGVD) and the original Bridge Alternative BR4 (18 feet NGVD). The elevation of Hwy 1 is 16.5 feet NGVD; therefore, the height of the bridge under Alternative BR3 would be 0.25 feet lower than Hwy 1, while the height of the bridge under Alternative BR4 would be 1.5 feet higher than Hwy 1. For

comparison, the height of the existing bridge is 15.2 feet NGVD, 1.3 feet lower than the elevation of Hwy 1. A height will be selected that accommodates the largest flows possible while also accommodating the new grade of Pacific Way from Hwy 1 and avoiding backwater effects that could increase flood elevations upstream. The new grade of Pacific Way from Hwy 1 to the bridge would tie into the elevation of the Pelican Inn parking lot. There may be other design elements that need to be addressed simultaneously with the design height. Thus, the height of the proposed bridge ultimately will be determined during the design phase, in consideration of the existing constraints presented by the entrance to the Pelican Inn parking lot and the need to avoid backwater effects.

In addition to modifications to the proposed length of the bridge, the maximum width of the bridge has been reduced. The County will reduce the maximum possible width from 36 to 32 feet, with the specific width to be determined during the design phase. The 32-foot width proposed in the new Bridge Alternative BR4, as with the 36-foot width previously discussed in the EIS/EIR, is intended as a maximum width for environmental review purposes and therefore should be viewed as conservative and could be reduced during final design. The proposed maximum width includes two vehicle lanes (each 10 to 11 feet wide), up to a 1-foot-wide shoulder on each side, and a 6-foot-wide pedestrian path. It may be possible to reduce the width below 32 feet during design, but future design plans must be prepared to confirm the feasibility of reducing the width below 32 feet.

## Bridge Costs and Value Analysis

After further review of the Value Analysis and costs presented in the Draft EIS/EIR, NPS and the County have concluded that the bridge costs were underestimated in the document. Initial cost estimates for project alternatives were developed during the Value Analysis process to provide a preliminary comparison of costs between alternatives; however, these initial values did not consider certain factors, such as various aspects related to construction management and design contingencies. NPS and the County have recalculated the cost estimates for the proposed Bridge Alternatives to reflect realistic values that can be estimated at this early stage of project design. The Final EIS/EIR has been corrected to reflect the revised cost estimates (see Chapter 2, *Selection of the Preferred Alternative*).

As stated above, the longer Bridge Alternative (BR4) has been selected as the preferred Bridge Alternative. This Bridge Alternative also has been shortened and narrowed. Consequently, the revised cost estimate for this alternative is approximately $600,000 less than the long bridge configuration described in the Draft EIS/EIR. Regardless of the cost difference between the original and revised Bridge Alternatives, the longer Bridge Alternative will cost more to construct than the previous preferred Bridge Alternative (BR3). The County has selected the longer Bridge Alternative despite its higher cost because the improved benefits to long-term channel and floodplain functioning, which will in turn improve salmonid habitat, would meet the project objectives best. This alternative is also expected to require the least maintenance.

### Bridge Aesthetics

Many comments expressed concerns that the bridge would not be compatible with the surrounding landscape and rustic visual character of the area. However, it is NPS's and the County's conclusion that the new bridge will not be incompatible with the local character. The bridge would appear as a long causeway, a continual flat or slightly rising connection from Hwy 1. As discussed above, the height of the bridge would be between the height of Bridge Alternative BR3 (16.25 feet NGVD) and BR4 (18 feet NGVD). The ultimate design of the bridge (Bridge Alternative BR4) would be somewhere between 0.25 below and 1.5 feet above the elevation of Hwy 1. The bridge would be simple; design details, particularly for the railings, would be tailored to fit in with the rural setting of the area.

### Pedestrian Bridge

Many comments requested consideration of a second bridge to provide pedestrian and equestrian access to Muir Beach from Hwy 1. Although a separate bridge may be perceived as providing additional visitor protection against vehicles, NPS and the County believe that the costs of construction and the impact on Redwood Creek outweigh the benefits of a separate bridge. It would be substantially more expensive to construct a separate set of piers for a pedestrian bridge than to use the roadway bridge piers to support the pedestrian path. If a second pedestrian bridge were to be constructed, the combined footprint of the vehicle and pedestrian bridge could be wider than that proposed in the revised Bridge Alternative BR4 because of the accommodation of two sets of railings. Additional fill or bridge pilings would be required for the second bridge, all of which would further intrude on the Redwood Creek floodplain. The County and NPS will comply with appropriate disability access requirements and ensure that adequate safety measures are incorporated into the bridge design.

## MR-2 Salmonid Rearing Habitat

One important project objective is to improve winter-spring rearing habitat for coho salmon and steelhead by increasing floodplain inundation frequency, the extent of winter-spring baseflow habitat, and floodplain connectivity. The preferred alternatives will improve the quality, and where possible increase the quantity, of these types of winter-spring rearing habitat compared to existing conditions.

### Existing Conditions

Under existing conditions, coho salmon have been observed to use inundated portions of the project site as winter rearing habitat. Floodplain inundation of these areas is influenced by:

- frequent overbank flows upstream of the Pacific Way bridge because of (a) channel aggradation upstream of the bridge and (b) existing floodplain topography that drains away from the creek;
- large-scale ponding in Green Gulch pasture because of (a) the 1,300-foot-long levee road, which disconnects the floodplain from the main creek channel, and (b) the two culverts crossing the levee road that limit outflows from the pasture to the main channel;
- periodic out-of-bank flow in the mainstem of Redwood Creek (downstream of the Pacific Way bridge) because of local sedimentation; and
- extreme tidal conditions that delay channel drainage in the lower reach (near the parking lot).

The main channel currently has an average conveyance capacity of approximately 250 to 300 cfs between the upstream project limit and the parking lot. Therefore, overbank flooding occurs when flows exceed 250 to 300 cfs, which happens usually one or more times per year[1], except during unusually dry years[2]. However, there are also local areas of reduced conveyance (because of irregular sediment deposition, log jams, etc.) that cause more frequent out-of-bank flows. For example, there are at least two locations upstream of the Pacific Way bridge where the creek routinely spreads onto the floodplain at flows lower than 250 cfs (see Figure 6-1).

Sediment accumulation upstream of the Pacific Way bridge results in relatively frequent out-of-bank flows (e.g., several times each winter). Once out-of-bank, creek flows follow the natural gradient away from the channel, across Pacific Way (at its low point near Pelican Inn) and through Green Gulch pasture. Flow out of Green Gulch pasture is limited by two culverts through the levee road that include flashboard structures intended to pond water year-round at an elevation of approximately 8 feet NGVD. Therefore, the floodplain area in Green Gulch pasture has two potential fish passage barriers, the 500-foot Pacific Way road to the northwest and the 1300-foot levee road (with flashboard structures) along the west boundary.

Figure 6-1 is a qualitative representation of likely inundation areas usable as winter rearing habitat under existing conditions. The dark grey areas represent open-water areas (the active channel and backwater areas) under typical winter base flow conditions (approximately 10 to 60 cfs). The cross-hatched areas approximate flooded areas during larger winter storms (approximately 250 to 300 cfs) that would normally occur at least once a year[3]. These floodplain areas

[1] Redwood Creek flows exceeded 300 cfs an average of seven times per year during the 7 years of complete continuous flow records between 1998 and 2006. Data used to calculate this average value include 2002, when there were no flows greater than 300 cfs.

[2] In the 28 years of record for Redwood Creek between 1972 and 2003, peak flows exceeded 300 cfs 86% of the time (in all but 4 years).

[3] Approximate flooding extent based on ponding up to an elevation of 9 feet NGVD in Green Gulch pasture, or 1 foot above the flashboard structure control (elevation 8 feet NGVD).

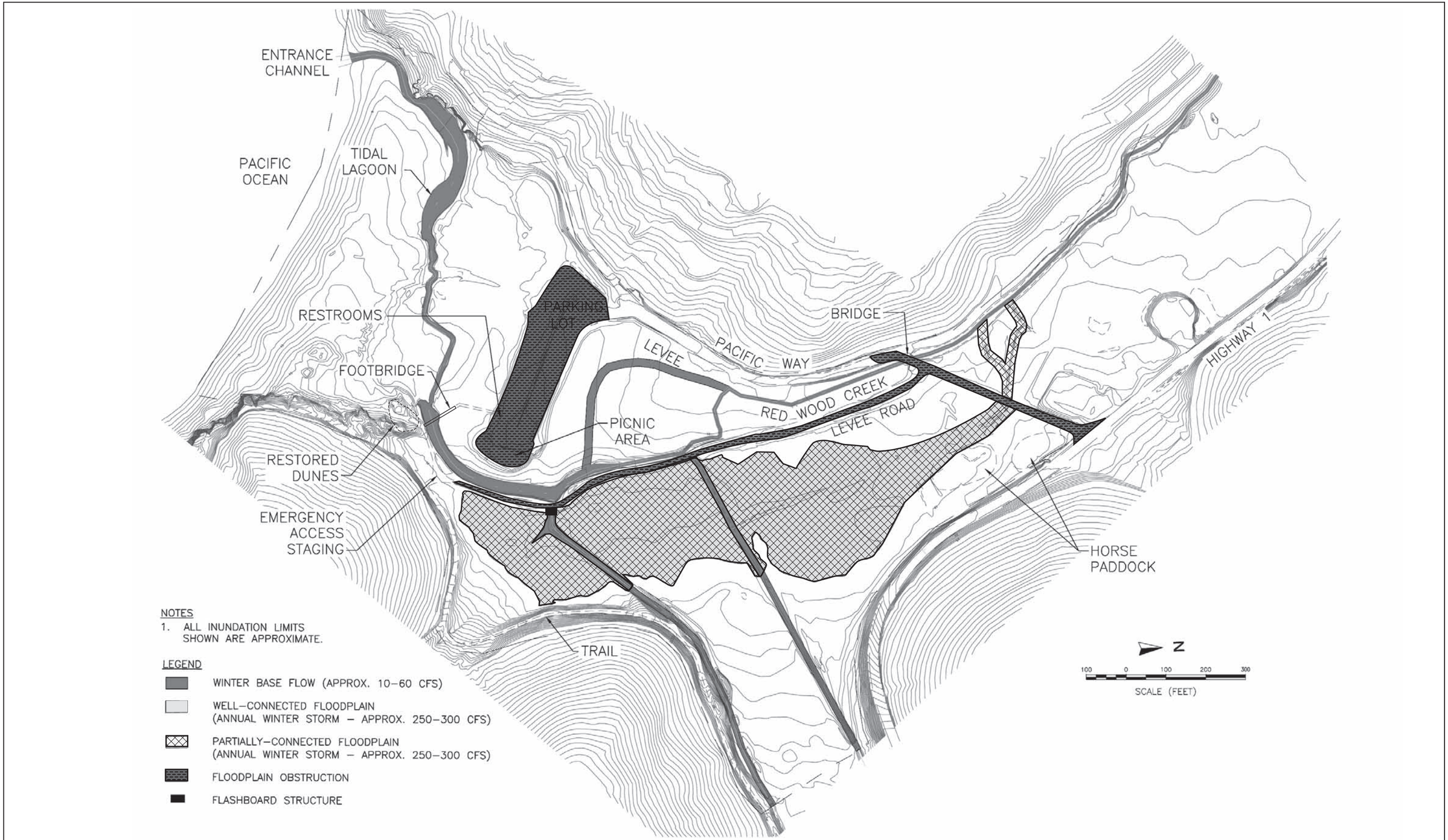


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**Figure 6-1**
**Winter Salmonid Rearing Habitat Under Existing Conditions**

contained by a berm. This design feature would reduce risk of fish stranding and subsequent predation on frog tadpoles.

- Abandoned remnants of the existing channel will be connected to the realigned creek (and deepened if needed) to serve as backwater channels. In addition, the existing backwater channel (parallel to levee road) and the tidal lagoon will be expanded to create additional backwaters. This will significantly increase the length of backwater channels compared with existing conditions, and provide additional rearing habitat during winter baseflow conditions.
- The levee road and associated water control structures will be removed. This will reduce the frequency and duration of ponding in Green Gulch pasture but will significantly improve channel-floodplain connectivity and allow unrestricted fish passage between the pasture and Redwood Creek.
- Tidal conditions will remain unchanged from existing conditions; extreme tidal conditions are expected to continue to delay channel drainage in the lower reach.

Figure 6-2 is a qualitative representation of likely inundation areas usable as winter rearing habitat under the preferred alternative. Similar to Figure 6-1, dark grey shows inundation during winter base flow (10 to 60 cfs). Fully connected floodplain areas (shown in light grey) are expected to include low-lying areas in the Green Gulch pasture and the wooded floodplain adjacent to the parking lot. The crosshatched area southeast of the parking lot (labeled *potential connected floodplain*) is anticipated to be partially or wholly inundated during annual winter storms, but the degree of inundation and floodplain connectivity would depend on the grading design for this area, which has yet to be determined.

## Comparison of Existing Conditions and the Preferred Alternative

The approximate areal extent of winter rearing habitat under existing conditions and the Preferred Alternative (as shown in Figures 6-1 and 6-2) is summarized below in Table 6-2.

are partially disconnected from the main channel by existing obstructions of the levee road and Pacific Way (shown in dark grey with black dashes).

## Conditions under the Preferred Alternative

The preferred alternative (Restoration Alternative 2, Public Access Alternative B4, Bridge Alternative BR4) includes the following actions that will improve winter-spring rearing habitat conditions by increasing extent and quality of baseflow habitat, functional floodplain areas, and channel-floodplain connectivity.

- Upstream of the bridge, the creek will be realigned to the lowest point in the floodplain. The new channel will be sized for the estimated typical fluvial conditions (approximately 560 to 800 cfs), which is larger than existing conditions (average of approximately 250 to 300 cfs). Therefore, less frequent out-of-bank flow is expected compared to existing conditions. However, the channel realignment will allow overbank flows to return directly to the channel, thus improving channel-floodplain connectivity. In addition, the existing channel will be preserved as a backwater channel, which provides additional rearing habitat during winter baseflow conditions.
- The existing 25-foot Pacific Way bridge will be replaced with an approximately 250-foot bridge that spans the floodplain. This change will also improve floodplain connectivity and benefit water quality.
- Downstream of the bridge, the creek will be restored to its original alignment along the low point of the valley through Green Gulch pasture. The upper 800 feet of proposed channel will have roughly the same flow capacity as the existing channel,[4] approximately 250 to 300 cfs. The lower 400-foot reach (from Green Gulch Creek to levee road) will have reduced capacity[5] (by the absence of berms in this reach) to further increase the frequency of overbank flooding.
- Large woody materials would be added into the backwater and main channel habitats to provide cover for aquatic life as well as to provide conditions that would help maintain deep pools. The need for maintenance dredging and the resulting channel and habitat impacts are expected to be significantly reduced.
- Existing land excavated in low-lying areas in Green Gulch pasture and the wooded floodplain are expected to be inundated during large winter storms (at 250 to 300 cfs) where creek flows are not contained by channel berms. One of two depressional areas created as California red-legged frog habitat will be located in the Green Gulch pasture area where the creek will be

[4] Channel dimensions will be roughly the same as the upstream reach, but conveyance will be reduced because of decreased channel slope (because of natural gradient and meandering) and increased roughness (because of introduced large woody debris, etc.).

[5] The new channel will be constructed by excavating to the thalweg depth and building up the banks using low berms. Discontinuing the channel berms in the downstream 400-foot reach of the creek will effectively reduce the channel depth by roughly 1 foot and reduce channel conveyance to approximately 150 to 200 cfs.

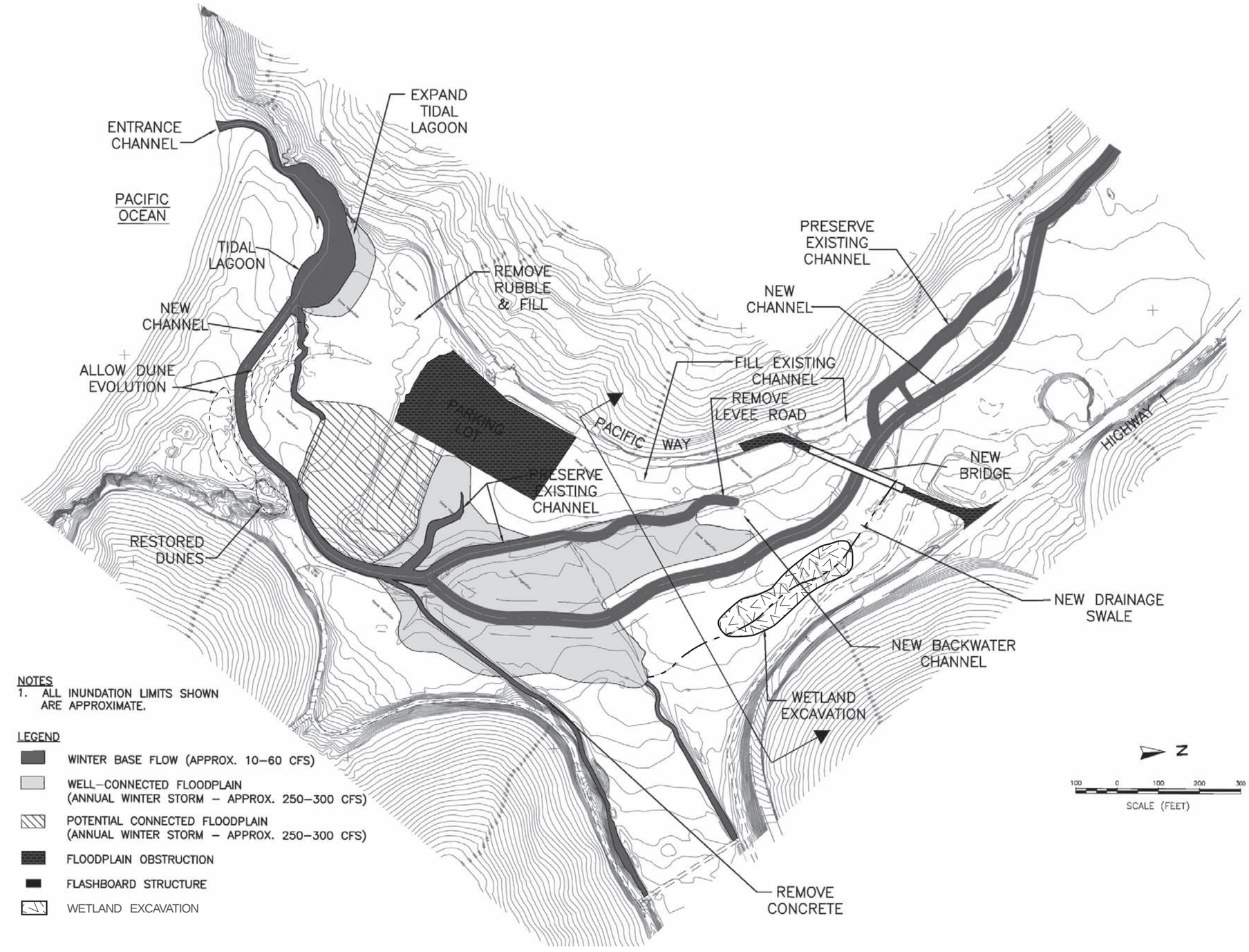


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**Figure 6-2**
**Winter Salmonid Rearing Habitat Under the Preferred Alternatives**

**Table 6-2.** Approximate Aerial Extent of Winter Rearing Habitat

| Description | Approximate Areal Extent (acres) | |
|---|---|---|
| | **Existing Conditions** | **Proposed Conditions** |
| Main Channel (winter base flow) | 3.0 | 3.0 |
| Backwater Areas (winter base flow) | 0.2 | 1.6 |
| Partially Connected Floodplain (annual storm) | 6.7 | |
| Fully Connected Floodplain (annual storm) | | 5.1 |
| Potential Connected Floodplain (annual storm) | | up to 2.1* |
| Total Inundated Area | 9.9 | 9.7 to 11.8* |

*Note: The potential connected floodplain near the existing parking lot has not been included in hydraulic analyses to date, but grading designs could create elevations in this area to allow overbank flow over an additional 2.1 acres in an annual storm event, thereby extending the connected floodplain by approximately 11.8 acres.

As shown in Table 6-2 above, the total areal extent of winter rearing habitat for backwaters and floodplain combined is roughly the same for existing and proposed conditions, and the preferred alternative has opportunities to expand the areal extent of annual floodplain by up to an additional 2.1 acres. Based on topographic data currently in this project's hydraulic model, the total areal extent of overbank flooding during an annual storm would be approximately 1.6 acres or 25% less for the proposed condition compared to the existing condition. However, the model does not incorporate the opportunity to lower the grade of the existing parking lot and picnic area to allow annual storm overbank flow in those areas. Since the parking lot and picnic area will be graded as part of project actions, it is possible to grade them to achieve the desired expansion of floodplain during an annual storm event. Therefore, up to an additional 2.1 acres of "potential" connected floodplain habitat (or a 30% increase in area) is shown on Figure 6-2, although the exact area would be determined during the project design phase. Because a grading design for this area has not been developed or included in the hydraulic analysis or earthwork estimates of the preferred alternative, Table 6-2 shows this area as "potential connected floodplain" and the high end of a range of the total inundated area.

In addition to the potential increase in area, both the floodplain quality and function will be improved by removal of floodplain obstructions. The preferred alternative is expected to increase floodplain connectivity, fish passage, and extent of backwater channel habitat compared with existing conditions. During annual winter storms, fish using the floodplain will be more likely to find their way back to the channel than under the existing conditions.

The various factors affecting winter rearing habitat under existing conditions and the Preferred Alternative are discussed in more detail below.

### Winter-Spring Baseflow Habitat (Main and Backwater Channel Habitats)

It is expected that the Preferred Alternative will increase the extent and quality of winter-spring baseflow habitat for fish compared to existing conditions. Research previously cited in Chapter 4 indicates that ideal winter-spring rearing habitat for juvenile coho would be deep, slow-water, main channel pools linked with adjacent off-channel habitats that provide high flow refuge (Bell 2001). Design elements for this project seek to provide both good winter baseflow habitats and adjacent off-channel refuge.

Under the Preferred Alternative, the existing backwater channel will be extended by approximately 400 feet and the tidal lagoon will be expanded. In addition, remnant portions of the existing main channel (approximately 700 to 1,000 linear feet) will be preserved (and deepened if needed) to function as additional backwater areas. These backwater sloughs are expected to provide habitat that is well shaded by the surrounding mature riparian vegetation. The proposed project will increase total backwater areas from approximately 0.2 to 1.6 total acres.

### Floodplain Inundation

The Preferred Alternative is expected to increase the amount of well-connected floodplain by removing the existing floodplain obstructions that isolate the 11-acre Green Gulch pasture from the main creek system. During an annual storm event, approximately 5.1 acres of the project area will experience shallow flooding. Although a somewhat larger area (6.7 acres) currently experiences annual flooding, this floodplain has lower habitat value because it is disconnected from the main channel by existing roads and the flashboard structures, increasing the potential for fish stranding as flows recede. The floodplain area during an annual storm event could be increased by about 2.1 acres through grading designs of the parking lot and picnic area removal area, as described above, thereby both increasing the areal extent and the quality of floodplain during annual events.

Upstream of Pacific Way bridge, the 8-acre floodplain area will experience reduced flooding frequency under proposed conditions, because of replacement of the existing undersized bridge, which causes severe sedimentation. However, similar to Green Gulch pasture downstream, the floodplain function will be improved by realigning the channel to the valley low point and replacing the at-grade Pacific Way road with the floodplain-spanning bridge. These two changes will improve channel-floodplain connectivity and reduce the risk of fish stranding on the floodplain.

It should be noted that the extent of floodplain inundation for a 2-year storm (800 cfs) is approximately the same for the proposed and existing conditions. Almost the entire project area is expected to be inundated during a 2-year event, except topographic high areas, including portions of Pacific Way, the parking lot, and the bluffs on either side of the beach.

It is expected that the duration of floodplain inundation of the preferred alternative would be less than under existing conditions. However, as noted

previously, the duration of inundation under existing conditions is maintained by artificial conditions of a levee and culvert system.

### Floodplain Connectivity

Under existing conditions, there are several barriers to floodplain connectivity.

- Upstream of the Pacific Way bridge, the channel is partially disconnected from the floodplain because of existing topography (i.e., the floodplain drains away from the channel).
- Pacific Way bisects the floodplain on either side of the road.
- The levee road disconnects the existing floodplain from the Green Gulch pasture.
- The southeastern end of the parking lot partially blocks the floodplain.

All of these obstructions will be removed under the proposed project, which will increase the area of connected floodplain habitat. The most significant change under proposed conditions is that Green Gulch pasture, including its tributaries, will be connected to the mainstem of Redwood Creek without any fish passage barriers.

### Reduced Maintenance Dredging

By raising Pacific Way and removing hydraulic impediments (e.g., the south end of parking lot and the levee road), the need for maintenance dredging, with its associated fish population impacts, are expected to be significantly reduced under the proposed project.

### Floodplain Activation Flows

In 2006, PWA completed a study for UC Davis and CALFED that correlated floodplain flows in the lower Sacramento Valley with beneficial fish rearing conditions (PWA 2006). This PWA study on floodplain activation flows (FAF) identified timing, frequency, and duration as key criteria to apply to evaluate ecosystem benefits attributable to floodplain inundation. These benefits were based on research that links multiple ecosystem processes, including phytoplankton production in the water column and fish rearing on the floodplain. These benefits are expected to increase proportionally to the area flooded.

The hydrologic and landscape characteristics of the large-scale lowland river system from which the FAF is derived are different from the Big Lagoon site. However, a similar approach of defining the hydrologic regime of activated floodplain could be applied to quantify critical floodplain habitat at the project site, if specific coho rearing habitat inundation criteria (timing, depth, duration) is identified for coastal stream floodplains.

For the EIR/EIS analysis, we have mapped expected winter rearing habitat areas at the project site based on:

- estimations of winter flow conditions (base and winter storm flows) derived from historic flow data;

- approximate areas of inundation for existing conditions based on available topographic mapping, hydraulic modeling results, supplemental hydraulic calculations, and visual observations; and
- expected areas of inundation for proposed project conditions based on topographic mapping, preliminary design dimensions, and supplemental hydraulic calculations.

Given the smaller scale of the site, this mapping approach seems sufficiently detailed to allow comparison of habitat quality and quantity under design and existing conditions.

### Conclusions

In summary, the Preferred Alternative would result in an increase in the quality and quantity of winter-spring baseflow habitat for juvenile salmonids. Under conservative estimates, there would be a minimal (0.2 acre) reduction in the areal extent of annually flooded areas using conservative estimates for the proposed project design. However, with the opportunities provided by regrading the area at and around the existing parking lot, it has the potential to increase the total area available for use as floodplain habitat in an annual event by up to 2.1 acres. There would be no reduction in floodplain area under 2-year storm or larger events. In addition, it would result in a great increase in the value of floodplain habitat by eliminating barriers to migration that currently put fish at risk of stranding and allow connectivity to baseflow habitats. Lastly, the preferred alternative would provide a relatively greater amount of backwater habitat that is available to fish during winter-spring baseflow conditions as well as larger storm events. This is in contrast to the existing condition, under which there is a preponderance of floodplain habitat that is only inundated during larger storm events. As such, the majority of winter rearing habitat under the preferred alternative would be available throughout the entire winter season, rather than only during storm conditions. For these reasons, NPS believes that the preferred alternative will serve to provide improved winter-spring rearing habitat compared to existing conditions.

## MR-3 Sea Level Rise

Historically, the morphology of the seasonally brackish lagoon, or the Big Lagoon, was determined by the relative influence of sea level rise, sedimentation from Redwood Creek, and beach sand transport processes. Over the last 5,000 years, sedimentation rates were equaled or exceeded by sea level rise (approximately 0.5 feet per 100 years). Because sea level rise more or less kept pace with sedimentation rates, the Big Lagoon likely sustained the same approximate size until Euro American disturbances began in the 19$^{th}$ century. The Feasibility Study (PWA 2004), examined the long-term sustainability of the Big Lagoon and other Restoration Alternatives, given current and future estimated rates of sea level rise and sediment delivery.

This MR addresses multiple comments received regarding sea level rise and is intended to answer the following questions.

1. Was the sea level rise value used in the previous analysis consistent with the latest 2007 recommendations from the IPCC[6]?
2. What are the potential effects of sea level rise on the project?
3. What would be the potential magnitude of these effects if actual sea level rise is greater than the predicted value of 0.7 feet over the next 50 years?

**1. Was the sea level rise value used in the previous analysis consistent with the latest 2007 recommendations from the IPCC?** Climate change simulations project a substantial rate of global sea level rise over the next century because of thermal expansion as the oceans warm and as runoff from melting land-based snow and ice accelerates. In the analysis to date, sea level rise was estimated at 0.7 feet over the 50-year planning horizon based on the 2001 IPCC study[7]. (This value was the median of the range of projections included in that study.)

In 2007, the IPCC published updated estimates for global sea level rise as shown in Table 6-3. Using the same approach described above, an average value of sea level rise over the 50-year planning horizon would be 0.54 feet[8]. Therefore, the previous estimate of 0.7 feet of sea level rise is still within the range of IPCC's most current estimates.

Given the latest IPCC data and the previous estimated rate of sea level rise, our 50-year predictions of future site evolution for each Restoration Alternative remain unchanged. However, the potential effects of sea level rise over a longer planning horizon, such as 100 years, are also discussed below. Note that sea level rise will not stop after 50 or 100 years, but will continue for millennia.

[6] Values used in the EIR/EIS were derived from the third IPCC assessment report published in 2001 and the latest IPCC data updated in 2007.

[7] **IPCC (2001)** predicted global average sea level rise of between 0.30 and 2.89 feet with a central value of 1.57 feet for 1990–2100 using six emissions scenarios (B1, A1T, B2, A1B, A2, and A1F1). Over a 50-year period, and assuming a linear rate of rise over the 21st century, this equates to between 0.13 and 1.31 feet with a central value of 0.72 feet (the value used in the Big Lagoon report).

[8] **IPCC (2007)** predicted global average sea level rise between 1980/1999 and 2090/2099 (approximately 105 years) of between 0.59 and 1.94 feet based on six different emissions scenarios. This would translate to a predicted rise of 0.28 to 0.92 feet over 50 years, with an average of 0.54 feet, assuming a linear rate during the 21st century. However, because the IPCC (2007) data show that the rate likely will increase with time, the assumption of a linear rate likely overestimates the 50-year projection. This may be offset by the fact that the lower range of IPCC projections is based on model runs that are known to underestimate past sea level rise; as such, these model runs may not be plausible projections of future sea level rise and would bias the average downward.
Also, note that the IPCC 2007 projections include only thermal expansion and melt from glaciers and ice caps excluding Greenland and Antarctica and do not include "future rapid dynamical changes in ice flow," which could contribute up to 4 to 6 meters of sea level rise over the next millennium. Scientists currently do not have the capability to model nonlinear dynamics of the Greenland and Antarctic ice sheets. IPCC has based their projections solely on models and acknowledges this shortcoming in the 2007 report. The extent to which this issue could affect sea level rise within the 50-year planning time horizon of the project is not predictable.

**Table 6-3.** IPCC (2007) Sea-level Rise Estimates (2090–2099 relative to 1980–1999)

| Emissions Scenario | 1990–2095 (105 years) | | | 2010–2060 (50 years) | | |
|---|---|---|---|---|---|---|
| | Low (feet) | High (feet) | Mid-Point (feet) | Low (feet) | High (feet) | Mid-Point (feet) |
| B1 | 0.59 | 1.25 | 0.92 | 0.28 | 0.59 | 0.44 |
| A1T | 0.66 | 1.48 | 1.07 | 0.31 | 0.70 | 0.51 |
| B2 | 0.66 | 1.41 | 1.03 | 0.31 | 0.67 | 0.49 |
| A1B | 0.69 | 1.57 | 1.13 | 0.33 | 0.75 | 0.54 |
| A2 | 0.75 | 1.67 | 1.21 | 0.36 | 0.80 | 0.58 |
| A1F1 | 0.85 | 1.94 | 1.39 | 0.41 | 0.92 | 0.66 |
| **Average** | 0.70 | 1.55 | 1.13 | 0.33 | 0.74 | **0.54** |

The maximum sea level rise predicted by IPCC (2007) over the next 50 and 100 years is approximately 0.92 feet and 1.94 feet, respectively (for emissions scenario A1F1)[9]. The implications of these higher values are discussed further in our response to Questions 2 and 3.

**2. What are the potential effects of sea level rise on the site?** Sea level rise likely would have the following general effects on the site (either with or without the project).

1. With sea level rise, the extent of tidal influence would shift landward (upstream), converting some wetlands from freshwater to more salt-tolerant vegetation types.
2. Water levels at the downstream end of Redwood Creek (i.e., below Pacific Way) would increase during storm events. This would increase the duration and extent of out-of-bank flooding and could increase flooding of some infrastructure, including the parking lot and portions of Pacific Way.
3. Groundwater levels toward the downstream end of the project would increase, creating more saturated soils that could convert lower-lying riparian areas to wetland habitats. The net increase in groundwater levels would increase, but not necessarily linearly, with sea level rise. (Groundwater levels at the beach would be approximately match the increased mean sea level; the net increase in groundwater levels would likely taper off with increased distance from the beach.)
4. The beach, and likely the tidal lagoon, would migrate landward. During large storm events, the parking lot would be more likely to be flooded because of storm surge and wave action. However, the increased storm

[9] It should be noted that these values reflect *global* sea level rise, rather than *relative* sea level rise, which considers the combined effects of land movements (subsidence or uplift) as well as static sea level rise, or other factors that could affect local sea level rise. (The magnitude of land movements over the next 100 years was considered too unpredictable to be incorporated into this study.)

surge potential would be somewhat offset by reconfiguring the parking lot away from direct wave action, as in Public Access Alternative B4.

**3. What would be the potential effects if the actual value of sea level rise were greater than the predicted value of 0.7 feet over the next 50 years?** Based on the latest available data, the selection of 0.7 feet sea level rise within the 50-year planning horizon appears reasonable. However, given the amount of uncertainty and variable parameters affecting sea level rise, it is prudent to consider the potential effects of the "worst case" sea level rise estimates over a longer planning horizon, such as 100 years. As stated above, the maximum sea level rise predicted by IPCC over 100 years is approximately 2 feet. It is acknowledged that IPPC estimates do not include melting of the Greenland and Antarctic ice sheets, which could contribute up to 4 to 6 meters of sea level rise over the next millennium. Scientists currently do not have the capability to model nonlinear dynamics of the Greenland and Antarctic ice sheets. As a result, the extent to which this issue could affect sea level rise within the 50-year planning time horizon of the project, or a longer timeframe, is not predictable, and therefore has not been used as the basis for project design.

While existing models do not have the capability to represent the ice sheets, Cayan et al. (2006) from the California Climate Change Center predicted global sea level rise over the next 50 and 100 years using IPCC emission scenarios B1, A2, and A1f1, including sea level rise attributable to melting ice sheets and glaciers. Cayan et al. (2006) predicted that sea level rise could range from 0.1 meter to 0.9 meter per 100 years (or from 0.2 meter to 0.9 meter for the worst case scenario, A1f1). Therefore, the high end of the estimated range for the worst case emission scenario is close to 1 meter over 100 years.

If such extreme events were to occur, they would not necessarily be incompatible with the restoration of the project site, nor would they completely eliminate its benefits compared to the No Action alternative. In addition, much larger planning issues would come into play, such as flooding of Highway 1 and other regional issues related to flooding in low-lying areas.

To help put impacts of sea level rise into perspective, the potential effects of up to 2 feet of sea level rise are discussed qualitatively below. Please note that these are general predictions and limited in their accuracy by several factors (e.g., natural variability and unpredictability and effects of large, episodic disturbances). The potential for more rapid sea level rise caused by melting of the Greenland and Antarctic ice sheets would cause the effects discussed below to be more extreme; this is also addressed more specifically in the discussion below.

## Tidal Influence Shifting Landward

Currently, when the sand bar is open, the channel flow is intertidal from the ocean to an area in the vicinity of the existing footbridge. (The exact limit of the tidal interface varies as the channel bed is constantly adjusting in response to sediment loading, storm events, etc.) With 2 feet of sea level rise, the extent of tidal influence would shift landward (upstream) roughly 800 feet (assuming a

channel slope of 0.25%). Much of the realigned Redwood Creek within Green Gulch pasture, as well as some of the backwater channels, would become intertidal. The willow thicket and other vegetation seaward of the existing parking lot may convert to more salt-tolerant vegetation. The magnitude of this change is expected to be similar with or without the proposed project. More extreme sea level rise would cause tidal influence to shift even further inland.

## Increased Flood Levels

Higher tide levels at the channel mouth will raise flood levels a certain distance upstream. The distance varies depending on the magnitude of storm rainfall and runoff, variable tide levels at the beach, and the timing of peak tidal and streamflow conditions.

Earlier model runs were performed to assess relative differences between Restoration Alternatives, rather than to evaluate worst-case flooding conditions. Therefore, we assumed a downstream tidal level of 3 feet NGVD (based on MHHW) coincident with the flood peak for all model runs. (This is a relatively common assumption for modeling tidally influenced fluvial systems and consistent with certain FEMA guidance.) We acknowledge that during storm events, water levels at the beach and in the lagoon can be significantly elevated because of processes affecting the whole coast, including high astronomical tides and coastal shelf storm surges as well as processes site specific to Muir Beach such as south swell setup and wave run-up into the lagoon.

In response to public comments on the Draft EIS/EIR, we used the hydraulic model to test the potential for more extreme downstream tidal conditions to influence upstream flood levels. This would provide an indication of how ocean water levels influence upstream flow stages to assess the potential impact of sea level rise. Both existing and design conditions were modeled, with two different tide levels.

For existing conditions, we modeled a hypothetical event selected to roughly simulate the December 31, 2005, event, the largest recent storm event of record (an actual event was selected to roughly calibrate results to observed conditions, rather than using a completely hypothetical scenario). For design conditions, we used a 2-year floodflow (peak of 805 cfs).

For both scenarios, to represent sea level rise, we estimated tidal conditions about 100 feet downstream of the footbridge to be 9.5 feet NGVD, 4 feet above normal tide level. This tide level was based on the measured peak tide level (5.5 feet per NOAA Fisheries, Tides and Currents) and rough estimates of wind setup and wave run-up at 0.5 and 3.5 feet, respectively, and appears to be consistent with local observations. This is considered a valid method of representing sea level rise, since sea level rise would be equivalent to a high tide which is sustained indefinitely. For comparison, we also simulated the same events using a lower tide level of 3 feet NGVD (MHHW), similar to earlier hydraulic model runs.

Figure 6-3 shows the changes in water levels because of varying tidal levels at the downstream boundary under both existing and design conditions. These modeling results have the following implications.

- Under both existing and design conditions, raising the tide level by 6.5 feet above existing MHHW potentially increases water levels upstream of the existing footbridge by less than 1 foot. The maximum increase for existing and design conditions, which occurs in the vicinity of the footbridge and parking lot, is approximately 0.2 and 0.5 feet, respectively.
- The water level increase extends farther upstream under design conditions as compared to existing conditions. However, under both existing and design conditions, the water level increases attributable to raising the tide levels 6.5 feet do not extend up to Pacific Way.
- For the 2-year storm event, flood levels under design conditions are predicted to be 1 to 2 feet lower than existing conditions from the upstream project limit down to the footbridge.

Therefore, sea level rise will potentially affect flood levels at existing infrastructure, especially downstream of the Pacific Way bridge (e.g., at the parking lot and at nearby homes on Pacific Way). However, there is no indication that the proposed project could increase flooding potential over existing conditions.

Increased flood levels downstream of Pacific Way would increase the frequency, depth, and duration of out-of-bank flows on the floodplain, which is expected to improve winter rearing habitat for salmonids.

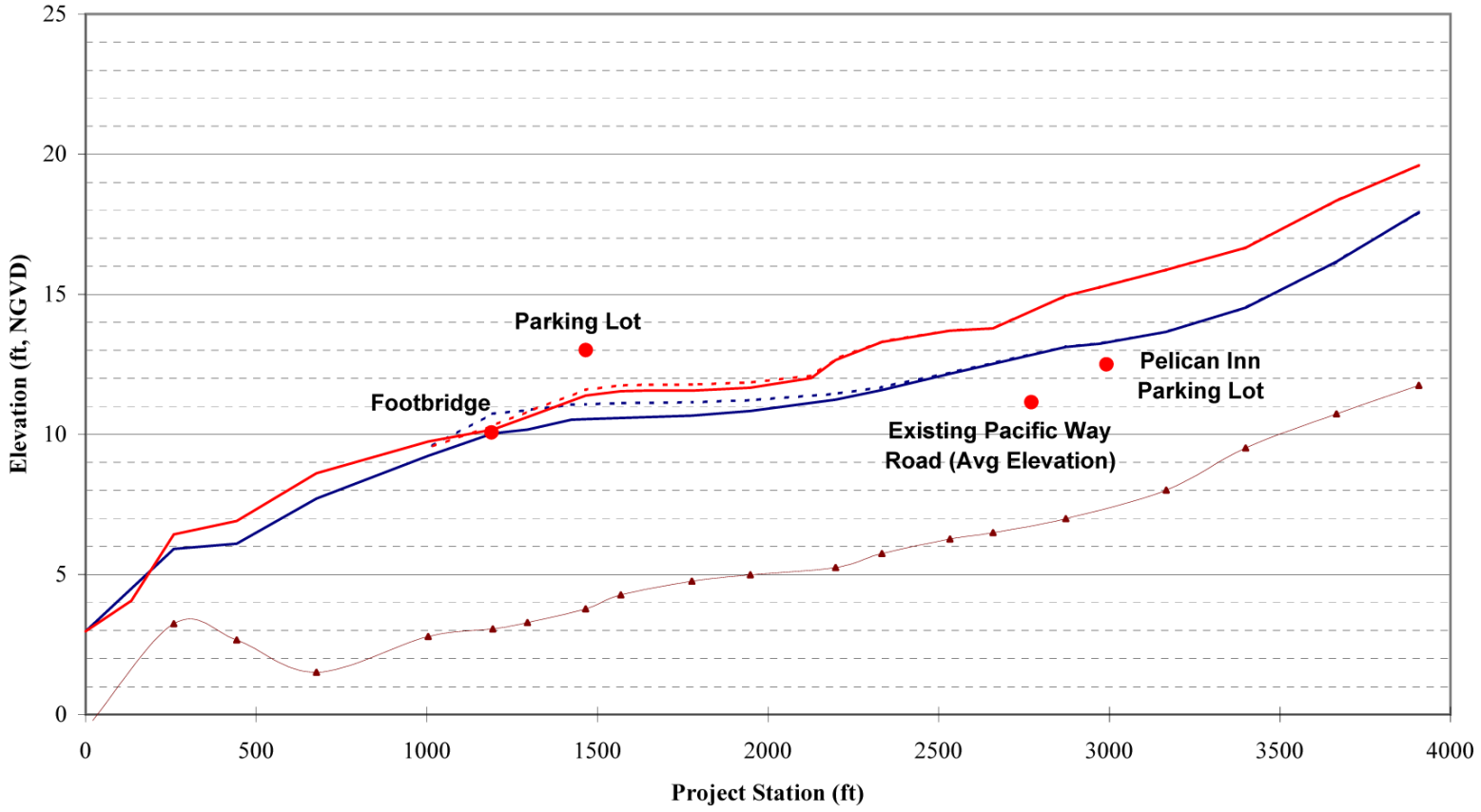
## Raised Groundwater Levels

We have predicted that the preferred alternative would initially lower groundwater levels (e.g., in the Green Gulch pasture) by roughly 1 foot because of improved drainage. Over time, the groundwater levels are expected to gradually increase because of sea level rise. Increased groundwater levels may alter future habitat predictions presented in the EIS/EIR; we would expect wetlands to replace riparian habitat. Extreme levels of sea level rise could ultimately lead to conditions more similar to the historic “Big Lagoon” that existed at the site in the mid-1800’s.

## Beach Retreat

Over the next century, the beach and likely the tidal lagoon are expected to migrate landward because of sea level rise. During large storm events, the existing parking lot would be more likely to be flooded as a result of storm surge and wave action. As proposed in the Final EIS/EIR, preferred parking lot alternative B4 would be rotated to allow more room for beach retreat and may result in the creation of sand dunes in the restored area of the existing lot. Two

feet of sea level rise would cause approximately 80 to 100 feet of beach retreat, assuming the existing beach profile remains relatively unchanged. More extreme levels of sea level rise would cause beach retreat to migrate further inland. It is likely that there will be some aggradation of the beach, counteracting beach retreat.




Notes: Alternative and spot elevation changes based on Alternative 1 MIKE network.
Mean Tide = 0.3 feet NGVD (mean higher high water or MHHW)
Extreme Tide = 9.5 feet NGVD (based roughly on 5.5 feet static tide level, plus storm surge & wave runup)

- Design Conditions (Alt 2, 150' Bridge) - Mean High Higher Water
- Design Conditions (Alt 2, 150' Bridge - Extreme Tide
- Existing Conditions (Alt 1) - Mean High Higher Water
- Existing Conditions (Alt 2) - Extreme Tide
- Alternative 2 Thalweg
- Spot Elevations

05052.05 (8-07)

Jones & Stokes

**Figure 6-3**
**Comparison of Redwood Creek Water Levels for 2-year Flow and Variable Tidal Conditions**

A

FEDERATED INDIANS OF GRATON RANCHERIA

Sacred Sites Protection Committee
P.O. Box 14428
Santa Rosa, CA 95402
707- 566-2288

RECEIVED
FEB 27 2007
SUPERINTENDENT'S OFFICE

SUSPENSED CORRESPONDENCE 3/27
ACTION PERSON: Craig Kenkel
REPLY DUE
SUPT'S OFC: Mar 13, 2007
PWR/OTHER:
COPIES PROVIDED Bartling
OR FORWARDED File
VIA E-MAIL Paul Scolari
P.07- 7.1

February 24, 2007

Superintendent
Golden Gate National Recreation Area
Fort Mason, Building 201
San Francisco, CA 941232
Attn: Restoration at Big Lagoon

RE: SCH # 2004042143
Wetland and Creek Restoration
Big Lagoon and Redwood Creek
Comment on DEIR

Thank you for the opportunity to comment on this project's DEIR. The Federated Indians of Graton Rancheria (FIGR) has appreciated the consultation on this project with Golden Gate National Recreation Area and in particular with Leo Barker and Paul Scolari. The respect they have demonstrated for our cultural resources and our culture is appreciated and is documented by the appropriate types of mitigation measures in the plan. A-1

We have the following one comment on the plan. On page 4-208, the current plan states a FIGR monitor is required during soil excavation "in the vicinity" of cultural resources. In other places there are references requiring monitoring by an archaeologist when soil disturbance occurs "within 100 feet". We request monitoring by a FIGR representative be changed to match the archaeologist, "within100 feet". A-2

Since this project area is considered a "cultural landscape", there is a high probability cultural resources can be discovered anywhere in the work area. The frequent movement of soils and the resources they contain, including human remains, may have been dispersed from their original location. Therefore, we request a Native American monitor from FIGR be present during soil disturbance within 100 feet of a known site.

Thank you for respect and assistance,

Nick Tipon
For the Sacred Sites Protection Committee

# Letter A: Federated Indians of Graton Rancheria (February 27, 2007)

## Response to Comment A-1

Thank you for your comment. It is a mission of NPS to protect cultural resources. We look forward to continuing to work together to protect the cultural resources of the Federated Indians of Graton Rancheria (FIGR).

## Response to Comment A-2

All references to monitoring ground disturbance activity during construction will be changed to state that an FIGR representative will be present when soil disturbance or excavation occurs within 100 feet of a previously identified cultural resource. Please see revisions to Mitigation Measure CR-MM1: Cultural Resources Education, Archaeological Monitoring, and Discovery Measures.

B

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION IX**
**75 Hawthorne Street**
**San Francisco, CA 94105-3901**



February 28, 2007

Brian O'Neill, Superintendent
Golden Gate National Recreation Area
Fort Mason, Building 201
San Francisco, CA 94123

Attn: Muir Beach Creek and Wetland Restoration

Subject: Wetland and Creek Restoration at Big Lagoon, Muir Beach Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR), Marin County, California [CEQ #20060514]

Dear Mr. O'Neill:

The U.S. Environmental Protection Agency (EPA) has reviewed the above referenced document. Our review and comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's (CEQ) NEPA Implementation Regulations at 40 CFR 1500-1508, and our NEPA review authority under Section 309 of the Clean Air Act.

B-1

EPA supports the purpose and goals of the project and believes the preferred alternative will help restore a functional, self-sustaining ecosystem in the project area while reducing flooding on Pacific Way and providing a compatible visitor experience. We have, therefore, rated this Draft EIS/EIR as LO – Lack of Objections (see enclosed "Summary of Rating Definitions").

The Draft EIS/EIR indicates that a spill prevention, control, and countermeasures (SPCC) plan will be developed before construction begins. It will be critical to minimize potential impacts from spills during construction/restoration activities in this highly sensitive project area. We recommend the SPCC plan be outlined in the Final EIS/EIR. The National Park Service's recent Giacomini Wetlands Restoration Draft EIS/EIR (p. 93) identifies several important elements of the SPCC plan for that project. We recommend those measures be incorporated into the SPCC plan for the Big Lagoon project, along with following additional measures.

B-2

- A spill kit with boom and sorbent materials should be on site at all times during construction;
- No vehicles will be fueled, lubricated, or otherwise serviced within 100 feet of the normal high-water area of any surface water body.

*Printed on Recycled Paper*

We also recommend you contact Peter Reich in EPA Region 9's Oil Program at 415-972-3052 to discuss the project's intended operations to ensure compliance with any oil spill regulations that may apply to the project. B-2 cont.

We appreciate the opportunity to review this Draft EIS/EIR and request a copy of the Final EIS/EIR when it is officially filed with our Washington, D.C., office. If you have any questions, please call me at (415) 972-3846, or have your staff call Jeanne Geselbracht at (415) 972-3853.

Sincerely,

Nova Blazej, Manager
Environmental Review Office

004917

Enclosure: Summary of Rating Definitions

cc: Marin County Community Development Agency

2

# SUMMARY OF EPA RATING DEFINITIONS

This rating system was developed as a means to summarize EPA's level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the EIS.

## ENVIRONMENTAL IMPACT OF THE ACTION

### *"LO" (Lack of Objections)*

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

### *"EC" (Environmental Concerns)*

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

### *"EO" (Environmental Objections)*

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

### *"EU" (Environmentally Unsatisfactory)*

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

## ADEQUACY OF THE IMPACT STATEMENT

### *Category 1" (Adequate)*

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

### *"Category 2" (Insufficient Information)*

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

### *"Category 3" (Inadequate)*

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

# Letter B: United States Environmental Protection Agency (February 28, 2007)

## Response to Comment B-1

Thank you for your comment. The NPS appreciates the support of the U.S. Environmental Protection Agency.

## Response to Comment B-2

As required in Mitigation Measure WQ-MM-2: Implement Spill Prevention and Control Plan, NPS will develop and implement measures to minimize water quality impacts attributable to hazardous spills and other sources and mechanisms of pollutants during construction activities. This plan will be prepared during project design and is not included in this document. NPS will consider the measures included in the Giacomini Wetlands Restoration Draft EIS/EIR and other suggested measures during development of the plan. . Additionally, NPS will comply with conditions of permits as required by regulatory agencies, such as the San Francisco Bay RWQCB, to further ensure that human and environmental health is protected during project construction.

C

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, GOVERNOR

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE (415) 904-5200
FAX (415) 904-5400
TDD (415) 597-5885



March 6, 2007

Brian O'Neill
Superintendent
Golden Gate National Recreation Area
Fort Mason, building 201
San Francisco, CA 94123

RE: DEIR/EIS Wetland and Creek Restoration at Big Lagoon, Muir Beach

Dear Mr. O'Neill:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement/Environmental Impact Report for Wetland and Creek Restoration at Big Lagoon, Muir Beach, dated December 2006. The Golden Gate National Recreation Area (GGNRA) proposes to restore a functional, self-sustaining ecosystem, and provide for public access that is compatible with restoration. The 38-acre project site is located entirely within the boundaries of the GGNRA, but includes some properties owned by the San Francisco Zen Center and Marin County.

The preferred alternative consists of Restoration Alternative 2 – Creek Restoration, Public Access Alternative B3 – 175 cars at the beach with a horizontal orientation, and Bridge Alternative BR3 – 150 foot-long bridge with raised road. Fill material will be disposed of at the Unused Reservoir Pit about 2 miles north of the project site.

The GGNRA is required to submit a consistency determination for this project, due to its impacts on the coastal zone.[1] This regulatory requirement arises under Section 307 of the federal Coastal Zone Management Act.[2] The consistency determination should include a finding as to whether the activities are consistent with the California Coastal Management Program, and the necessary information to support that conclusion, including an analysis of the project's consistency with the applicable Chapter 3 policies of the Coastal Act. (See CFR Section 930.58 for a full listing of the information required for a complete consistency certification). C-1

In general, the staff believes the project proposal would improve the biological processes at Big Lagoon, but only minimally. The alternatives do not seem to be designed for maximum biological productivity in terms of: a) the creek alternative versus a lagoon alternative, b) taking into account effects of global warming on the coastal zone, or c) the long-term management of the area. This letter does not express the full range of our concerns regarding this project, as our staff biologist has not yet had the opportunity to evaluate the proposed project and C-2

1 16 U.S.C. Section 1456, with implementing regulations at 15CFR Part 930.

2 16 U.S.C. Section 1456, with implementing regulations at 15CFR Part 930.

alternatives. The following comments focus on the project's consistency with relevant Coastal Act policies. C-2 cont

***Public Access***

Coastal Act § 30210 states in part

> *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with … the need to protect … natural resource areas from overuse.*

The DEIR/EIS should address the issue of visitor overuse at Muir Beach and attendant facilities areas, including the contribution made by the existing capacity of the parking lot. The "Visitor Management at Muir Woods and Muir Beach" study (Manning, et alia 2004) indicates that most visitors—over 440,000 annually—do not report feeling overcrowded, but the DEIR/EIS does not evaluate the effects of visitor use levels on natural resources, in particular, at the beach. A measure of use levels compatible with protection of natural resources should be established. C-3

Coastal Act § 30233 (c) states in part

> *Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in its report entitled, "Acquisition Priorities of the Coastal Wetlands of California", shall be limited to very minor incidental public facilities…*

GGNRA should evaluate the potential benefits of year-round public transportation directly to Muir Beach, with a parking scheme designed to promote the use of public transportation. A rejected alternative described in the DEIR/EIS included a transit stop on Highway 1, as opposed to a transit stop at Muir Beach. This alternative was rightly rejected, not least because it would create a situation where only those on public transportation would be inconvenienced by having to walk the remaining distance to Muir Beach, while those that drive cars would have the advantage of parking at the beach. Any public transportation alternative should include service directly to Muir Beach. C-4

The DEIR/EIS mentions a bus line that provides service to the vicinity of Muir Beach which is no longer in service. That reference should be excluded from the DEIR/EIS. C-5

Page 2-22 of the DEIR/EIS alludes to, but does not describe, "County plans" to improve transit pull-offs on Highway 1. These plans should be described and incorporated into the project. C-6

Public Access Alternative C – 118 Cars at Alder Grove plus 14 Disabled-Accessible Parking Spaces and Drop-off at Beach should be reconsidered, and the relegation of this alternative to less than "preferred" status should be re-evaluated. C-7

On page 2-43 Public Access Alternatives B3—175 Cars at the Beach (Horizontal) and B4—175 Cars at the Beach (Vertical) are compared. The evaluation of these alternatives includes a C-8

"cost-benefit" analysis. For federal consistency purposes "cost-benefit" is not a deciding factor, although economic factors may be part of feasibility considerations. C-8 cont

***Wetland Restoration***

Coastal Act § 30231 states

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

All restoration alternatives for the project assume the long-term functioning of the area in the absence of active management. Each scenario of conditions 50 years hence anticipates a marked decrease in wetlands due, primarily, to vegetation succession. The biological productivity of this wetland/lagoon area cannot be sustained without maintenance and anthropogenic interference. These actions would seem entirely reasonable at Big Lagoon in light of the historical, aggressive, maintenance activities of the Native Americans documented by M. Kat Anderson (U.C. Davis), and the findings of Longcore, Mattoni, et alia,[3] (attached) regarding the requirements for successful restoration efforts. Those findings emphasize the importance of long-term maintenance for restoration success. The Big Lagoon area should be maintained for maximum biological productivity, and all alternatives should be evaluated in this light. C-9

Table 2-8 Alternatives Comparison Summary on page 2-50 is missing two pieces of information that would appear to be important in comparing restoration alternatives: in Restoration Alternative 2—Creek Restoration, the number of haul trips of dredged materials should be included in Adverse Effects, and in Restoration Alternative 4—Large Lagoon Restoration, corollary benefits to bird species should be included in Beneficial Effects. C-10

On page 4-119, the vegetated swales in the parking lot are described as not providing high levels of ecological function, and as only potentially providing some filtering capacity for the parking lot. These bio-swales should be designed specifically for filtering hydro-carbon and other petroleum-based pollutants resulting from the high use levels of the parking lot, or the existing design should be shown to be adequate to do so. C-11

Thank you for the opportunity to comment on the Draft EIR/EIS for the Wetland and Creek Restoration at Big Lagoon, Muir Beach. We look forward to working closely with you and your

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[3] Longcore, T., R. Mattoni, G. Pratt, and C. Rich. 2000. On the perils of ecological restoration: lessons from the El Segundo blue butterfly. Pp. 281-286 in Keeley, J., M. Baer-Keeley, and C. J. Fotheringham, eds. *2nd Interface Between Ecology and Land Development in California*, U.S. Geological Survey Open-File Report 00-62, Sacramento, CA.

staff throughout the consistency determination process for this project. If you have questions, please contact me at 415-904-5250, dlivia@coastal.ca.gov. If you have questions about the federal consistency process, please contact Larry Simon, the Commission's federal consistency coordinator, at 415-904-5288.

Sincerely,

Diane Livia
Federal Consistency Analyst

cc: Carolyn Shoulders, NPS

# Letter C: California Coastal Commission (March 6, 2007)

## Response to Comment C-1

The comment is noted. NPS will submit a consistency determination to the California Coastal Commission pursuant to the requirements of Section 307 of the federal Coastal Zone Management Act.

## Response to Comment C-2

The Commission's concern is noted. Maximum biological productivity, in and of itself, is not a goal of the restoration project. The purpose of the project is to restore a functional, self-sustaining ecosystem, including wetlands, riparian habitat, and habitat for sustainable populations of special-status species, including salmonids. The proposed actions will meet this goal and allow the most natural function at the site in almost a century. The substantial existing constraints on natural function due to infrastructure will be largely erased by project actions; and the aquatic system, with its diverse sub-habitats, will be allowed to evolve in response to natural processes.

**Creek Alternative versus Lagoon Alternative.** Restoration Alternative 2 (creek alternative) will enhance both biological processes and physical processes. Please note that the lagoon alternatives (Restoration Alternatives 3 and 4) would not have universal beneficial impacts for biological resources. Some habitat qualities could have been further enhanced under Restoration Alternatives 3 or 4, particularly for juvenile salmonid habitat; but Restoration Alternatives 3 and 4 also posed some added risk of adverse impacts for the federally threatened California red-legged frog. Neither Restoration Alternative 3 nor 4 were selected because of their substantial added construction impacts for minimal added benefits and the fact that excavated ponds are likely to refill with sediment, eventually returning the site to a landscape similar to that of Restoration Alternative 2. Please also see Response MR-2 about the likely increase in the extent of annual winter habitat for salmonids in Restoration Alternative 2.

Restoration Alternative 2 will substantially enhance both the quantity and quality of winter-spring habitat for juvenile salmonids, one of the most critical needs for the federally listed coho and steelhead in Redwood Creek. During greater than average winter events, most of the riparian and wetland habitat in the 38-acre project site will be inundated, providing essential floodplain habitat for juvenile salmonids; but for the first time since the 1920's, the floodplain will be fully connected and unconfined. Juvenile salmonids will be more likely to reenter the creek from the floodplain, and they will have expanded area for refugia and food sources. (See also Response MR-2, which focuses on the gain in winter-spring habitat during a 1-year flow event).

**Global Warming.** The DEIS/EIR did include analyses of projected sea level rise, but this topic is further addressed in MR-3 (p. 6-12), which discusses the IPCC's 2001 and 2007 projections for sea level rise, the potential effects of sea level rise on the project area, and the potential magnitude of effects if sea level rise is much greater than the value used in the project analyses. Also, the change in the preferred bridge alternative in this Final EIS/EIR to the longest feasible bridge (BR4) is based partially on an understanding that it is the best choice given the uncertainties in flood elevations related to future sea level rise (see also Letter F). The longest feasible bridge provides the maximum benefits no matter what the future scenario is. Similarly, the rotation of the parking lot creates extensive new capacity for geomorphic processes that may occur during large storms or storm surges. One of the best actions that can be taken to plan for rising sea level is to remove infrastructure that impedes geomorphic processes. The project as proposed will achieve the critical need to anticipate effects of not only sea level rise but other possible changes in storm event patterns due to global climate change, while also accommodating visitor and residential access.

**Long-term Management.** With respect to long-term management, the project has been designed to reduce and minimize the need for active management in the project area into the future by returning more sustainable fluvial processes to the site. The project removes infrastructure that has created the need for management that is often controversial and difficult to permit. The infrastructure (the bridge, the parking lot, and the levee) at the site restricts flow conveyance and sediment transport, which has caused flood elevations to increase and created a need for periodic maintenance dredging to improve flow conveyance. The selection of the longest bridge (BR4) and the rotated parking lot, together with a more natural channel alignment, function together to substantially reduce the need for long term maintenance that can be detrimental to natural resources. Long-term management would include monitoring and adaptive management but many natural changes in the fluvial system would not be considered triggers for management actions. Additional information on long-term management related to vegetation is provided in Response C-9.

## Response to Comment C-3

NPS shares the Coastal Commission's concern for Muir Beach's sensitive natural resources; NPS Management Policies specifically emphasize the need to provide uses that are "appropriate to the superlative natural … resources found in [its] parks" and can be sustained without "unacceptable impacts" on park resources or values (NPS Management Policies 2006 Section 8.2).

Consistent with these policies, Muir Beach has been managed to allow limited, site-appropriate visitor access since it was added to the National Park System in 1972 (PWA 1994). A recent survey of visitor experience did, in fact, find that visitors at Muir Beach do not report feeling overcrowded, and further observations suggest that resources at the site are best protected through specific site management actions rather than a reduction in the number of visitors.

As discussed in Chapter 4, Section 4.3.4.1 *Recreation and Visitor Experience*, the proposed actions would reduce impacts of visitors and visitor facilities on natural resources, while neither reducing nor increasing visitation. Impacts of visitors would be reduced because the reconfigured access (bridge, trails, and parking) is designed to minimize the potential for disturbance to aquatic habitats, birds and wildlife. Trails on the site would be relocated to the perimeter of the resource areas, and the existing levee trail through the center of the site would be removed, increasing the connectivity of aquatic habitat and reducing the disturbance that currently results from hikers, equestrians, and vehicle traffic along the levee.

Other actions identified in the Final EIS/EIR which are intended to reduce the impacts of visitation include fencing around dunes at the beach to allow reestablishment of native vegetation. The location and configuration of the pedestrian bridge over Redwood Creek from the parking lot to the beach will be designed so as to minimize the impact of the bridge on creek function.

Existing data shows that shorebird abundance at Muir Beach and Rodeo Beach is substantially lower than that on six other beaches in GGNRA (3 birds/km at Muir Beach compared to 105 birds/km at Ocean Beach South). The low abundance at the beach is attributed to the habitat quality at Muir Beach, not visitation. The findings reported in BeachWatch state: "Whereas Ocean Beach is a long, wide beach that provides an excellent foraging substrate, Muir Beach has coarser grain sands not as suitable for foraging" (Flanagan, 2006). Potential impacts of dogs at the beach – to birds as well as aquatic habitats such as the intermittent tidal lagoon and the creek - are being addressed in a park-wide Negotiated Rulemaking process, not this project.

About eight years ago, NPS took action to reduce the impact of visitation by removing the water fountain at Muir Beach because it was one of the large water users of the area's only potable water, a well owned by the Muir Beach Community Services District (MBCSD) about a mile upstream. Water extraction from the MBCSD well can affect water surface elevations in Redwood Creek during the low flow period, when conditions for resident coho and steelhead can become critical. To avoid impacts to Redwood Creek from water use by visitors, this project does not propose to reinstate potable water and will continue to offer only non-flush toilets, although improved non-flush toilets, such as vault toilets, are proposed. Current management has not added additional amenitites (e.g. rentals, concessions, etc.) at Muir Beach to avoid increasing visitation levels and the human footprint. NPS also avoids the use of night lighting in order to protect dark skies, and therefore no such features are proposed as part of the new parking lot.

Changes in visitor access to Muir Beach are analyzed in Impact REC-P2, beginning on Draft EIS page 4-229, and Impact TC-P6, beginning on Draft EIS/EIR page 4-257. As discussed in these analyses, parking capacity—and therefore anticipated visitation levels—would remain unchanged under the Preferred Public Access Alternative B4. By retaining existing parking capacity, while modifying the infrastructure that serves visitors, the potential impacts of visitation are likely to be reduced.

The General Management Plan (GMP) is the most appropriate planning process to set visitor use management for Muir Beach, as it is a more comprehensive evaluation of visitor use at the site and in context with the local area. Under Statute 16 USC 1a-7(b), GGNRA's GMPs are required to evaluate visitor carrying capacity. The GMP planning process, which is currently underway by the GGNRA, will evaluate indicators and standards to evaluate impacts of visitors, but will not necessarily be done for all individual sites within the GGNRA. NPS Policies 2006 state that:

> The level of analysis necessary to make decisions about carrying capacities is commensurate with the potential impacts or consequences of the decisions.

In light of the project's design features, the very limited potential for the proposed action to alter long-term use patterns at Muir Beach, and NPS's ongoing commitment and mandate for responsible, low-impact management, the proposed action is not expected to result in adverse effects related to increases in site use.

## Response to Comment C-4

The proposed action does not include public transit features; providing public transit is outside the scope of this effort and thus outside the scope of EIS/EIR analysis. However, NPS has a long-term policy of close partnership with state and local governments to ensure park access and connections with external transportation systems, and—as Chapter 1 of the Draft EIS/EIR identifies—one of the proposed action's eight goals is to

> [c]oordinate with local transportation planning efforts to identify project features that are compatible with transportation improvements and consistent with the ecosystem restoration.

Consistent with this goal, NPS will continue to work with the Transit Authority of Marin, the Marin County Department of Public Works, and Caltrans to maximize the "fit" between improvements at Muir Beach and transit service provided by the County.

## Response to Comment C-5

Thank you for your comment. The Stage Coach, operated by the Marin County Transit District, used to run weekdays on Shoreline Highway with a stop at Muir Beach. As of April 1, 2007, low ridership prompted the District to reroute the Stage Coach on Panoramic Highway instead of Shoreline Highway, thus discontinuing the Muir Beach stop. The description of the Stage Coach service in the Traffic and Circulation section of Chapter 3, *Affected Environment*, has been updated in the Final EIS/EIR.

## Response to Comment C-6

NPS agrees with the commenter regarding the need to coordinate park planning with local transit improvements to ensure broad-based public access to national park resources. However, the County's proposal to improve transit pull-offs along Hwy 1 is a separately proposed and funded effort and is outside the scope of this EIS/EIR.

As discussed in the response to Comment C-4, the proposed action will coordinate with County improvements, including potential upgrades to Hwy 1 transit pull-offs. Nevertheless, the transit pull-off improvements are intended to meet goals that differ substantially from those of the proposed project; the NPS planning process, NEPA, and NEPA implementing regulations all require that NPS select the alternative that would best satisfy the specific purpose and need identified for the proposed action.

## Response to Comment C-7

Based on extensive public outreach and environmental analyses, NPS has concluded that Public Access Alternative C is not the best approach to accomplish the proposed action's identified purpose. This parking lot would cause the loss of a mature riparian area, with added losses for new trails through a natural area. Traffic issues on Hwy 1 would be exacerbated by the added ingress/egress. In addition, because there still would have to be a drop-off at the beach, the total area affected by visitors would be expanded. The road to the beach must remain because of its function as access to residences, and leaving the parking lot at the beach causes fewer impacts. No further analysis is warranted.

## Response to Comment C-8

The comment regarding cost-benefit considerations in evaluation of alternatives is noted. Preferred alternatives were selected based on their benefits in meeting project goals, not on their costs. NPS requires that large projects follow a value analysis and a choosing-by-advantages process for determining which alternatives best meet the goals of a project. Once the comparative advantages of the alternatives are understood, costs are evaluated to determine whether increased costs result in increased benefits to the project. This is the standard NPS method for analysis of project alternatives. In this project, two of the three alternatives selected as preferred (Bridge Alternative BR4 and Public Access Alternative B4) are not the least expensive alternatives.

## Response to Comment C-9

The proposed project is not anticipated to result in loss of wetland areas over time. Vegetation succession does not imply loss of wetlands, but rather a shift from emergent wetland to riparian wetland habitat. The proposed project, as designed, fully complies with the Coastal Zone Management Act. The project will restore functioning hydrological processes in this coastal area, and natural processes will be the least obstructed since the mid-20$^{th}$ century. Biological functions will be enhanced by project measures to create, expand, and reduce fragmentation of sustainable habitat.

As stated in Chapter 1 of the Final EIS/EIR, the goals of the project are to restore a functional, self-sustaining ecosystem, including wetland, aquatic, and riparian components; restore functions in the context of the watershed; and recreate and maintain habitat adequate to support sustainable populations of special status species. Additionally, NPS is designing the project to reduce the need for future maintenance of sediment deposition, channel configuration, etc. NPS is committed to managing vegetation well into the future to ensure that native species become established and nonnative species are reduced. Further, please note that another project goal, stated on p. 1-8, is to work with the Federated Indians of Graton Rancheria to incorporate cultural values and indigenous archeological sites into the restoration design, visitor experience, and site stewardship. Objective 33, on p. 1-13, states, “In addition to the principle of ecological restoration, the landscape design will be informed by the traditional ecological knowledge of the indigenous peoples of the Central California Culture Area, and one indicator for this objective is, “The extent the design and operational management of the restoration employs native plants with traditional cultural uses, and native practices of land management.” This goal, objective and indicator recognize a role for on-going land management in which some anthropogenic effect is incorporated, particularly in relation to vegetation. NPS is familiar with the work of Kat Anderson and its likely impact on future vegetation management actions and stewardship at the site.

By restoring ecosystem functioning and designing the project to be as self-sustaining as is practical, biological productivity at the project site and surrounding area will consequently benefit from the proposed restoration efforts.

## Response to Comment C-10

Table 2-8, Alternatives Comparison Summary, has been updated in the Final EIS/EIR as suggested.

## Response to Comment C-11

The bio-swales will be designed and managed to filter pollutants from stormwater runoff from the parking lot, thus providing water quality benefits for the project.

D

State of California – The Resources Agency ARNOLD SCHWARZENEGGER, Governor
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
(707) 944-5500

February 28, 2007

Mr. Tim Haddad
Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Dear Mr. Haddad:

Subject: Wetland and Creek Restoration at Big Lagoon, Muir Beach, Marin County
Draft EIS/EIR, SCH 2004042143

The Department of Fish and Game (DFG) is generally in support of the proposed Big Lagoon Wetlands and Creek Restoration Project in an effort to restore hydrologic and ecological process and functions to the project area, and in a larger context, restoration of the Redwood Creek watershed. The lead agency, Marin County Community Development Agency, has selected Restoration Alternative 2, Public Access Alternative 3B, and Bridge Alternative BR3 as the preferred Alternatives.

Restoration Alternative 2 involves the relocation of 2,000 linear feet of Redwood Creek to the lowest portion of the valley in an effort to widen the area of accessible floodplain over-bank events, increase sediment transport and channel stability, maintain abandoned channel areas of Redwood Creek as backwater habitat, and maintain select riparian areas in a similar condition to that which currently exists. Other elements of Restoration Alternative 2 include excavation to create emergent wetland habitat in the upper pasture area as well as adjacent to Green Gulch tributaries in support of existing California red-legged frog (CRLF) populations at the site.

Bridge Alternative BR3 includes widening and lengthening the existing Pacific Way vehicle bridge that provides access from Highway 1 to the Muir Beach parking lot. Installation of the proposed 150 foot bridge involves excavation and rebuilding of bridge abutments, installation of supporting piers, off hauling of spoils and other project related activities.

While DFG supports the increase of both CRLF and coho salmon habitat at this site, the population of both species that currently persist at the site is extremely low and possibly subject to local extirpation as the result of implementation of the wetland and riparian creation aspect of this project. Therefore, DFG recommends that take avoidance measures for CRLF include trapping and exclusion requirements beyond that which is outlined in the DEIR; detailed plans should include: incorporation of exclusion fences, pre-construction night surveys to capture adult California red-legged frogs,

D-1

*Conserving California's Wildlife Since 1870*

pre-construction daytime surveys to capture juvenile transformed California red-legged frogs, possible initial hand vegetation clearing, and close monitoring of pre-construction and construction activities to ensure that take of CRLF is prevented. D-1 cont.

The new Pacific Way vehicle structure will span Redwood Creek which contains habitat for State-listed endangered coho salmon. The installation of both temporary and permanent piles during the construction of the proposed bridge and demolition of the existing bridge has the potential of adversely impacting both adult and juvenile coho salmon. High sound pressure levels (SPL) will be produced, which may result in the instant mortality, delayed mortality, and adverse behavioral effects which could lead to increases in predation and delays in migration of coho salmon. Therefore, DFG recommends the following: all permanent pile driving activities be conducted between July 15 and October 15 to avoid the peak migration of adult and juvenile coho salmon, all reasonable measures (air bubble curtains, vibratory hammers, dewatered coffer dams, etc.) shall be incorporated to ensure that peak underwater SPLs remain below 180 dB at a distance of 10 meters from the pile, all temporary and permanent pile driving activities shall be monitored during the entire project by a qualified fisheries biologist. D-2

Further, a long term adaptive management plan, including performance standards based on the success of created habitats as measured by monitoring of re-vegetation and colonization of plants, animals, and fish, should be developed beyond that which is outlined in Section C-1 of the DEIR. D-3

DFG also encourages the lead agency to work with Green Gulch Farms, Marin Municipal Water District and other diverters in the watershed to dedicate all appropriative water right holdings to instream flow protection for the benefit of coho salmon and other sensitive species within the watershed under Section 1707 of the State Water Code (1707). D-4

Please be advised that a California Endangered Species Act (CESA) Permit must be obtained if the project has the potential to result in take of species of plants or animals listed under CESA, either during construction or over the life of the project. Special status state/federal species and their habitat that potentially occur at this site include but or not limited to: Central California Coast coho salmon, California brown pelican, Willow flycatcher, California red-legged frog, and other species. D-5

For any activity (such as levee removal or creation, bridge construction, stream channel re-alignment, etc.), that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) of a river or stream, or use material from a streambed, DFG may require a Streambed Alteration Agreement D-6

(SAA), pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant. Issuance of SAAs is subject to the California Environmental Quality Act (CEQA). DFG, as a responsible agency under CEQA, will consider the CEQA document for the project. To obtain information about the SAA notification process, please access our website at www.dfg.ca.gov/1600; or to request a notification package, contact the Streambed Alteration Program at (707) 944-5520.

D-6 cont.

If you have questions, please contact Mr. Jeremy Sarrow, Environmental Scientist, at (707) 944-5573; or Mr. Greg Martinelli, Water Conservation Supervisor, at (707) 944-5570.

Sincerely,

Chuck Armor
Regional Manager
Bay Delta Region

cc: Golden Gate National Recreation Area
Building 201, Ft. Mason
San Francisco, CA 94123
Attention: Restoration at Big Lagoon

State Clearinghouse

# Letter D: California Department of Fish and Game (February 28, 2007)

## Response to Comment D-1

NPS appreciates the suggestions for additional mitigation measures related to CRLF. These and other additional measures to protect CRLF, as appropriate, will be implemented as part of the USFWS's Biological Opinion. These measures will also be included in the ROD on the EIS/EIR.

## Response to Comment D-2

The construction of the Pacific Way bridge may require pile driving, but the need for pile driving cannot be fully determined until a subsurface geotechnical investigation is conducted during the design process for the bridge. While ground-borne vibration quickly attenuates (FTA 1995) and further attenuation occurs at the ground/water interface, sound pressure impacts on fish in nearby water bodies cannot be completely ruled out. High sound pressure levels (SPL) in excess of 180 dB could physically injure and kill juvenile and adult fish as a result of the percussive shock of these activities. Additionally, incubating salmonid embryos are immobile and sensitive to percussion-related energy shock waves. If engineers determine that pile driving is necessary for structural soundness and that sound pressure in Redwood Creek could reach 180 dB, NPS will implement Mitigation Measure FISH-MM-3 to reduce or avoid impacts on fish in the nearby creek. Mitigation Measure FISH-MM-3 is listed below, and the text has been added in the Final EIS/EIR to reflect this information.

### Mitigation Measure FISH-MM-3: Avoidance and Monitoring of High Sound Pressure Levels during Pile-Driving Activities.

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.

## Response to Comment D-3

A monitoring plan for physical and biological functions of the project will be prepared as part of the design preparation following completion of this EIS/EIR. Physical and biological functions of the project will be monitored according to

the monitoring plan, which will identify goals and performance standards for adaptive management.

## Response to Comment D-4

NPS agrees that instream flow protection for water rights in the watershed would be beneficial for coho salmon, but this is beyond of the scope of the proposed project.

## Response to Comment D-5

NPS and Marin County will work with regulatory agencies to obtain all pertinent permits.

## Response to Comment D-6

NPS and Marin County will work with regulatory agencies to obtain all pertinent permits; however, a Streambed Alteration Agreement is not required for federal actions on federal land (i.e., portions of the project site).

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *Governor*

**OFFICE OF HISTORIC PRESERVATION**
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14 March 2007

Reply To: NPS030131A

Brian O'Neill
General Superintendent
National Park Service
Golden Gate National Recreation Area
Fort Mason
San Francisco, CA 94123

Re: Section 106 Consultation for the Big Lagoon Ecosystem Restoration, Muir Beach, Marin County, CA

Dear Mr. O'Neill:

Thank you for your letter of 31 January 2007, requesting my comment pursuant to the National Historic Preservation Act as amended and the implementing regulations codified at 36 CFR 800 with regards to the above undertaking. You are requesting concurrence with the NPS' determination that the above referenced project will not have an adverse affect on historic properties.

As I understand it, the undertaking consists of the evaluation of alternatives to restore a functional, self-sustaining ecosystem, and provide public access that is compatible with the ecosystem restoration at Big Lagoon, Muir Beach. Under consideration are three restoration alternatives, six public access alternatives, four bridge alternatives, and five fill disposal alternatives for the project.

The NPS has determined that the APE to be the area shown in Figure 1-3 of the accompanying EIS/EIR. As described via telephone, the APE is bounded by Pacific Highway on the north, and the Golden Gate Dairy on the east, and the beach on the west. I find this satisfactory pursuant to 36 CFR 800.4(1).

E-1

Within the APE for this project, there are four historic properties: the Golden Gate Dairy, CA-MRN-333, CA-MRN-674, and the Fan Site. Golden Gate Diary is eligible for inclusion in the NRHP. The Cultural Landscape Initiative Program submitted this project to my office for review and is still currently under review. More information regarding the three archeological sites will be forthcoming.

Until the identification and evaluation portion of the project is complete, I am not able to concur with the finding of effects for this undertaking.

Thank you for considering historic properties as part of your project planning and I look forward to continuing this consultation. If you have any questions, please contact Amanda Blosser of my staff at (916) 654-9010 or e-mail at ablosser@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

MWD:ab

# Letter E: Office of Historic Preservation (March 14, 2007)

## Response to Comment E-1

Thank you for your comment. We are continuing the consultation process with the SHPO and will be seeking concurrence on a no adverse effect finding on the proposed project.