Golden Gate National Recreation Area

National Park Service
U.S. Department of the Interior

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Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan

Marin County, California

Final Environmental Impact Statement

March 2009

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Final Environmental Impact Statement
Marin Headlands and Fort Baker
Transportation Infrastructure and Management Plan

GOLDEN GATE NATIONAL RECREATION AREA

Marin County, California

Lead Agency: National Park Service, U.S. Department of the Interior

The *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan Final Environmental Impact Statement* presents and analyzes alternatives to provide improved access to and within the Marin Headlands and Fort Baker for a variety of users, and seeks to initiate these improvements in a way that minimizes impacts to the rich natural diversity and cultural resources of the Marin Headlands and Fort Baker. This document describes and analyzes four alternatives for transportation infrastructure and management in the Marin Headlands and Fort Baker:

- Alternative 1, the No-Action Alternative, would provide no change from the existing management direction for transportation infrastructure and management in the Marin Headlands and Fort Baker.
- Alternative 3, the Preferred Alternative, would provide enhanced multi-modal access to the Marin Headlands and Fort Baker. Roadway infrastructure would be rehabilitated or reconstructed without altering the historic character, and parking facilities would be improved. Additional transit options would be provided to and within the Marin Headlands and Fort Baker to improve access to the area. Pedestrian and bicycle access would be improved by closing and rerouting existing trails and constructing new trails.
- Alternative 2 would provide basic multi-modal access to the Marin Headlands and Fort Baker. Roadway infrastructure would be rehabilitated within the existing roadway width; parking facilities would be improved; transit service to the Marin Headlands would be expanded on weekends; and minor pedestrian and bicycle facility enhancements would be implemented to improve access to the park.
- Alternative 4 would provide maximum multi-modal access to the Marin Headlands and Fort Baker. Roadway infrastructure would be reconstructed throughout the study area, and parking facilities would be improved. Transit options would be similar to those provided in the Preferred Alternative, with the addition of connections to regional transit centers outside the park. More extensive pedestrian and bicycle facility enhancements would be implemented, including closing and rerouting existing trails, constructing new trails, and widening nearly all major roads to allow bicycle lane construction.

Based on issues identified during the public and agency scoping process, the impact analysis focuses on transportation, natural resources (including geology, paleontology, soils, and seismicity; water resources, biological resources, and air quality), cultural resources, visitor use and experience (including visual and aesthetic resources; recreation and visitor enjoyment; noise; and human health, safety, and the environment), the social and economic environment, and park operations and management.

Decision Process: The National Park Service will execute a Record of Decision (ROD) no sooner than 30 days following publication by the Environmental Protection Agency of the Notice of Availability of the Final Environmental Impact Statement. The Final EIS will be available for public inspection as follows: online at http://parkplanning.nps.gov/goga; in the Office of the Superintendent (Bldg. 201 Fort Mason, San Francisco, CA); at local public libraries (San Francisco Public Library - Main Branch, Marin County Free Library, Mill Valley Public Library, Point Reyes Station Library, and Sausalito Library), or by requesting a copy (contact Steve Ortega at 415-561-2841, or e-mail at goga_planning@nps.gov). Written inquiries can also be sent to:

Superintendent, Golden Gate National Recreation Area
Attention: MH_FB TIMP
Fort Mason, Building 201
San Francisco, CA 94123)

SUMMARY

INTRODUCTION

This *Final Environmental Impact Statement* presents four alternative transportation management concepts and related infrastructure improvements for the Marin Headlands and Fort Baker in Golden Gate National Recreation Area. Environmental impacts of the alternatives are analyzed in accordance with the requirements of the National Environmental Policy Act, National Park Service *Director's Order #12: Conservation Planning, Environmental Impact Analysis and Decision-making,* and NPS *Management Policies 2006*.

The Marin Headlands and Fort Baker are in the San Francisco Bay area at the north end of the Golden Gate Bridge, across the bay from San Francisco. The Marin Headlands span the southern tip of the Marin Peninsula, from U.S. Highway 101 to the western coastline, a 2,500-acre area. Fort Baker is a 335-acre site directly adjacent to the Headlands on the east side of U.S. 101. Both sites are within Marin County. The city limits of Sausalito meet the northern boundary of Fort Baker, and San Rafael is about 10 miles to the north. The study area for this project is defined as the historic U.S. Army Forts Baker, Barry, and Cronkhite, and the corridors of roads and trails that connect the three forts to the U.S. Highway 101 corridor and the Golden Gate Bridge. Forts Baker, Barry, and Cronkhite are listed on the National Register of Historic Places as a historic district.

PROJECT PURPOSE AND NEED

Purpose of the Plan

The purpose of the plan is to provide improved access to and within the Marin Headlands and Fort Baker for a variety of users, and to initiate these improvements in a way that minimizes impacts to the rich natural and cultural resources of the Marin Headlands and Fort Baker study area.

Need for the Plan

Roadways and Vehicular Circulation. The current road network was not constructed to accommodate present traffic volumes and the diverse types of traffic that now use the roads. The transportation infrastructure is in poor condition, the asphalt paving is 30 years old or more, and culverts are undersized, plugged, and collapsed.

Parking Conditions. Locations in the park lack sufficient parking to accommodate all users, while other locations have a surplus of available parking. Poorly designed parking areas result in congestion and pedestrian and bicycle safety concerns, and parking often occurs in areas that have not been developed to support parking uses, resulting in adverse impacts on resources.

Bicycle and Pedestrian Access. Visitors wishing to access the study area by bicycle or on foot find that roads and trails are inadequate. Trail conditions and connectivity from U.S. 101 and local roads to park destinations need to be improved to create an attractive and viable alternative to auto access.

Transit Service. Limited transit service is provided to the study area, making it difficult to access the Marin Headlands and Fort Baker except by driving.

Wayfinding. A lack of both directional signs and appropriate street signs in the study area make it difficult to quickly find destinations within the study area.

Natural and Cultural Resources Protection. Trails, roadways, and parking areas have caused various resource impacts. Some poorly designed or undesignated parking areas take up more space than necessary, and many are located in valuable wetland or riparian resources and habitat, which are further impacted by runoff from roadways and parking areas. Pedestrians take shortcuts to reach destinations without formal trails, contributing to natural resource degradation. Although the road system is largely intact and much of it remains as the Army built it over 50 years ago, there have been limited resources for its upkeep and rehabilitation. Consequently, this historic resource is deteriorating.

Forts Baker, Barry, and Cronkhite comprise a historic district that is listed on the National Register of Historic Places for its high-quality examples of military coastal fortifications and support facilities, including historic architecture and roads. In addition, some of these historic resources may also

contribute to a seacoast fortification national historic landmark, the highest form of historic resource designation provided by federal law. Although the road system is largely intact and much of it remains as the Army built it over 50 years ago, the road and trail system in the study area has suffered from little investment and rehabilitation; therefore, this historic resource is deteriorating.

Plan Goals and Objectives

This project would provide infrastructure and access improvements in the park to meet the following plan goals:

- Promote public transit, pedestrian, and bicycle travel to and within the park to improve visitor experience and enhance environmental quality.
- Rehabilitate the Marin Headlands and Fort Baker road and trail infrastructure in a manner that protects resources and improves safety and circulation.
- Reduce traffic congestion and improve safety at key park locations and connecting roads.

THE ALTERNATIVES

This environmental impact statement describes and analyzes four alternatives for transportation infrastructure and management in the Marin Headlands and Fort Baker — a no-action alternative, which would provide no change from the existing management direction, and three action alternatives, which would propose a range of improvements to the transportation system and infrastructure.

- **Alternative 1 — No-Action Alternative.** Alternative 1 would include only those actions necessary to continue park operations and management. Transportation improvements and transportation demand management programs specified in the *Fort Baker Plan Final Environmental Impact Statement* and resulting *Record of Decision* would be implemented (see "Actions Common to All Alternatives"). Analysis of the No-Action Alternative provides a baseline from which to compare the other alternatives.
- **Alternative 3 — Preferred Alternative: Enhanced Multi-Modal Access.** Roadways would be rehabilitated or reconstructed/widened without altering their character-defining features, and parking facilities would be improved. A greater number of transit options would be provided to and within the study area. Parking fees would be collected to fund improved transit services. Extensive pedestrian facility enhancements would be implemented, including closing and rerouting existing trails and constructing new trails. Bicycle facilities would be improved with a few new paths and bike lanes. Car-free days would be implemented on a trial basis for a maximum of seven days per year. Alternative 3 is the proposed action because it would improve safety and circulation within the study area, alleviate traffic congestion at key locations, reduce impacts to resources in some locations, and enhance visitor experience.
- **Alternative 2 — Basic Multi-Modal Access.** Roadways would be rehabilitated within the existing roadway width; parking facilities would be improved; transit service would be expanded to the Marin Headlands on weekends; and minor pedestrian and bicycle facility enhancements would be implemented. No parking fees would be collected.
- **Alternative 4 — Maximum Multi-Modal Access**. Roadways would be reconstructed and widened for bicycle lanes in various locations throughout the study area, and parking facilities would be improved. Transit options would be similar to those provided in Alternative 3, with the addition of connections to regional transit centers outside the park. Extensive pedestrian and bicycle facility enhancements would be made, including closing and rerouting existing trails, and constructing new trails plus bicycle lanes on nearly all major roads. Parking fees would be collected to fund improved transit services. Car-free days would be implemented on a trial basis for a maximum of seven days per year.

Actions Common to All Alternatives

Certain actions would be taken under all alternatives, including the No-Action Alternative, because they were approved through separate planning efforts that were completed before the current

transportation management plan was undertaken. These actions are described briefly below.

The *Fort Baker Plan Final Environmental Impact Statement* and the resulting *Record of Decision* provide for the reuse of Fort Baker, which was previously owned by the U.S. Army and is now part of the national park system. The plan will preserve historic structures and natural features in Fort Baker through the establishment of compatible uses, the rehabilitation or restoration of certain areas, and other site improvements.

The proposed Fort Baker retreat and conference center is required to operate a shuttle or assist in the operation of a shuttle as part of the *Fort Baker Plan*. While shuttle operations have not been determined at this time, the shuttle service will transport conference center visitors to and from the center, parking areas, and sites in Fort Baker and Sausalito. The shuttle service will also provide airport connections for conference center patrons and could provide transit to other local attractions outside the study area. The shuttle will accommodate bicycles to help alleviate bicycle/vehicle conflicts on narrow roadways in Sausalito near Fort Baker.

Also, as part of the *Fort Baker Plan*, the National Park Service has implemented a transportation demand program in the study area to reduce the number of single-occupancy vehicle trips in the area. The program is composed of six elements that focus on the use of existing transportation infrastructure and voluntary participation of the employees, volunteers, and visitors of the organizations located in the study area.

"Special Park Use Guidelines" for Fort Baker guide special event parking and traffic management. Special events occurring at Fort Baker will abide by the provisions of the transportation demand management (TDM) program.

The Marine Mammal Center is currently being upgraded and expanded, in accordance with the *Marine Mammal Center Site and Facilities Improvements Project Environmental Assessment* and the subsequent "Finding of No Significant Impact." As part of this undertaking, parking for the center is being modified.

Elements Common to All Action Alternatives

The following elements would be common to Alternatives 2, 3, and 4 (except where noted):

- Roadway and vehicular circulation improvements would include rehabilitation or reconstruction (including widening) of existing roadways and operational changes to improve safety and circulation, alleviate traffic congestion, and reduce resource impacts.
- Parking management improvements would include organizing and delineating parking areas, closing some parking areas, and relocating some parking areas to improve visitor experience, accessibility, and safety; to alleviate congestion; and to reduce resource impacts.
- Bicycle and pedestrian improvements would include changes to the existing trail system to improve bicycle and pedestrian travel options and connections within the park, to improve the quality of the visitor experience, to improve safety, and to reduce resource impacts. The intent would be to improve the facilities so that more visitors would choose to access the study area by these modes of transportation instead of automobiles.
- Resource protection elements include both natural and cultural resource actions related to transportation elements in this plan.
- For Alternatives 3 and 4, transit service improvements would include increased transit options to and within the park, including increased service times and frequency, plus more direct access to specific areas. These improvements would be tied to projected revenue expected to be generated by parking fees under Alternatives 3 and 4.
- For Alternatives 3 and 4, the establishment of car-free zones on specified days and during special events throughout the year would provide visitors the opportunity to experience large sections of the study area in a natural setting with reduced automobile traffic and would educate visitors on alternative modes of transportation for access to and within the study area under Alternatives 3 and 4 only.

ENVIRONMENTAL CONSEQUENCES

Impact topics for the environmental analysis were determined based on applicable laws, regulations and policies, along with comments from park staff and the public, including other governmental agencies. Impacts are generally described below. The impacts of Alternatives 2, 3, and 4 are compared to what would happen under the No-Action Alternative (Alternative 1).

No resources or values in Golden Gate National Recreation Area would be impaired by any alternative, no impacts were found to be unacceptable, and all proposed uses are deemed to be appropriate. Although Alternative 4 would cause a long-term, major, adverse effect to historic resources in the Marin Headlands due to widespread changes to the scale of the historic district's circulation system, the park's Division of Cultural Resources has determined that these impacts would not impair the park's cultural resources.

Impacts on Transportation

Proposed transportation improvements would address existing transportation issues to varying degrees. Overall, Alternatives 2, 3, and 4 would improve roadway and trail facilities and transit services, thereby improving safety and access by all transportation modes. This would also improve access for a broad variety of users, one of the purposes of this plan.

Transit. Alternative 1 would continue to provide limited transit service to the Marin Headlands and Fort Baker, while Alternatives 2, 3, and 4 would improve transit service at various levels. Compared to Alternative 1, all of the action alternatives would have a beneficial impact on transit service by increasing the size of the current transit market; improving transit service levels, intermodal connections, and accessibility; and adding to transit capacity. These long-term, beneficial impacts would range from negligible to major for the various alternatives. The potential disruption of transit service due to construction activities would result in short-term, minor, adverse impacts.

Traffic. *Traffic Volumes* — Traffic volumes in Marin Headlands and Fort Baker would not change under Alternative 1. With the increased availability of transit and the implementation of a program to restrict the use of vehicles on a few select days, traffic could be reduced under Alternatives 3 and 4 compared to Alternative 1, resulting in long-term, negligible, beneficial impacts. Because Alternative 2 would include limited transit improvements and no parking fee program, this alternative would have no noticeable impact on reducing traffic to or within the park. Alternative 2, with a one-way road system, would also have long-term, minor to major, adverse impacts due to increased traffic volumes on some roads because of out-of-direction travel. However, one-way operation would have a long-term, minor, beneficial impact along Danes Drive and Bunker Road because of lower traffic volumes. Construction activities would have short-term, negligible to moderate, adverse impacts to traffic volumes along specific roadway segments.

Level of Service — Improvements to major intersections under Alternatives 2, 3, and 4 would result in long-term, minor, beneficial impacts to traffic operations by improving the level of service.

Vehicular Safety — There would be no improvements to roadways under Alternative 1, so there would be no change to vehicular safety. For Alternatives 2, 3, and 4, the increase in safety compared to Alternative 1 would be commensurate with the number of safety improvements. The overall effect of these safety improvements would be to address existing vehicular safety issues throughout the study area, including locations where high accident rates have been reported. Improvements under Alternative 2 would have long-term, moderate, beneficial impacts compared to Alternative 1; while additional safety improvements under Alternatives 3 and 4 would have long-term, major, beneficial impacts.

Parking — Current parking conditions would continue under Alternative 1, resulting in inefficient use and potential safety issues, with ongoing impacts on resources due to parking in nondesignated areas. All of the action alternatives would reduce the number of overall parking spaces, eliminating spaces or lots in underutilized locations or areas where resources have been degraded. These reductions would have long-term, beneficial impacts for park resources and safety, but overall long-term, minor, adverse impacts on the total parking supply. During construction some parking spaces could be inaccessible, resulting in short-term, minor, adverse impacts.

Nonmotorized Use and Access. *Bicycles and Pedestrian Access* — Improvements to trails and bicycle facilities would vary by alternative. Improving access by providing new or improved connections would result in long-term, beneficial impacts that would be minor under Alternatives 1 and 2 and major under Alternative 3. Alternative 4 would include less investment in off-road bike paths than Alternative 3, resulting in long-term, moderate to major, beneficial impacts. Bicycle and pedestrian access under Alternatives 3 and 4 could be disrupted by construction activities, resulting in a short-term, minor, adverse impact.

Bicycle and Pedestrian Safety — Alternatives 1 and 2 would have an overall long-term, minor, beneficial impact on bicycle and pedestrian safety by providing sidewalks and trails in some locations or improving existing trails. Alternative 3 would have a long-term, major, beneficial impact by providing additional improvements, such as new off-street bike paths and signage or widening existing roads to safely accommodate bicyclists and pedestrians in the shoulder area. Alternative 4 would include less investment in off-road pedestrian infrastructure than Alternative 3, resulting in long-term, moderate to major, beneficial impacts.

Wayfinding — There would be no change in the ease of finding one's way in the park under Alternative 1. Improvements to transit stops, including benches and signs, would increase the visibility of transit services in the park under Alternatives 2, 3, and 4. In the long term these improvements would have minor, beneficial impacts on wayfinding. However, implementing a one-way circulation concept in Alternative 2 could result in temporary confusion for drivers entering and exiting the park, resulting in short-term, minor, adverse impacts on wayfinding.

Car-Free Days — Car-free days tested under Alternatives 3 and 4 would result in substantial changes in private vehicle access to portions of the Marin Headlands where implemented on a trial basis for a maximum of seven days per year, resulting in long-term, major, adverse impacts on private vehicle access on these days. However, expanded shuttle service, along with the absence of vehicles on certain roads, would result in long-term, major, beneficial impacts on the ability to access park destinations by alternative modes on these days.

Impacts on Natural Resources

Geology, Paleontology, Soils, and Seismicity. *Geology and Paleontology* — No rock cuts would be required under Alternative 1, so there would be no impacts to geologic or paleontological resources under this alternative. Under Alternatives 3 and 4 additional excavation of existing rock cuts would be required in certain areas to provide safe sight distance and accommodate a wider roadway, resulting in long-term, moderate, adverse impacts. Under Alternative 3 realigning a section of one-way West Conzelman Road away from the erosional head cut would result in a long-term, negligible, adverse impact because rock cuts would be required.

Soils — Soil erosion on the road and trail system would continue to cause long-term, moderate, adverse impacts under Alternative 1. Under the Alternatives 2, 3, and 4 the potential effects to soils would be limited to those sites where work would occur off the existing road bench. Addressing known sites of significant soil erosion would have long-term, moderate, beneficial impacts under Alternatives 3 and 4 due to greatly reducing the amount of erosion. Under Alternative 2 fewer actions would be taken to deal with erosion problems, resulting in long-term, minor, beneficial impacts.

Coastal Resources. There would be no impacts to coastal resources, including shorelines in the study area of the Pacific Ocean, Golden Gate Channel, and San Francisco Bay, under Alternative 1. Elements of Alternatives 2 and 4 would directly improve the quality of coastal resources within the Marin Headlands and Fort Baker by reducing erosion, which would result in long-term, minor, beneficial impacts on coastal resources. Alternative 3 would have additional beneficial effects as a result of actions to reduce erosion and restore natural shoreline processes. Impacts would be long-term, minor, and beneficial.

Water Resources. *Groundwater* — Alternative 1 would have no effect on groundwater. Drainage of the wet section along the Rodeo Valley trail under Alternatives 2, 3, and 4 would have long-term, negligible or less, adverse impacts on groundwater levels.

Water Quality — Due to ongoing erosion at various locations throughout the Marin Headlands, Alternative 1 would result in long-term, moderate

adverse impacts to water quality. Under Alternatives 2, 3, and 4, improvements to roadways, parking areas, trails and bicycle facilities, and natural resources would vary. Improvements under Alternatives 3 and 4 would result in long-term, minor to moderate, beneficial impacts to water quality because of erosion control and a reduction in vehicle-generated pollutants that could drain into waterbodies. Alternative 2 would address fewer severe erosion sites, or address them in less effective ways, so impacts would be long-term, minor, and beneficial at locations where some improvements were undertaken and moderate and adverse at locations where erosion problems would continue. Construction activities could cause short-term, moderate, adverse impacts to surface water quality, but the use of best management practices would reduce this likelihood.

Floodplains and Flooding — There would be no improvements in any floodplains under Alternative 1 and no change in surface water run-off. Under Alternatives 3 and 4 trail and bridge construction across the Rodeo Creek floodplain adjacent to the Capehart housing area and adjacent to Smith Road would result in long-term, negligible, adverse impacts to this floodplain. Long-term, adverse impacts on localized flooding under Alternatives 2, 3, and 4 would range from negligible to minor due to possible increased surface runoff rates and volumes. Potential reductions in the occurrence of localized flooding would result in negligible, beneficial impacts.

Biological Resources. *Biological Habitats and Vegetation* — There would be no impacts to plant community size, continuity, or integrity under Alternative 1, nor would there be any change in the number of native and nonnative trees in the park. Under Alternatives 2, 3, and 4 impacts to plant communities would be long-term, minor, and beneficial since impacts would be restricted primarily to already disturbed areas, and restoration efforts would result in a higher quality community for native plant and wildlife species.

The overall impact of removing invasive, nonnative tree species under Alternatives 2, 3, and 4 would be long-term, minor, and beneficial because the potential for these species to further spread through the study area would be reduced, and they would be replaced by native vegetation communities. The potential spread of invasive weeds under Alternative 1 would result in long-term, negligible to minor, adverse impacts because no additional efforts would be taken to remove or control these species. Efforts under Alternatives 2, 3, and 4 to remove and control invasive, nonnative species would result in long-term, moderate, beneficial impacts. Non-native tree removal within areas directly adjacent to habitat for the federally endangered mission blue butterfly (e.g., the slopes of Hawk Hill, etc.) and within predicted mission blue butterfly habitat (e.g. the southern and western slope below Conzelman Road, etc.), together with other restoration activities, would result in long-term, major, beneficial impacts. Non-native trees would be replaced with a mosaic coastal scrub and prairie habitats.

Construction activities could result in short-term, negligible to minor, adverse impacts from the spread of invasive nonnative plants and the potential introduction of new invasive weeds from construction equipment. However, the use of best management practices and mitigation measures would reduce this likelihood.

Wetlands — There would be no impact to wetlands under Alternative 1. Any loss of wetlands from construction activities under Alternatives 2, 3, and 4 would result in long-term, minor, adverse impacts because of the limited distribution of these habitats. However, the restoration and enhancement of wetlands under the action alternatives would more than offset any losses sustained due to construction, with overall long-term, moderate, beneficial impacts. For example, project design elements related to removal of the Rodeo Beach unpaved parking lot, such as control of invasive weeds and removal of natural hydrology in these areas, would greatly increase the value and area of emergent wetlands in these areas.

Wildlife and Aquatic Life — There would be no impacts to wildlife and aquatic life under Alternative 1. Under Alternatives 2, 3, and 4 small amounts of wildlife habitat would be permanently removed, resulting in localized effects on habitat connectivity. However, these adverse effects would be offset by net increases in habitat due to revegetation efforts. The overall connectivity and integrity of wildlife habitat within the study area would not be diminished and could improve over the long-term. Effects to individual animals could occur, but would primarily be restricted to con-

struction areas. The overall long-term impacts on common wildlife under the action alternatives would be minor and beneficial. Short-term, minor, adverse impacts would occur during construction.

Special Status Plant Species — There would be no impacts to special status plant species under Alternative 1. Overall long-term effects would be minor and adverse under Alternatives 2 and 3, and moderate and adverse under Alternative 4. New trail construction through previously undisturbed habitats would have a much greater potential to impact special status plant species. Construction activities could result in short-term, negligible to minor, adverse impacts from temporary disturbance.

Special Status Wildlife Species — There would be no impacts to special status wildlife species under Alternative 1. Under Alternative 2, there would be no long-term impacts to the species listed below (except for the mission blue butterfly and bats) because no actions would occur within suitable habitat for these species. Long-term impacts to the mission blue butterfly would be minor and beneficial under Alternative 2 because no Coastal Trail restoration projects would be proposed. Under Alternative 2 impacts to bats could be long-term, moderate, and adverse due the possible removal of trees throughout the study area if they provided roosting habitat and loss of individuals. The primary location for impacts would be the Marin roads and trails maintenance yard. Pre-construction surveys to identify any such trees, however, would lessen the potential for impacts.

Additional impacts to specific special status wildlife species under Alternatives 3 and 4 are described below.

- *Mission Blue Butterfly* — Although short-term, major, adverse impacts could result from roadway improvements and specific project elements, these impacts would be reduced with mitigation. Alternatives 3 and 4 overall would have long-term, major, beneficial impacts on the mission blue butterfly from the closure and active restoration of habitat areas and compensation measures.
- *Tidewater Goby* —Major, adverse impacts, including habitat degradation and potential loss of individuals, could result during removal of fill in Rodeo Lagoon under Alternatives 3 and 4, and widening the Rodeo Lagoon bridge under Alternative 4. These impacts would be reduced with mitigation. Overall long-term effects would be major and beneficial because habitat would be reestablished once fill had been removed from the lagoon, and mitigation measures would be taken.
- *Steelhead* — Habitat degradation and potential loss of individuals could result during removal of fill in Rodeo Lagoon under Alternatives 3 and 4, and widening the Rodeo Lagoon bridge under Alternative 4. These impacts would be reduced with mitigation. Overall long-term impacts would be major and beneficial for Alternatives 3 and 4 because habitat would be reestablished once fill had been removed from the lagoon, and mitigation measures would be taken.
- *California Red-legged Frog* — Moderate, adverse impacts, including the loss of individuals and critical habitat, could result from constructing the new Rodeo Creek crossings and removing the existing crossings under Alternatives 3 and 4, and from widening the Rodeo Lagoon bridge under Alternative 4. These impacts would be reduced with mitigation. Overall long-term impacts would be major and beneficial under Alternative 3 and moderate beneficial under Alternative 4 because willow riparian habitat would be restored along Rodeo Creek and riparian and/or emergent wetland habitat would be created along Rodeo Lake and Lagoon.
- *California Brown Pelican* — Constructing a fence at the southern end of Rodeo Beach and removing fill in Rodeo Lagoon could result in short-term, minor, adverse impacts, including disturbance of individuals. Additional impacts could result from installing sand matting along Rodeo Beach under Alternative 4. These impacts would be reduced with mitigation. Overall long-term impacts would be minor and beneficial because of reduced human disturbance and mitigation measures.
- *Western Snowy Plover* — Constructing a fence at the southern end of Rodeo Beach could result in short-term, minor, adverse impacts, including disturbance of individuals. Additional impacts could result from installing sand matting along Rodeo

Beach under Alternative 4. These impacts would be reduced with mitigation. Overall long-term impacts would be minor and beneficial because of reduced human disturbance and mitigation measures.

- *Western Pond Turtle* — The western pond turtle could be affected by the construction of new Rodeo Creek crossings and the removal of existing crossings. Effects would be localized in a very small area and are not anticipated to include loss of individuals. Long-term impacts would be minor and adverse. Short-term habitat disturbance during construction would impact a very a small amount of turtle habitat.
- *Salt Marsh Harvest Mouse* — The majority of impacts to the salt marsh harvest mouse would be long-term, negligible, and adverse as a result of harm or harassment, sedimentation and erosion, and toxic materials. However, effects to the species are considered unlikely as its presence within the project area has not been positively confirmed.
- *Salt Marsh Common Yellowthroat* — Short-term impacts could be moderate and adverse, including loss of habitat, as a result of removing fill from Rodeo Lagoon, constructing new Rodeo Creek crossings and removing existing crossings, and also from widening the Rodeo Creek bridge under Alternative 4. However, these impacts would be reduced with mitigation. Long-term impacts would be moderate and beneficial because willow riparian habitat would be restored along Rodeo Creek and riparian and/or emergent wetland habitat would be created along Rodeo Lake and Lagoon, in addition to mitigation measures.
- *Allen's Hummingbird* — Constructing the new Rodeo Creek crossings and removing the existing crossings would result in long-term, moderate, adverse impacts, including the potential loss of habitat. These impacts would be reduced with mitigation. Overall long-term impacts would be moderate and beneficial because of willow riparian habitat restoration along Rodeo Creek, the creation of riparian and/or emergent wetland habitat along Rodeo Lake and Lagoon, and mitigation measures.
- *Bats* — Some bats could be affected by the removal of trees if they provided roosting habitat, primarily at the Marin roads and trails maintenance yard. Short-term impacts would be considered moderate because they could result in loss of individuals, but the overall size or integrity of a local population would not be permanently affected. These impacts would be reduced with mitigation. Long-term impacts would be moderate and adverse because of the permanent loss of potential roosting habitat.

Air Quality. There would be no effects to the region's air quality under any of the alternatives. Alternative 1 would only include those measures already adopted in approved plans, including those previously evaluated as part of the *Fort Baker Plan;* therefore, no new short- or long-term local air quality impacts would occur. Under Alternatives 2, 3, and 4, local, long-term impacts would primarily be associated with potential increases in mobile-source carbon monoxide concentrations near roadway intersections. Based on the traffic analysis prepared for this project, the action alternatives would result in beneficial impacts on traffic volumes and levels of service in the study area. Therefore, impacts to air quality would likely be long-term, negligible to minor, and beneficial because of reductions in localized carbon monoxide concentrations. Adverse, short-term local air quality impacts would occur during construction and would range from negligible to moderate.

Impacts on Cultural Resources

Alternative 1 would not change the management or treatment of historic roads and associated resources in the Marin Headlands, and the existing appearance and character of these resources would remain the same.

The Preferred Alternative would include a number of minor and moderate adverse effects to specific historic features. Overall, the alterations under this alternative would lessen the vernacular quality of the military circulation network and replace it with a standardized sense of design to the point that this alternative would diminish the integrity of design, setting, and feeling of the historic district. The changes proposed in Alternative 3, as a whole, would represent a long-term, moderate, adverse impact to historic resources.

Alternative 2 would result in a few minor and moderate adverse effects in connection with alterations to specific historic features of the historic district. While these modifications would replace a measure of the vernacular character of the district's circulation system with an uncharacteristic level of modern roadway standardization, the district's integrity of design, setting, and feeling, while affected, would not be diminished. The changes proposed in Alternative 2, as a whole, would result in long-term, minor, beneficial impacts and localized, minor, adverse impacts to historic resources. Most of the modifications to the historic features would have negligible or beneficial effects.

Alternative 4 would include most of the same actions as Alternative 3, but on a greater scale. With Alternative 4, the district's circulation network would retain integrity of location. However, roadway alterations would lessen the vernacular quality of the military circulation network and replace it with a standardized sense of design to the point that integrity of design, setting, materials, workmanship, feeling, and association would all be diminished to the degree that this alternative would have the most severe impacts of the four alternatives. Alternative 4 would cause long-term, major, adverse effects to historic resources in the study area.

In addition, restoration efforts included as enhancement and mitigation for impacts on wetlands areas or mission blue butterfly habitat under Alternatives 2, 3, and 4 could cause additional impacts on historic and archeological resources. With implementation of cultural landscape mitigation measures, long-term impacts at other resource areas would range from negligible to minor and adverse, to moderate and beneficial.

Impacts on Visitor Use and Experience

Visual and Aesthetic Resources. The analysis of visual resources for the transportation plan was based on three priority sites: Battery Spencer, Hawk Hill, and Fort Cronkhite. Each of these priority sites was evaluated from two or three key observation points, representing the most commonly experienced views of these areas.

Alternative 1 would take no specific actions to remedy traffic and parking problems in the study area, to provide for the restoration of natural and historic resource areas, or to reduce or prevent erosion caused by improper parking along roadways. Consequently, there would be no effect to the visual character of specific sites or the overall study area.

Battery Spencer — Alternatives 2 and 3 would result in long-term, negligible impacts to visual and aesthetic resources due to parking area improvements at Battery Spencer. Additional road widening, rock cuts, and paving at this location under Alternative 4 would result in long-term, moderate, adverse impacts.

Hawk Hill — Bicycle- and parking-related improvements at Hawk Hill, and a large retaining wall constructed along the south side of Conzelman Road to accommodate the wider road under Alternative 3, would result in moderate, adverse impacts to visual and aesthetic resources. Long-term, minor, beneficial visual effects would result under Alternative 2 from the proposed parking changes, since the area would appear more organized. Alternative 4 would widen Conzelman Road by 4 to 6 feet to accommodate an uphill bike lane between McCullough Road and Hawk Hill, and a wider, more organized parking and turnaround area at Hawk Hill. Also, a larger retaining wall would be constructed along the south side of Conzelman Road to accommodate the wider road. Long-term impacts at this location under Alternative 4 would be moderate and adverse.

Fort Cronkhite — Overall long-term benefits of restoring the unpaved Rodeo Beach parking area would effectively balance the adverse visual effect of the other changes under Alternative 3, resulting in long-term, moderate, beneficial visual impacts. The changes proposed under Alternative 2 would result in long-term, minor, beneficial visual effects on Fort Cronkhite because a portion of the unpaved parking area at Rodeo Beach would be removed and partially restored to a riparian corridor. Impacts under Alternative 4 would be similar to Alternative 3, except that Mitchell Road would be widened to accommodate bike lanes in each direction, and long-term impacts would be minor and beneficial.

Other Visual Resource Changes — While Alternatives 3 and 4 propose to rehabilitate and reconstruct roadway infrastructure without altering character-defining features, some changes to the visual landscape would occur, including cuts into hillsides and rock faces, plus construction of retaining and fill walls. In contrast, some elements of these alternatives would restore natural and cultural features

to portions of the study area, thereby improving visual conditions. Overall long-term impacts on visual and aesthetic resources under Alternatives 2, 3, and 4 would be minor and beneficial.

Under Alternative 2 the physical infrastructure would not be substantially altered; instead uses would be limited or reduced to fit within available space. This alternative would limit rehabilitation/ reconstruction efforts to previously disturbed areas whenever possible, and some basic restoration and rehabilitation efforts would restore the character of the natural environment. The overall long-term impacts on visual and aesthetic resources under Alternative 2 would be minor and beneficial.

Construction would result in short-term, minor, adverse impacts at Battery Spencer, Hawk Hill, and Fort Cronkhite, as well as at other locations in the planning area.

Impacts to Recreation and Visitor Enjoyment. Alternative 1 would not change access to park partner activities, variety of park experiences, scenic views, access to aquatic recreation sites, or access to interpretive services.

Short-term disruptions during construction under Alternatives 2 and 3 would result in negligible to minor adverse impacts, and Alternative 4 would result in minor adverse impacts for park partners and at specific viewing areas, as well as negligible adverse impacts to the visitor experience. Additionally, tree removal at Hawk Hill under Alternatives 2, 3 and 4 would result less shaded and wind-protected areas for visitors and programs (e.g., Golden Gate Raptor Observatory, environmental education, etc.). There would be fewer places to find “shelter” on top of Hawk Hill compared with the current tree cover; however, shelter and shade would still be present within the tunnel structures.

Access to Park Partner Activities — Under Alternatives 3 and 4 the implementation of car-free days would result in long-term, moderate, adverse impacts on these specific days because access by private vehicle to park partner activities would be restricted. The park would work with park partners to determine how to provide access to visitors and with recreational groups to determine how to transport gear. During all other times impacts on access would be long-term, minor to moderate, and beneficial. Alternative 2 would not implement car-free days, so long-term impacts would be minor and beneficial because of transit service improvements.

Variety of Park Experiences — Car-free days tested under Alternatives 3 and 4 would result in long-term, moderate to major, beneficial impacts on the variety of park experiences because during these days many more areas of the park could be experienced without interference from vehicular traffic. There would be long-term, minor to moderate, beneficial changes on the variety of park experiences at all other times as a result of trail improvements, reroutes, and multi-use access. Alternative 2 would not introduce new types of park experiences, with long-term, negligible, beneficial impacts.

Scenic Viewing — Under Alternatives 3 and 4 a car-free program on a trial basis for a maximum of seven days each year would result in long-term, moderate, adverse impacts on these specific days because access to scenic views by private vehicle would be restricted. Additional access changes under Alternative 3 would result in long-term, moderate, adverse impacts at Bird Island Overlook and Battery Spencer and negligible beneficial impacts at other viewing areas. Views from Bird Island Overlook to Fort Cronkhite under Alternative 3 would be improved by removing visitor vehicles from the area. Long-term impacts to scenic viewing would be minor and adverse at Slacker Hill, and minor and beneficial at Hawk Hill. Panoramic views would be increased Under Alternatives 2, 3 and 4 following the removal of trees at Hawk Hill.

Alternative 2 would retain existing access to most of the popular scenic viewing areas within the study area, except at Bird Island Overlook. Access to the Battery Spencer and Hawk Hill overlooks would be reduced because of fewer parking spaces. The overall impacts of Alternative 2 would be long-term, moderate, and adverse at Battery Spencer, Hawk Hill, and Bird Island Overlook.

Alternative 4 would retain existing access to most of the popular scenic viewing areas. Access to the Battery Spencer overlook would be reduced because of fewer parking spaces. Access to the Point Bonita Lighthouse would be improved with a new pedestrian connection from Battery Alexander. These access changes would result in long-term, moderate, adverse impacts at Battery Spencer. Long-term, moderate, adverse impacts would also occur at Slacker Hill. Long-term, negligible, bene-

ficial impacts are expected at other viewing areas. Similar to Alternative 3, views from Bird Island Overlook to Fort Cronkhite under Alternative 4 would be improved with the removal of visitor vehicles from the area.

Access to Aquatic Recreation and Interpretive Sites — Car-free days under Alternatives 3 and 4 would restrict access to aquatic recreation and interpretive sites by private vehicle, resulting in long-term, moderate, adverse impacts, but access would still be possible by shuttle, walking, and biking. The Rodeo Beach unpaved parking lot would be removed. Parking immediately adjacent to Rodeo Beach would be lost, but parking in infill areas at Fort Cronkhite would be added, resulting in a long-term, minor, adverse impact.

Noise. Alternative 1 would include measures to reduce noise as proposed in the *Fort Baker Plan;* therefore, no new short- or long-term noise impacts would occur. Under Alternatives 3 and 4 traffic-generated noise levels would be slightly reduced as a result of alternative modes of access, such as transit, walking, and biking; therefore, noise impacts would be negligible and beneficial. Increases in traffic noise levels under Alternative 2 would be long-term, negligible, and adverse.

Noise associated with the proposed transit facilities, parking lots, and recreational facilities (e.g., use of trails) under Alternatives 2, 3, and 4 could result in long-term, minor, adverse impacts to ambient noise levels. Construction activities would result in localized, short-term, moderate, adverse impacts on the noise environment.

Human Health, Safety, and the Environment. There would be no additional impacts to public health and safety related to security of personal property or seismic or tsunami events under any alternative. Under Alternative 1 there would be no impact from hazardous substances or to personal safety other than those already addressed for transportation. There would be long-term, moderate, adverse impacts to fire, police, and emergency vehicle access in the study area under Alternative 1 due to possible access problems through the Barry-Baker tunnel.

Proposed road, parking, trail, and resource restoration work under Alternatives 2, 3, and 4 could disturb contaminated sites, soils, or substances; however, with the implementation of mitigation measures, resulting impacts would be long-term, negligible, and adverse. Proposed roadway and parking area improvements, along with traffic signals at the Barry-Baker tunnel under Alternatives 3 and 4, would result in long-term, moderate, beneficial impacts with respect to emergency vehicle access. Due to the one-way road system at McCullough Road and the Barry-Baker tunnel under Alternative 2, impacts to emergency vehicle access would be long-term, moderate and adverse. Short-term, minor, adverse impacts to personal safety could occur during construction activities.

Social and Economic Impacts

There would be no change to park visitation patterns, or any effects to local employment or quality of life under Alternative 1. Under Alternatives 2, 3, and 4 changes to visitation patterns could result from improved transit access, with long-term, negligible, beneficial impacts. Long-term impacts on local employment opportunities from new transit service jobs would be negligible and beneficial. Quality of life impacts on local communities under Alternatives 3 and 4 would be negligible to moderate and beneficial in terms of traffic congestion and moderate and beneficial in terms of access to the study area. Under Alternative 2 quality of life impacts would be negligible and beneficial for traffic congestion and minor and beneficial for access to the study area. Construction activities would result in short-term, minor, beneficial impacts to the local economy and employment.

Impacts on Park Operations and Management

Alternative 1 would not affect the park's current staffing requirements, and there would be no new impacts on park operations and management. Existing facilities would continue to deteriorate, placing an increasing burden on park operations to keep facilities open and usable by the public.

Alternatives 2, 3, and 4 would propose extensive improvements to roads, trails, and parking areas. These improvements would be designed to minimize maintenance needs and reduce the current burden on park staff to address ongoing infrastructure problems. However, the addition of new administrative functions associated with transit operations and parking fee collection would result in the potential for slight impacts to current staffing

allocations, with long-term, minor, adverse impacts under Alternatives 3 and 4.

None of the alternatives would change the park's annual operating budget or affect the allocation of current funding sources. The implementation of car-free days under Alternatives 3 and 4 would result in a long-term, minor, adverse impact as a result of potential staffing impacts or costs not accounted for in the project budget. No transportation infrastructure improvements would be implemented until sufficient funding had been allocated. In addition, capital and operating expenses for transit services would be implemented only if they were fully funded through new revenue streams.

KEY ISSUES FOR THE PUBLIC

Refer to Chapter 6 for a discussion of public issues. The main concerns related to car-free days, parking fees, and equestrian and bicycle use of specific trails.

PUBLIC REVIEW PROCESS

This *Final Environmental Impact Statement* will be available for a 30-day public review. The alternatives, the impact analysis, or other features may be changed as a result of comments received during the review. These comments will be taken into consideration, and a record of decision will then be prepared and signed, identifying which alternative has been selected as the final plan. The National Park Service will select the final plan based primarily on advantages with respect to improving access to and within the Marin Headlands and Fort Baker for a variety of users in a way that minimizes impacts to natural and cultural resources. The selected alternative's elements will become the primary component of the Marin Headlands and Fort Baker transportation infrastructure and management plan, which will be implemented by the National Park Service.

Selected management activities and projects would be implemented as funds became available. This document does not constitute a commitment for funding, and future budgets could influence implementation priorities.

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ABBREVIATIONS AND ACRONYMS

The following abbreviations and acronyms are used as unit modifiers or in bibliographic citations.

ADA	Americans with Disabilities Act
CARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
BADM	Bay Area Discovery Museum
BCDC	San Francisco Bay Conservation and Development Commission
BMP	Best Management Practice
BRAC	Base Alignment and Closure Act
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
CCAA	California Clean Air Act
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CCC	Civilian Conservation Corps
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CLR	Cultural Landscape Report
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
cy	cubic yard
dB	decibel
dBA	A-weighted decibels
DEIS	Draft Environmental Impact Statement
DOD	Department of Defense
DOI	Department of the Interior
EIS	Environmental Impact Statement
EO	executive order
EPA	Environmental Protection Agency
ESHA	Environmentally Sensitive Habitat Area
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FEIS	Final Environmental Impact Statement
FLHP	Federal Lands Highway Program
FONSI	Finding of No Significant Impact
FUDS	formerly used defense site
GGB	Golden Gate Bridge
GGBHTD	Golden Gate Bridge Highway and Transportation District
GGNRA	Golden Gate National Recreation Area
GGRO	Golden Gate Raptor Observatory
GGT	Golden Gate Transit
GMP	General Management Plan
ha	hectares
HAR	Highway Advisory Radio
IPCC	Intergovernmental Panel on Climate Change
IPM	integrated pest management
ITS	intelligent transportation systems
KOP	key observation points
LOS	level of service
MCTD	Marin County Transit District
MTC	Metropolitan Transportation Commission
MUNI	San Francisco Municipal Transit System
MVMT	million vehicle miles traveled
NAAQS	national ambient air quality standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NOAA	National Oceanographic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources and Conservation Service
NRHP	National Register of Historic Places
NWP	Nationwide Permit
O_3	ozone
Pb	lead
PM10	suspended particulate matter
ppm	parts per million
ROG	reactive organic gases
SFRWQCB	San Francisco Regional Water Quality Control Board

SALLY	Sausalito Area Local Land Yacht
SO_2	sulfur dioxide
SO_X	sulfur oxides
TDM	transportation demand management
TIMP	Transportation Infrastructure and Management Plan
TRB	Transportation Research Board
ug/m3	micrograms per cubic meter
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UXO	unexploded ordnance
VTS	Vessel Traffic Service
WSOF	Wetlands Statement of Findings
WTA	Water Transportation Authority

CHAPTER 1. PURPOSE OF AND NEED FOR ACTION

The National Park Service (NPS) is preparing an environmental impact statement for the Marin Headlands and Fort Baker in Golden Gate National Recreation Area to identify and assess potential impacts associated with alternative transportation management concepts and infrastructure improvements. In June 2000 the National Park Service initiated a transportation management study to evaluate current transportation conditions in the study area. Based on that study, conceptual approaches to address various transportation issues were developed, and this environmental impact statement evaluates a range of alternatives for a transportation management plan and the rehabilitation of the park's road network. This document has been prepared in accordance with the requirements of the National Environmental Policy Act (42 USC 4321 et seq.). At the completion of this planning process, the National Park Service will issue a record of decision (ROD) that will specify which proposals will be implemented as funding becomes available.

The Marin Headlands and Fort Baker are part of the Golden Gate National Recreation Area, an urban national park that extends north of the Golden Gate Bridge to Tomales Bay in Marin County and south to the San Mateo coast. The park encompasses over 79,000 acres of land and water, including approximately 50 miles of bay and ocean shoreline, Fort Point National Historic Site, Muir Woods National Monument, Alcatraz Island, and the Presidio of San Francisco. The Marin Headlands and Fort Baker are located in the San Francisco Bay area at the north end of the Golden Gate Bridge, across the bay from San Francisco. The Marin Headlands span the southern tip of the Marin Peninsula, from U.S. Highway 101 to the western coastline, a 2,500-acre area. Fort Baker is a 335-acre site directly adjacent to the headlands on the east side of U.S. 101. Both sites are within Marin County. The city limits of Sausalito meet the northern boundary of Fort Baker, and San Rafael is about 10 miles to the north.

The specific study area for this transportation management plan is shown in Figure 1.1 and includes the historic U.S. Army Forts Baker, Barry, and Cronkhite, and road and trail corridors that connect the three forts to the U.S. 101 corridor and the Golden Gate Bridge. For purposes of this study, the study area is referred to as the Marin Headlands and Fort Baker study area.

1.1 PURPOSE OF THE ACTION

The purpose of the proposed action is to provide improved access to and within the study area for a variety of users, and to initiate these improvements in a way that minimizes impacts to the area's rich natural and cultural resources.

1.2 NEED FOR THE ACTION

1.2.1 ROADWAYS AND VEHICULAR CIRCULATION

Since the transfer of the former U.S. Army lands to the National Park Service for inclusion in Golden Gate National Recreation Area in the mid 1970s, little of the road network has been rehabilitated. Most of the asphalt roadway paving is 30 or more years old, reaching an age where the pavement is increasingly cracking, failing, and breaking up. A 1999 survey of pavement conditions (amount of cracking, rutting, patches, etc.) found only 12% of the paved roads in the study area to be in good condition, 20% in fair condition, and 67% in poor condition (FHWA 1999). Since that survey, pavement conditions have visibly deteriorated (see Photo 1.1). With the heavy use of the roads by bicycles and the many steep grades that result in bicycles traveling at high speeds, rough pavement can contribute to bicycle accidents.

Photo 1.1. Deteriorated roadway asphalt pavement in Fort Barry.

FIGURE 1.1 MARIN HEADLANDS AND FORT BAKER STUDY AREA

Photo 1.2. Rusted culvert under East Road.

Many culverts and drain inlets in and under the roadways are extremely undersized and prone to plugging with debris. Other culverts are constructed of metal or wood and have rusted or rotted to the point where they are collapsing or are totally plugged (see Photo 1.2). Undersized, plugged, and collapsed culverts have been the cause of numerous flooded areas, washouts, landslides, and sinkholes in the roads over the past 25 years. Significant damage occurred in 1982, 1983, 1995, 1997, 1998, and 2005–6.

The current road network, most of which was built by the Army between the 1870s and the 1940s, was designed to be frequently and intensively maintained by military personnel. The system was not constructed to accommodate present traffic volumes and the diverse types of traffic that currently use the roads. Several segments of the road system, particularly those with high levels of roadside parking, have accident rates that are as much as two and a half times the national average accident rate for non-urban two-lane roads. There also are major road intersections with very limited sight distances and confusing alignments that have a history of accidents. The existing accident rate on Conzelman Road between U.S. 101 and McCullough Road is over twice the national average for two-lane roads (Robert Peccia & Associates 1999).

On peak traffic weekend days (when the weather is sunny), the Golden Gate Bridge, Alexander Avenue, and U.S. 101 can be overwhelmed with cars and traffic slows to a stop-and-go pace. Although the majority of this traffic is going to or returning from destinations other than the Marin Headlands and Fort Baker, very limited transit service and the lack of other transportation alternatives mean that most visitors to these park areas use private automobiles for access. Although this visitor traffic contributes to regional road congestion, only a very small proportion of the traffic on U.S. 101 is related to the Marin Headlands and Fort Baker. Approximately 20% of the vehicle traffic on Alexander Avenue is related to vehicles entering or exiting the study area during weekend peak hours (Nelson\Nygaard 2000).

1.2.2 Parking Conditions

The existing road system was not built to access what are now the most popular destinations, such as Battery Spencer and the other overlooks along Conzelman Road. These locations lack sufficient parking to accommodate present demand, while other study area locations have a huge excess of parking capacity and parking areas that never fill. Weekend parking demand at destinations such as Hawk Hill and the Point Bonita trailhead often

Photo 1.3. Congestion at the Hawk Hill parking area is compounded by the lack of sidewalks and by bicycles and pedestrians competing with moving traffic.

Photo 1.4. Parking congestion blocking Mendell Road between the Point Bonita trailhead and Battery Mendell.

results in visitors parking on roadside shoulders and blocking travel lanes (see Photo 1.3 and Photo 1.4). The lack of shoulders or sidewalks at the overlooks and between parking locations and trailheads further exacerbates congestion and results in pedestrian and bicycle safety concerns.

Many parking areas are poorly designed, so the limited land resources are inefficiently used. Of these, many are located in or on relatively rare and valuable natural resources, such as wetlands and streamside riparian zones. Unpaved parking areas with grades over 4% (4 feet of vertical rise over 100 feet of horizontal run) are among the largest sources of water polluting sediment since they are unpaved and subject to ongoing soil erosion (see Photo 1.5).

High parking demand in areas where the road system was not designed to accommodate it also results in heavy parking on some road shoulders. In areas where the road shoulders are unpaved, repeated parking prohibits vegetation growth. Without stabilizing vegetation on the road shoulders with grades steeper than about 4%, severe soil erosion can result (see Photo 1.6). Erosion of the road shoulders further impacts the wetlands, creeks, and surrounding waters of the Golden Gate Channel and Pacific Ocean with silt and sediment.

Photo 1.5. Erosion at the Rodeo Beach unpaved parking area.

Photo 1.6. Typical unpaved shoulder parking and resultant soil erosion.

Photo 1.7 Bicycling on the narrow Conzelman Road (west of Hawk Hill), with deteriorating pavement.

Photo 1.8. Lack of bicycle facilities on Bunker Road.

1.2.3 BICYCLE AND PEDESTRIAN ACCESS

Park visitors wishing to access the Marin Headlands and Fort Baker study area by bicycle or on foot will also likely find inadequate roads and trails. Most park roads are narrow and twisting (see Photo 1.7), with numerous blind curves, and lack of shoulder space or bicycle lanes (see Photo 1.8, Photo 1.9). Trails primarily follow former Army dirt roads and are steep and subject to severe soil erosion. Many trails provide circuitous routes, making it difficult to access several visitor destinations (e.g., the youth hostel). Because of incomplete pedestrian connections, hikers, pedestrians, and even large school groups end up walking in roadway travel lanes to reach popular destinations (see Photo 1.10, Photo 1.11).

Photo 1.9. View west from the Battery Spencer area, with a typical weekend mix of cars, buses, bicycles, and pedestrians.

Photo 1.10. School group on the Marine Mammal Center access drive because there is no trail or sidewalk.

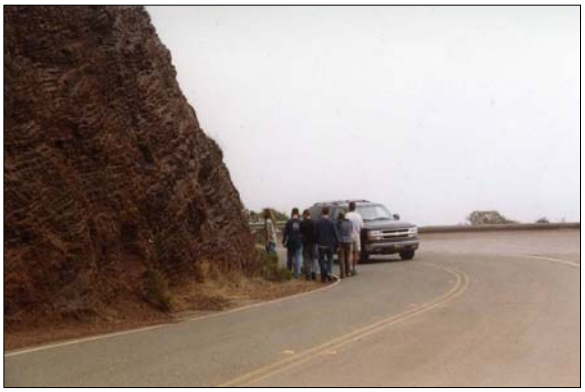

Photo 1.11. Geology class viewing geology at Hawk Hill, with traffic having to cross centerline to avoid students.

Trail conditions and connectivity from U.S. 101 and local roads to park destinations need to be improved to create an attractive and viable alternative to auto access.

1.2.4 Transit Service

Golden Gate Channel and San Francisco Bay separate the Marin Headlands and Fort Baker portions of Golden Gate National Recreation Area from the City of San Francisco, the Peninsula, and the East Bay communities. As previously mentioned, the study area is difficult to access by persons without, or wishing not to use, private automobiles. Public transit service from San Francisco to the study area is provided by the San Francisco Municipal Transit System (MUNI) only on Sundays and holidays. Golden Gate Transit (GGT) provides daily bus service along Alexander Avenue between San Francisco and Sausalito, but the stops are hard to find, generally lack amenities (see Photo 1.12), and are not connected to any of the Marin Headlands' primary attractions or facilities. Golden Gate Transit also provides service to bus stops at Spencer Avenue bus pads adjacent to U.S. 101 seven days a week. Access to Marin Headlands destinations from this stop is 2–4 miles over a steep trail, making it inconvenient and not easily accessible for visitors. Visitors living in San Francisco can ride bicycles or walk to the Marin Headlands and Fort Baker over the Golden Gate Bridge, but they must travel 2–10 miles each way to do so. As a result of limited transit service, 88% of visitors to the Marin Headlands and Fort Baker arrive by private automobiles.

During the extensive general management planning process in the mid- to late-1970s for Golden Gate National Recreation Area, transportation was the most studied issue. Extensive plans were developed to connect the new parklands in Marin County with urban centers in San Francisco, on the Peninsula, and in the East Bay. As identified in one of the 1980 *General Management Plan's* objectives, the

Photo 1.12. Golden Gate Transit's Alexander Avenue bus stop has no amenities.

intent was to make the parklands accessible for a diverse group of users, not just those with cars, as well as to reduce traffic impacts on the regional roadway system (e.g., U.S. 101 and the Golden Gate Bridge) from any increases in traffic resulting from greater recreational use of parklands. However, with the exception of the MUNI Route 76 bus service on Sundays, few of these plans for improved transit connections were ever implemented, or if they were implemented, are no longer in service, primarily because of the continual lack of operating funds. Local transit agencies such as the San Francisco Municipal Transit System and Golden Gate Transit use all of their funds to provide adequate service within their core service areas, rather than providing service to areas that would likely have fewer riders and less fare box revenue.

The National Park Service in particular, and the federal government in general, have until recently lacked any way to pay for the operational costs of park transit services. But with the passage of the National Parks Omnibus Management Act of 1998, Congress granted the National Park Service authority to collect user fees from activities such as parking to cover the costs of transportation services.

1.2.5 WAYFINDING

The lack of directional signs on U.S. 101 and Alexander Avenue makes it difficult for park visitors and users of park partner facilities to find their way to the Marin Headlands and Fort Baker. Inside the park the absence of both directional signs and appropriate street signs causes difficulty in wayfinding within the study area. The irregularity of the street network within the study area and around U.S. 101 makes signage particularly important for access to and through the park. In a survey of visitors, 19% encountered problems either getting to park units or finding locations inside them. Poor signage was noted more than any other problem (Nelson\Nygaard 2000).

1.2.6 NATURAL AND CULTURAL RESOURCE PROTECTION

As previously discussed, trails, roadways, and parking areas have resulted in soil erosion. Some poorly designed or undesignated parking areas take up more space than necessary, and many are located in, or result in runoff impacts to, valuable wetland or riparian resources and habitat. In some locations such as Conzelman Road, culvert improvement projects have been undertaken to control erosion. Although these projects have stopped gully erosion, the scarring remains (see Photo 1.13 and Photo 1.14). Similar but smaller and less visible gullies are present along many Marin Headlands roads. Continued severe erosion on steep road shoulders and at some trails in the study area will result in the degradation of cultural and natural resources. To avoid gullies, pedestrians take shortcuts to reach destinations without formal trails, contributing to natural resource impacts.

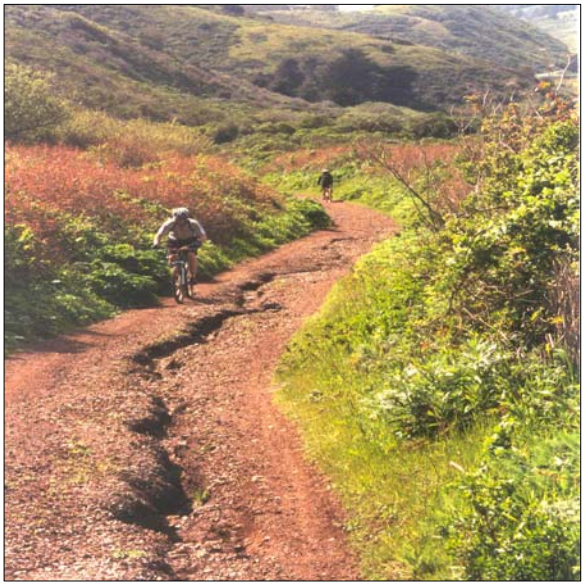

Photo 1.13 Severe trail erosion on Julian Road.

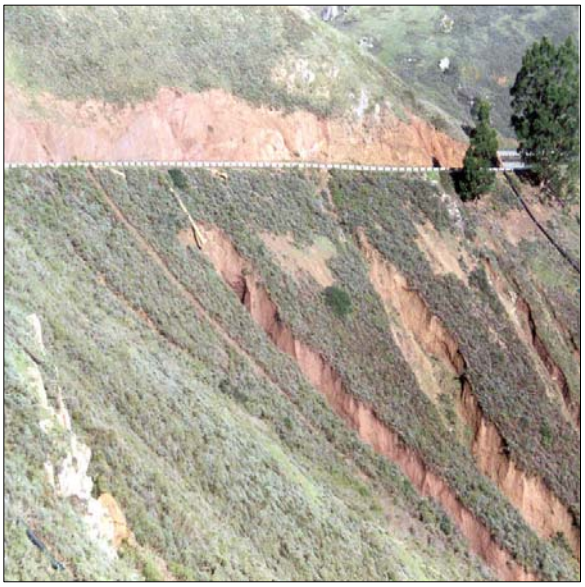

Photo 1.14 Erosion scars below Conzelman Road.

Wetland and riparian communities continue to experience impacts in some high-use locations.

Forts Baker, Barry, and Cronkhite comprise a historic district that is listed on the National Register of Historic Places for its high-quality examples of military coastal fortifications and support facilities, including historic architecture and roads. In addition, some of these historic resources may also contribute to a seacoast fortification national historic landmark, the highest form of historic resource designation provided by federal law. Although the road system is largely intact and much of it remains as the Army built it over 50 years ago, the road and trail system in the study area has suffered from little investment and rehabilitation; as a result, this historic resource is deteriorating.

1.3 PLAN GOALS AND OBJECTIVES

This project will provide infrastructure and access improvements in the park to meet the following plan goals and objectives:

Goal: Promote public transit, pedestrian, and bicycle travel to and within the park to improve visitor experience and enhance environmental quality.

Objectives:

- Provide transportation infrastructure and access improvements that enhance the preservation of natural and cultural resources.
- Reduce automobile trips through incentives and improved transportation options.
- Offer a range of transportation choices that enhance the visitor experience and acknowledge the diversity in transportation needs of visitors, staff, and park partner volunteers and in possible park destinations and special events.
- Develop a funding program that sustains the long-term costs of implementing and operating an improved transportation program.
- Coordinate planning with local communities, regional institutions and other park planning efforts.
- Reduce the environmental and traffic impacts of the park on the U.S. 101 corridor.

Goal: Rehabilitate road and trail infrastructure in a manner that protects resources and improves safety and circulation.

Objectives:

- Provide transportation infrastructure and access improvements that enhance the preservation of natural and cultural resources.
- Coordinate planning with local communities, regional institutions, and other park planning efforts.
- Reduce the environmental and traffic impacts of the park on the U.S. 101 corridor.

Goal: Reduce traffic congestion and improve safety at key park locations and connecting roads.

Objectives:

- Reduce automobile trips through incentives and improved transportation options.
- Offer a range of transportation choices that enhance the visitor experience and acknowledge the diversity in transportation needs of visitors, staff, and park partner volunteers and in possible park destinations and special events.
- Coordinate planning with local communities, regional institutions, and other park planning efforts.
- Reduce the environmental and traffic impacts of the park on the U.S. 101 corridor.

1.4 PARK PURPOSE AND SIGNIFICANCE

Golden Gate National Recreation Area was established on October 27, 1972, by Public Law 92-589 and included former U.S. Army lands within its boundaries and Point Reyes National Seashore. Subsequent laws added over 59,000 acres to the park, but Point Reyes is no longer part of the unit.

The primary purpose of Golden Gate National Recreation Area is “to preserve for public use and

enjoyment certain areas of Marin and San Francisco Counties, California, possessing outstanding natural, historic, scenic, and recreational values, and . . . to provide for the maintenance of needed recreational open space necessary to urban environment and planning." Additionally, the National Park Service "shall preserve the recreation area, as far as possible, in its natural setting, and protect it from development and uses which would destroy the scenic beauty and natural character of the area."

All NPS programs are based on the provisions of the 1916 Organic Act and the NPS General Authorities Act of 1970.

The Organic Act states:

> [The National Park Service] shall promote and regulate the use of the Federal areas known as national parks, monuments and reservations by such means and measures as conform to the fundamental purpose of the said parks, monuments and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations (16 USC 1).

The General Authorities Act of 1970 states,

> the authorization of activities shall be construed and the protection, management, and administration of national park areas shall be conducted in light of high public value and integrity of the national park system and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress (16 USC 1a-1).

As with many of the management actions considered by NPS decision-makers today, the careful balance of sometimes competing park resources and values is an important component of the review and decision-making process. The NPS *Management Policies 2006* (NPS 2006b) provide guidance in this regard by reaffirming that the "fundamental purpose" of the national park system begins with a mandate to conserve park resources and values. Although providing for the enjoyment of park resources and values by the people of the United States is also a mandate for the National Park Service, Congress has provided that when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant.

1.5 RELATIONSHIP OF THIS PROJECT TO PARK PLANS AND REGIONAL PROJECTS

1.5.1 NPS PLANS — GOLDEN GATE NATIONAL RECREATION AREA

General Management Plan

The *General Management Plan* for the Golden Gate National Recreation Area was completed in 1980. To preserve for public use the park's natural, historic, scenic, and recreational features, the plan establishes the following objectives:

1. Preservation and restoration of natural resources to provide, maintain, and restore the character of natural environment lands by maintaining the diversity of native park plant and animal life.
2. Preservation and restoration of cultural resources to recognize the importance of cultural resources within the recreation area through a positive program of their identification.
3. Making the recreation area readily available to the broadest variety of park users — to pursue the extension of transit services between the park and transit dependent neighborhoods.
4. Provision of a broad variety of park experiences — to plan facilities to offer a wide variety of uses.
5. Consideration of park neighbors — to alleviate traffic impacts on adjacent communities.
6. Improve multi-modal transportation access to the park and within the park.

An emerging theme from the *General Management Plan* is to improve multi-modal transportation access to and within the park that is compatible with park objectives and that considers a full range of alternative modes of transportation. Desired transit improvements include improved transit service to the park; direct routing of weekend public transit to the park; a park shuttle to improve

transit service within the park; and remote staging areas with substantial parking and local and regional connections for transit to the park.

Management goals related to dispersed development (campsites, trails, etc.) include coordination of transit routes and stops with trail routes to improve access to trails in the park.

The alternatives considered in this *Environmental Impact Statement* are consistent with the 1980 *General Management Plan.*

The National Park Service has initiated an update to the 1980 *General Management Plan,* which is scheduled for completion in 2010.

Statement for Management

The importance of public access and park transportation was re-affirmed in the *Statement for Management* for Golden Gate National Recreation Area (NPS 1992). This document identifies the following three management objectives for access and transportation:

- To provide alternative public transportation services as proposed in the *General Management Plan*.
- To alleviate traffic impacts on adjacent communities and on park resources by promoting and encouraging visitor and employee use of public transportation.
- To design and implement transportation plans to effectively manage the safe flow of traffic.

Fort Baker Plan Final Environmental Impact Statement and Record of Decision

Subsequent NPS studies such as the *Fort Baker Plan Final Environmental Impact Statement* (NPS 1999a) and the subsequent *Record of Decision* (NPS 2000b) also identified transportation and site access as public and park management issues. The *Fort Baker Plan* analyzes the rehabilitation and reuse of historic buildings within the historic district. Some of the mitigation measures listed in the subsequent *Record of Decision* address traffic and circulation concerns in Fort Baker and are therefore relevant to this environmental impact statement. Mitigation measures include the implementation of a transportation demand management (TDM) program in Fort Baker to reduce automobile use and parking needs and to alleviate congestion in the area. Providing shuttle service for patrons of the proposed Fort Baker conference center is a key component of the TDM program. The National Park Service will also pursue transportation systems management measures to alleviate traffic congestion during peak periods and will encourage direct transit service to Fort Baker by Golden Gate Transit, the San Francisco Municipal Transit System, or other providers. In addition, trail improvements are identified in the *Fort Baker Plan,* and the specific trail and transportation elements are included in all alternatives considered in this document, as described in Chapter 2.

Bicycle Routes

Title 36 of the *Code of Federal Regulations* states,

> The use of a bicycle is prohibited except on park roads, in parking areas and on routes designated for bicycle use. . . . Routes may only be designated for bicycle use based on a written determination that such use is consistent with the protection of a park area's natural, scenic and aesthetic values, safety considerations and management objectives and will not disturb wildlife or park resources (36 CFR 4.30).

Specific regulations with regard to bicycle routes for Golden Gate National Recreation Area state,

> Any additional trails other than those mentioned in this preamble may be designated by the Superintendent in writing after holding public meetings through the Golden Gate Advisory Commission, by marking on maps which will be available in the office of the Superintendent and other places convenient to the public, and through the posting of trails which are open to bicycle use (*Federal Register*, vol. 57, no. 239).

This *Final Environmental Impact Statement* serves as written determination that bicycle use, where noted, is being proposed.

Background Studies

Background studies specific to this proposed plan include the following:

- "Revised Auto-Reduction Analysis for Marin Headlands / Fort Baker TIMP [Transportation Infrastructure and Management

Plan] EIS Memorandum" (Nelson\Nygaard 2005)

- "Auto-Reduction Analysis for Marin Headlands / Fort Baker TIMP EIS Memorandum" (Nelson\Nygaard 2004)
- "Draft Alternatives Evaluation Report" (Nelson\Nygaard 2002a)
- "Draft Car-Free Days Report" (Nelson\Nygaard 2002b)
- "Public Outreach Summary" (Nelson\Nygaard 2002c)
- "Transportation Management Plan for Marin Headlands / Fort Baker" (Nelson\Nygaard 2002d)
- "Conceptual Alternatives Report" (Nelson\Nygaard 2001a)
- "Summer 2000 and Spring 2001 Data Collection Report" (Nelson\Nygaard 2001b)
- "Transportation Goals" (Nelson\Nygaard 2001c)
- "Marin Headlands and Fort Baker Existing Conditions Report" (Nelson\Nygaard 2000)
- "Traffic Safety Study, Golden Gate National Recreation Area" (Robert Peccia & Associates 1999)

1.5.2 OTHER PLANS, PROGRAMS, AND TRANSPORTATION PLANNING EFFORTS

California Coastal Management Program

The California Coastal Act of 1976 established the Coastal Commission to develop and carry out the state's responsibilities under the federal Coastal Zone Management Act. Development activities generally require a coastal permit from either the Coastal Commission or the local government. The coastal zone established by the Coastal Act does not include San Francisco Bay, where development is regulated by the San Francisco Bay Conservation and Development Commission, which existed before the Coastal Act was implemented.

Prior to the record of decision, the *Transportation Infrastructure and Management Plan and Environmental Impact Statement* will be submitted to the California Coastal Commission and the San Francisco Bay Conservation and Development Commission for a consistency determination during the public review period.

San Francisco Bay Plan

The *San Francisco Bay Plan* was completed and adopted by the San Francisco Bay Conservation and Development Commission in 1968 and submitted to the California Legislature and Governor in January 1969. The *Bay Plan* was prepared by the Commission over a three-year period pursuant to the McAteer-Petris Act of 1965. In 1969, the Legislature revised the McAteer-Petris Act by designating the Commission as the agency responsible for maintaining and carrying out the provisions of the Act and the *Bay Plan* for the protection of the Bay and its great natural resources and the development of the bay and shoreline to their highest potential with a minimum of Bay fill. The commission is is directed by the McAteer-Petris Act to carry out its regulatory process in accord with the *Bay Plan* policies and *Bay Plan* maps that guide the protection and development of the bay and its tributary waterways, marshes, managed wetlands, salt ponds, and shoreline.

Golden Gate Recreational Travel Study

The 1977 *Golden Gate Recreational Travel Study*, which was prepared by the Metropolitan Transportation Commission with the participation of 34 local, state, and federal agencies, recommended that greater attention be placed on alternatives to automobile traffic to and from Golden Gate National Recreation Area sites. Recommendations included increased funding for recreational transit, improved transportation linkage with existing transit networks, and increased shuttle service to and within park sites. The theme of improving multimodal transportation access to and within the park was carried forward in the *General Management Plan*. The *Recreational Travel Study* acknowledged the importance of providing access to and circulation within the park and to consider a full range of alternative modes of transportation.

Southwest Marin Comprehensive Transportation Management Plan

Between 2000 and 2005 representatives from Marin County, the National Park Service, California State Parks, the California Department of Transportation (Caltrans), and other agencies, as well as the public, identified and evaluated recrea-

tional travel model options to reduce visitor traffic impacts on gateway communities and the parks. Heavy peak-period volumes of traffic and parking on roadways leading to national park areas in Marin County (specifically Muir Woods National Monument, Tennessee Valley, Muir Beach, and Stinson Beach) and Mount Tamalpais State Park prompted the need to evaluate alternative access to the parks to reduce reliance on automobile passenger travel.

The project, however, was terminated in March 2005 before completion of a draft environmental impact statement / environmental impact report. Although this project has been discontinued, plans are being advanced by individual agencies, including the National Park Service, to implement specific elements of the preliminary alternatives. Two legacies of the project are (1) the establishment of a recreational traffic model based on Marin County data to estimate future growth in park-related visitation and travel, and (2) a sizable database of traffic-related information and park visitor survey information. The traffic model assumptions were applied to this project to project future growth in the Marin Headlands and Fort Baker study area.

Marin County

Land use on the portions of the project site not owned by the National Park Service is guided by the County's General Plan, the *Marin Countywide Plan* (Countywide Plan), which was adopted on November 6, 2007.

The current update renames the corridor within the Marin Headlands and Fort Baker study area from Coastal Recreation Corridor to Coastal Corridor because issues, opportunities, and constraints in the corridor go beyond recreation. The Coastal Corridor is reserved for federal parklands and other recreational land uses, as well as preservation of existing small coastal communities (Marin County 2007).

The "Natural Systems and Agriculture" element of the Countywide Plan outlines policies for protecting the county's natural resources and ensuring that the design of the built environment is compatible with the natural setting. The Countywide Plan recommends that Golden Gate National Recreation Area be "retained in its natural state to the greatest extent possible." Relevant policies that support desired outcomes include enhancing native habitat and biodiversity; protecting sensitive biological resources; conserving wetlands, riparian areas, and baylands; protecting people and property from flooding and inundation; sustainably managing open space; preserving open space; preserving and expanding the trail network; and appropriately designing, locating, managing, and maintaining trails (Marin County 2007).

The "Transportation" element of the Countywide Plan includes existing and projected conditions of the transportation system and county policy concerning transportation. To accommodate the travel demand associated with the land use projections, this element specifies the improvements needed for achieving an acceptable level of service and how those improvements would be provided. This element also includes objectives, policies, and programs to facilitate the planning and public review process for the transportation system. Relevant policies that support desired outcomes include reducing vehicle miles traveled, promoting transportation alternatives, increasing bicycle and pedestrian access by connecting to state and federal parklands, encouraging and supporting expansion of local bus and ferry services, supporting regional transit initiatives, and increasing clean-fuel vehicle use (Marin County 2007).

The *Marin County Unincorporated Area Bicycle and Pedestrian Master Plan* (Marin County 2001b) outlines the county's vision for bicycle and pedestrian facilities. The plan identifies specific projects to fulfill this vision, and elements of the plan allow the county to qualify for available funding for these projects. The bicycle plan identifies a desire for improved connections between Sausalito and the Golden Gate Bridge; however, the roads in this area are not under Marin County jurisdiction. Marin County will need to encourage Caltrans and the Golden Gate Bridge Highway and Transportation District, who maintain Alexander Avenue, to provide designated bicycle lanes along Alexander Avenue.

Proposed improvements under all alternatives would be consistent with and support Marin County plans and policies (e.g., improved bicycle connections between Sausalito and the Golden Gate Bridge).

City of Sausalito

The 1995 *Sausalito General Plan* (Sausalito 1995) does not pertain directly to the Marin Headlands and Fort Baker, as these areas lie outside city limits.

As part of its bicycle plan, the city would like to develop a shuttle system between Fort Baker and downtown Sausalito for use by bicyclists and to help alleviate automobile congestion in the city. The city also supports the extension of the San Francisco Bay Trail to Fort Baker. The plan states that the city will work with trail advocates to resolve safety issues between the Sausalito Ferry Terminal and Fort Baker.

Proposed improvements under all alternatives (e.g., the Fort Baker conference center shuttle and extension of the new San Francisco Bay Trail along the shoulder of East Road) would be consistent with and support the City of Sausalito's plans and policies.

Alexander Avenue Planning Study

A significant amount of planning activities and funding have been invested in evaluating and implementing improvements for Alexander Avenue. The NPS has initiated a planning study to identify and evaluate a range of planning and design solutions to improve multi-modal access and safety on Alexander Avenue between the Golden Gate Bridge and Sausalito City limits. The study purpose is to define a consensus master plan for the corridor segment that provides access to the Marin Headlands and Fort Baker. This study was initiated in January 2008 with all the stakeholders. Currently, the Golden Gate Bridge Highway and Transportation District (GGBHTD) has not taken any board action on Alexander Avenue improvements and no funding is available to implement improvements at this time.

Improvements or next steps identified in the study would be included in the Regional Transportation Plan. The funding or implementation of improvements would be determined later among all parties involved.

Headlands Institute Campus Planning

The Headlands Institute, a campus of the Yosemite National Institute, is located on the east side of Fort Cronkhite, and provides environmental education services. The existing campus facilities in Fort Cronkhite do not meet the Headland Institute's day to day operational needs. Therefore, the park and the Headlands Institute are planning for the modernization and possible expansion of these facilities. As part of this planning effort a Cultural Landscape Report (CLR) on the Headlands Institute Campus landscape has been prepared and an environmental assessment is underway.

1.6 SCOPING FOR THE ENVIRONMENTAL IMPACT STATEMENT

Scoping is an early and open process to determine the breadth of environmental issues and alternatives to be addressed in a planning document prepared in accordance with the National Environmental Policy Act. Scoping includes obtaining early input about the planning project from any public, staff, interested agency, or any agency with jurisdiction by law or expertise. Scoping activities for this project are summarized below. Additional information on the public involvement process and ongoing agency coordination is presented in Chapter 5, "Consultation and Coordination."

1.6.1 PUBLIC INVOLVEMENT

The National Park Service hosted three public scoping meetings, one each in San Francisco (March 26, 2002), Marin City (April 10, 2002), and Oakland/East Bay (April 11, 2002).

The National Park Service prepared and mailed a "Scoping Summary" in March 2002 to local, state, and federal agencies, private organizations, and park partners. The National Park Service also issued formal letters requesting consultation from the United States Fish and Wildlife Service (USFWS) and the California State Historic Preservation Office. The National Park Service provided a briefing to the interagency Parklands Transportation Task Force, which consists of numerous land management agencies and the Metropolitan Transportation Commission working to reduce traffic congestion on the regional roadway system serving Marin County parklands.

Input was also solicited from the Marin Parklands Technical Advisory Committee, which consists of agency staff from the same partner agencies that participate in the Parklands Transportation Task Force (representatives at the technical and decision-maker levels from the National Park Service, Marin County, Caltrans, California State Parks, Sausalito, the Golden Gate Bridge Highway

and Transportation District, and the Marin Municipal Water District). This group was established in 2000 to facilitate coordination among multiple agencies engaged in the twin planning efforts for a Southwest Marin comprehensive transportation management plan and the Marin Headlands and Fort Baker transportation management plan. The advisory committee's role in the transportation study gradually diminished once the scope was adjusted to exclude any lands outside NPS jurisdiction. The cessation of the Southwest Marin planning effort in spring 2005 coincided with a decision to dissolve the advisory committee.

The current transportation project was presented for information purposes at the park's quarterly open houses in 2006 and 2007.

1.6.2 CONCERNS AND ISSUES

Issues identified during the scoping process with park staff, the public, agencies, and park partners included the following:

- *Coordination with Other Plans* — This project should be coordinated with other ongoing transportation planning projects in the region. In addition, the cumulative impacts of these actions should be considered. The ongoing or planned mitigation measures identified in the *Fort Baker Plan Final Environmental Impact Statement* and its *Record of Decision* should be a critical element of the plan.
- *Access to the Park* — Park access for various users and transportation modes is important. For example, existing transit service to the park is limited, and expansion of transit is often identified as a need to provide access to a diverse range of park visitors and to relieve congestion. There are concerns about restricting vehicular access for aquatic recreation and park partner patrons. Expanding or improving pedestrian and bicycle access was often suggested.
- *Safety* — For all modes of transportation, safety is a concern, especially for pedestrians and bicyclists who must share the road with cars and buses. Conzelman Road was cited as a particular concern.
- *Wayfinding* — Signing must be improved for all modes of access and all types of users. Wayfinding affects visitor experience and traffic congestion as drivers search for destinations.
- *Parking Fees* — Issues associated with parking fees include concerns that such fees could encourage visitors to park illegally and that parking coupon dispensers might be an unnatural element in a natural environment. Some believe that parking fees would be beneficial because they would encourage shifts from cars to transit/shuttles. Others believe that charging parking fees is undesirable in principle.
- *Vehicular Restrictions or Road Closures* — Vehicular restrictions would have a detrimental impact on the overall accessibility of the park's resources, including scenic views, as well as visitor experience. Others suggested that some roads be closed to cars but open to bicyclists and/or pedestrians.
- *Natural Resource Preservation* — Maintaining the rural nature of the park, protecting the natural resources, including the preservation of endangered species and the restoration of degraded areas, and implementing improvements with minimal impacts were all mentioned as desirable goals.
- *Historic Resource Preservation* — Concerns were raised about impacts to historic resources in the military coastal fortifications and support facilities at Forts Baker, Barry, and Cronkhite, which make up a national historic district. Some were concerned that widening roads and improving intersections or making other changes in the landscape could adversely affect the integrity of the historic landscape and the features that contribute to the historic setting and context.
- *Special Events* — Special events result in increased visitation for the duration of the activity. This increase in visitation can result in traffic congestion and insufficient parking availability.
- *Funding* — The ability to pay for improvements, including increased transit service, is a concern.

1.6.3 IMPACT TOPICS

Impact topics are the resources or values of concern that could be affected, either beneficially or

adversely, by the alternatives. The following impact topics were identified based on federal laws, regulations, orders, NPS *Management Policies 2006*, scoping, and NPS staff concerns or knowledge. The impact topics evaluated include:

- Transportation — transit, roadway, bicycle, and pedestrian uses
- Natural resources — geology, paleontology, soils, and seismicity; coastal resources; water resources; floodplains and wetlands; biological resources; vegetation; and air quality
- Cultural resources
- Visitor use and experience — recreation and visitor enjoyment; noise (soundscapes); visual and scenic resources; human health, safety, and the environment
- Socioeconomic environment
- Park operations and management.

1.6.4 IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

The topics listed below would either not be affected or would be affected negligibly by the alternatives. (Negligible effects are those that would be localized and not measurable at the lowest level of detection.) Therefore, these topics have been dismissed from detailed analysis.

- *Night Sky* — Although the roads of the study area are currently open to traffic after dark, there is very little nighttime traffic. No changes in uses of the study area that would increase or decrease night traffic are proposed as part of this plan, nor are any streetlights or other sources of new light pollution proposed as part of this plan. Construction efforts would not adversely affect night views because construction activities would be limited to daylight hours. Therefore, this topic was dismissed.
- *Wilderness Values* — The Wilderness Act of 1964 (16 USC 1131 et seq.) established a national wilderness preservation system. There are no designated wilderness areas within the study area; therefore, this topic was dismissed.
- *Indian Trust Resources and Sacred Sites* — Indian trust assets are owned by Native Americans but held in trust by the United States. The U.S. Department of the Interior requires that any anticipated impacts to Indian trust resources due to a proposed project or action by Interior agencies be explicitly addressed in environmental documents (512 *Departmental Manual* 2). Since the lands within the park boundaries are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians, this topic was dismissed.
- *Prime and Unique Farmlands* — In August 1980 the Council on Environmental Quality directed that federal agencies assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service as prime or unique. None of the soils in the project area would qualify as prime or unique farmlands because they have not been used for production of crops during the past four years. Therefore, this topic was dismissed.
- *Wild and Scenic Rivers* — The Wild and Scenic Rivers Act of 1968 established the national wild and scenic river system to protect the nation's highest quality natural rivers. There are no designated wild and scenic rivers within the study area, so this topic was dismissed.
- *Ethnographic Resources* — Ethnographic resources are defined in the NPS "Director's Order #28: Cultural Resource Management Guideline," as "any site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (NPS 1998). There are no known ethnographic resources within the study area, so this topic was dismissed.
- *Environmental Justice* — Executive Order 12898 ("Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations") requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. According to the Environ-

mental Protection Agency (EPA), environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. The alternatives would not have disproportionate health or environmental effects on minorities or low-income populations or communities as defined by the Environmental Protection Agency; therefore, this topic was dismissed.

- *Utility Infrastructure* — The plan does not propose changes to land use or building facilities that would increase or decrease water, sewer, electric, phone, or gas consumption or production in the study area. The plan does not propose major relocations of or changes to utility systems. Therefore, this topic was dismissed.
- *Energy Requirements and Conservation Potential* — The Council on Environmental Quality requires that environmental documents consider energy requirements and the conservation potential of various alternatives and mitigation measures. Currently, visitors to the Marin Headlands and Fort Baker arrive almost exclusively by private automobile. However, vehicle miles traveled because of park visitation is negligible in the context of regional travel because the proposed alternatives would result in (1) no reduction to less than a 1.5% reduction in private vehicle trips to Fort Baker; (2) no reduction to less than 1% reduction in private vehicle trips to the Marin Headlands; and (3) no reduction to a 5% reduction in private vehicle trips within the study area. The alternatives considered would operate up to 22 more buses in the study area each day. The potential for energy conservation as a net result of auto reduction and increased transit trips would be imperceptible on both a local and regional scale. Changes in energy requirements resulting from the changes in auto and bus trips would be imperceptible within the Marin Headlands and Fort Baker study area. On a regional scale existing transportation-related energy consumption within the study area is negligible compared to transportation-related energy consumption within the region as a whole. Construction of the action alternatives would consume energy, but the expenditure would last only for the duration of construction. The short- and long-term impacts of energy consumption would be negligible under all alternatives, so this topic was dismissed.
- *Land Use and Planning* — Proposed actions would more clearly define which lands in the study area are specifically available for public use and which lands are to be protected for naturally occurring processes. Overall, these changes would result in minor beneficial changes to land use in the Marin Headlands and Fort Baker under Alternatives 3 and 4 and negligible beneficial changes under Alternative 2. Proposed improvements under Alternatives 2, 3, and 4 would not be anticipated to increase traffic volumes or visitation and would therefore not be expected to stimulate related development or land use changes. The alternatives considered in this *Final Environmental Impact Statement* are consistent with the 1980 *General Management Plan* for Golden Gate National Recreation Area. In addition, all of the alternatives would be consistent with and support Marin County and City of Sausalito plans and policies. Therefore, this impact topic was dismissed.
- *Sea Level Rise* — Although sea level rise is expected to affect road infrastructure in lower Rodeo Valley within the next 50 years, it is important to address the functional deficiencies of the roads within the Marin Headlands and Fort Baker to continue to safely support park operations, the visiting public, and park partner operations at Fort Cronkhite in the more immediate future. Sea level rise, based on the Intergovernmental Panel on Climate Change (IPCC) estimates, is not expected to affect road infrastructure during the expected life of the rehabilitation actions (i.e., life of the repav-

ing) proposed under the Preferred Alternative. Because of their historical integrity as a registered landmark site, these roads would only be moved if necessitated by eventual sea level rise. Although bay water levels are expected to rise, only stairs to the beach (proposed to control erosion) and the lagoon trail would be affected in the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan. The stairs would be adjusted when necessary to adjust to sea level rise. Nothing else identified in the plan is expected to be affected by predicted sea level rise. For these reasons, this impact topic was dismissed from further evaluation.

CHAPTER 2. ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE

2.1 INTRODUCTION

The following four alternatives for the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan* are evaluated in this *Final Environmental Impact Statement:*

- Alternative 1 — No Action
- Alternative 2 — Basic Multi-Modal Access
- Alternative 3 — Enhanced Multi-Modal Access (Preferred Alternative)
- Alternative 4 — Maximum Multi-Modal Access

This chapter consists of the following sections:

- a detailed description of the alternatives being considered, the environmentally preferred alternative, and alternatives eliminated from further study (sec. 2.2 through sec. 2.9)
- a summary of the alternatives (Table 2-1)
- a summary of the impacts of the alternatives and proposed mitigation measures (Table 2-2)

Under the No-Action Alternative (Alternative 1) the National Park Service would continue the present transportation infrastructure and operations in the Marin Headlands and Fort Baker without any major changes. Transportation improvements and transportation demand management (TDM) programs specified in the *Fort Baker Plan Final Environmental Impact Statement* and the subsequent *Record of Decision* would be implemented.

Under the Preferred Alternative (Alternative 3) the National Park Service would rehabilitate or reconstruct/widen roadway infrastructure without altering its present character-defining features, and would improve parking facilities. A greater number of transit options would be provided to and within the park. Extensive pedestrian facility enhancements would be implemented, including closing and rerouting existing trails and constructing new trails. Bicycle facilities would be improved with a few new trails and bike lanes.

Under Alternative 2 the National Park Service would rehabilitate roadway infrastructure within the existing roadway width; improve parking facilities; expand transit service to the Marin Headlands on weekends; and undertake minor pedestrian and bicycle facility enhancements.

Under Alternative 4 the National Park Service would reconstruct roadway infrastructure and widen roadways for bicycle lanes in various locations throughout the study area, and would improve parking facilities. Transit options would be similar to those provided in Alternative 3. Extensive pedestrian and bicycle facility enhancements would be implemented, including closing and rerouting existing trails, and constructing new trails and bicycle lanes on nearly all major roads.

2.1.1 ALTERNATIVES DEVELOPMENT PROCESS

The alternatives considered in this environmental impact statement are based on concepts developed in earlier studies, such as the 2002 *Transportation Management Plan [Study] for Marin Headlands / Fort Baker* (Nelson\Nygaard 2002d).* This planning process began in 2000, and information about transportation issues in the park was collected. In addition, three goal-setting workshops were held during the summer of 2000 to help define the key transportation issues and were attended by representatives from Golden Gate National Recreation Area, park partner agencies, public agencies, and the public. These goals were used to develop four conceptual approaches to address transportation problems in the Marin Headlands and Fort Baker study area. The conceptual approaches were further refined in a series of three workshops from the summer of 2000 to March 2001. The four conceptual approaches included simple improvements (low-cost improvements), circulation enhancements, parking consolidation and shuttle service,

* This plan is subsequently referred to as the *Transportation Management Study* in this document because it preceded the decision to prepare an environmental impact statement and transportation infrastructure and management plan for the Marin Headlands and Fort Baker.

and a car-free experience. The *Transportation Management Study* was completed in March 2002 and included a comprehensive description and evaluation of these conceptual approaches. Subsequent to the completion of the plan, it was determined to prepare an environmental impact statement.

During the scoping process for the environmental impact statement (see sec. 1.6), elements of the conceptual approaches from the 2002 *Transportation Management Study* were presented to the public and agencies to obtain their input. NPS staff and the EIS project team participated in a road system evaluation workshop (March 18–22, 2002), which defined the purpose of and need for the project and used the conceptual approaches in the study to develop the initial alternatives for analysis in an environmental impact statement. These initial alternatives were presented at public meetings in the fall of 2002 and were further refined during agency meetings and a staff workshop in July 2004. At this time four alternatives were evaluated in detail, and Alternative 3 was identified as having more advantages than the other alternatives. Some of the better attributes of the other alternatives were then included to refine Alternative 3 as the Preferred Alternative.

The park received public comments from June 8, 2007 through August 13, 2007 following the release of the *Draft Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan/EIS* for public review. A comprehensive process was implemented to review public concerns and identify planning issues derived from public input (described in Chapter 6). As a result, the park modified some aspects of the plan, and those changes have been incorporated into this Final EIS. During this timeframe, the park also undertook more detailed investigations and development of plans to restore the Rodeo Beach parking area. Those changes and their associated impacts are also included in this FEIS.

Some specific changes to the alternatives were made between release of the DEIS and the FEIS based primarily on public comment:

Slacker Road (trail): The preferred alternative has been changed in the FEIS so that the proposed rerouted sustainable trail would continue to the launch site and allow both pedestrian and equestrian use. Access to the GGRO research sites would be provided via improved or new foot trails. The existing trail connection between the SCA Trail and McCullough Road would be rerouted to a more sustainable alignment and retained for hiker-only access beyond the trail to Slacker Hill.

Hawk Hill Parking on Conzelman Road: The preferred alternative in the DEIS had proposed replacing the existing head-in parking at the turnaround (which currently provides 55 parking spaces) with parallel parking spaces to address safety issues, resulting in a net loss of 30 spaces. In response to public concern about loss of parking, the preferred alternative in the FEIS would improve the safety of the head-in parking by expanding the area using a retaining wall and providing additional parallel parking on the inboard side of Conzelman Road. The result would be no net loss of parking spaces; 55 spaces would continue to be provided.

Smith Road Parking: The proposed parking at Smith Road as been revised under the preferred alternative in the FEIS to avoid the emergent wetland on the eastern side of the site. In the FEIS, Smith Road parking has been reduced in size and realigned to the south, moving it farther from Rodeo Creek and the riparian area along the creek. The new bridge and trail proposed in the DEIS would remain, and the two existing bridges and trails to the west and east of the new bridge would still be removed.

East Road and Bay Trail: The preferred alternative in the FEIS has been revised to provide additional width where possible in the shoulder area of East Road for bicyclists, providing a balance between protecting resources and improving safety. The refined design includes 11-foot travel lanes in each direction and widened paved shoulders. A 4-foot shoulder would be provided northbound from Fort Baker to the curve before the Sausalito-Marin City Sanitary District Entrance, changing to a 3-foot shoulder from this point to the Alexander Avenue/East Road intersection. Southbound bicyclists from Alexander Avenue and Sausalito would have a consistent 3-foot wide shoulder until reaching the downhill grade north of Murray Circle, where the shoulder would become 2 feet wide (see typical sections in Appendix A). The refined FEIS concept for East Road would also accommodate the extension of the San Francisco Bay Trail along the east paved shoulder of the road from the current connection to Alexander Avenue.

Rodeo Beach Parking: The Rodeo Beach unpaved parking lot would be removed and restored to its

pre-existing wetland condition to re-establish natural hydrologic and wetland conditions by reversing past human disturbances to natural resources.

Rodeo Valley Connector Trail: The preferred alternative has been revised to permit cyclists on the Rodeo Valley Connector Trail, an existing trail between Conzelman Road north to Bunker Road. The trail starts east of Battery Rathbone-McIndoe on Conzelman Road, connecting to Bunker Road east of the riding stables. This would be a multi-use trail allowing use by pedestrians, equestrians, and bicyclists.

Mendell Road: The preferred alternative in the FEIS is not as specific as the DEIS on the surface treatment for the closed road that would be used by pedestrians and bicyclists.

NPS Marin Roads and Trails Maintenance Yard: The preferred alternative in the FEIS would rehabilitate the NPS Marin roads and trails maintenance yard (reduce in size by up to half, regrade area to be less steep, move NPS vehicle parking to paved erosion-resistant areas, build a new garage to house equipment and materials, install vegetated drainage swales, and revegetate remainder of former yard. Some replacement parking would be created in infill areas at Fort Cronkhite, possibly including the rehabilitated roads and trails maintenance yard, in which case, the revegetated area would be smaller. An associated sidewalk would be constructed along Old Bunker Road (2 to 4 feet wide) to connect the maintenance yard parking to the interior of Fort Cronkhite.

Dubois Road (trail): Under the preferred alternative in the FEIS, Dubois Road (trail) would be converted to a trail that allows both pedestrians and bicyclists. In the DEIS, only foot traffic had been proposed for the trail.

Parking near Overlook 2: The preferred alternative in the FEIS does not provide the four parallel parking spaces along the bend near Overlook 2 on Conzelman Road.

Bicycle Connection through Capehart Housing: The preferred alternative in the DEIS proposed routing bicycles through Capehart Housing. This has been changed in the FEIS. Both pedestrians and bicyclists would use McCullough Road between Rodeo Valley trail and Dubois Road (trail).

Parking at Julian Road: Under the preferred alternative, some parking would be eliminated in shoulder areas along Conzelman Road to improve safety and reduce natural resource impacts. In the FEIS, a new parking area would be constructed on Julian Road near the Conzelman Road intersection to replace some of the roadside parking.

Remove Sidewalk Proposed on Lower Conzelman from Trailhead Parking to Conzelman: In the FEIS, the sidewalk that had been proposed on Lower Conzelman Road from the trailhead parking to Conzelman Road was removed in the preferred alternative.

2.1.2 Elements of Alternatives

To address the purpose of and need for the project, the alternatives consider actions in the following management areas — roadways and vehicular circulation, parking management, bicycle and pedestrian facilities, transit services, and resource protection. In addition, a plan for special events would be implemented under all of the alternatives, and a plan for car-free days would be implemented under two alternatives.

- **Roadway and vehicular circulation improvements** would include rehabilitation or reconstruction (including widening) of roadways and operational changes to improve safety and circulation, reduce traffic congestion, and reduce resource impacts.
- **Parking management improvements** would include organization and delineation of parking areas, closure of some parking areas, and relocation of some parking areas to improve visitor experience, accessibility, and safety, as well as to reduce congestion and resource impacts. For some alternatives, fees would be collected in some parking areas and would be used to fund increased transit service to the area.
- **Bicycle and pedestrian improvements** would include changes to the existing trails system to improve bicycle and pedestrian travel options and connections within the park, to improve the quality of visitor experience, to improve safety, and to reduce resource impacts so that more visitors would choose to access the headlands by these modes. For the purpose of this transportation plan, bicycle facilities in these alternatives

are categorized according to the following three definitions (the goal would be to meet these standards where possible):

These facilities are also referred to as multi-use trails when there is shared use between bicycles, hikers, and equestrians. They are generally 5-6 feet (approximately 1.5 to 2 meters) wide where not shared with management vehicles:

- Class 1 (bike paths) — detached paths separated from the roadway for the exclusive use of bicycles and pedestrians
- Class 2 (bike lanes) — striped bicycle lanes for one-way bicycle travel adjacent to vehicular travel lanes; they are a minimum width of 4 feet (1.2 m) wide, and may be wider on steep roads
- Class 3 (bike routes) — facilities where bicycles and vehicles share the same travel lane on the roadway; they are usually designated with signs

- **Transit service improvements** would provide additional transit options to and within the park, including increased service times and frequency and more direct access to specific areas. These improvements would provide the opportunity to increase use of public transit to and within the study area. Local transit operators would be encouraged to provide these improvements. Revenue that is expected to be generated by parking fees or other sources would be used to implement some transit service improvements.
- **The implementation of car-free zones** on a limited, trial basis in specific locations for a maximum of seven days per year would provide visitors the opportunity to experience large sections of the park in a natural setting with reduced automobile traffic and would educate visitors about alternative modes of transportation for access to and within the study area.
- **Resource protection elements** include both natural and cultural resource actions related to transportation elements in this plan focused on reducing impacts associated with transportation infrastructure.

2.2 ELEMENTS COMMON TO ALL ALTERNATIVES

Universal design concepts that maximize accessibility for all visitors (including those with disabilities) would be applied to all facility designs to the greatest extent possible. All new or reconstructed trails would meet outdoor accessibility guidelines as outlined in the *Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas: Final Report* (United States Access Board 1999).

2.2.1 ELEMENTS FROM THE FORT BAKER PLAN

The *Fort Baker Plan Final Environmental Impact Statement* (NPS 1999a) and the subsequent *Record of Decision* (NPS 2000b) provide for the preservation of historic structures and natural features in Fort Baker through the establishment of compatible uses, rehabilitation, restoration, and other site improvements. Specific elements of the plan that are applicable to all of the alternatives for this document are described below. (See Figure 2.1 on page 33 for street names and locations.)

Roadways and Vehicular Circulation

Some operational changes will be implemented to improve vehicular circulation, wayfinding, and operations. Lower Conzelman Road between Fort Baker and the trailhead parking area will remain closed to vehicular traffic, except for emergency and service vehicles. This road segment may be opened to one-way outbound vehicular traffic during peak conditions and special events to alleviate traffic congestion on Alexander Avenue. As part of the 2002 *Transportation Management Study*, the park may temporarily or conditionally close East Road to through-traffic during peak travel periods in order to discourage access to Sausalito from this road. Implementation of this measure would be reviewed by the National Park Service in conjunction with the traffic monitoring program and consultation with other relevant agencies.

Several geometric improvements will be implemented on roads in Fort Baker. The existing right-turn lane at the intersection of Bunker Road and Danes Drive will be extended to improve turning operations at the intersection. The Alexander Avenue/Danes Drive intersection will be reconfigured from a Y to a T configuration and the left turn lane

from northbound Alexander Avenue would be extended. The Alexander Avenue/East Road intersection will be reconstructed to reduce driver confusion and to improve operations, and wayfinding signs will be provided at key points in Fort Baker to help alleviate current driver confusion in the area.

Parking Management

On-street parking at Murray Circle will be prohibited to allow for adequate access and egress for emergency and service vehicles. New parking for the Bay Area Discovery Museum will be constructed on the north side of East Road to accommodate museum parking needs and school bus parking. These parking improvements have been implemented.

Bicycle and Pedestrian Improvements

The National Park Service will provide safety information to bicyclists at Fort Baker and will implement bicycle rental restrictions to minimize exposure of bicyclists to existing offsite hazards. Secure bicycle parking will be provided. The San Francisco Bay Trail (a 500-mile pedestrian and bicycle facility that will eventually circle the entire San Francisco Bay) will be extended along the east shoulder of East Road in Fort Baker. Because 0.25 mile of the existing road is too narrow to accommodate the trail, additional actions would be required under the action alternatives.

Transit Services

A shuttle service will be implemented to serve visitors to Fort Baker for the conference and retreat center (see section 2.2.2 below). Additionally, the National Park Service will continue discussions with Golden Gate Transit, the Marin County Transit District, and the San Francisco Municipal Transit System to expand service and determine the feasibility of providing direct transit service to Fort Baker. The National Park Service will coordinate with public transit officials and tour companies to determine where buses can be accommodated given the geometry of roads in Fort Baker.

The National Park Service will promote alternative modes of travel to visitors by providing reduced or free fares or other incentives to use transit or shuttle connections as part of the TDM program for Fort Baker. In addition, the National Park Service will also promote implementation of a ridesharing program as part of the Fort Baker TDM program. Specific TDM measures are also identified for the future conference and retreat center. Section 2.2.3 describes the current TDM program that was cooperatively developed with organizations for the Marin Headlands and Fort Baker.

Special Events

As a component of the TDM program, all large event sponsors or organizers will be required to secure a park special use permit as part of the approval process. Overflow parking during special events will be provided on East Road. Changes to traffic circulation during special events are noted in the “Roadways and Vehicular Circulation” section above. Section 2.2.4 describes the current special park use permit program.

Traffic Monitoring Program

A monitoring program has been implemented by the National Park Service to measure the effectiveness of the proposed mitigation measures, and to verify that no impacts greater than those already analyzed and mitigated in the *Fort Baker Plan Final Environmental Impact Statement* and *Record of Decision* occur as a result of the plan’s implementation. This traffic monitoring program will establish an ongoing traffic data collection program during pre-construction, construction, and post-project implementation periods for the Fort Baker retreat and conference center. Data will be used to develop traffic mitigation thresholds as well as contingency measures if the traffic generated exceeds the impacts projected in the *Fort Baker Plan Final Environmental Impact Statement*.

2.2.2 Fort Baker Conference Center Shuttle

The operator of the Fort Baker retreat and conference center, with coordination and cost sharing with other Fort Baker partners, will provide shuttle service as part of the *Fort Baker Plan Final Environmental Impact Statement* and *Record of Decision*. While shuttle operations have not been determined at this time, the service will transport conference center visitors to and from the center, parking areas, and sites in Fort Baker and Sausalito. The shuttle service will also provide airport connections for conference center patrons and could provide transit to other local attractions outside the study area. The shuttle will accommodate

bicycles to help alleviate bicycle/vehicle conflicts on narrow roadways in Sausalito near Fort Baker. The Conference Center Lodge opened in July 2008. Currently, for employees it is operating a small van shuttle in the morning and evening peak hours between Fort Baker and the local transit connections in Sausalito. A more expanded shuttle service as described above is being planned for visitors, lodge guests, and employees.

2.2.3 TRANSPORTATION DEMAND MANAGEMENT PROGRAM

The National Park Service has developed a TDM program in the study area as a mitigation measure from the *Fort Baker Plan Final Environmental Impact Statement* and *Record of Decision.* The intent of this program is to reduce the number of single-occupancy vehicle trips. The program consists of six elements that focus on the use of existing transportation infrastructure and voluntary participation of employees, volunteers, and visitors in the study area. The six elements include:

- a TDM coordinator position for each stakeholder organization
- a biannual TDM evaluation survey administered by each stakeholder organization
- quarterly meetings for TDM coordinators
- site-specific projects for coordinators to provide ongoing TDM promotion
- a rideshare program
- park transportation planning to address transit, bicycle, pedestrian, and parking needs

2.2.4 SPECIAL PARK USE GUIDELINES

"Special Park Use Guidelines" for Fort Baker were approved as a standard operating procedure on July 22, 2004, in response to implementing some of the mitigation measures identified in the *Fort Baker Plan Final Environmental Impact Statement* and the *Record of Decision*.

In terms of special event parking and traffic management, all special park uses incorporate elements of the TDM program. When requested by NPS staff, an event-specific TDM plan may be required. TDM measures may include, but are not limited to, using a variety of transportation modes and providing that information in advance; providing incentives to use alternative transportation modes; streamlining traffic flow; staggering work shifts of event employees and volunteers; selling tickets in advance; scheduling events to avoid peak traffic hours; directing cars to specific parking lots; using traffic control officers at bottleneck locations; providing overflow parking and shuttle service along East Road; and offering monitored bicycle parking.

In addition, the following roadways are identified in the standard operating procedure:

- Lower Conzelman Road may be used for one-way outbound traffic during peak traffic conditions.
- Existing paved/graveled surfaces on East Road may be used as a parking/staging area for shuttle service.
- Event participants should be encouraged to enter Fort Baker via Bunker Road in order to minimize any increased traffic through the City of Sausalito.

2.2.5 MARINE MAMMAL CENTER PARKING AND ROADWAY IMPROVEMENTS

The Marine Mammal Center Site and Facilities Improvements Project is currently underway to upgrade and expand facilities. In addition to facility improvements, this project includes a new 43-space parking lot on the west side of the center. These improvements are included in all alternatives because the NEPA process has been completed and the project is under construction.

2.3 CONSTRUCTION ACTIVITIES COMMON TO ALTERNATIVES 2, 3, AND 4

Activities that would be common to Alternatives 2, 3, and 4 would include the construction of roads, trails, and parking areas; the potential sequencing of construction activities; construction activity timing; and construction mitigation measures.

2.3.1 CONSTRUCTION ACTIVITIES

Road construction activities would include some or all of the following, depending on the road segment and alternative:

- grading

- pulverizing existing pavement for use as base aggregate and laying new asphaltic concrete pavement surface
- repairing, upgrading, or replacing culverts, drain inlets, and other drainage structures
- installing curbs, gutters, guardrails, sidewalks, and retaining walls in select locations
- widening for bike lanes or routes with improved safety
- replacing or reconfiguring intersections
- installing traffic signing and striping
- revegetating disturbed areas

Parking construction activities would include:

- decompacting, regrading, and revegetating areas where parking would be removed
- grading and paving new parking areas
- paving and resurfacing existing parking areas
- installing curbs, sidewalks, crosswalks, guardrails, and parking fee machines
- repairing, upgrading, or replacing culverts, drain inlets, and other drainage structures
- Best management practices as described under 2.3.5 on page 25.

Trail construction activities would include:

- decompacting, regrading, and revegetating areas where trails would be removed
- removing and constructing bridges
- grading
- surfacing trails with stabilized aggregate, aggregates, or native soil
- repairing, upgrading, or replacing culverts, drain inlets, and other drainage structures
- installing fences to keep pedestrians out of areas with erosion or resource degradation
- installing sand matting in soils where appropriate

Other construction activities would include:

- removing nonnative trees
- wetland fill excavation
- filling and revegetating erosion sites
- constructing new bus stops and amenities, including sidewalks, crosswalks, curb cut ramps, and shelters

2.3.2 Construction Sequencing

The timing of construction for the components of the alternatives would depend on funding availability. A potential sequence for construction of proposed improvements is outlined below.

Construction actions occurring in 2009 or later:

Conzelman Road and associated overlooks and parking areas

McCullough Road

Field and Mendell roads and Battery Alexander parking

East Road

Danes Drive

Slacker Road (trail)

Rodeo Valley trail

Julian Road / Coastal Trail

Rodeo Lagoon trail

Construction actions occurring in 2011 or later:

West Bunker Road

Mitchell Road

Old Bunker Road

Marine Mammal Center access road

Rodeo Beach and Rodeo Lagoon

Marin roads and trails maintenance yard

Stables parking area

Construction actions occurring in 2013 or later:

Fort Cronkhite internal roads

Fort Barry internal roads

Fort Baker roads

2.3.3 Construction Timing

Construction would generally occur during the dry season (April 1 to October 31), but could occur all year weather permitting. Each road and trail would be constructed within a single season if possible and would be carefully coordinated with biological resource protection and other restrictions. In most cases, major roads would be closed to traffic for a limited period of time in order to complete con-

struction as quickly as possible and to limit disruption to visitors to the shortest period possible. Where feasible, roads being reconstructed would be opened to traffic on weekends except when it would be unsafe to do so (e.g., a guardrail had not been reinstalled). Major soil-disturbing construction would be primarily undertaken during the dry season but could occur all year, weather permitting. At all times the contractor would be required to comply with sediment control requirements. It might be necessary to close the one-way portion of Conzelman Road for an extended period of time to facilitate construction and maintain visitor safety.

2.3.4 CULTURAL, BIOLOGICAL, AND OTHER RESOURCE MONITORING

The following activities would be conducted as part of the action alternatives as needed.

Archeological Monitoring

An archeological monitor will be present at construction activities occurring near archeologically sensitive sites. The Forts Baker, Barry, and Cronkhite Historic District contains buildings, structures, archeological sites, and locations that contribute to its significance. Archeological and historical features have been identified for the area of potential effect for this project and are listed in several NPS inventories (List of Classified Structures, Cultural Landscape Inventory, Archeological Sites Management Information System, and Archeological Resources Geographic Information System).

Cultural resource monitoring of construction will be conducted for all historic properties within the area of potential effect to ensure that these features are not impacted by construction or collateral actions. Historic properties, including buildings, structures, sites, and small-scale landscape features, will also be incorporated into project designs to facilitate this monitoring. Ground disturbances and vegetation removal will be monitored in the vicinity of all historic properties and in all areas identified as sensitive for the discovery of archeological properties.

Historic or archeological properties discovered in the course of the project will be immediately reported to the park archeologist, and work will be halted to record and assess the discovery. If the project will adversely affect a discovered property that contributes to the historic district, efforts will be made to avoid or ameliorate such effects in consultation with the California State Historic Preservation Office.

If human remains or associated artifacts are discovered during the project, all work will cease in the area of the find and the remains or artifacts will be protected from loss or view until disposition is resolved. A park law enforcement ranger, the county coroner's office (if the remains are human), and the park archeologist will be notified immediately. If the remains are Native American, consultation will be carried out with the Federated Indians of Graton Rancheria, in accordance with the Native American Graves Protection and Repatriation Act.

Biological Monitoring

Contractor crews working in areas designated as habitat for listed species will be monitored by a USFWS-approved biological monitor to ensure that project actions conform to restrictions developed for species protection. The qualified biological monitor will have experience in the identification and behavior of special status wildlife species that could be affected as described in the "Biological Assessment" prepared for this project, habitat assessment experience, and identification of special status plant species. Knowledge of the natural resources within the project area and experience with road and trail projects will be necessary. The monitor will be responsible for ensuring that best management practices are being properly implemented and that the work is being conducted in accordance with all required permits, policies, regulations, and plans. The biological monitor will be onsite during all phases of construction. Work will be halted, if necessary, to protect biological resources. The monitor will be responsible for all the terms and conditions in the USFWS biological opinion for this project. If work is stopped due to the taking of any listed species, the biological monitor will complete a daily log summarizing activities and environmental compliance.

The biological monitor will be the contact source for any employee or contractor who might inadvertently kill or injure a federally listed species or who finds a dead, injured, or entrapped individual. The monitor will be identified during the crew-training program for this project. The monitor's name and telephone number will be provided to

the U.S. Fish and Wildlife Service prior to any ground-disturbing activities.

After completion of each project element, the biological monitor will submit a post-activity compliance report to the U.S. Fish and Wildlife Service and NOAA Fisheries that details, but is not limited to, the following information:

- proof of compliance with fulfilling project conservation measures for listed species
- dates that project activities occurred
- a list of avoidance and take reduction measures implemented and the effectiveness of such measures
- known project effects on listed species, if any
- an assessment of the extent and severity of project impacts on all sensitive wildlife habitat
- occurrences of incidental take of federally listed species, if any
- a list of all personnel involved with the project who received training

Erosion Control Plan

Subject matter experts will ensure that an erosion control plan for each action is sufficient to prevent short- and long-term soil erosion or sediment transport as a result of the action. Sites with identified high potential for soil erosion will be monitored. Regular site inspections will be conducted during construction to ensure that erosion control measures remain in place and that they are maintained and function properly. A post-project site stabilization plan, including monitoring, will be developed and implemented by the park.

Restoration Action / Site Management and Monitoring Plan

Prior to the implementation of the invasive nonnative plants species control projects and associated habitat restoration projects, the National Park Service will prepare restoration action/site management and monitoring plans. It is anticipated that several plans will be prepared over the course of the project implementation due to the extended work period. Plans will include detailed maps of targeted nonnative plant species, specific integrated pest management (IPM) control treatments, implementation and site maintenance timelines and strategies, performance measures for treatment methods, restoration actions, and post-restoration site conditions. All herbicide use for project actions will be reported monthly to the IPM coordinator. The National Park Service will submit the restoration action plan to the U.S. Fish and Wildlife Service for concurrence prior to initiating the proposed action. The restoration action / site management and monitoring plans for the 2007 implementation activities will be included as a part of the 2007 annual report.

Funding and performance standards regarding follow-up care of plantings for one year following planting, and weed control for five years, will be funded as a part of projects.

As discussed with the U.S. Fish and Wildlife Service during consultations about threatened and endangered species, habitat restoration projects for the mission blue butterfly will be provided as compensation for habitat impacts or losses resulting from the proposed project.

Dust Control

A person or persons will be designated to oversee the implementation of a comprehensive dust control program and to increase watering, as necessary.

2.3.5 Best Management Practices

The following best management practices will be implemented, as appropriate, to minimize the degree or severity of adverse effects on natural resources, cultural resources, visitor experience, and other elements.

General Construction Measures

To the greatest degree possible, all existing suitable pavement will be pulverized in place and reused as base aggregate to reduce cost, construction time, and truck traffic hauling new materials.

Existing onsite demolished materials, such as waste concrete and asphalt, may be reused to the greatest extent possible to reduce waste and truck traffic hauling new materials. Local soil will be reused to the greatest extent possible to reduce costs and trucking impacts.

Construction-related activities will be primarily limited to daylight hours (7 a.m. to 7 p.m.) Monday through Friday and from 9 a.m. to 5 p.m. on Saturday. No work will occur during the more noise-sensitive nighttime hours or on Sunday or holidays unless located away from noise-sensitive sites (such as housing) or as noted otherwise in the final construction schedule. In addition, a major road may be closed for a limited period of time for the contractor to complete construction as fast as possible.

Consistent with the NPS *Management Policies 2006*, the National Park Service will strive to construct facilities with sustainable designs and systems to minimize potential environmental impacts. To the extent possible, the design and management of facilities will emphasize environmental sensitivity in construction, use of nontoxic materials, resource conservation, recycling, and integration of visitors with natural and cultural settings. The National Park Service will also reduce energy costs, eliminate waste, and conserve energy resources by using energy-efficient and cost-effective technology. Energy efficiency is incorporated into the decision-making process during the design and acquisition of buildings, facilities, and transportation systems that emphasize the use of renewable energy sources.

All structures (such as retaining walls and trail bridges) that will have any risk potential during an earthquake will be designed to meet federal or state seismic standards, whichever is more stringent.

Measures will be followed to minimize risks to personal safety, including implementation of a construction management plan to manage construction staging areas and safely route visitors through construction areas.

Crew Training

Contractors, or any NPS staff conducting maintenance or infrastructure improvement as described herein, will be required to have a project orientation for all workers to increase their understanding and sensitivity to the challenges of working in a national park environment. Park staff will conduct a training session for all contractor crews at the beginning of each action. At this training construction workers and supervisors will be informed about the Endangered Species Act and listed species in the project area, sensitivity of park resources, NPS standard values and regulations, and appropriate housekeeping practices. Training sessions will include identification of NPS staff resource contacts; special status plants, wildlife, or other sensitive resources in the work area; markings for the limit line of disturbance; thresholds that would trigger a change in implementation techniques or require a halt in project implementation; prohibitions on feeding wildlife; and proper disposal of food waste and garbage to discourage feeding by wildlife, which may increase predation or native wildlife, including corvids (scavengers, such as ravens). Upon completion of training, employees or contracting crews will sign a form stating that they attended the training and understand all the conservation and protection measures.

The National Park Service will ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging paleontological materials, archeological sites, or historic properties. Contractors and subcontractors will also be instructed on procedures to follow in case previously unknown paleontological or archeological resources are uncovered during construction.

General Resource Protection

The contractor, in coordination with NPS, will be required to clearly mark project limits before any ground-disturbing activities. No disturbance will occur beyond these limits. All protection measures will be clearly stated in the construction specifications, and workers will be instructed to avoid conducting activities beyond the zone (including storage of equipment, materials, soil, etc.) as defined by the construction zone fencing. Construction plans will be reviewed by a qualified, NPS-approved biologist.

The biological monitor will identify, flag, and map sensitive resource areas. In areas of extra sensitive resources (e.g., wetlands, threatened or endangered species and archeological sites) temporary construction fencing will be installed before any ground-disturbing activity. Exclusion zones around sensitive biological resources will be identified on construction plans. Temporary protective fencing or other barriers will be installed around sensitive native plant communities and resources to facilitate sight recognition and to aid in avoiding inadvertent disturbance by construction crews (includ-

ing storage of equipment, materials, soil, etc.). All existing resource protection fencing will be left in place and protected from heavy equipment until all work is completed.

To minimize the amount of ground disturbance, whenever possible, staging and stockpiling areas will be located in selected pullouts in each project area, Smith Road, and previously disturbed sites, except the former pistol range site on Bunker Road. Staging and stockpiling areas will be located away from visitor use areas to the extent possible. Disturbed and/or stockpiled soils will be temporarily covered with rice straw, matting, netting, or plastic sheeting. All open trench areas will be covered at the end of the workday. Waste and excess excavated materials will be stockpiled outside drainages, and contained with appropriate silt control. All staging and stockpiling areas will be returned to pre-construction conditions following construction.

The project will adhere to any additional measures required by section 7 of the Endangered Species Act, the biological opinion, section 404 permits, and NPDES II permits beyond those described in this document.

To ensure that the proposed actions are in conformance with the National Environmental Policy Act, the record of decision on the final environmental impact statement, and NPS policy, individual transportation plan projects will be subject to a park project review. Through the project review process, an interdisciplinary team will evaluate whether the potential effects of an action, including appropriate mitigation measures, are adequately addressed by the final environmental impact statement and reflect NPS management policies (the final environmental impact statement will include all conservation measures from the biological opinion). If it is determined that the project has the potential for new environmental effects not addressed in this environmental impact statement or effects greater than those described in this statement, a separate environmental process will be conducted.

Water Quality

Potential measures to protect water quality will include timing earth-moving activities to be completed primarily during the dry season, but they can occur all year weather permitting; minimizing run-on to the construction site; using water filters for sediment laden runoff; designating fueling and maintenance areas; and proper onsite storage of solvents, fuels, and other construction-related chemicals. During any construction activities, fill of wetlands, riparian zones, stream channels, or other valuable habitat will be strictly avoided or specifically permitted by the appropriate agency.

The following measures will be incorporated, as appropriate, into the design of parking areas to limit the introduction of vehicle-generated pollutants and to minimize erosion:

- In heavily used parking areas, where grass cover cannot survive, steep grades will be paved to resist erosion.
- Drop inlet filters and vegetated bio-filters will be used in heavily used parking areas.
- Drainage patterns of sheet flow will be directed into vegetated and stable ditches and swales around parking areas.
- Pervious pavers or porous pavements will be investigated for use in selected parking areas.

All herbicide use will be administered through the park's IPM coordinator, and only licensed personnel will be allowed to apply pesticides, under the oversight of NPS staff or the biological monitor. No herbicide foliar spraying or direct stump applications will be allowed in riparian or wetland habitats supporting special status species except in the dry season. Foliar herbicide applications beyond the riparian corridor are not approved where saturated soils are present, at wind speeds over 5 miles per hour, or when weather conditions facilitate herbicide movement toward drainages.

Revegetation/Restoration and Erosion Control

Road and infrastructure construction will be primarily completed during the dry weather months, but could occur all year, weather permitting. Unless no feasible alternative is available, use of heavy equipment will be avoided in areas with soils that are undisturbed, saturated, or subject to extensive compaction.

Until revegetation takes place, erosion control measures will be implemented to minimize any potential soil erosion and sediment transport away from the site. These measures will be implemented

and maintained according to an approved erosion control plan. Erosion and sedimentation control measures will be installed, such as silt fences, sedimentation basins, weed-free rice straw mulch, bonded fiber matrix, sediment traps, check dams, geofabrics, drainage swales, sand bag dikes and/or straw wattles wherever deemed appropriate to reduce erosion, surface scouring, and sediment discharge to water bodies, as defined in the erosion control plan.

Erosion and sediment control measures will be implemented where project actions could leave soils exposed to runoff prior to revegetation. Areas disturbed by equipment or vehicles will be rehabilitated as quickly as possible to prevent erosion, discourage the spread of nonnative plants, and address soil compaction. Techniques used for rehabilitation efforts will include decompacting and recontouring to natural topography, compacting soils to a natural degree, stabilizing soils, and removing and monitoring for nonnative plants.

After tree felling, roots will be left in place in areas with highly erosive soils or on steep slopes in areas outside of excavation and embankment areas. Stumps will be either flush cut at an angle consistent with the natural topography or ground down to the ground level if appropriate.

Scarifying (ripping) soils will be conducted to decrease compaction and retard runoff where restoration treatments are prescribed.

Rounding the tops of proposed cuts and the bottoms of fills, along with the sculpting of restoration areas, will be conducted, as appropriate, to ensure blending with surrounding terrain.

Regular site inspections will be conducted during construction to ensure that erosion control measures remain in place, are maintained, and function properly.

Mechanical regrading and rehabilitation of roads and trails will be conducted according to best management practices.

Topsoil and shouldering material that is compatible with future restoration/rehabilitation will be approved in coordination with a natural resource specialist or geologist.

Soil aggregate mix will be placed on all road shoulders where reestablishment of vegetated shoulders is desired.

All disturbed areas will be restored as close as possible to pre-construction native plant conditions shortly after construction activities have been completed.

If determined appropriate by a natural resource specialist, the top 6 to 12 inches of topsoil will be salvaged (to retain seeds, soil microrhiza, and fungi) from all excavation and disturbance areas of a project action where invasive plant propagules are limited and native plant species respond well to salvaging. Salvaged topsoil will be reapplied over all areas of the proposed action to be revegetated.

For smaller sites, passive revegetation will be accomplished by seeding from adjacent native seed sources. For larger sites, active revegetation will be accomplished by direct seeding or active revegetation. Seeds will be collected from the site or adjacent similar habitats. Revegetation will focus on establishing appropriate assemblages of native plant species known to occur in mission blue butterfly habitat (when within the flight corridor).

A native seed mix for vegetated road shoulders will be developed. Grassy road shoulders have been identified as a major character-defining feature for the historic roads; therefore, maintaining a grass cover will be critical for historic character and erosion control.

Active planting will not be used for narrow off-road bench sites with a high likelihood of seeding from adjacent native seed sources.

Active planting with onsite collected and propagated plants will be required for larger off-road bench sites without a high likelihood of natural seeding from adjacent native seed sources. For larger off-road bench areas where seeding is desired, seeds will be collected from the site or adjacent similar habitats, and a seed increase program such as the NRCS Plant Materials Center will be employed to generate the required quantities of seed.

Revegetation of native plant areas affected by construction will occur immediately following construction to reduce the potential of colonization by nonnative species. If the biological monitor or a natural resource specialist determines that interim

erosion control and site stabilization measures are beneficial, these measures will be implemented before revegetation.

Invasive Plant Species Control

The National Park Service will develop a target list of invasive weeds with potential to occur and be problematic in the project area. Prior to construction, any invasive weed infestations present in the study area will be documented and eradicated if feasible. If eradication is not feasible, invasive weed populations will be clearly identified by flagging, and flagged areas will be avoided during construction to prevent spread.

All construction equipment to be used on the projects will be required to be thoroughly cleaned, both inside and out, of soil and weed seeds prior to entering the park, and contractors will be required to make the equipment available for inspection prior to entry into the park. Contractors will also be required to clean equipment during construction activities whenever moving equipment from areas known to support invasive weeds to other areas within the park, and before leaving the site. Contractors will allow inspection of equipment prior to beginning construction in other areas.

Soil disturbance during grading activities will be minimized to the greatest extent possible to reduce the potential for introduction or spread of invasive nonnative plant species, to protect topsoil resources, and to reduce available habitat for new nonnative plant species. Where surface soils supporting native vegetation will be disturbed as a result of the proposed action, the topsoil layer will be excavated and stockpiled separately from other fill and replaced as topsoil at the end of the action.

All herbicide use will be administered through the park's IPM coordinator, and only licensed personnel will be allowed to apply pesticides, under the oversight of NPS staff or the biological monitor. All herbicide use for project actions will be reported monthly to the IPM coordinator. No herbicide foliar spraying or direct stump applications will be allowed in riparian or wetland habitats supporting special status species except in the dry season. Foliar herbicide applications beyond the riparian corridor are not approved where saturated soils are present, at wind speeds over 5 miles per hour, or when weather conditions facilitate herbicide movement toward drainages.

All nonnative trees and shrubs will be removed from the road bench, except when part of the cultural landscape (Forts Baker, Barry, and Cronkhite cantonment areas) and identified as contributing elements of those landscapes, where historic plant materials and planting patterns would be retained or replaced.

In remote steep areas, biomass generated from the removal of invasive nonnative trees will be scattered and disposed of on site. Material will be bucked and/or macerated into small sections and then strategically placed under mature coastal scrub, within erosion gullies, or in other areas deemed appropriate by NPS natural resources staff to reduce potential impacts associated with hauling off site.

The National Park Service will identify restrictions placed on the movement or deposition of fill, rock, or other materials containing weed seed or viable plant cuttings to areas relatively free of weeds during final design, and will monitor these activities during construction.

Fill soil, mulch, seeds, and straw materials used during construction and implementation of best management practices will be certified as weed free. Appropriate excavated soil and aggregate materials from other projects within the park will be reused before allowing the importation of materials from outside the park. Soils and vegetation contaminated with weed seeds from within the park will be segregated and disposed of or treated as appropriate. Erosion control measures and mulches that contain nonnative plant seeds will be prohibited. Only rice straw will be permitted to prevent the inadvertent introduction of wheat and barley species.

In the event contractors propose to use a noncommercial material source, staging, or spoils area, they will be required to submit proposed source locations and written documentation (under the laws noted) to ensure that potential effects on rare, threatened, or endangered species (Endangered Species Act), waters of the United States (Clean Water Act), or prehistoric or historic resources (National Historic Preservation Act) have been evaluated as to presence and effects of the proposed activities. Aggregate will be supplied from solid rock or deep layers of quarry sites, be preapproved by the National Park Service, or be certified weed free to avoid potentially contaminating material with

weed seeds and to minimize the potential introduction of exotic invasive nonnative species.

Based on the density of the invasive nonnative plant population present, invasive species surveys will be conducted along the road shoulders of the routes that will provide project access. Areas subject to project activities will be monitored periodically for the presence of invasive nonnative plant species; if such species become established or spread as a result of such activities, the nonnative, nonhistoric plants will be removed.

Wetland Protection

Wetlands will be delineated by qualified NPS staff or certified wetland specialists and clearly marked prior to initiation of work.

Work areas within wetlands, such as work pads to support construction equipment, will be confined to the smallest area necessary and may require permitting. Excavated and stored materials will be located, contained, and stabilized within upland staging areas, and re-entry into wetland or aquatic habitats will be prevented.

Dust Control

The following basic control measures for construction emissions of PM_{10} (Bay Area Air Quality Management District 1999) will be implemented at all construction sites:

- All active construction areas will be watered to control dust.
- All trucks hauling soil, sand, and other loose materials will be covered, or all trucks will be required to maintain at least two feet of freeboard.
- All paved access roads, parking areas, and staging areas at construction sites will be swept (where required and necessary).
- Streets will be swept as required (with water sweepers) if visible soil material is carried onto adjacent public streets.

Pollution Prevention

Equipment and material staging areas will be located in existing disturbed areas within construction limits. The asphalt batch plant will not be permitted in the park. Staging areas will be indicated on the grading plans. Proper storage, use, and disposal of chemicals, fuels, and other toxic materials will be required. No fueling or equipment maintenance will occur within 100 feet of sensitive resources (e.g., wetlands, riparian zones, mission blue butterfly habitat), where feasible. Equipment will be checked frequently to identify and repair any leaks in order to minimize the possibility of hazardous materials contaminating soil or water. All heavy equipment used in the park will be required to carry emergency spill containment materials. For example, pans should be placed under equipment that is stored onsite to reduce the potential for oil and other substances to leak onto park lands. Absorbent materials should be on hand at all times to absorb any minor leaks and spills.

For each construction contract to implement the proposed projects, the contractor will be required to comply with permit requirements for storage of fuel, petroleum products, or deleterious materials. The contractor will be responsible for the management of unintended hazardous materials releases and other environmental regulations and requirements. An emergency response plan will be prepared by the contractor(s), approved by the National Park Service, and implemented during project implementation. During construction, if previously unknown hazardous materials sites are discovered, such sites will be remediated in accordance with EPA regulations and NPS standard practices, including an approved plan for the management of hazardous materials and spill response consistent with current park standard operating procedures for hazardous waste management and the park's "Spill Response Plan."

2.4 ALTERNATIVE 1 — NO ACTION

Alternative 1 is the no-action alternative, and except as noted below, only those actions necessary to meet the legislative requirements to protect natural and cultural resources within Golden Gate National Recreation Area, to provide for visitor safety, and to support existing park partner and NPS programs would be carried out. The National Park Service would be responsible for overall management and operations, with existing park partners responsible for continuing the responsibilities of their agreements. There would be no construction or transit operations costs, and no additional funding would be required above that currently allocated for routine maintenance, management, and operations. As part of Alternative 1, improvements listed above in

"Elements Common to All Alternatives" (sec. 2.2) would be implemented. Figure 2.1 shows existing conditions, and Figure 2.2 illustrates Alternative 1.

Alternative 1 provides a baseline for comparing the other alternatives, evaluating the magnitude of proposed changes, and measuring the environmental effects of those changes. The no-action concept follows the guidance of the Council on Environmental Quality, which describes the no-action alternative as representing no change from the current management direction or level of management intensity. Those projects or conditions for which NEPA compliance has been completed are assumed to be in place under this alternative because they represent current NPS management direction. Therefore, the actions and mitigation commitments in the *Fort Baker Plan Final Environmental Impact Statement* and *Record of Decision*, as well as the *Marine Mammal Center Site and Facilities Improvement Project Environmental Assessment* (NPS 2004b) and the subsequent "Finding of No Significant Impact," would occur under Alternative 1.

2.4.1 Roadways and Vehicular Circulation

No changes beyond those listed above in "Elements Common to All Alternatives" (sec. 2.2) would be made to the existing roadway infrastructure or vehicular circulation in the Marin Headlands and Fort Baker study area. Basic maintenance of roads would continue.

2.4.2 Parking Management and Fees

No changes beyond those listed in "Elements Common to All Alternatives" (sec. 2.2) would be made to parking facilities in the study area. Currently there are approximately 1,593 parking spaces in the Marin Headlands and 961 parking spaces in Fort Baker, as stated in the *Fort Baker Plan Final Environmental Impact Statement* and the *Marine Mammal Center Site and Facilities Improvement Project Environmental Assessment*. Parking currently occurs in formal paved lots, informal gravel or grass lots, and designated spaces and undesignated spaces along roadways.

No parking fees are now charged in the study area.

2.4.3 Bicycle and Pedestrian Improvements

No changes beyond those listed in "Elements Common to All Alternatives" (sec. 2.2) would be made to bicycle and pedestrian facilities in the study area. No improvements would be implemented to correct existing problems on pedestrian trails, which include poor trail connections, overly steep segments, poorly marked routes, soil erosion, and drainage problems. Basic maintenance of trails would continue and would include repairing or regrading path surfaces, cutting brush back from trails, sign repair, and cleaning ditches and culverts.

Currently, all roads in the study area are Class 3 bicycle routes (see sec. 2.1.2), except for the Barry-Baker tunnel and the connecting Danes Drive, which include a Class 2 striped bicycle lane. Under Alternative 1 these conditions would not change. In addition to the use of roadways for bicycling, the National Park Service permits biking on several trails, such as Julian Road (motorized vehicles are not permitted).

2.4.4 Transit Services

No changes beyond those in "Elements Common to All Alternatives" (sec. 2.2) would be made to transit services in the study area, and existing transit services would continue. MUNI Route 76 would continue to operate hourly on Sundays in the Marin Headlands. GGT Route 10 would continue on weekdays and weekends on Alexander Avenue at poorly marked stops that are difficult to access for pedestrians in the study area, and a limited number of GGT buses would stop at the Spencer Avenue bus pads on weekdays and weekends. The Fort Baker conference center shuttle would be implemented (see sec. 2.2).

2.4.5 Car-Free Days and Special Events

Aside from the changes listed in "Special Park Use Guidelines" (sec. 2.2.4), no additional actions would be implemented for special events. No car-free days would be implemented in the study area.

2.4.6 NATURAL AND CULTURAL RESOURCE PROTECTION

No existing roadway and parking infrastructure or pedestrian and bicycle facilities would be improved. Therefore, present cultural and natural resource impacts would continue, and the condition of historic roads and trails would continue to deteriorate. Ongoing severe erosion on steep road shoulders and at some trails would result in cultural and natural resource degradation. Pedestrians would continue to take shortcuts to reach destinations without formal trails, contributing to natural resource impacts. Wetland and riparian communities would continue to experience impacts in some high-use locations.

Natural and cultural resources in the park would be protected through such means as signage, fencing, and routine patrol to meet NPS legislative requirements. Existing programs to restore and enhance habitat and cultural resources would continue. These individual actions would be implemented as funding allowed. Interpretive and educational signs and programs would be implemented as funding allowed. No new habitat restoration would be initiated.

2.4.7 COSTS

No additional transit operating or construction costs are associated with Alternative 1.

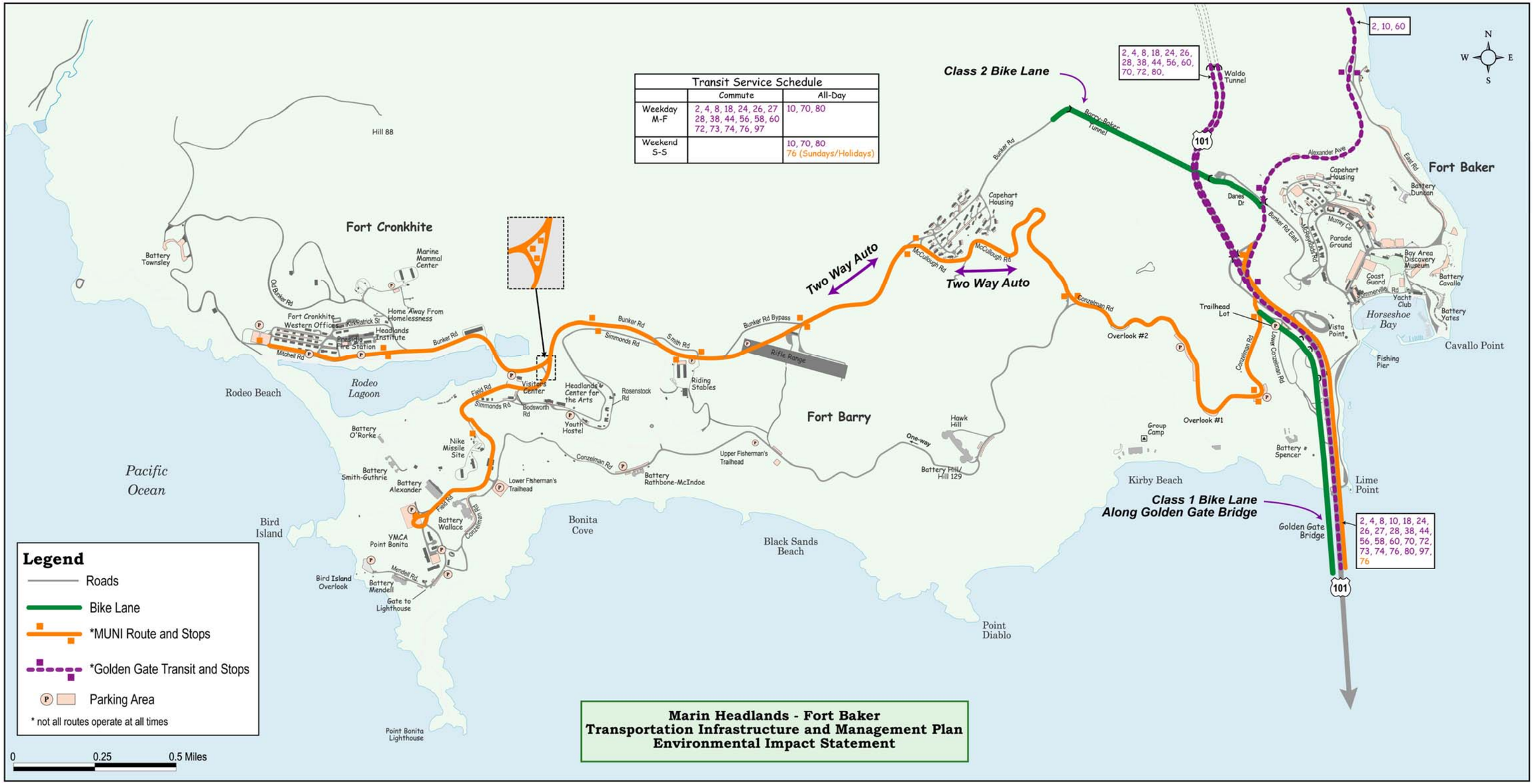

FIGURE 2.1 EXISTING CONDITIONS

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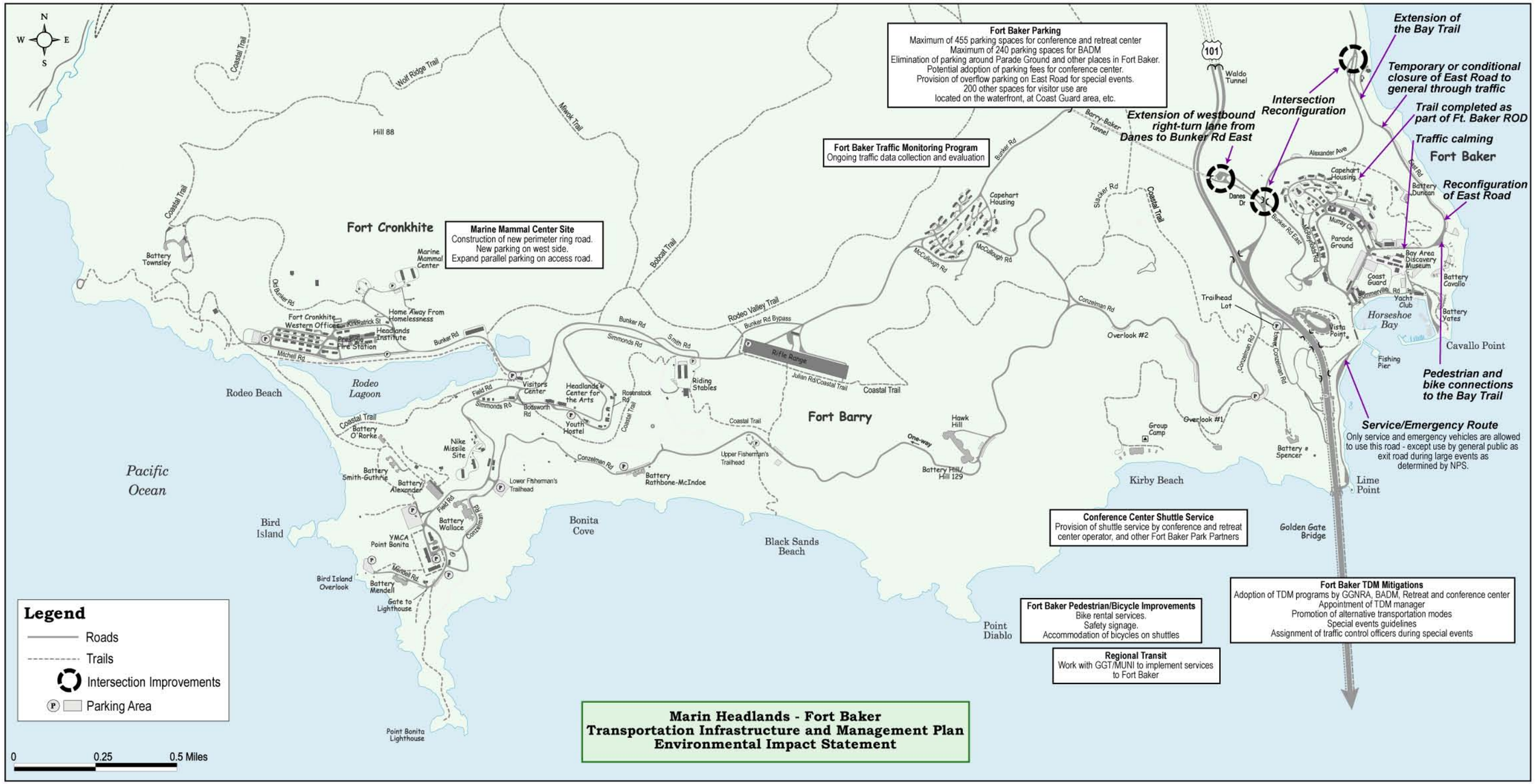

FIGURE 2.2 ALTERNATIVE 1 (NO ACTION)

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2.5 ALTERNATIVE 3 — PREFERRED ALTERNATIVE: ENHANCED MULTI-MODAL ACCESS

Under Alternative 3, the Preferred Alternative, the National Park Service would rehabilitate or reconstruct roadway infrastructure without altering the character of the roadway, and it would improve parking facilities. Additional transit options would be provided to and within the park to improve access to the park, subject to available funding. Trail enhancements would include improving or closing and/or rerouting some existing trails and constructing new trails. Bicycle access would be improved, as well as signage to assist visitors. Some infrastructure elements would be changed to fit within the available space. For example, at the Battery Spencer parking area, where the current space is inadequate to safely accommodate the numbers of vehicles using the site, the amount of parking would be slightly reduced and signage would be implemented to ensure safe parking use. Parking fees would be established throughout the Marin Headlands and Fort Baker area to provide funding for the transit improvements.

The intent of these actions would be to improve safety and circulation within the study area, to alleviate traffic congestion at key locations, to reduce impacts to resources in some locations, and to enhance the visitor experience by providing improved access opportunities for non-automobile modes of transportation.

Table 2-1 provides a summary of all actions proposed under this alternative. Figure 2.3, Figure 2.4, and Figure 2.5 illustrate proposed improvements under Alternative 3. Graphics for specific improvement locations are included in Appendix A.

2.5.1 MAIN ACTIONS

The main actions of Alternative 3 are summarized below. Each action is cross-referenced to the specific sections of the plan where it is further described (i.e., roadways and vehicular circulation, parking management and fees, bicycle and pedestrian improvements, transit services, car-free days and special events, and natural and cultural resource protection).

1. Improve roadways through light reconstruction and non-character altering road widening.

   Associated plan elements: Roadways and vehicular circulation (sec. 2.5.2).

2. Widen roadways and parking areas, and realign roadways at specific locations, such as Battery Spencer and Overlooks 1 and 2 on Conzelman Road to improve the safety of bicyclists sharing the roadway with motorized vehicles. Widening at these specified locations would allow cars to partially back out to gain sight distance to see oncoming vehicles prior to entering the traveled way.

   Associated plan elements: Roadways and vehicular circulation (sec. 2.5.2); parking management and fees (sec. 2.5.3); bicycle and pedestrian improvements (sec. 2.5.4).

3. Construct a new bicycle/pedestrian path between Fort Baker and the Marin Headlands along the utility road north of East Bunker Road, with a new bicycle/pedestrian tunnel under Alexander Avenue (in lieu of widening East Bunker Road to provide a bike lane as proposed in Alternative 4).

   Associated plan elements: Bicycle and pedestrian improvements (sec. 2.5.4).

4. Permit cyclists on the Rodeo Valley Connector Trail, an existing trail between Conzelman Road north to Bunker Road. The trail starts east of Battery Rathbone-McIndoe on Conzelman Road, connecting to Bunker Road east of the riding stables. This would be a multi-use trail allowing use by pedestrians, equestrians, and bicyclists.

   Associated plan elements: Bicycle and pedestrian improvements (sec. 2.5.4).

5. Provide an uphill bike lane to improve safety on Lower Conzelman Road (from the trailhead lot) and on Conzelman Road by widening the road. On Conzelman Road, the bike lane would be from Alexander Avenue to the intersection with McCullough Road.

   Associated plan elements: Roadways and vehicular circulation (sec. 2.5.2); bicycle and pedestrian improvements (sec. 2.5.4).

6. Convert major intersections from a Y to a T configuration to improve safety, except construct a roundabout at the Conzelman Road / McCullough Road intersection to facilitate bus turnarounds.

Associated plan elements: Roadways and vehicular circulation (sec. 2.5.2).

7. Terminate Field Road at the Point Bonita trailhead and construct a turnaround loop. Close the Mendell parking lot, Mendell Road, and the Bird Island Overlook parking lot to allow the restoration of natural and cultural resources, including historic earthworks. With these parking lot closures, the nearest large parking lot would be at Battery Alexander. Construct a new pedestrian trail from the Battery Alexander parking lot to the Point Bonita trailhead, pave the Point Bonita trailhead parking lot, and provide a pedestrian/bicycle path on the existing roads (Mendell Road) for access to the Bird Island Overlook.

   Associated plan elements: Roadways and vehicular circulation (sec. 2.5.2); parking management and fees (sec. 2.5.3); bicycle and pedestrian improvements (sec. 2.5.4); natural and cultural resource protection (sec. 2.5.7).

8. Implement a wayfinding program and apply intelligent transportation systems (ITS) technologies (such as electric changeable message signs and highway advisory radio alerts) to provide improved visitor information and safety, and to reduce congestion at key locations (such as at the Battery Spencer parking area).

   Associated plan elements: Roadways and vehicular circulation (sec. 2.5.2); natural and cultural resource protection (sec. 2.5.7).

9. Rehabilitate the NPS Marin roads and trails maintenance yard (reduce in size by up to half, regrade area to be less steep, move NPS vehicle parking to paved erosion-resistant areas, build a new garage to house equipment and materials, install vegetated drainage swales, and revegetate remainder of former yard). If needed to address parking demand, create some replacement parking in infill areas at Fort Cronkhite, possibly including the rehabilitated roads and trails maintenance yard. Construct an associated sidewalk along Old Bunker Road (2 to 4 feet wide) to connect the maintenance yard parking to the interior of Fort Cronkhite.

   Associated plan elements: Parking management and fees (sec. 2.5.3); natural and cultural resource protection (sec. 2.5.7).

10. Eliminate some parking in shoulder areas along Conzelman Road to improve safety and reduce natural resource impacts, and construct a new parking area on Julian Road near the Conzelman Road intersection to replace some of the roadside parking.

    Associated plan elements: Parking management and fees (sec. 2.5.3); natural and cultural resource protection (sec. 2.5.7).

11. Remove the unpaved Rodeo Beach parking lot to restore pre-existing wetland condition to re-establish natural hydrologic and wetland conditions by reversing past human disturbances to natural processes; replace some of the lost parking with replacement parking in infill areas at Fort Cronkhite and/or the rehabilitated roads and trails maintenance yard. This removal would be conducted in phases based in implementation of replacement parking, parking needs, and provision of transit access. Decisions about replacement parking within this area would also be confirmed through the General Management Plan process, currently underway, and the CLR, also currently underway.

    Associated plan elements: Parking management and fees (sec. 2.5.3); natural and cultural resource protection (sec. 2.5.7).

12. Shift Smith Road closer to Bunker Road to replace existing parking at the historic rifle range. Close the rifle range and adjacent pistol range to all vehicles and parking. Provide 150 parking spaces on a combination of permeable material and pavement for the new Rodeo Valley trailhead, special events, and a car-free days program to replace parking removed from the rifle range. Close the Bunker Road bypass, and consider opening only for special event and car-free days parking. Remove two existing trail bridges west of the rifle range. Provide new bridge connection from the trailhead to the Rodeo Valley Trail. Design Smith Road parking area to accommodate large vehicles, such as horse trailers; organize and delineate to provide adequate space for pedestri-

ans, bicyclists, and equestrians to safely move through this area.

Associated plan elements: Parking management and fees (sec. 2.5.3); car-free days and special events (sec. 2.5.6); natural and cultural resource protection (sec. 2.5.7).

13. Reduce and organize the quantity of parking at selected sites (e.g., Battery Spencer) to improve safety and to provide improved pedestrian facilities.

    Associated plan elements: Parking management and fees (sec. 2.5.3); bicycle and pedestrian improvements (sec. 2.5.4).

14. Organize and delineate parking at remaining parking locations to improve safety, alleviate parking congestion, and reduce impacts on resources.

    Associated plan elements: Parking management and fees (sec. 2.5.3); natural and cultural resource protection (sec. 2.5.7).

15. Construct a new Coastal Trail hiker segment parallel to Conzelman Road between current crossing on Conzelman Road and Field Road to Battery Alexander and Rodeo Beach Trail, providing a more coastal route for hikers. Regrade and revegetate the trail segments that are replaced with reroutes.

    Associated plan elements: Bicycle and pedestrian improvements (sec. 2.5.4); natural and cultural resource protection (sec. 2.5.7).

16. Improve the Rodeo Valley Trail surface (make it hardened but permeable and not paved) to accommodate bicycles on the segment between Bunker Road and the new bridge at the Capehart residential neighborhood near the intersection of Bunker and McCullough Roads. Realign the trail west of the rifle range to restore riparian resources. Add signage for safety, such as share the trail and slow speed signs.

17. Improve connections to the Rodeo Valley Trail at Smith Road (as described under item 12 above) and Dubois Road (trail). Improve Dubois Road (trail) between Julian Road and McCullough Road for bike/pedestrian use. Connect to new bike/pedestrian bridge at Capehart housing to access Rodeo Valley Trail.

    Associated plan elements: Roadways and vehicular circulation (sec. 2.5.2); parking management and fees (sec. 2.5.3); bicycle and pedestrian improvements (sec. 2.5.4); natural and cultural resource protection (sec. 2.5.7).

18. Widen East Road to provide additional width where possible in the paved shoulder area for bicyclists and space for the San Francisco Bay Trail. Other than the existing pullout areas, no new formal parking is proposed on East Road. During the car-free days or special events, cars could be parked on East Road.

    Associated plan elements: Roadways and vehicular circulation (sec. 2.5.2); bicycle and pedestrian improvements (sec. 2.5.4).

19. Upgrade the Rodeo Lagoon loop trail to make portions accessible.

    Associated plan elements: Bicycle and pedestrian improvements (sec. 2.5.4).

20. Work with the San Francisco Municipal Transit System, Golden Gate Transit, or another provider to encourage expanding existing transit service and improve park access to the main Fort Baker post area, and facilitate transfers between transit providers.

    Associated plan elements: Transit services (sec. 2.5.5).

21. Implement a new shuttle system for Fort Baker and the Marin Headlands to provide mobility within the park.

    Associated plan elements: Transit services (sec. 2.5.5); car-free days and special events (sec. 2.5.6).

22. Implement a car-free days program on a limited, trial basis for a maximum of seven days per year to provide an alternative visitor experience.

    Associated plan elements: Car-free days and special events (sec. 2.5.6).

23. Institute a parking fee program for private vehicles in the Marin Headlands and Fort Baker to provide funding for improved transit service and car-free day operations.

    Associated plan elements: Parking management and fees (sec. 2.5.3); transit services (sec. 2.5.5); car-free days and special events (sec. 2.5.6).

Detailed actions are presented in the following sections and in Table 2-1.

2.5.2 ROADWAYS AND VEHICULAR CIRCULATION

As previously stated, universal design concepts that maximize accessibility for all visitors (including visitors with disabilities) would be applied to all facility designs to the greatest extent possible. Roadway infrastructure would be improved through light reconstruction and roadway widening that would not alter the historic character of roads in the study area. In most cases reconstruction would be accomplished within the existing road bench (the graded area between the inboard ditch and outboard shoulder that includes the travel lanes), although several new retaining walls would be constructed in narrow locations. Safety improvements would be implemented at critical intersections. See Appendix A for graphics of typical sections for key roads in the study area.

Most road widening in the study area would increase the width of roads from 2 to 4 feet to allow for Class 2 bicycle lanes or to improve safety on Class 3 bike routes. Roadways widened for uphill bike lanes would include Lower Conzelman Road and portions of Conzelman Road. Road widening at Battery Spencer would include excavation to increase the extent of an existing rock cut by approximately 328 feet (100 m) within the road curve. This would improve sight distance at this popular destination and improve the safety of vehicles, pedestrians, and cyclists on Conzelman Road and vehicles entering and exiting the parking area. Most of the existing roads would be reconstructed/rehabilitated on the same, or very similar, vertical and horizontal alignments.

To improve safety for either motorized vehicles or bicycles (Class 3), the following roads would be widened: McCullough Road, Bunker Road, Field Road, Mitchell Road, East Road, and the access road to the Marine Mammal Center. In addition, west of the tunnel the shoulders of Bunker Road would be further widened at select locations (i.e., blind corners) to improve sight distance and safety. The function of the following roads would change, resulting in closure or conversion:

- Field Road would be terminated at the Point Bonita trailhead, and Mendell Road would be closed to traffic.
- The southern section of Slacker Road (trail) would be closed and rerouted to a less steep path to address erosion problems while maintaining access to two research sites.
- Dubois Road (trail) would be converted to a pedestrian/bicycle trail.
- The Bunker Road bypass would be closed to traffic except for parking during special events and car-free days.

Other changes would include the following:

- Smith Road would be shifted closer to Bunker Road to restore natural resources.
- The intersection of Conzelman Road and McCullough Road would be replaced with a roundabout to allow for safe bus turnaround and to maintain traffic flow.
- The following intersections would be reconstructed from Y to T configurations to improve operations and safety:

  McCullough Road / Bunker Road

  Bunker Road / Field Road

  East Road / Alexander Avenue.
- The Bunker Road / Mitchell Road intersection would be converted to a three-way stop to improve safety. This measure would be reevaluated for effectiveness based on the results of monitoring for traffic safety and operations (e.g., long queues resulting in congestion), and if needed, the intersection would be converted to a T configuration.
- The intersection of U.S. 101 and Conzelman Road would be improved to accommodate the turning radius of buses. The east entrance to the visitor center on Field Road would be reconstructed to be aligned with Bodsworth Road. The entrance to Battery Alexander parking lot would be improved to allow for better sight distance and safer entering and exiting movements.

In addition to the Fort Baker traffic management and monitoring program that is common to all alternatives, signage as part of a wayfinding program and ITS technologies would be implemented to improve visitor information and safety and to reduce traffic congestion at key locations, such as Battery Spencer parking area.

2.5.3 PARKING MANAGEMENT AND FEES

Parking facilities would be reconfigured, delineated, and formalized in many locations to improve parking operations, reduce congestion, better match parking supply with demand, and reduce natural resource impacts. Parking spaces in the Marin Headlands would be reduced from approximately 1,593 existing spaces to about 1,330 spaces. Parking spaces in Fort Baker would be reduced slightly (from 961 spaces to 944), as compared to the *Fort Baker Plan* and Alternative 1, because of East Road improvements.

A parking fee program would be implemented throughout the planning area to provide a source of funding for enhanced transit service to the Marin Headlands and Fort Baker. Parking areas where fees would be implemented would be determined during development of the parking fee program. There could be a mix of fee payment options, including daily, monthly, and yearly passes for display in vehicles. Passes could be purchased at the visitor center or at parking pass vending machines in key locations throughout the study area. The parking needs of park staff, park partners, and visitors would be considered during development of the parking fee program. Fee payment options could include an annual parking pass that may reduce costs for more frequent park users. Details of implementation, administrative, and maintenance costs for the parking fee program would be considered in developing the final program budget and fee.

To replace some of the roadside parking closed along Conzelman Road, a new parking area would be provided on Julian Road near the Conzelman Road and McCullough Road intersection (see Appendix A). The parking lot at Battery Mendell and Bird Island Overlook would be removed because Field Road would be terminated at the Point Bonita trailhead; however, parking would be available in the improved Battery Alexander and Point Bonita trailhead parking lots and on the roadside at the terminus of Field Road. New parallel parking would also be provided along the road to the Marine Mammal Center.

The unpaved portion of the parking lot at Rodeo Beach would be removed to reduce erosion and to allow the restoration of the riparian corridor in that area. Some replacement parking would be provided in infill areas in the Fort Cronkhite, to be identified following completion of a Cultural Landscape Report (CLR), and coordinated with decisions in the General Management Plan process currently underway. Replacement parking could also be located in the rehabilitated maintenance yard. An associated sidewalk (2 to 4 feet wide) would be constructed along Old Bunker Road to connect the maintenance yard parking as well as Marine Mammal Center parking to the interior of Fort Cronkhite. The removal of Rodeo Beach parking would be conducted in phases based on implementation of replacement parking, parking needs, and provision of transit access. Decisions about replacement parking within this area would also be confirmed through the General Management Plan process, currently underway, and the CLR, also currently underway.

The rifle range would be closed to all vehicles and parking, with a new trailhead lot at Smith Road. Smith Road would be shifted closer to Bunker Road, and 150 parking spaces for special events or car-free days would be provided on a combination of reinforced grass and pavement to provide accessible access. Also during special events and car-free days, the Bunker Road bypass would be opened for parking; at all other times the bypass would be closed. If additional parking was needed during special events or car-free days, vehicles would be allowed to park on the shoulder of Bunker Road near the bypass.

Parking would be reorganized and delineated at the remaining locations, including the following: Conzelman Road (including Overlooks 1 and 2), Battery Spencer, Hawk Hill, the Upper Fisherman's trailhead, the Lower Fisherman's trailhead, Battery Alexander, internal parking at Fort Barry, and East Road parking. Except at Battery Alexander and Fort Barry, the number of parking spaces would be reduced to allow for these improvements. At Hawk Hill, head-in parking stalls would extend over the side of the hill and away from the driving lane using a 515-foot long, 14-foot high retaining wall. Additional parallel parking would be provided on the inboard side of Conzelman Road. The number of parking spaces would not change relative to existing conditions. The park would also consider operation of a seasonal weekend shuttle to Hawk Hill from other Marin Headlands parking lots to provide access to the Golden Gate Raptor Observatory (GGRO) program site if Hawk Hill parking is not sufficient. To manage parking at the Battery Spencer parking area, signage would be provided

(directing visitors to other areas when the lot is at capacity). The trailhead parking lot west of Highway 101 would be promoted as an alternative to the Battery Spencer lot.

Visitor amenities, such as information kiosks, benches, and vault toilets, would be installed at major parking areas, including parking areas at the new Smith Road trailhead, Battery Alexander, Hawk Hill, and Julian Road. These amenities would be designed to be compatible with the historic district and would be implemented based on the availability of funding.

2.5.4 BICYCLE AND PEDESTRIAN IMPROVEMENTS

As previously stated, universal design concepts that maximize accessibility for all visitors (including those with disabilities) would be applied to all facility designs to the greatest extent possible. All new or reconstructed trails would meet outdoor accessibility guidelines to the extent possible as outlined in the *Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas: Final Report* (United States Access Board 1999). Many trails occur in the project area. Trail use will remain unchanged on most of these trails unless noted in the project description below.

Class 1 bicycle paths and Class 2 bicycle lanes (and multi-use trails) would be added at several locations in the study area, and pedestrian trails would be extensively improved. A new bicycle/pedestrian trail would be constructed to connect Fort Baker and the bike lanes at the Barry-Baker tunnel and the Marin Headlands. This facility would include a new separate bicycle/pedestrian tunnel parallel to Bunker Road under Alexander Avenue and the addition of a sidewalk on the north side of Danes Drive. This new pedestrian/bicycle trail would also provide a connection between the bus transfer on Alexander Avenue/U.S. 101, Fort Baker, and the Marin Headlands.

With the closure of Mendell Road, a Class 1 bicycle path would be provided between the Point Bonita trailhead and Bird Island Overlook, maintaining access to the overlook for both pedestrians and bicyclists. The Rodeo Valley trail would be widened with a hardened surface (permeable but not paved) between the Capehart housing area and Bunker Road at Rodeo Lagoon to provide a Class 1 bicycle path on the existing equestrian and hiking trail. The existing route would be realigned west of the rifle range to allow restoration of the riparian area. Signage for safety would be added, such as share the trail and slow speed signs.

To connect to the Rodeo Valley Trail, Dubois Road (trail) would be converted to a pedestrian/bicycle trail between Julian Road and McCullough Road. Both pedestrians and bicyclists would use McCullough Road shoulder between Rodeo Valley trail and Dubois Road (trail).

A Class 2 bicycle lane would be added to Conzelman Road between Alexander Avenue and McCullough Road, providing a dedicated uphill (westbound) bicycle lane in this area; downhill (eastbound) bicycles would continue to share the travel lane with vehicles. Other roads in the study area would remain Class 3 bicycle routes, with shared bicycle/ vehicular travel lanes.

Some Class 3 bicycle routes would be improved through the widening of most roads in the study area by 2 to 4 feet. The paved shoulders on East Road would be widened to improve this bicycle route. Additional width would be provided where possible in the shoulder area for bicyclists. A 4-foot shoulder would be provided northbound from Fort Baker to the curve before the Sausalito-Marin-City Sanitary District entrance, changing to a 3-foot shoulder from this point to the Alexander Avenue/East Road intersection. Southbound bicyclists from Alexander Avenue and Sausalito would have a consistent 3-foot wide shoulder until reaching the downhill grade north of Murray Circle, where the shoulder would become 2 feet wide (see typical sections in Appendix A). The San Francisco Bay Trail would be extended along the east paved shoulder of East Road from the current connection to Alexander Avenue.

Pedestrian facility improvements would include improvements to existing trails, new trail construction, trail closures and rerouting, and other actions, including drainage improvements, erosion control, trail stabilization, and accessibility improvements.

- A new trail would be constructed between Battery Alexander and Rodeo Beach to replace the existing social trail.
- A new trail would be constructed between the Battery Alexander parking area and the

Point Bonita trailhead to provide access from the parking area to the existing trail.

- Cyclists would be allowed on the Rodeo Valley Connector trail between Conzelman Road north to Bunker Road. The trail starts east of Battery Rathbone-McIndoe on Conzelman Road, connecting to Bunker Road east of the riding stables. This trail would be multi-use and would permit pedestrian, equestrian, and bicycle use. The trail would be improved for drainage and would include minor tread work and minor vegetation clearing. It would be re-routed to avoid a remediation site near the hangar. Signage and calming measures would be provided at both ends of the trail to alert visitors they are in a developed area and could encounter vehicular traffic.
- A sidewalk would be constructed along the access road to the Marine Mammal Center.
- The Rodeo Lagoon loop trail would be improved with some alignment changes to make steep portions more accessible and address drainage and erosion issues.
- East Road would be widened to improve the bicycle route and accommodate the extension of the San Francisco Bay Trail along the east paved shoulder of the road from the current connection to Alexander Avenue.
- A new Coastal Trail hiker segment would be constructed parallel to Conzelman Road between the current crossing on Conzelman Road and Field Road to Battery Alexander and Rodeo Beach Trail, providing a more coastal route for hikers. The trail segments that are replaced with reroutes would be regraded and revegetated. A total of approximately 14,930 feet of trail reroute would occur on existing roads, and a total of 11,325 feet of new off-road trail would be constructed.
- Duplicate trail segments in the vicinity of the rifle range, stables, and Fort Barry would be closed and revegetated.
- Slacker Road (trail) would be a rerouted pedestrian/equestrian-only trail. The reroute would retain the connection to the SCA Trail. The existing route to the top of Slacker Hill would be converted from a road to a trail and some of the existing route would be removed and the site restored. The re-route would maintain access to the two GGRO research sites. Access to the east side of the launch site would be maintained for its views of the bay and city. The spur road leading from this trail that currently provides access to a raptor observatory research site would be closed and restored; access to this site would be provided through a new foot trail. Existing access to the other GGRO research site would be retained.
- Julian Road would continue to provide multi-use access.

2.5.5 Transit Services

Existing transit services would be expanded to improve access to and within the Fort Baker / Marin Headlands study area. The goal would be to provide transit access within the park areas connected to adjacent transit service. Transit would be provided seven days a week and may be implemented by expanding or extending existing transit services. Service would be more frequent on weekends than on weekdays, and no determination has been made regarding a selection of service provider for the park shuttle service. No specific changes are identified for the existing GGT Route 70/80 service that stops at the Spencer Avenue bus pads adjacent to U.S. 101. The Fort Baker conference center shuttle would be implemented as described under “Fort Baker Conference Center Shuttle” (sec. 2.2.2).

Expansion of the existing MUNI Route 76 service in the Marin Headlands would be encouraged on Saturdays, with a 30-minute service frequency on weekends. This route could also be extended to the new bus turnaround at the Point Bonita trailhead on Field Road. Either a new service provider or Golden Gate Transit would be encouraged.

Rerouting the existing GGT Route 10 on Alexander Avenue would be encouraged to provide direct service to the main post area of Fort Baker at 60-minute intervals seven days per week. This route would operate on Bunker Road and East Road to provide service to the main post area. The northbound transit interface would be on the east side of Highway 101 at the existing stop on the Alexander Avenue exit ramp off northbound US 101. For the southbound transit interface, the park would work with GGT and other service providers

to identify a feasible location for the interface (there currently is no existing GGT stop in the southbound direction near Highway 101). The park would work in collaboration with GGT, MUNI, and the shuttle service providers to develop an interface that could provide connections among these transit services. A new bicycle/pedestrian tunnel and trail under Alexander Avenue and sidewalks alongside Danes Drive would provide a bicycle and pedestrian connection between Fort Baker and these stops.

A new shuttle system serving Fort Baker and the Marin Headlands would be implemented to provide mobility within the park. Although this shuttle, funded by parking fees, would not provide access to transit connections beyond the park areas and Alexander Avenue, it would be designed to coordinate with other transit operations in the area, including MUNI and GGT routes and the Fort Baker Conference Center shuttle, to make other transit connections possible. Trips could be operated up to every 60 minutes throughout the day, and 7 days/week, depending on funding availability. The transit ridership and funding would be monitored and service refined as appropriate. The shuttle system would be operated by a private contractor or a local transit provider such as Golden Gate Transit. This would not preclude expansion of the shuttle to make other transit connections in the future if other funding sources or partners were identified to make this service feasible. It is anticipated at this time, regardless of who operated the system, that no servicing garages, shops, or other facilities would be constructed in the Marin Headlands and Fort Baker area. If maintenance or other support facilities are needed, they would be evaluated under a separate planning effort and NEPA compliance would be undertaken.

Transit stops within the park would be improved in cooperation with service providers and would include the addition of benches, signage, and shelters at heavily used stops. To pay for the transit service expansion, parking fees or other potential revenue sources, such as lease revenues, would be investigated. The National Park Service would encourage public use of alternative modes of transportation through various media such as the park website, handouts, and signage. ITS and wayfinding would be implemented to encourage transit services.

2.5.6 CAR-FREE DAYS AND SPECIAL EVENTS

To allow visitors to experience the area with minimal vehicular traffic and to encourage visitors to use alternative modes of transportation to access the park and travel within it, a car-free days program would be implemented on a limited, trial basis to allow the park flexibility in tailoring implementation and to coordinate with the public and park partners. Select trial periods would be limited to off-peak days with no more than seven trial days per year, e.g., the first Sunday of each month from April to October. After reviewing the program, the National Park Service could adjust the number of car-free days or times and operations. Implementation of the program would be coordinated with an extensive public information campaign, providing notice of the special operations and explaining the rationale and benefits of a car-free park experience. Prior to implementing the program to test car-free days, NPS would work with affected stakeholders, including park user group representatives, residents, and park partners to refine the details of the car-free area and operation to be tested in consultation with these groups. Other scenarios and strategies, including coordination with special events, may be tested. Detailed planning would address essential vehicle access and/or equipment drop-off, and park partners' concerns regarding operations, delivery vehicles, and other related issues.

In the Marin Headlands the car-free zone would include all roads west of the intersection of McCullough Road and Conzelman Road, with the exception of McCullough Road and the portion of Bunker Road between McCullough Road and Smith Road. The majority of visitors to the Marin Headlands would park at the new Smith Road trailhead parking. In addition, parking would be available on the Bunker Road bypass and shoulders of Bunker Road in this area. Equestrians would still park at the Smith Road parking area during car-free days as a result of closing parking at the rifle range. Visitors to the Golden Gate Raptor Observatory would be accommodated at Hawk Hill or Julian Road parking. (Figure 2.5 illustrates car-free zones and transit services that would be operated during car-free days.)

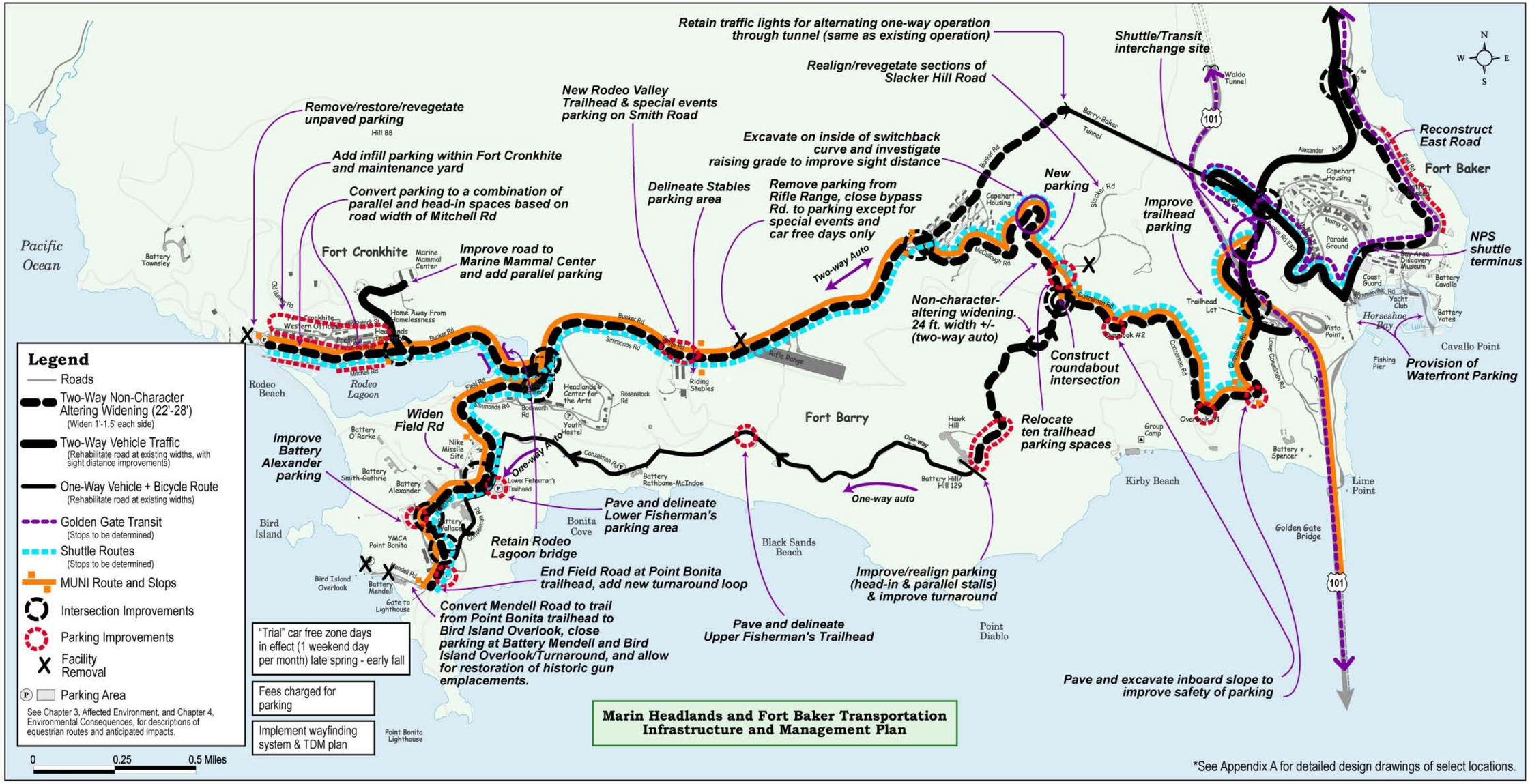

FIGURE 2.3 ALTERNATIVE 3 (PREFERRED ALTERNATIVE) — ENHANCED MULTI-MODAL ACCESS (ROADS, PARKING, AND TRANSIT IMPROVEMENTS)

United States Department of the Interior / National Park Service June 2007 • 641/20617

FIGURE 2.4 ALTERNATIVE 3 (PREFERRED ALTERNATIVE) — ENHANCED MULTI-MODAL ACCESS (PEDESTRIAN, TRAIL, BIKE, AND NATURAL RESOURCE IMPROVEMENTS)

United States Department of the Interior / National Park Service — March 2009 • 641/20618

FIGURE 2.5 ALTERNATIVE 3 (PREFERRED ALTERNATIVE) — CAR-FREE ZONES AND TRANSIT OPERATIONS FOR CAR-FREE DAYS

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SOURCE: NPS 2005b.

In Fort Baker the car-free zone would include most of the internal roads of Fort Baker, outside of the Fort Baker Lodge area. Major through-roads would remain open, and their operation would be changed to a one-way loop, allowing visitors to drive in a clockwise direction from U.S. 101 to Alexander Avenue, East Road, Center Road, Bunker Road, and Danes Drive. The majority of visitors to Fort Baker would park along East Road, where the one-way southbound operation would allow additional parking in the northbound lane (parking could be accommodated in the pullout areas). Parking would be developed along East Road, as specified in the *Fort Baker Plan/EIS*, which states that East Road would be reconfigured through striping to provide capability for overflow parking on the existing paved surface to support event parking needs. In addition to East Road, parking would be allowed on Center Street, Bunker Road, the Bay Area Discovery Museum (BADM) lot, and in visitor lots.

BADM visitors, including families with small children, would have the option of parking at the BADM visitor parking area or at East Road and being transported via the shuttle bus to a bus stop at the museum. After leaving the museum, visitors parked on East Road would board the shuttle bus that would continue its one-way route to Bunker Road, Danes Drive, Alexander Avenue, and the East Road parking area.

In addition to regular transit operations described under "Transit Services" (sec. 2.5.5), three special shuttle service routes would be implemented on car-free days to transport visitors from the new Smith Road trailhead, the Bunker Road bypass, and East Road parking areas to other destinations within the study area.

- One route would go from the Smith Road and Bunker Road bypass parking areas to Rodeo Beach/Fort Cronkhite and the Point Bonita trailhead (including also the Nike missile site, Bird Island Overlook, and Visitor Center).
- Another route would go from the Smith Road and Bunker Road bypass parking areas to points in Fort Baker via Bunker, McCullough, and Conzelman roads (including the Capehart housing area and Battery Spencer).
- A third route would transport visitors exclusively within Fort Baker.

The estimated cost (in 2007 dollars) of the shuttle service, additional NPS staff, and preparatory activities (i.e., public outreach) would be $19,150 to $22,500 per day or $134,000 to $157,500 annually for seven days of operation. These increased costs would be funded from revenue sources such as parking fees, leasing, or other sources to be investigated.

For special events, transportation demand measures such as parking controls and road closures would be implemented to facilitate vehicular circulation and accommodate increased parking demands.

2.5.7 NATURAL AND CULTURAL RESOURCE PROTECTION

Many of the previously listed infrastructure improvements would reduce impacts to natural resources and would restore natural functions and processes in specific locations. While these improvements would alter many historic roads and trails, impacts would be reduced to the extent feasible, mitigations would be implemented to enhance cultural resources, and ultimately the alternative would serve to rehabilitate historic roads and trails. Removing the unpaved Rodeo Beach lot would allow for the restoration of the riparian corridor in that area. Native plant and wetland communities would be restored where Field Road, Mendell Road, and associated parking areas would be removed; where Smith Road would be realigned; where Slacker Road (trail) and the Coastal Trail would be rerouted/removed; and at fill removal sites in Rodeo Lagoon. Design guidelines for improving Mendell Road and Bird Island Overlook would protect these historic resources as well. The historic gun emplacement and historic setting on the north side of Battery Mendell would be restored. The rifle range and pistol range would be closed to all motor vehicle use to protect these historic sites. Parking areas in the Fort Cronkhite cantonment would be defined and paved, as appropriate, to address the ongoing degradation of historic road and landscape features due to parking pressures.

To help restore natural resources at the rehabilitated roads and trails maintenance yard, the yard area would be reduced by half (see Appendix A). The reduction may be less if the area is used as replacement parking when unpaved Rodeo Beach

parking lot is removed and revegetated. A new, approximately 4,500-square-foot building designed to be compatible with the historic district would be installed to protect equipment and materials from the corrosive environment and to move them out of public view. Vegetated drainage swales would be installed, and the former yard area would be revegetated. The new garage would be built as an infill project within an existing, well-established maintenance facility that already has lighting, hazardous material storage, other garages, offices, paved parking, and drives.

A fence and stairs would be constructed on the south side of Mitchell Road to direct pedestrian movements to a dedicated path and prevent shortcuts down the slope to the beach. Eroded gullies on Conzelman Road would be refilled and revegetated. The natural drainage patterns would be restored to the greatest extent feasible. Additional improvements would include (1) comprehensive erosion control measures on unpaved shoulders and ditches on steep road segments and drainage improvements in some locations, and (2) habitat restoration enhancement included as mitigation for project impacts.

The Rodeo Beach unpaved parking lot would be removed and restored to its pre-existing wetland condition to re-establish natural hydrologic and wetland conditions by reversing past human disturbances to natural processes. Changes to this area must be guided by the Fort Cronkhite cultural landscape report to avoid adverse impacts to the historic district. Associated actions include removing fill from the unpaved parking lot above Rodeo Beach, grading the site to re-establish pre-disturbance contours, and restoring natural hydrologic conditions to establish native emergent marsh community. These actions would restore the dispersed flow of water along the valley floor by removing drainage ditches, gullies, and culverts. The excavated material from the parking lot would be used in this restoration area. The project would result in the net restoration of 1.3 acres of a sedge-dominated emergent wetland habitat from what is now upland habitat and unpaved parking lot. The total estimated fill for this project is 2,300 cubic yards, with most of the fill coming from the parking lot excavated material. The road crossing at Mitchell Road would be reconstructed with a bridge or bottomless culvert to allow movement of water, sediments, and wildlife between the beach and the restored wetland complex. The Statement of Findings in Appendix F contains more details.

2.5.8 Costs

Cost estimates (in 2007 dollars) for additional transit operations are $1,411,000 to $1,635,000 per year, and for car-free days, $134,000 to $157,500 per year (based on an assumption of seven car-free days; see Appendix B for detailed cost information). Construction costs are estimated to be $27.9 million (in 2007 dollars).

2.6 ALTERNATIVE 2 — BASIC MULTI-MODAL ACCESS

Under Alternative 2 roadway infrastructure would be rehabilitated within the existing roadway width; parking facilities would be improved; transit service would be expanded in the Marin Headlands on weekends; and minor pedestrian and bicycle facility enhancements would be implemented to improve access to the park. Wayfinding signage would be improved to assist visitors. These actions would improve safety and circulation within the study area, alleviate traffic congestion, reduce impacts to resources in some locations, and enhance visitor experience by providing better facilities and opportunities for non-automobile modes of transportation. The physical infrastructure would not be appreciably altered; instead, uses would be limited or reduced to fit within the available space. For example, at the Battery Spencer parking area, where the current space is inadequate to safely accommodate current vehicle use, parking would be substantially reduced to ensure safe parking use. Table 2-1 provides a summary of all actions proposed under this alternative. Figure 2.6 and Figure 2.7 show proposed improvements under Alternative 2. Graphics for specific improvement locations are included in Appendix A.

2.6.1 Main Actions

The main actions under Alternative 2 are summarized below, along with the associated plan elements where further details are provided.

1. Rehabilitate roadways within existing road widths.

   Associated plan elements: Roadways and vehicular circulation (sec. 2.6.2).

2. Convert Bunker Road to one-way eastbound traffic from the intersection with McCullough Road, east through the Barry-Baker tunnel, to the intersection with Danes Drive in order to eliminate the traffic signals at the tunnel and to provide a two-way bike lane on Bunker Road without widening the roadway.

   Associated plan elements: Roadways and vehicular circulation (sec. 2.6.2); bicycle and pedestrian improvements (sec. 2.6.4).

3. Provide an uphill bike lane on McCullough Road without widening the roadway by changing McCullough Road from two-way to one-way circulation from Conzelman Road to Bunker Road.

   Associated plan elements: Roadways and vehicular circulation (sec. 2.6.2); bicycle and pedestrian improvements (sec. 2.6.4).

4. Convert major intersections from a Y to a T configuration to improve safety.

   Associated plan elements: Roadways and vehicular circulation (sec. 2.6.2).

5. Reduce parking at Battery Spencer, Overlooks 1 and 2, and Hawk Hill to improve safety.

   Associated plan elements: Parking management and fees (sec. 2.6.3).

6. To restore natural resources, close Mendell Road west of Battery Mendell and the Bird Island parking lot to motorized vehicles. Remove pavement and provide a new pedestrian/bicycle path to access the Bird Island Overlook.

   Associated plan elements: Roadways and vehicular circulation (sec. 2.6.2); parking management and fees (sec. 2.6.3); bicycle and pedestrian improvements (sec. 2.6.4); natural and cultural resource protection (sec. 2.6.7).

7. Rehabilitate the NPS Marin roads and trails maintenance yard (reduce in size by half, regrade area to be less steep, move all vehicle parking to paved erosion-resistant areas, build new garage to house equipment and materials, install vegetated drainage swales, and revegetate remainder of former yard).

   Associated plan elements: Parking management and fees (sec. 2.6.3); natural and cultural resource protection (sec. 2.6.7).

8. Eliminate some parking along Conzelman Road and in a portion of the unpaved Rodeo Beach parking lot; to restore natural resources, remove Smith Road and associated parking.

   Associated plan elements: Parking management and fees (sec. 2.6.3); natural and cultural resource protection (sec. 2.6.7).

9. To alleviate parking congestion and to protect resources, organize and delineate parking at remaining parking locations.

   Associated plan elements: Parking management and fees (sec. 2.6.3); natural and cultural resource protection (sec. 2.6.7).

10. Implement minor trail improvements such as drainage, erosion control, and stabilization at Julian Road, Slacker Road (trail), Rodeo Valley Trail, Rodeo Lagoon Trail, and Coastal Trail connections.

    Associated plan elements: Bicycle and pedestrian improvements (sec. 2.6.4); natural and cultural resource protection (sec. 2.6.7).

11. Improve park access by encouraging increasing existing transit service (provide MUNI service at a 60-minute frequency on Saturdays, and facilitate transfers between transit providers).

    Associated plan elements: Transit services (sec. 2.6.5).

12. Improve selected transit stops within the park through the addition of benches and signage. Encourage public use of alternative modes of transportation through various media such as the park website, handouts, and signage.

    Associated plan elements: Transit services (sec. 2.6.5).

Detailed actions are presented in Table 2-1.

2.6.2 ROADWAYS AND VEHICULAR CIRCULATION

As previously stated, universal design concepts that maximize accessibility for all visitors (including visitors with disabilities) would be applied to all facility designs to the greatest extent possible.

Roadway infrastructure in the study area would be rehabilitated without widening or realigning roads except in isolated locations to avoid or stabilize erosion sites. Safety improvements would be implemented at critical intersections, and traffic operations in some locations would be altered to improve safety and circulation and to alleviate traffic congestion without widening the roadway. See Appendix A for graphics of typical sections for key roads in the study area.

Roadway and operational changes would occur on Mendell Road, Bunker Road, and McCullough Road. Mendell Road would be terminated at Battery Mendell, and the pavement between Battery Mendell and Bird Island Overlook would be removed because the overlook parking lot would be closed to vehicular access. Bunker Road would be made one-way eastbound from the intersection with McCullough Road, east through the Barry-Baker tunnel, to the intersection with Danes Drive in order to eliminate the traffic signals at the tunnel. McCullough Road would also be made one-way northbound as part of this one-way circulation system and to provide an uphill (southbound) bicycle lane without widening the roadway. Except as noted, all existing roads would be reconstructed/rehabilitated on the same, or very similar, vertical and horizontal alignments.

The following intersections would be reconstructed to T configurations to improve operations and safety: Conzelman Road / McCullough Road, McCullough Road / Bunker Road, Bunker Road / Field Road, and East Road / Alexander Avenue. The Bunker Road / Mitchell Road intersection would be converted to a three-way stop to improve safety. This measure would be reevaluated for effectiveness based on the results of monitoring for traffic safety and operations, and if needed, the intersection would be converted to a T configuration.

In addition to the Fort Baker traffic management and monitoring program that is common to all alternatives, signs for a wayfinding program would be posted to improve visitor information and safety and to reduce traffic congestion.

2.6.3 Parking Management and Fees

Parking facilities would be reconfigured, delineated, and formalized in many locations to improve parking operations, reduce congestion, better match parking supply with demand, and reduce natural resource impacts. Parking in the Marin Headlands would be reduced from approximately 1,593 spaces to about 1,330 spaces. Parking spaces in Fort Baker would remain the same as Alternative 1.

Parking would continue to be provided free of charge to visitors.

The greatest changes to parking facilities would include the following.

- Parking at Battery Spencer, Overlooks 1 and 2 on Conzelman Road, and Hawk Hill would be substantially reduced; parking would only be allowed where there is room for drivers to park safely and not block travel lanes or back up blindly into automobile and bicycle traffic. In other shoulder areas along Conzelman Road parking would be eliminated to improve safety and reduce natural resource impacts.
- A portion of the unpaved parking area at Rodeo Beach would be removed to partially restore the riparian corridor in that area.
- Parking at Bird Island Overlook would be eliminated, and Mendell Road would be terminated at Battery Mendell.
- Smith Road and its associated parking area would be removed to allow restoration of native plant communities in that area.
- To keep parking at the rifle range from further expanding and impacting cultural resources, the parking area would be delineated with barriers such as logs or wheel stops.

2.6.4 Bicycle and Pedestrian Improvements

As previously stated, universal design concepts that maximize accessibility for all visitors (including those with disabilities) would be applied to all facility designs to the greatest extent possible. All new or reconstructed trails would meet outdoor accessibility guidelines as outlined in the *Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas: Final Report* (United States Access Board 1999). Many trails occur in the project area. Trail use will remain unchanged on most of these trails unless noted in the project description below.

Class 1 bicycle paths and Class 2 bicycle lanes would be added in several locations in the study area, and minor improvements would be made to pedestrian trails. With the proposed removal of Mendell Road between Battery Mendell and Bird Island Overlook, a Class 1 bicycle path would be constructed between the two areas to allow bicycle and pedestrian access to the overlook.

Class 2 bicycle lanes would be added to Bunker Road between the intersection with McCullough Road and the Barry-Baker tunnel, and a one-way uphill (southbound) Class 2 bicycle lane would be added to McCullough Road. These lanes, along with the existing Class 2 lanes in the Barry-Baker tunnel and on Danes Drive, would allow two-way bicycle travel on McCullough Road and the portion of Bunker Road that would be converted to one-way vehicular travel. Other roads in the study area would remain Class 3 bicycle routes, with shared bicycle and vehicular travel lanes.

Pedestrian facility improvements would include drainage improvements, erosion control, or trail stabilization at several sites in the study area, including Julian Road, Slacker Road (trail), the Rodeo Valley trail, the Rodeo Lagoon loop trail, and Coastal Trail connections.

2.6.5 TRANSIT SERVICES

Existing transit services would be supplemented to improve access to the study area. Expanding the existing Sunday MUNI Route 76 service in the Marin Headlands to Saturdays would be encouraged, with service at 60-minute intervals throughout the weekend.

The Fort Baker conference center shuttle would be implemented (see sec. 2.2.2).

In addition to these transit service improvements, selected transit stops within the park would be improved with the addition of benches and signs. The National Park Service would encourage public use of alternative modes of transportation through various media such as the park website, handouts, and signage. To pay for the increased transit service expansion, potential revenue sources such as leases would be investigated.

2.6.6 CAR-FREE DAYS AND SPECIAL EVENTS

No car-free days program would be implemented in the study area. Aside from the measures in "Special Park Use Guidelines" (sec. 2.2.4), no additional special event actions would be implemented.

2.6.7 NATURAL AND CULTURAL RESOURCE PROTECTION

Many of the infrastructure improvements listed for Alternative 2 would reduce impacts to cultural and natural resources and would restore natural functions and processes in isolated locations. Removing part of the unpaved portion of the Rodeo Beach lot would partially restore the riparian corridor in that area. Native plant and wetland communities would be restored where parts of Mendell Road, Smith Road, and their associated parking areas were removed. Design guidelines to implement improvements at Mendell Road and the Bird Island Overlook would protect these historic resources. Also, the historic gun emplacements at Battery Mendell would be restored.

To help restore natural resources at the NPS Marin roads and trails maintenance yard, the yard area would be reduced by half. A new, approximately 4,500-square-foot building designed to be compatible with the historic district would be installed to protect equipment and materials from the corrosive environment and to keep it out of public view. Vegetated drainage swales would be installed, and the former yard area would be revegetated. The new garage would be built as an infill project within an existing well-established maintenance facility that already has lighting, hazardous material storage, other garages, offices, paved parking, and drives.

Constructing a fence and stairs on the south side of Mitchell Road would funnel pedestrian movements to a dedicated path, preventing shortcuts down the slope to the beach. Additional improvements would include erosion control measures on unpaved shoulders, ditches on some steep road segments, and drainage improvements in some locations, as well as habitat restoration enhancement to mitigate project impacts.

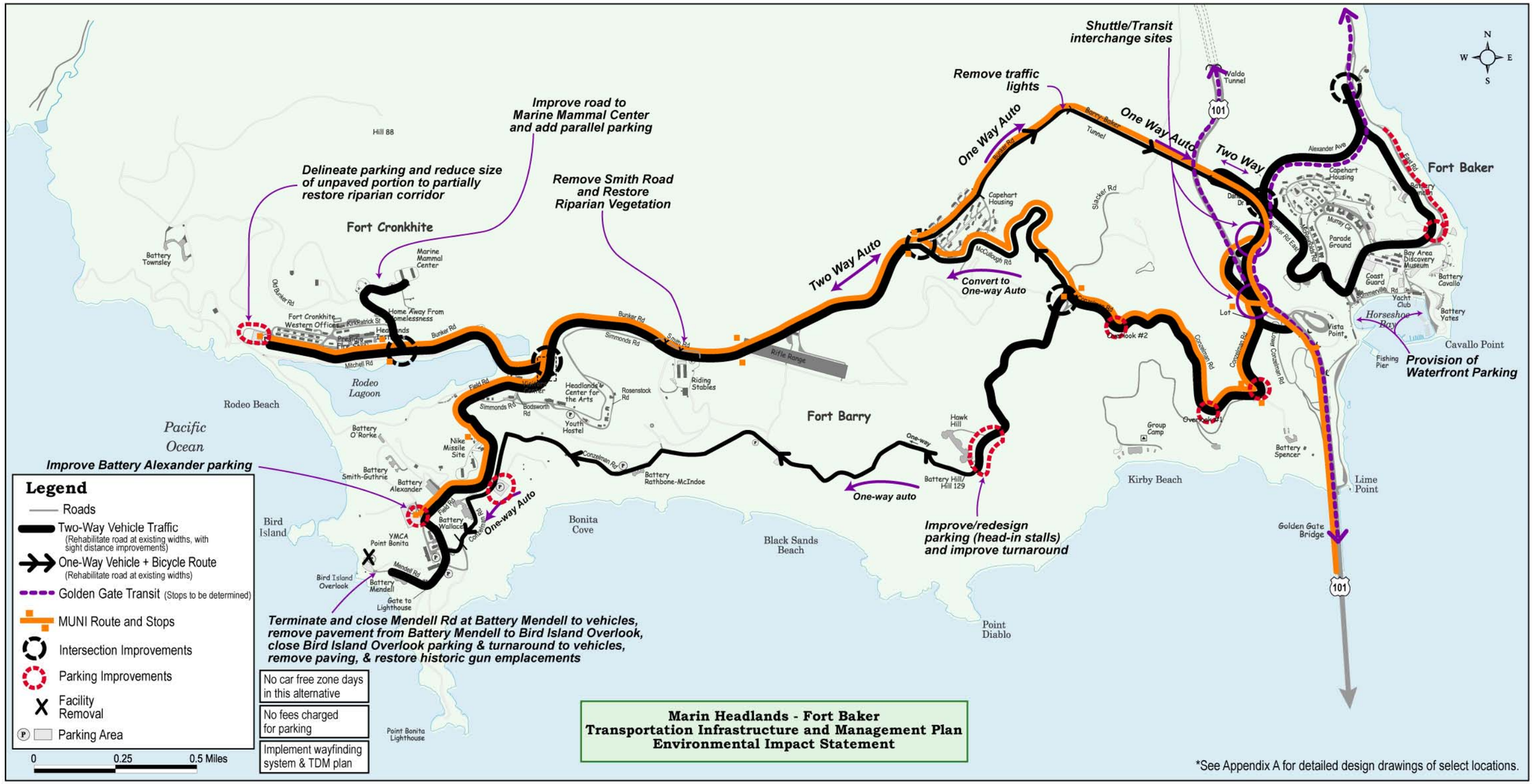

FIGURE 2.6 ALTERNATIVE 2 — BASIC MULTI-MODAL ACCESS (ROADS, PARKING, AND TRANSIT IMPROVEMENTS)

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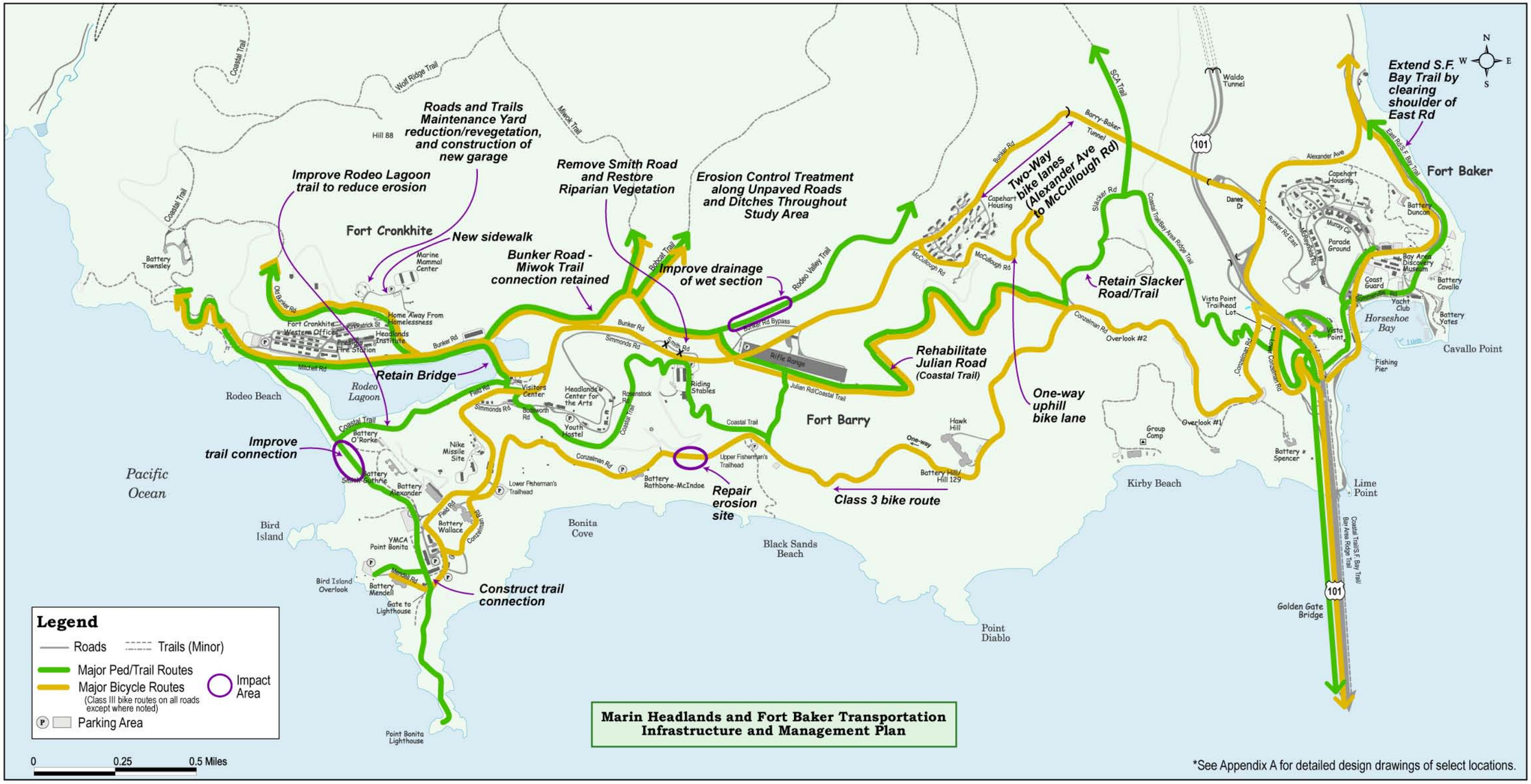

FIGURE 2.7 ALTERNATIVE 2 — BASIC MULTI-MODAL ACCESS (PEDESTRIAN, TRAIL, BIKE, AND NATURAL RESOURCE IMPROVEMENTS)

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2.6.8 COSTS

Estimated costs for additional transit operations are $88,400 per year (see Appendix B for detailed cost information). Construction costs would be an estimated $19.5 million (in 2007 dollars); this does not include mission blue butterfly habitat enhancement costs.

2.7 ALTERNATIVE 4 — MAXIMUM MULTI-MODAL ACCESS

Under Alternative 4 roadway infrastructure would be reconstructed throughout the study area, and parking facilities would be improved. Transit options would be similar to those provided in Alternative 3, the Preferred Alternative, with the addition of connections to regional transit centers outside the park. To improve safety and circulation within the study area, to alleviate traffic congestion, and to reduce impacts to natural resources in some locations, pedestrian and bicycle facilities would be extensively enhanced by closing and rerouting existing trails, constructing new trails, and constructing bicycle lanes on nearly all major roads. Table 2-1 provides a summary of all actions proposed under this alternative. Figure 2.8, Figure 2.9, and Figure 2.10 show proposed improvements under Alternative 4. Graphics for specific improvement locations are included in Appendix A.

2.7.1 MAIN ACTIONS

Below is a summary of the main actions under Alternative 4, along with references to the specific plan elements where more details are provided.

1. Reconstruct and widen roadways to provide uphill bike lanes on McCullough, Conzelman, Field, and Mendell roads and two-way bike lanes on all other roads.

   Associated plan elements: Roadways and vehicular circulation (sec. 2.7.2); bicycle and pedestrian improvements (sec. 2.7.4).

2. Provide a bicycle/pedestrian connection between Fort Baker and the Marin Headlands by adding an uphill bike lane on East Bunker Road, which would require replacing the Bunker Road underpass of Alexander Avenue, and two-way bike lanes on Bunker Road from the Barry-Baker tunnel to Mitchell Road and along Mitchell Road to Rodeo Lagoon.

   Associated plan elements: Roadways and vehicular circulation (sec. 2.7.2); bicycle and pedestrian improvements (sec. 2.7.4).

3. Convert major intersections from a Y to a T configuration to improve safety, except construct a roundabout at the Conzelman / McCullough intersection to facilitate bus turnarounds.

   Associated plan elements: Roadways and vehicular circulation (sec. 2.7.2).

4. Rehabilitate the NPS Marin roads and trails maintenance yard (reduce in size by up to half, regrade area to be less steep, move all vehicle parking to paved erosion-resistant areas, build new garage to house equipment and materials, install vegetated drainage swales, and revegetate remainder of former yard). If needed to address parking demand, create some replacement parking in infill areas at Fort Cronkhite, possibly including the rehabilitated roads and trails maintenance yard. Construct an associated sidewalk along Old Bunker Road (2 to 4 feet wide) to connect the maintenance yard parking to the interior of Fort Cronkhite.

   Associated plan elements: Parking management and fees (sec. 2.7.3); natural and cultural resource protection (sec. 2.7.7).

5. Implement a wayfinding program and apply ITS technologies to improve visitor information and safety, and to reduce congestion at key locations (such as at the Battery Spencer parking area).

   Associated plan elements: Roadways and vehicular circulation (sec. 2.7.2); parking management and fees (sec. 2.7.3); bicycle and pedestrian improvements (sec. 2.7.4); car-free days and special events (sec. 2.7.6).

6. Pave and delineate parking areas at Battery Mendell and Bird Island Overlook to reduce natural resource impacts.

   Associated plan elements: Parking management and fees (sec. 2.7.3); natural and cultural resource protection (sec. 2.7.7).

7. Eliminate some parking in shoulder areas along Conzelman Road to improve safety and reduce natural resource impacts, and construct a new parking area on McCullough Road near the Julian Road Coastal Trail to replace some roadside parking.

Associated plan elements: Parking management and fees (sec. 2.7.3); natural and cultural resource protection (sec. 2.7.7).

8. Remove the unpaved Rodeo Beach parking lot to restore pre-existing wetland condition to re-establish natural hydrologic and wetland conditions by reversing pas human disturbances to natural processes; replace some of the lost parking with replacement parking in infill areas at Fort Cronkhite and/or the rehabilitated roads and trails maintenance yard. This removal would be conducted in phases based in implementation of replacement parking, parking needs, and provision of transit access. Decisions about replacement parking within this area would also be confirmed through the General Management Plan process, currently underway, and the CLR, also currently underway.

   Associated plan elements: Parking management and fees (sec. 2.7.3); natural and cultural resource protection (sec. 2.7.7).

9. Remove most of the parking at the Point Bonita trailhead on Field Road and direct users to park in the adjacent Battery Alexander parking area. Parking at the Point Bonita trailhead would include only four spaces for visitors with disabilities.

   Associated plan elements: Parking management and fees (sec. 2.7.3).

10. Provide 200 additional spaces of reinforced grass or porous surfaced parking for the new Rodeo Valley trailhead, special events, and a car-free days program at Smith Road, which would be realigned away from Rodeo Creek to restore resources.

    Associated plan elements: Parking management and fees (sec. 2.7.3).

11. Expand parking at Hawk Hill and the Upper Fisherman's trailhead to accommodate demand.

    Associated plan elements: Parking management and fees (sec. 2.7.3); natural and cultural resource protection (sec. 2.7.7).

12. Improve drainage on the Rodeo Valley trail for hiking and equestrian use, and realign the trail west of the rifle range to restore riparian resources. Improve other connections to the Rodeo Valley trail by constructing a new trailhead with parking and a bicycle/pedestrian/equestrian bridge over Rodeo Creek at Smith Road. Construct a new bridge and trail to the Rodeo Valley Trail, eliminating the need for the bridges and trails to the west and east of the new bridge. Remove two existing trail bridges west of the rifle range (one from the Bunker Road bypass to the Rodeo Valley trail and the other from Bunker Road to Miwok Trail) for riparian area restoration. Design parking area to accommodate large vehicles, such as horse trailers; organize and delineate to provide adequate space for pedestrians, bicyclists, and equestrians to safely move through this area. Convert Dubois Road (trail) to a trail between Julian Road and McCullough Road, and extend through the Capehart housing area to connect to a new pedestrian bridge over Rodeo Creek. With this new trailhead parking, remove vehicular access at the rifle range and the Bunker Road bypass to improve the riparian habitat and protect cultural resources.

    Associated plan elements: Roadways and vehicular circulation (sec. 2.7.2); parking management and fees (sec. 2.7.3); bicycle and pedestrian improvements (sec. 2.7.4); natural and cultural resource protection (sec. 2.7.7).

13. Reroute the Coastal Trail by closing Slacker Road (trail) and constructing a new pedestrian trail around the north side of the ridge and connect to the existing trail at McCullough and on the rehabilitated Julian Road. Reroute the Coastal Trail between the rifle range and the riding stables to avoid out-of-direction travel and to remove/restore existing trails; at the riding stables reconnect the trail to the existing trail.

    Associated plan elements: Bicycle and pedestrian improvements (sec. 2.7.4); natural and cultural resource protection (sec. 2.7.7).

14. Widen East Road to provide additional width for bike lanes. This additional width would require cut or fill with extensive retaining walls along East Road. The San Francisco Bay Trail from the current connection to the Alexander Avenue/East Road intersection, would run parallel to the road, varying from 3 to 5 feet and existing in some places. Other than the pullout areas,

no formal parking is proposed along East Road. During the car-free days or special events, cars could be parked along East Road.

Associated plan elements: Roadways and vehicular circulation (sec. 2.7.2); bicycle and pedestrian improvements (sec. 2.7.4).

15. Construct new trails from Battery Alexander to Rodeo Beach to replace the existing social trail and from Battery Alexander to the Point Bonita trailhead.

    Associated plan elements: Bicycle and pedestrian improvements (sec. 2.7.4); natural and cultural resource protection (sec. 2.7.7).

16. Modify the Rodeo Lagoon bridge on Bunker Road to accommodate pedestrians and upgrade the Rodeo Lagoon loop trail to accessible grade standards.

    Associated plan elements: Bicycle and pedestrian improvements (sec. 2.7.4).

17. Work with the San Francisco Municipal Transit System, Golden Gate Transit, or another provider to encourage expanding existing transit service and improve park access to the main Fort Baker post area, and facilitate transfers between transit providers.

    Associated plan elements: Bicycle and pedestrian improvements (sec. 2.7.4); transit services (sec. 2.7.5).

18. Improve internal transit service and access to the park with a new park shuttle system that would extend north to the Manzanita transit center in Sausalito and south to the Golden Gate Bridge toll plaza.

    Associated plan elements: Transit services (sec. 2.7.5).

19. Implement a car-free days program on a limited, trial basis for a maximum of seven days per year to provide an alternative visitor experience.

    Associated plan elements: Transit services (sec. 2.7.5); car-free days and special events (sec. 2.7.6).

20. Institute a parking fee program for private vehicles in the Marin Headlands or Fort Baker to provide funding for improved transit service.

    Associated plan elements: Parking management and fees (sec. 2.7.3).

Detailed actions are presented in Table 2-1.

2.7.2 Roadways and Vehicular Circulation

As previously stated, universal design concepts that maximize accessibility for all visitors (including visitors with disabilities) would be applied to all facility designs to the greatest extent possible. Roadway infrastructure would be reconstructed throughout the study area. Reconstruction would occasionally involve widening the roadway beyond the existing road bench (the flat area that includes travel lanes and shoulders) and would require the use of small retaining walls at a dozen or more locations. Safety improvements would be implemented at major intersections. See Appendix A for graphics of typical sections for key roads in the study area.

The majority of the road work would widen roads between 4 and 8 feet to allow for the provision of Class 2 bicycle lanes on most roads in the study area. Other major infrastructure changes would include the following:

- Mitchell Road would be retained as a public roadway and widened for two-way traffic and an uphill bike lane between the Point Bonita trailhead and Bird Island Overlook. A turnaround loop would be constructed at Bird Island Overlook.
- Slacker Road (trail) would be closed and regraded to allow for revegetation.
- Dubois Road (trail) would be converted from a road to a trail.
- The East Bunker Road underpass of Alexander Avenue would be replaced with a wider structure to accommodate an uphill bike lane.
- The pavement on the Bunker Road bypass adjacent to the rifle range would be removed, and Smith Road would be realigned closer to Bunker Road to restore natural resources.

Intersection improvements would be the same as described for Alternative 3: replacing the intersection of Conzelman Road and McCullough Road with a roundabout to allow for safe bus turnaround; reconstructing intersections at McCul-

lough Road / Bunker Road, Bunker Road / Field Road, and East Road / Alexander Avenue from Y to T configurations to improve operations and safety; and converting the Bunker Road / Mitchell Road intersection to a three-way stop to improve safety (after monitoring, this measure would be reevaluated for safety and traffic operations, and if needed, the intersection would be converted to a T configuration).

The intersection of U.S. 101 and Conzelman Road would be improved to accommodate the turning radius of buses. The east entrance to the visitor center on Field Road would be reconstructed to be aligned with Bodsworth Road. The entrance to the Lower Fisherman's parking area on Conzelman Road would be formalized as part of the reduction of parking spaces at this location. The entrance to the Headlands YMCA would be reconstructed to be aligned with Conzelman Road.

Except as noted, all existing roads would be reconstructed or rehabilitated on the same, or very similar, vertical and horizontal alignments.

In addition to the Fort Baker traffic management and monitoring program that is common to all the alternatives, the ITS technology and wayfinding program in Alternative 3 would be implemented.

2.7.3 PARKING MANAGEMENT AND FEES

Parking facilities would be reconfigured, delineated, and formalized in many locations to improve parking operations, reduce congestion, better match parking supply with demand, and reduce natural resource impacts. Parking in the Marin Headlands would be reduced from approximately 1,593 existing spaces to about 1,408 spaces. Parking at Fort Baker would be reduced slightly (from 961 spaces to 944 spaces), compared to the *Fort Baker Plan* and Alternative 1, because of the East Road improvements.

A parking fee program would be implemented to support enhanced transit service operations, the same as Alternative 3.

Road widening in many areas under this alternative would take up much of the road shoulder space currently used for informal parking. Thus, this alternative would have the least amount of roadside parking. For example, much of the parking along Mitchell Road would be removed to accommodate the wider road with bike lanes. At Battery Spencer and Overlooks 1 and 2, the parking areas would be enlarged to provide space for an aisle for cars to circulate within the parking area without encroaching on the roadway travel lanes. Although these parking areas would be enlarged, there would be fewer spaces than today. The parking areas at Hawk Hill and the Upper Fisherman's trailhead would be expanded to accommodate existing high demand. At Hawk Hill, the parking stalls would extend over the side of the hill and away from the driving lane using a 550-foot long, 20-foot high retaining wall.

The unpaved portion of the parking area at Rodeo Beach would be removed to reduce erosion and restore the riparian corridor. The rifle range would be closed to all vehicles and parking use; the grass field northeast of the rifle range (referred to as pistol range lot), however, would be retained for parking during permitted special events and car-free days. Smith Road would be realigned closer to Bunker Road, and approximately 200 parking spaces for special events or car-free days would be provided on reinforced grass surfacing. Additionally, parking in some shoulder areas of Conzelman Road would be eliminated to improve safety and reduce natural resource impacts. Other differences from the Preferred Alternative would be the retention of vehicle access to Bird Island Overlook, along with paving and delineating parking areas at the overlook, and the reduction in parking to provide handicapped-only spaces at the Point Bonita trailhead. Other parking changes would be similar to those described for the Preferred Alternative, except there would be a new parking area on McCullough Road instead of Julian Road.

2.7.4 BICYCLE AND PEDESTRIAN IMPROVEMENTS

As previously stated, universal design concepts that maximize accessibility for all visitors (including those with disabilities) would be applied to all facility designs to the greatest extent possible. All new or reconstructed trails would meet outdoor accessibility guidelines as outlined in the *Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas: Final Report* (United States Access Board 1999). Many trails occur in the project area. Trail use will remain unchanged on most of these trails unless noted in the project description below.

No new Class 1 bicycle paths would be provided. Class 2 bicycle lanes would be added to almost all major roads in the study area, and extensive improvements to pedestrian facilities would be implemented. Bunker Road, Mitchell Road, and East Road would be widened to allow for Class 2 bicycle lanes in both directions. The following roads would be widened to allow for a Class 2 bicycle lane in the uphill direction: McCullough Road, Field Road, Mendell Road, Conzelman Road between U.S. 101 and Hawk Hill, and East Bunker Road from Danes Drive to Fort Baker. Conzelman Road west of Hawk Hill and Old Bunker Road to the Marine Mammal Center would remain Class 3 bicycle routes, with a shared bicycle and vehicular travel lane.

Pedestrian facility improvements would include new trail construction, some trail closures and rerouting, and other actions, including drainage improvements, erosion control, trail stabilization, and accessibility improvements. Many improvements would be similar to those described under the Preferred Alternative, including new trails between Battery Alexander and Rodeo Beach, and the Battery Alexander parking area and the Point Bonita trailhead, and a new sidewalk on the access road from Mitchell Road to the Marine Mammal Center.

The Rodeo Lagoon loop trail would be improved to accessible grades. East Road would be widened to accommodate the extension of the San Francisco Bay Trail along the east shoulder of the road.

The Rodeo Valley trail would be realigned west of the rifle range to restore riparian resources. Also to connect to the Rodeo Valley trail, Dubois Road (trail) would be converted from a road to a trail and then extended through the Capehart housing area to a new trailhead and new pedestrian-only bridge over Rodeo Creek. The major difference between this alternative and the Preferred Alternative would be that the Rodeo Valley trail between the Capehart housing area (foot of McCullough Road) and the trailhead at Smith Road would not be hardened for use as a Class 1 bicycle path. (Throughout this document, the term “hardened surface” means that the surface is permeable and is not paved.) Bikes would instead be accommodated on Class 2 bike lanes on Bunker Road. Similarly the bicycle/pedestrian tunnel connecting Fort Baker and Danes Drive would not be constructed under this alternative. Instead, an uphill bike lane would be provided on East Bunker Road. A sidewalk would be constructed on the north side of Danes Drive to connect to East Bunker Road.

Changes to the Coastal Trail and Slacker Road (trail) would be different than those described for the Preferred Alternative. The Coastal Trail would retain its current interior valley route. To improve that alignment, a new trail link would be constructed between the rifle range and the riding stables to provide a more direct route and to eliminate several unnecessary climbs and descents of hills. Duplicate trail segments in the area would be removed and revegetated. Slacker Road (trail) would be removed and revegetated, and a new pedestrian trail would be constructed on the north side of the ridge.

2.7.5 Transit Services

Existing transit services would be expanded to improve access to the study area. MUNI and GGT transit services and transfers would be the same as those described for the Preferred Alternative, except that extension of MUNI Route 76 would be encouraged to the new bus turnaround at Bird Island Overlook.

A new shuttle system serving Fort Baker and the Marin Headlands would provide internal mobility within the study area. The shuttle would operate on a 60-minute frequency, seven days a week within the park and on the same routes described under Alternative 3. The shuttle system under Alternative 4 would also connect to the Manzanita transit center in Sausalito to the north (six trips per day) and to the Golden Gate Bridge toll plaza to the south (seven trips per day), offering additional park access options from these transit centers. The shuttle system would be operated by a private contractor or a local transit provider such as Golden Gate Transit. If maintenance or other support facilities are needed, they would be evaluated under a separate planning effort and NEPA compliance would be undertaken. It is anticipated at this time that regardless of who operated the system, no servicing garages, shops, or other facilities would be constructed in the Marin Headlands and Fort Baker area. All such support would be accomplished outside the park.

Transit stops within the park would be improved through the addition of benches, signs, and shelters

at key stops. The National Park Service would encourage public use of alternative modes of transportation through various media such as the park website, handouts, and signs. The Fort Baker conference center shuttle would be implemented, as described under "Fort Baker Conference Center Shuttle" (see sec. 2.2.2). The costs of the additional transit service would be funded with revenues from parking fees, and potential funding from leasing or other sources would be investigated.

2.7.6 CAR-FREE DAYS AND SPECIAL EVENTS

The car-free days program proposed under Alternative 4 would be the same as under Alternative 3 except that a parking area northeast of the rifle range (on the pistol range) would replace parking on the Bunker Road bypass for special event or car-free day use only. (See the description under Alternative 3, sec. 2.5.6, for detailed information.) Figure 2.10 illustrates car-free zones and transit services that would be operated under Alternative 4.

For special events transportation demand measures such as parking controls and road closures would be implemented to facilitate vehicular circulation and accommodate increased parking demands. As described under "Special Park Use Guidelines" (sec. 2.2.4), the special event permit will specify the parking locations and traffic operations. The traffic and transit operations described for the car-free days could also be applied to special events.

2.7.7 NATURAL AND CULTURAL RESOURCE PROTECTION

Many of the infrastructure improvements listed for Alternative 4 would reduce impacts to natural resources and would restore natural functions and processes in isolated locations. While these improvements would alter many historic roads and trails, impacts would be reduced to a degree through sensitive design, and mitigations would be implemented through cultural resource enhancements. Removing the unpaved portion of the Rodeo Beach parking area would allow for the restoration of the riparian corridor in that area. Native plant and wetland communities would be restored where Smith Road would be realigned, where Slacker Road (trail) and the Coastal Trail would be removed, and at fill removal sites in Rodeo Lagoon.

The rifle range would be closed to all motor vehicle use to protect this historic site. Defining and paving parking areas in the Fort Cronkhite cantonment would address ongoing degradation of historic road and landscape features.

Improvements at the NPS Marin roads and trails maintenance yard, Mitchell Road / Rodeo Beach, and Conzelman Road would restore natural resources and would be the same as described for Alternative 3. Additional improvements would include (1) paving of most road shoulders and ditches to prevent erosion, along with drainage improvements in some locations, and (2) habitat restoration enhancement included as mitigation for project impacts.

2.7.8 COSTS

Estimated costs (in 2007 dollars) for additional transit operations are $1,879,000–$2,150,000 per year, and for the car-free days program, $134,000–$157,500 per year (based on an assumption of seven car-free days; see Appendix B for detailed cost information). Construction costs are estimated to be $33.3 million (in 2007 dollars); this does not include mission blue butterfly habitat enhancement costs.

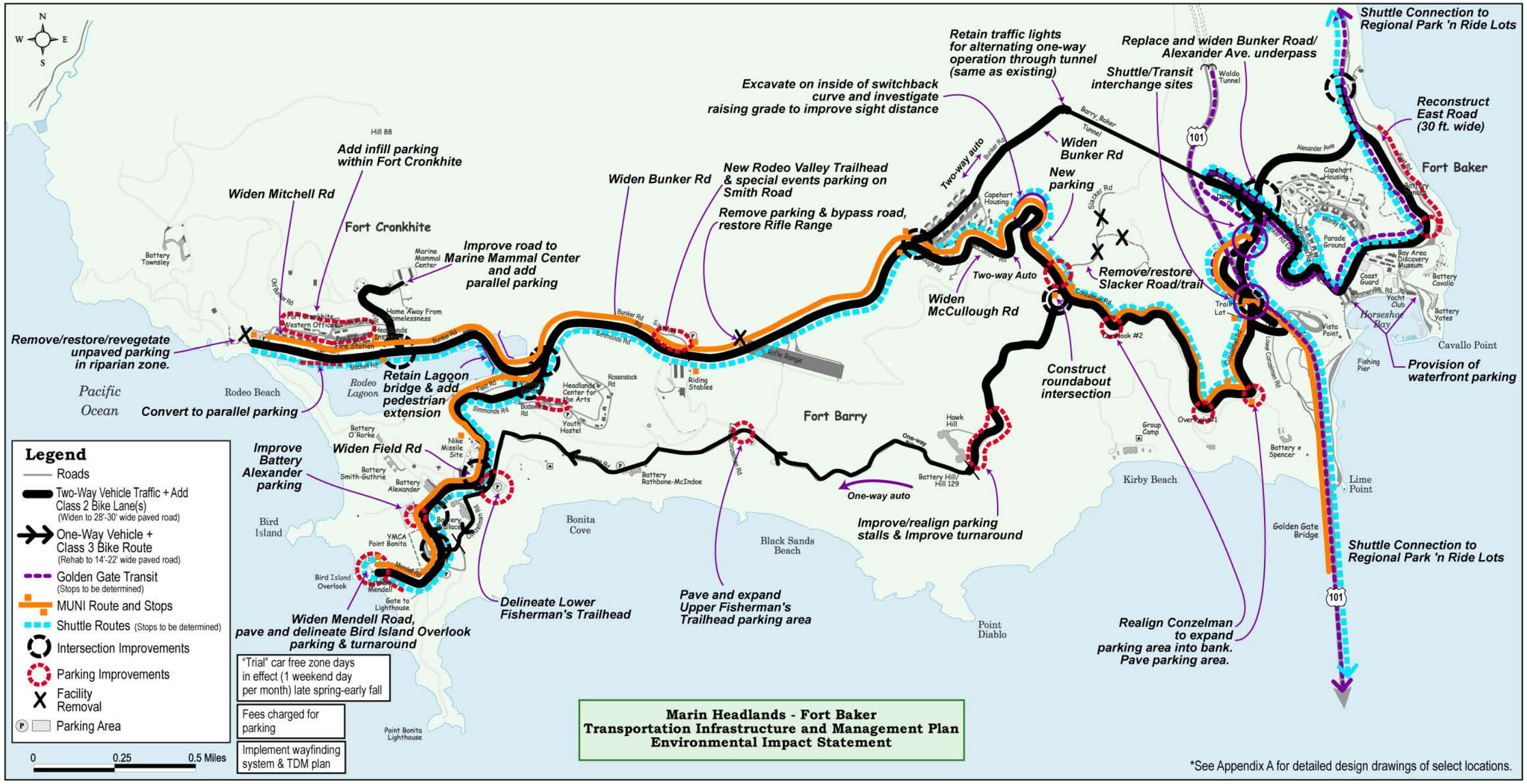

FIGURE 2.8 ALTERNATIVE 4 — MAXIMUM MULTI-MODAL ACCESS (ROADS, PARKING, AND TRANSIT IMPROVEMENTS)

United States Department of the Interior / National Park Service June 2007 • 641/20622

FIGURE 2.9 ALTERNATIVE 4 – MAXIMUM MULTI-MODAL ACCESS (PEDESTRIAN, TRAIL, BIKE, AND NATURAL RESOURCE IMPROVEMENTS)

United States Department of the Interior / National Park Service June 2007 • 641/20623

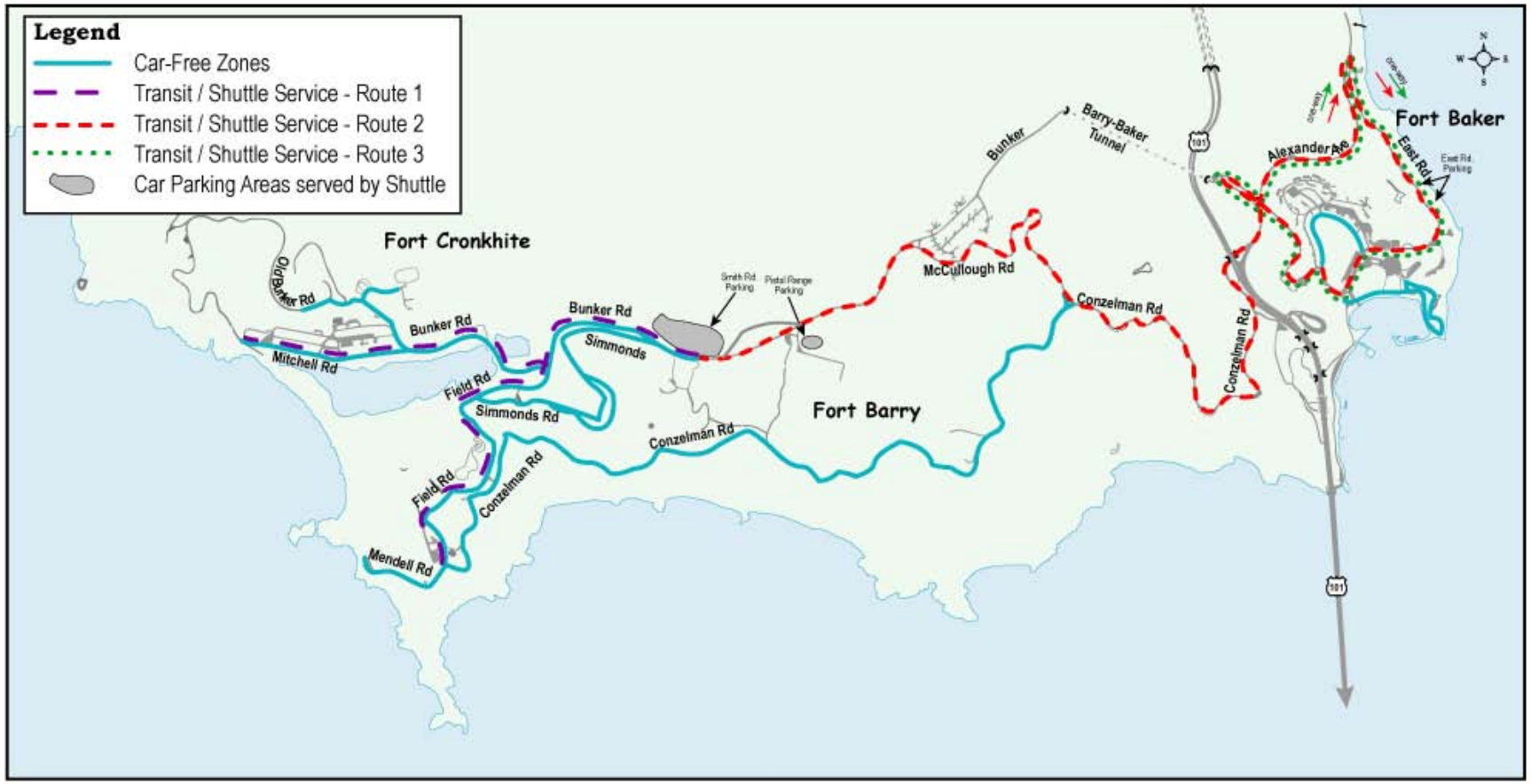

FIGURE 2.10 ALTERNATIVE 4 — CAR-FREE ZONES AND TRANSIT OPERATIONS FOR CAR-FREE DAYS

United States Department of the Interior / National Park Service June 2007 • 641/20624

SOURCE: National Park Service 2005b.

2.8 ENVIRONMENTALLY PREFERRED ALTERNATIVE

In accordance with Director's Order #12 and the National Environmental Policy Act, the National Park Service is required to identify the environmentally preferred alternative (NPS 2001a). The Council on Environmental Quality defines the environmentally preferred alternative as "the alternative that will promote the national environmental policy as expressed in the National Environmental Policy Act's Section 101." Under section 101(b) of the act, it is the continuing responsibility of federal agencies to:

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;
5. achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Closely mirroring these criteria are the project's goals and objectives. Goals and objectives for this project emphasize natural and cultural resource protection, as well as enhancing visitor experience and improving safety of park users. Because project goals and objectives correlate very closely to these criteria, analyzing which alternative best meets project goals and objectives will also determine which alternative is environmentally preferred. Using this analysis approach, it has been determined that Alternative 3 is the environmentally preferred alternative. Provided below is a summary of how the action alternatives meet project goals. Since Alternative 1 (the No-Action Alternative) does not meet project goals, purpose, or need, it is not the environmentally preferred alternative.

Promote public transit, pedestrian, and bicycle travel to and within the park to improve visitor experience and enhance environmental quality: Alternative 3 would provide significant improvement in public transit and in pedestrian and bicycle travel to and within the park; consequently, it would enhance visitor experience. Although similar to Alternative 4 in many aspects, Alternative 3 would continue to improve public transit to both the Marin Headlands and Fort Baker by encouraging increased service frequency by both the San Francisco Municipal Transit System and Golden Gate Transit; this would represent a major beneficial improvement. Also included in Alternative 3 are improvements in transfer interfaces and transit stop amenities. Alternative 2, on the other hand, would not provide these convenience elements, nor would it allow for shuttle service between the Marin Headlands and Fort Baker. Alternative 3 would also provide exclusive access for bicyclists and pedestrians on predetermined car-free days, thereby enhancing visitor experience for these user groups. For bicyclists Alternative 3 would provide enhancements for all classes of bicycle routes within the project area. For instance, Class 1 (bike path) enhancements would include enhancing the bikeway along the Rodeo Valley trail between the Capehart housing area and Rodeo Lagoon. For pedestrians, substantial improvements are proposed for hiking trails, including, but not limited to, improving the Julian Road trail; rerouting the Coastal Trail and making trail enhancements on Conzelman Road from the existing Coastal Trail crossing on Conzelman Road to the Lower Fisherman's parking area; widening East Road to extend the San Francisco Bay Trail along the entire road shoulder; and improving and upgrading both the Rodeo Valley and Rodeo Lagoon trails. Alternative 2 would have very minimal provisions to address resource or connection issues associated with other trails in the project area.

Rehabilitate the Marin Headlands / Fort Baker transportation road and trail infrastructure in a manner that protects resources and improves safety and circulation: In designing roadway and trail infrastructure improvements for all the alter-

natives, opportunities to incorporate project components that would enhance natural resources were selected wherever possible. Natural resource enhancement actions included as part of Alternative 3 include removing the Rodeo Beach unpaved parking lot and restoring it to its pre-existing wetland condition to re-establish natural hydrologic and wetland conditions. Wetland fill removal and restoration of portions of Smith Road would also occur under Alternative 3. Alternative 4 would incorporate most of these actions; however, Alternative 2 would not restore the Rodeo Beach unpaved parking area to the same degree as the other alternatives, and it would not implement erosion gully treatments downslope of Conzelman Road. Alternative 4, because it incorporates a wider roadway prism than the other alternatives, would result in greater impacts to undisturbed native habitat. It is important to note that for project elements that would impact natural and cultural resources, mitigation measures and best management practices have been incorporated to lessen these impacts.

Reduce traffic congestion and improve safety at key park locations and connecting roads: As a key goal for this project, most project components in this analysis have been designed to reduce traffic congestion and improve safety. Although several actions, such as wayfinding and ITS implementation, would be similar for all action alternatives, the alternatives would vary considerably in their approach to altering roadways to improve circulation and safety. The roadway and intersection improvements proposed for Alternative 3 would provide slightly more benefits, but less impacts than Alternatives 2 and 4. For instance, Alternative 2 would not widen roadways beyond existing conditions; however, its one-way traffic operation would result in greater impact and less benefit for affected roadways in terms of traffic volume, level of service, vehicle safety, bicycle safety, pedestrian access, and safety. Alternative 4, which was designed to provide greater road width, would generally provide slightly better circulation benefits, but at a substantial increase in environmental impacts. With minor differences, all alternatives would provide for changing major intersections from a Y to a T configuration in order to improve safety.

2.9 ALTERNATIVES ELIMINATED FROM FURTHER STUDY

The following alternatives or elements of an alternative were identified by NPS staff, agencies, or the public, but were later dismissed. As a result, these alternatives were not carried forward for evaluation in this document. This section briefly explains each alternative action and the reason for its elimination. In general, these alternative elements were eliminated for one or more of the following reasons:

1. They were not consistent with NPS or park mission, legislation, plans, or policies.
2. They were outside the scope of the study.
3. They were not within the NPS/park's jurisdiction or ability to implement.
4. Does not meet project purpose or resolve project need to a large degree.
5. They would be inconsistent with project goals and objectives (as presented in sec. 1.3).
6. They would be technically or economically infeasible, or not implementable.
7. A similar or better option is included in the alternatives (i.e., there is a less environmentally damaging, less expensive, or more optimal alternative) that would achieve the same result.
8. It would have unacceptable impacts (environmental, economic, cultural, scenic, visitor) that would result in impairment of park resources or values.

2.9.1 ROADWAYS AND VEHICULAR CIRCULATION

Bunker Road / McCullough Road / Conzelman Road One-Way Loop. This alternative would propose a full one-way loop using Bunker Road, McCullough Road, and Conzelman Road in either a clockwise or counterclockwise direction. This alternative would require all Headlands visitors (5,500–11,000 vehicles per day) to travel the entire loop to exit the park. This would add approximately 2.07 miles to the route for all vehicles. Those visitors going to one particular destination (Battery Spencer, for example) would be forced to circle this loop to enter and exit the park. This would increase congestion at various locations,

increase the potential for accidents, overload the Alexander Avenue intersections, and increase concerns of law enforcement and emergency medical services because of only one access direction.

Having all traffic enter or exit the Marin Headlands via Bunker Road could result in traffic stacking up on either side of the tunnel. This could cause vehicles to queue on either side or in the tunnel on the east side. Stopped and idling cars in the tunnel could result in air quality and numerous safety concerns. This alternative was eliminated because it would not meet the plan's objectives to reduce congestion at key park locations and connecting roads and to improve safety and circulation, as identified within the plan purpose and need.

Alexander Avenue / U.S. 101 Roundabout. This alternative element would add a roundabout on the east side of the intersection of Alexander Avenue and U.S. 101. There is insufficient area to accommodate a roundabout on the east side of U.S. 101 without extensive grading and the construction of retaining walls. In addition, a roundabout would shorten the northbound U.S. 101 entrance lane. This lane is currently very steep, causing large vehicles to merge onto the freeway at slow speeds, which is an unsafe condition. This action would worsen the situation, and it was eliminated because it would meet neither plan objectives nor goals to improve safety.

Bunker Road Realignment. Realigning Bunker Road around the north side of Rodeo Lake would allow the removal of the causeway and bridge over Rodeo Lagoon and allow a reconnection to Rodeo Lake. This alternative element would require 0.3 mile of new roadway north of the lagoon and a new bridge across Rodeo Creek just upstream of the lagoon, with a cost of approximately $5 million to $7 million. This alignment would adversely affect a large area of sensitive riparian and wetland resources. These adverse impacts would not be offset by the amount of area that would be restored. This alternative was eliminated because it would not meet project objectives or resource preservation goals to rehabilitate road and trail infrastructure in a manner that would protect resources or would enhance the preservation of resources.

One-Way Operation on Conzelman Road. Conzelman Road currently operates as a westbound one-way road west of Hawk Hill. This alternative element would begin one-way operation at the intersection of Conzelman Road and McCullough Road, which would require all traffic going only to the Hawk Hill overlook to travel an additional 4 miles on Conzelman Road in order to exit on Bunker Road. This would greatly increase traffic on this narrow, steep segment of roadway, adding to the increased risk of auto/bicycle accidents in this area. This alternative was eliminated because it would meet neither the plan objectives nor visitor experience goals to reduce congestion and improve safety.

Maximum Car Reduction. This alternative would include the installation of a primary access gate east of the Barry-Baker tunnel and would permanently close major portions of Marin Headlands roads to all public motor vehicles, eliminating the way the majority of visitors access the park. An access gate would be installed on East Road near the Bay Area Discovery Museum in Fort Baker, restricting visitors to parking at the museum and along East Road. This could result in a drastic reduction in public use and would conflict with the park's legislative purpose. Transportation studies have shown that, with the exception of the Battery Spencer area and the Point Bonita trailhead, congestion and parking problems are not serious within the park. There is congestion at the U.S. 101 entrances and exits to the park on good weather days. Under this alternative congestion at park entrances and exits would likely be exacerbated, creating an unacceptable condition. This alternative would also require extensive transit service (and associated construction) to maintain usage similar to the current level, as well as extra staff operational costs at closure points. This alternative was eliminated because it would be economically infeasible at present, and it would conflict with the park's *General Management Plan* objective to make the park available to the broadest variety of users. It would also be inconsistent with project objectives. Some of the concepts for Fort Baker have been incorporated into the suggested TDM measures for special events and the car-free days in the alternatives evaluated.

2.9.2 PARKING MANAGEMENT AND FEES

Bunker Road / Danes Drive Intercept Parking Lot. This alternative element would provide a new intercept parking lot at the intersection of Bunker

Road and Danes Drive. This element would connect with the maximum car reduction alternative: visitors would leave their vehicles at this new parking facility and proceed into the study area by foot, bicycle, or public transport. This alternative would not encourage visitors to leave their vehicles outside the park and arrive by other modes.

The parking lot would require approximately 3.6 acres of land to accommodate 300–350 vehicles. The proposal would involve extensive fills up to 35 feet deep. The remainder of the study area would then be inaccessible to public motor vehicles. The capacity of this parking lot would not meet the current and future needs of visitors; therefore, other roads would still be necessary to access additional parking. The present congestion problems would continue and likely increase with the concentration and spill over of vehicles onto the surrounding roadways, such as Alexander Avenue. Converting 3.6 acres of mostly native habitat to parking would be a significant adverse impact because wetlands would be affected, and endangered species might be affected. This alternative was eliminated because it would not meet the plan objectives, resource preservation goals, or visitor experience goals to reduce congestion.

Bunker Road / Danes Drive Intercept Parking Structure. This alternative element would provide a new intercept parking structure at the intersection of Bunker Road and Danes Drive. This alternative is also associated with the maximum car reduction alternative, which was eliminated. The four- or five-level facility would have a capacity of approximately 1,000 vehicles, and visitors would proceed into the park by other modes. In addition to the same reasons for eliminating the Bunker Road / Danes Drive intercept parking lot alternative discussed above, this structure would initially cost in excess of $30 million and have high annual operations costs (e.g., lighting) and would therefore not be economically feasible under reasonably foreseeable funding. Thus, it was eliminated from further consideration.

Parking Closure on Conzelman Road. This proposal would close problematic parking areas at Battery Spencer and at overlooks along Conzelman Road and would avoid loss of geologic resources to road cuts. Instead of implementing changes to improve safety at these areas, this alternative would eliminate safety problems by simply closing these parking areas. Battery Spencer and the two overlooks are among the most popular sites in the Marin Headlands. On weekends approximately half of all traffic on Conzelman Road visits only these attractions. Closing these parking areas would not provide the access to the Marin Headlands that visitors have enjoyed for decades. It is likely that if these parking areas were closed, visitors would still park their vehicles along the road to take pictures, increasing traffic problems and creating even more hazardous conditions. This alternative was eliminated because it would not meet the plan objectives or visitor experience goals to reduce congestion and improve safety.

Parking Consolidation at the Rifle Range. This alternative element would convert the rifle range to parking areas, adversely affecting this resource, which is listed on the National Register of Historic Places. This alternative was eliminated because it would not be consistent with either the park's *General Management Plan* objectives to preserve and restore resources or the project's resource preservation goal.

Parking Consolidation at the Capehart Housing Area. This alternative element would remove housing at the Capehart area to create a new parking facility. The removal of housing is consistent with the 1980 *General Management Plan*; however, the *General Management Plan* proposed using the housing area site for primarily picnicking and informal recreation. A large parking facility at this location would not be consistent with the *General Management Plan*.

Offsite Parking at the Presidio. This alternative element would provide offsite parking with transit service from the Presidio. The Presidio Trust has officially responded that no Presidio Trust lands will be available for this purpose. It would also be inconsistent with the 1994 *General Management Plan Amendment* for Area A of the Presidio. This alternative was eliminated because it is not within the park's jurisdiction or ability to implement.

1980 General Management Plan Parking and Circulation Elements at Fort Cronkhite. The 1980 *General Management Plan* called for removing 12 former Army buildings in the northeast portion of Fort Cronkhite and constructing an undefined amount of parking and alternative vehicle access to the Rodeo Beach parking lot in order to make Mitchell Road car-free. Most of the 12 buildings proposed for demolition were built in the

1950s as part of the Nike missile program. They are currently used by park partners, including the Headlands Institute and the Marine Mammal Center, which would have to be accommodated elsewhere. These buildings are now eligible for listing on the National Register of Historic Places, thus their removal would constitute an adverse and significant impact to the park's cultural resources. This alternative was eliminated because it was not consistent with either the park's *General Management Plan* objective to preserve and restore cultural resources or the project's resource preservation goal. Part of this concept in the *General Management Plan* was to remove the unpaved portion of the Rodeo Beach parking area and develop infill parking within Fort Cronkhite. This concept is included in Alternative 3 (Preferred Alternative) and Alternative 4.

Perpendicular Parking on East Road. The *Fort Baker Plan* called for providing perpendicular (head-in) parking along East Road. Perpendicular parking would create safety concerns because parked vehicles would be required to back into the travel lanes to exit parking spaces. Perpendicular parking on through roads is one of the major sources of accidents in the Marin Headlands. Improved trail and bicycle circulation can be provided in a safer manner if parking is parallel. During special events the same amount of parking can be provided by converting the road to a one-way road and using one travel lane as a parallel parking lane. The parking element was altered to remove the conflict and accommodate all of the desired uses in a safe manner while remaining consistent with the *Fort Baker Plan.*

Reduced Parking at Hawk Hill. The DEIS proposed reducing parking at Hawk Hill under Alternative 3 compared to Alternative 1, resulting in a loss of 30 parking spaces. The intent was to address the roadside erosion resulting from improper parking and to improve safety at the Hawk Hill parking area at the turnaround. The existing parking is primarily configured as head-in parking; however, there currently is inadequate space for head-in parking and cars partially block the travel lanes near the turnaround and back into traffic lanes to exit parking spaces. In addition, visitors walking in this area where there are no pedestrian walkways add to congestion and safety concerns. The preferred alternative in the DEIS proposed replacing the head-in spaces at the turnaround with parallel parking spaces to address these safety issues, resulting in the loss of parking spaces. Currently, there are 55 spaces in the area; changing the head-in parking to parallel parking would result in a total of 25 spaces, for a net loss of 30 spaces.

In response to public concern about loss of parking, NPS staff observed parking utilization at Hawk Hill in the fall of 2007. These observations showed that demand for the parking spaces sometimes exceeds 25 spaces. Therefore, this alternative was eliminated in favor of a revised parking configuration at Hawk Hill as described in the FEIS, which improves the safety of the head-in parking by expanding the area. The proposed plan in the FEIS increases parking over the DEIS, for a revised total in the area of 55 parking spaces and represents no net loss in parking compared to the existing condition.

Parking Changes at Fort Cronkhite. The DEIS proposed developing parking areas within Fort Cronkhite, including approximately 36 spaces parallel to Mitchell Road, approximately 31 spaces north of the Fire House, approximately 16 spaces off Kirkpatrick Street and other smaller parker areas throughout Fort Cronkhite. After release of the DEIS, it was decided that these new parking areas would not be compatible with the historic character of Fort Cronkhite and this element of Alternative 3 was therefore dismissed.

2.9.3 BICYCLE AND PEDESTRIAN IMPROVEMENTS

Closure of Conzelman Road West of Hawk Hill to Vehicles. This proposal would allow only bicycles and pedestrians on the portion of Conzelman Road west of Hawk Hill. This road segment has very steep grades (up to 19%) and requires intermediate or better cycling skills to safely traverse. Allowing only bicycling on this road could attract novice bicyclists, who may be poorly skilled on such steep slopes, potentially resulting in more serious bicycle accidents. Because this is the most spectacular and scenic segment in the Marin Headlands, it is very popular and well known. Eliminating motor vehicles would deprive many visitors access to this resource, as well as restrict access to trailheads that connect to beaches. This alternative was eliminated because it did not meet the plan objectives or visitor experience goals to improve safety. In addition, eliminating access for most visitors to this area of exceptional scenic

value would not meet the project purpose to provide improved access to and within the park.

Two-Way Class 2 Bicycle Lanes on Steep Roads. This proposal would provide Class 2 bicycle lanes in both directions on all roads with grades steeper than 5%. On steeper roads (Conzelman Road between U.S. 101/Alexander Avenue and Hawk Hill, McCullough Road, Field Road, and Bunker Road between Danes Drive and Fort Baker), bicycle traffic is generally able to easily move at the same speed as motor traffic. The impacts of widening these roadways to accommodate two Class 2 bicycle lanes would be greater than the minimal safety benefits that would be realized. This alternative was eliminated because there are other options, such as providing only uphill bike lanes, that would accomplish the same safety objectives but would be less environmentally damaging.

Relocation of the Rodeo Valley Trail. Because the Rodeo Valley trail and the entire slope north of the trail are saturated for much of the winter, it was proposed that the trail be relocated farther upslope to improve drainage. This problem has been addressed in the other alternatives through simple surface improvements on the existing trail alignment, and this alternative was eliminated.

Maintain Slacker Road / Close Slacker Trail. This alternative would close and revegetate the upper portions of Slacker Trail but would maintain the lower portion of Slacker Road as a paved one-lane service road for vehicular access to the Golden Gate Raptor Observatory research sites. This alternative was eliminated because access could still be provided on a narrower pedestrian/ATV trail that would allow for greater restoration in the area, with less environmental damage.

Remove/Revegetate Slacker Road (trail). Slacker Road (trail) is an existing unpaved road currently open to bicyclists, hikers, and equestrians. Due to the steep slopes and severe erosion, the DEIS preferred alternative proposed that most of Slacker Road (trail) would be removed and revegetated, providing a rerouted sustainable hiker-only trail with ATV access for Golden Gate Raptor Observatory to the first research site, and closed the trail past the first site. The lower 150 feet of the trail would be retained and narrowed. Uphill of this section on the lower slopes, the trail would be rerouted to continue to provide access to the bird research sites for the Golden Gate Raptor Observatory. After release of the DEIS, cyclists and hikers expressed opposition to closing the unpaved road up to Slacker Hill as proposed in the DEIS preferred alternative, noting that it has historically been used by cyclists and other users "without problems" and offers unique views of the city. In addition to these unique views, hikers commented that this closure would preclude the ability to travel between the SCA/Ridge Trail and the top of Julian Road, resulting in a gap in access to the western part of the park. Commenters believe that re-routing, rather than closing, the trail would alleviate erosion problems. In addition, the Golden Gate Raptor Observatory noted that it requires daily access to the Slacker Hill region to attend to two banding research sites, and requested continued private vehicle access to Slacker Road (trail). For these reasons, this alternative component was dismissed from further consideration and the preferred alternative was revised.

2.9.4 TRANSIT SERVICES

Alexander Avenue / U.S. 101 Ramp Bus Stop for All GGT Routes. An alternative was suggested to provide a transit transfer facility and bus stop at Alexander Avenue on both sides of U.S. 101, which could be used by all GGT routes using the U.S. 101 corridor, greatly improving transit access to the Marin Headlands and Fort Baker. However this interchange is at the base of a steep 6% grade for northbound traffic. Buses stopping in this location would be forced to merge back onto the freeway while climbing this steep grade and an even steeper freeway entrance lane. Slowly moving buses merging onto U.S. 101 would result in increased traffic congestion and a potentially dangerous situation and more accidents. There is also no room to reconfigure the interchange because surrounding hillsides are very steep. This alternative would not meet plan objectives or visitor experience goals to improve safety. Representatives of Golden Gate Transit and Caltrans who were consulted also indicated that the proposal was infeasible.

2.10 DETAILED SUMMARY OF ALTERNATIVE ACTIONS

Table 2-1 provides a detailed summary of the specific actions proposed under each alternative for roadways and vehicular circulation, parking management and fees, bicycle and pedestrian improvements, transit services, car-free days and special events, and resource protection.

TABLE 2-1. SUMMARY OF ALTERNATIVE ACTIONS

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
Overall Concept	*Existing conditions plus traffic mitigation in* Fort Baker Plan Record of Decision.	*Manage uses and modifications to improve multi-modal access.*	*Manage use to fit infrastructure.*	*Accommodate multi-modal access throughout the park area.*
ROADWAYS AND VEHICULAR CIRCULATION				
Concept	*Existing conditions plus traffic mitigation measures in* Fort Baker Plan ROD *and roadway and parking improvements in Marine Mammal Center "Finding of No Significant Impact" (FONSI).*	*Undertake light reconstruction of roadway infrastructure. Implement non-character altering road widening on the existing road bench with few new retaining walls. Improve circulation and safety with a mix of changing road functions and adding bike lanes.*	*Rehabilitate roadway infrastructure within existing road width. Implement safety improvements only at critical intersections. Change operation to fit existing road width/alignment.*	*Reconstruct and expand road and trail infrastructure by widening roadways (more frequently requiring the use of retaining walls) and occasionally extending beyond the existing road bench. Widen all major roads as described below to improve circulation and safety. Add bike lanes.*
Fort Baker Traffic Management and Monitoring Plans (per *Fort Baker Plan ROD*)	Initiate traffic monitoring (*ROD,* pp. 13–14) to measure the effectiveness of mitigation measures. During construction of the Fort Baker conference center, direct contractor to prepare a traffic management plan and submit to the National Park Service for approval.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
Wayfinding	Current signage, visitor information lacking or confusing.	Implement a wayfinding program, including signage.	Same as Alternative 3.	Same as Alternative 3.
Intelligent Transportation Systems (ITS) Technology)	Current lack of information results in visitor confusion and exacerbates traffic congestion.	Implement ITS technology (such as electric changeable message signs and highway advisory radio) at selected sites, such as along Conzelman Road.	Same as Alternative 1.	Same as Alternative 3.
Lower Conzelman Road	Fort Baker to Trailhead Parking Area: Lower Conzelman Road from Fort Baker to the trailhead parking area is currently closed to vehicle traffic due to GGB security. In the near-term, NPS would continue to work with GGBHTD and other agencies to provide special event traffic control access if feasible with the requirement for additional security and consistent with the Fort Baker Plan.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
	Trailhead Parking (Commuter Lot) to Conzelman: Existing paved width is 22′ plus 4′ to 10′ gravel/dirt shoulders, with two-way traffic and informal parallel parking. Remainder of road (trailhead parking to Fort Baker) is 14′–30′ wide.	Trailhead Parking (Commuter Lot) to Conzelman: Widen to 28′, provide uphill Class 2 bike lane.	Trailhead Parking (Commuter Lot) to Conzelman: Rehabilitate to existing 22′ width, retain gravel shoulders with informal parallel parking. Remainder of road, same as Alternative 3.	Same as Alternative 3.

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
Conzelman Road	U.S. 101/Alexander to McCullough: Existing paved width varies from 26′ to 27′ (wider in paved pullouts), with the uphill lane wider than the downhill lane to accommodate slow bicycles.	U.S. 101/Alexander to McCullough: Rehabilitate to maintain two-way road, with sight distance improvements, 28′ wide, shifting the alignment up to 22′ at Battery Spencer and overlooks, provide uphill Class 2 bike lane. Add curbs on both sides to control drainage. Reset guardrail closer to pavement edge to eliminate parallel parking in unsafe locations.	U.S. 101/Alexander to McCullough: Rehabilitate at existing widths to maintain two-way road. Reset guardrail closer to pavement edge to eliminate parallel parking in unsafe locations.	U.S. 101/Alexander to McCullough: Rehabilitate to maintain two-way road, with sight distance improvements, 28′ wide, realign 20′–30′ at Battery Spencer and overlooks, provide uphill Class 2 bike lane. Reset guardrail closer to pavement edge to eliminate parallel parking in unsafe locations.
	McCullough to Hawk Hill: Existing paved width is 20′ to 22′, with two-way traffic; large vehicles prohibited.	McCullough to Hawk Hill: Retain two-way road, but widen to 24′. Redesign vehicle parking and turnaround at Hawk Hill using a retaining wall. Continue prohibiting large vehicles. Move guardrail closer to pavement edge to reduce unsafe parallel parking.	McCullough to Hawk Hill: Retain 20′–22′ wide two-way road, redesign vehicle parking and turnaround at Hawk Hill, continue prohibiting large vehicles. Reset guardrail closer to pavement edge to reduce unsafe parallel parking.	McCullough to Hawk Hill: Widen two-way road to 28′, with uphill bike lane (Class 2). Redesign vehicle parking and turnaround at Hawk Hill. Continue to prohibit large vehicles. Move guardrail closer to pavement edge to reduce unsafe parallel parking.
	Hawk Hill to Field Road: Existing one-way road with paved width varying from 14′ to 24′.	Hawk Hill to Field Road: Retain as one-way; widen roadway on existing bench to include paved shoulders; shift alignment approximately 8′–10′ to avoid erosion site and regrade the land to eliminate surface water from the slope, which is causing some of the erosion.	Hawk Hill to Field Road: Same as Alternative 3.	Hawk Hill to Field Road: Same as Alternative 3.
McCullough Road	Conzelman to Bunker Road: Existing paved width is 22′ to 24′ with two-way traffic.	Conzelman to Bunker Road: Retain two-way traffic, widen to consistent 24′ to improve Class 3 bike safety, improve sight distance on switchback.	Conzelman to Bunker Road: Rehabilitate at existing width for one-way (downhill) shared bike and motor vehicle use and uphill Class 2 bike lane.	Conzelman to Bunker Road: Retain two-way traffic, widen to 28′ to add uphill Class 2 bike lane, improve sight distance on switchback.
Danes Drive	Bunker/Danes intersection (per *Fort Baker Plan ROD*): Extend existing right-turn lane by a minimum of 75′. Construct new sidewalk on east side between bus stop and parking area at tunnel. Extend the left turn lane from northbound Alexander Avenue	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
Bunker Road	Bunker Road: Provide channelization and signs at key points within Fort Baker (Bunker Road and East Road, and intersections with Alexander Avenue at Danes Drive and East Road) to avoid confusion for arriving drivers. Install signs directing U.S. 101-bound motorists to use Bunker Road / Danes Drive / Alexander Avenue.	Same as Alternative 1	Same as Alternative 1.	Same as Alternative 1.
	Tunnel to Murray Circle (East Bunker Road): Existing paved width is 22′; 20′ wide in Alexander Avenue underpass.	Tunnel to Murray Circle (East Bunker Road): Rehabilitate at existing width. Replace guardrail to current standards.	Tunnel to Murray Circle (East Bunker Road): Same as Alternative 3.	Tunnel to Murray Circle (East Bunker Road): Widen to 28′ plus width of concrete swale to maintain two-way traffic and provide uphill Class 2 bike lane. Replace Alexander Avenue underpass.
	Barry-Baker Tunnel: Existing tunnel width is 20′, alternating one-way motor vehicle flow controlled by signals, Class 2 bike lanes in tunnel.	Barry-Baker Tunnel: Same as Alternative 1.	Barry-Baker Tunnel: Convert to one-way eastbound motor vehicle flow, remove tunnel traffic signals, maintain two-way Class 2 bike lanes in tunnel.	Barry-Baker Tunnel: Same as Alternative 1.
	West Tunnel Portal to McCullough: Existing paved width is 24′ to 26′, with two-way traffic.	West Tunnel Portal to McCullough: Widen to 26′ for Class 3 bike route, two-way traffic. Also further widen Bunker Road shoulders at tight, blind corners to improve safety.	West Tunnel Portal to McCullough: Rehabilitate at existing or narrower width, convert to one-way eastbound (clockwise) flow, provide contra flow two-way Class 2 bike lanes.	West Tunnel Portal to McCullough: Widen entire roadway to 30' for two-way traffic; add two-way Class 2 bike lanes.
	McCullough to Mitchell: Existing paved width is 24′, with two-way traffic.	McCullough to Mitchell: Widen to 26′ for Class 3 bicycling, two-way traffic. Rodeo Lagoon bridge would be analyzed to resolve existing erosion. Bridge rail would be analyzed to verify it meets current standards. Also further widen Bunker Road shoulders at tight, blind corners to improve safety.	McCullough to Mitchell: Rehabilitate at existing width, two-way traffic. No modifications to Rodeo Lagoon bridge.	McCullough to Mitchell: Widen to 30′ to add two-way bike lanes (Class 2), two-way traffic; reconfigure Rodeo Lagoon bridge and add pedestrian bridge beside road bridge.
Field Road / Mendell Road	Bunker Road to Battery Mendell: Existing paved width is 20′ to 22′. Battery Mendell to Bird Island Overlook: Existing paved width is 14′ to 20′.	Field Road: Widen to 24′ for Class 3 bike route to improve bike safety. Terminate at the Point Bonita trailhead, and construct a turnaround loop. Mendell Road: Close to motor vehicle traffic.	Field and Mendell Roads: Rehabilitate roads at existing widths, except close Mendell Road to motor vehicles and terminate at Battery Mendell; remove asphalt pavement from Battery Mendell to Bird Island Overlook.	Field and Mendell Roads: Widen to 28′ for two-way traffic and uphill Class 2 bike lane over entire length of Field and Mendell roads to Bird Island Overlook.
Mitchell Road	Bunker Road to Rodeo Beach: Existing paved width is 20′ to 22′.	Bunker Road to Rodeo Beach: Widen to 24′ to improve Class 3 bike route.	Bunker Road to Rodeo Beach: Rehabilitate at existing width.	Bunker Road to Rodeo Beach: Widen to 30′ for Class 2 bike lanes in each direction.

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
East Road	Per *Fort Baker Plan ROD:* Temporarily or conditionally close East Road to general through-traffic to discourage vehicle access to Sausalito. (Review this measure in conjunction with the traffic monitoring program and consult with other relevant agencies.)	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
	Existing pavement width: south end is 28′; mid section is 28′–40′; north end is 22′.	Rehabilitate and widen to provide additional width where possible in the paved shoulder area for bicyclists (two 11′ travel lanes and two 2′ to 4′ shoulders). San Francisco Bay Trail would run parallel between current connection on East Road and Alexander Avenue. Replace and improve drainage culverts.	Rehabilitate at existing widths; replace and improve drainage culverts.	Reconstruct to 30′ wide to provide Class 2 bike lanes with parallel 3' footpath (San Francisco Bay Trail) between current connection on East Road and the Alexander Avenue/East Road intersection; replace and improve drainage culverts.
Alexander Avenue (Unlike all other roads in this plan that are under the jurisdiction and control of the National Park Service, Alexander Avenue is under the joint jurisdiction and control of Golden Gate National Recreation Area, Caltrans, and the Golden Gate Bridge Highway and Transportation District because it is an approach road to the Golden Gate Bridge.)	Alexander Avenue / Danes Drive: Coordinate with appropriate agencies to reconfigure the Danes Drive approach to this intersection. Work with the Golden Gate Bridge Highway and Transportation District, Marin County and Caltrans to encourage funding for pedestrian and bicycle improvements as future projects on Alexander Avenue.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
	MUNI and GGT bus stops at Alexander Avenue / U.S. 101 interchange: Bus stops poorly marked, lack adequate sight distance and pedestrian amenities. Work with the Golden Gate Bridge Highway and Transportation District, Marin County, Caltrans, and other agencies as needed to encourage transit stop improvements as future projects.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
	Alexander Avenue / U.S. 101 underpass: Only 22′ wide (wall to wall); vehicular traffic, pedestrians, and bicyclists all must share narrow traffic lanes simultaneously. Work with the Golden Gate Bridge Highway and Transportation District, Marin County and Caltrans to encourage funding for pedestrian and bicycle improvements as a future project.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
Marine Mammal Center	Construct a new loop road (not open to public) at the center (per FONSI).	Same as Alternative 1.	Same as Alternative. 1.	Same as Alternative 1.
	Access road: Existing road is 15′–24′ wide without sidewalks.	Access road: Rehabilitate to 24′ wide plus parallel parking lane and sidewalk.	Same as Alternative 3.	Same as Alternative 3.
Major Intersections	Conzelman / McCullough intersection: Currently a T intersection. McCullough / Bunker, Bunker / Field, Bunker / Mitchell intersections: Currently Y intersections. East Road / Alexander intersection (per *Fort Baker Plan ROD*): Poor signage and markings. Coordinate with appropriate agencies to improve channelization and provide clearer direction to drivers.	Conzelman / McCullough intersection: Construct roundabout to enable bus turnaround. McCullough / Bunker, Bunker / Field, Bunker / Mitchell, and East Road / Alexander intersections: Convert to T configurations to improve safety; convert Bunker / Mitchell to a three-way stop in the near term and monitor for traffic safety and operations to confirm whether further intersection modifications are needed.	Conzelman / McCullough intersection: Rehabilitate to a T configuration (similar to existing alignment). McCullough / Bunker, Bunker / Field, Bunker / Mitchell, and East Road / Alexander intersections: Same as Alternative 3.	Same as Alternative 3.
	Alexander Avenue / Danes Drive intersection (per *Fort Baker Plan ROD*): Realign intersection from Y to T configuration. Retain stop signs for control on Danes Drive.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
Other Intersections	U.S. 101 / Conzelman Road: Turning radius of buses turning right onto U.S. 101 off Conzelman Road not accommodated. Field Road Visitor Center: East entrance to parking area not aligned with Bodsworth Road. Lower Fisherman's Parking Area: Entrance to parking area not formalized. Headlands YMCA: Entrance to parking area not aligned with Conzelman Road.	U.S. 101 / Conzelman Road: Reconstruct intersection to accommodate turning radius of buses turning right off of Conzelman Road onto U.S. 101. Field Road Visitor Center: Align east entrance to parking area with Bodsworth Road. Lower Fisherman's Parking Area: Formalize entrance to parking area as part of parking reduction.	Same as Alternative 1.	Same as Alternative 3.
PARKING MANAGEMENT AND FEES				
Concept	*Existing conditions plus parking actions in the Fort Baker Plan ROD and Marine Mammal Center FONSI.*	*Reconfigure, delineate, and formalize parking; reduce resource impact. Implement parking fees to fund transit.*	*Same as Alternative 3, except parking would continue to be provided free of charge.*	*Same as Alternative 3.*
Fort Baker Plan	Coordinate a TDM program to reduce automobile use and parking requirements, alleviate traffic congestion, and enhance transportation safety. Require each park partner, including the future Fort Baker conference center operator, to prepare individual TDM plans, which would be integrated into an overall plan for the site.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
	Bay Area Discovery Museum: Construct parking area in Fort Baker on north side of East Road			
	Murray Circle: Eliminate parallel, on-street parking.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
Marine Mammal Center	Parking (per FONSI): Construct new lot for additional parking.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
	Access Road: Informal parking occurs on shoulders.	Access Road: Pave and stripe 19 parallel parking spaces.	Same as Alternative 3.	Same as Alternative 3.
Marin Headlands and Fort Baker Parking Areas	Approximately 1,593 spaces in Marin Headlands and 961 spaces in Fort Baker at dispersed locations in both formal paved and informal unpaved areas.	Provide approximately 1,330 spaces at the Headlands and 944 spaces at Fort Baker. Organize and delineate proposed parking improvements for safety, ADA accessibility, and reduced impacts at the following: •Conzelman Road •Battery Spencer •Overlook 1 •Overlook 2 •Upper Fisherman's trailhead •Lower Fisherman's trailhead •Mitchell Road (Rodeo Lagoon) •Fort Cronkhite internal parking •Fort Barry internal parking •Battery Alexander •East Road •Point Bonita trailhead •Smith Road Provide safety improvements at Hawk Hill turnaround and additional parallel parking on inboard side of Conzelman Road to retain existing number of parking spaces. Provide paved parking area at Julian Road near McCullough/ Conzelman intersection. Provide signage (directing visitors to other areas when lot is at capacity) to manage parking at Battery Spencer. Promote trailhead parking lot as an alternative to the Battery Spencer lot.	Provide approximately 1,338 spaces at the Headlands and 961 spaces at Fort Baker. Organize and delineate proposed parking improvements for safety, ADA accessibility, and reduced impacts at the following: •Conzelman Road •Battery Spencer •Overlook 1 •Overlook 2 •Hawk Hill •Upper Fisherman's trailhead •Lower Fisherman's trailhead •Fort Cronkhite internal parking •Battery Alexander •Fort Barry internal parking •East Road Remove parking at Smith Road.	Provide approximately 1,408 spaces at the Headlands and 944 at Fort Baker. Organize and delineate proposed parking improvements for safety, ADA accessibility, and reduced impacts at the following: •Conzelman Road •Battery Spencer •Overlook 1 •Overlook 2 •Lower Fisherman's trailhead •Mitchell Road (Rodeo Lagoon) •Fort Cronkhite internal parking •Fort Barry internal parking •Battery Alexander •East Road •Smith Road Reduce parking to handicap-only spaces at Point Bonita trailhead Expand parking at: •Hawk Hill •Upper Fisherman's trailhead Provide new parking area at McCullough and Conzelman.
Rodeo Beach	Approximately 325 spaces total currently available in paved lot, unpaved lot, and along Mitchell Road (another 116 spaces in Fort Cronkhite).	Close and remove unpaved lot. Partially replace with infill parking inside Fort Cronkhite and/or NPS Marin roads and trails maintenance yard if needed to address parking	Organize and delineate, reduce size of lot, and remove portion of unpaved lot from riparian corridor.	Same as Alternative 3.

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
		demand. Construct an associated sidewalk along Old Bunker Road (2' to 4' wide) to connect the maintenance yard parking to the interior of Fort Cronkhite.		
Bird Island Overlook / Battery Mendell	Bird Island Overlook and access drive is unpaved.	Close and remove parking at Bird Island Overlook and Battery Mendell.	Close and remove parking at Bird Island Overlook.	Delineate paved parking at Battery Mendell and Bird Island Overlook.
Rifle Range/ Pistol Range	Rifle Range: Approximately 20 parking spaces for Rodeo Valley trailhead. Pistol Range: Approximately 100 informal parking spaces on grass on northeast side of rifle range/south side of Bunker Road (pistol range) when parking is managed and directed by staff.	Rifle Range: Close to all public motor vehicle use and parking. Pistol Range: Prohibit parking.	Rifle Range: Delineate margins of parking for the Rodeo Valley trailhead with barriers (e.g., logs) to keep parking from expanding.	Rifle Range: Close to all public motor vehicle use and parking. Pistol Range: Continue informal parking on grass on the northeast side of the rifle range/south side of Bunker Road.
Smith Road	Approximately 35 spaces available.	Shift Smith Road closer to Bunker Road, provide 150 spaces for Rodeo Valley trailhead and special event/car-free day parking, with a combination of permeable material and pavement. Revegetate and restore remainder of area. Design parking area to accommodate large vehicles; organize and delineate to provide adequate space for pedestrians, bicyclists, and equestrians. Install visitor amenities, such as information kiosks, benches, and vault toilets. For car-free days and special events, parking may also occur on Bunker Road shoulders in this area.	Remove Smith Road and parking.	Similar to Alternative 3, except provide 200 spaces.
Bunker Road Bypass	Informal parking on shoulder.	Close Bunker Road bypass except for special event/ car-free day parking on existing pavement.	Same as Alternative 1.	Prohibit parking; remove road pavement.
Parking Fees	No fees currently charged for parking.	Charge parking fees at selected locations throughout Fort Baker and the headlands. Use collected fees to support enhanced transit service and car-free day operations.	Same as Alternative 1.	Same as Alternative 3.
BICYCLE AND PEDESTRIAN IMPROVEMENTS				
Concept	*Provide safety information to bicyclists at Fort Baker and implement bicycle rental restrictions to minimize exposure of bicyclists to offsite hazards.*	*Improve biking conditions and add one-way bike lanes on selected roads.*	*Improve biking conditions on roads.*	*Widen roads to add bike lanes on most roads.*
Fort Baker Plan ROD	Bike rentals provided at Fort Baker; bike safety program; accommodation	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
	of bicycles on Fort Baker conference center shuttles; secure bike parking provided.			
Golden Gate Bridge Vista Point Underpass	Current bike and pedestrian underpass and connections to Golden Gate Bridge have stairs requiring all riders to dismount and carry bikes. Work with the Golden Gate Bridge Highway and Transportation District, Marin County, Caltrans, and other agencies as needed to encourage funding for pedestrian and bicycle improvements as future projects.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
Class 1 Bike Paths	No Class 1 paths provided.	Point Bonita trailhead to Bird Island Overlook: Leave Mendell Road in place but close it to motor vehicles. Rodeo Valley trail: Improve and widen two-way bike facility, which would be resurfaced with aggregate material between the Capehart housing area and Bunker Road at Rodeo Lagoon (trail would cross Rodeo Creek on new bridges at Capehart housing area and at trailhead parking at Smith Road). Julian Road: Rehabilitate Julian Road for improved mountain bike/pedestrian use. Dubois Road (trail): Convert to a pedestrian/bicycle trail. Rodeo Valley Trail Connector: Permit cyclists on trail between Conzelman Road north to Bunker Road. The trail starts east of Battery Rathbone-McIndoe on Conzelman Road, connecting to Bunker Road east of the riding stables. This would be a multi-use trail allowing use by pedestrians, equestrians, and bicyclists. Fort Baker: Provide a bike path partially on utility road (tunnel to Fort Baker housing area). Fort Baker and the Barry-Baker tunnel: Construct a bicycle/pedestrian tunnel parallel to East Bunker Road under Alexander Avenue.	Battery Mendell and Bird Island Overlook: Provide 500′ segment of stabilized aggregate surfaced path. Julian Road: Rehabilitate Julian Road for improved mountain bike/pedestrian use.	Provide no new Class 1 paths. Julian Road: Rehabilitate Julian Road for improved mountain bike/pedestrian use.

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
Class 2 Bike Lanes	Barry- Baker tunnel: Class 2 bike lanes. No other Class 2 bike lanes provided. Alexander Avenue: Marin County *Transportation Plan* calls for Class 2 bike lane on Alexander Avenue. Work with the Golden Gate Bridge Highway and Transportation District, the Parklands Task Force, Marin County, and Caltrans to encourage funding for pedestrian and bicycle improvements as future projects.	Lower Conzelman Road: Construct one-way (uphill) bike lane from trailhead lot to Conzelman Road. Conzelman Road: Construct one-way (uphill) bike lane from U.S. 101/Alexander to McCullough Road. Barry-Baker tunnel: Retain Class 2 bike lane. Alexander Avenue: Same as Alternative 1.	Bunker Road: Construct two-way Class 2 bike lanes from the Barry-Baker tunnel to McCullough Road. McCullough Road: Construct two-way Class 2 bike lanes and an uphill bike lane along full length of road. Alexander Avenue: Same as Alternative 1.	Bunker Road: Construct two-way Class 2 lanes along entire road, except Barry-Baker tunnel (Class 2 lanes already exist). Mitchell Road: Construct two-way Class 2 bike lanes along entire road. McCullough Road, Field Road, Mendell Road: Construct one-way (uphill) bike lanes all along roads. Conzelman Road: Construct one-way (uphill) bike lane from U.S. 101/Alexander to McCullough, and from McCullough to Hawk Hill. East Bunker Road: Construct one-way (uphill) bike lane, requiring replacing the Alexander Avenue underpass. Alexander Avenue: Same as Alternative 1.
Class 3 Bike Routes	All roads except the Barry-Baker tunnel and Danes Drive are undesignated Class 3 routes.	Designate the following roads as Class 3 routes: Conzelman–McCullough to Field (with general traffic); entire length of Bunker Road (excluding Class 2 section through Barry-Baker tunnel); East Road; Field Road; Mitchell Road (Rodeo Lagoon).	Designate following roads as Class 3 routes: Conzelman–McCullough to Field (with general traffic); entire length of Bunker Road (excluding Class 2 section through Barry-Baker tunnel and west to McCullough); East Road; Field Road; Mitchell Road (Rodeo Lagoon).	The only major Class 3 bike routes would be Conzelman west of Hawk Hill to Field Road intersection, and Old Bunker Road to the Marine Mammal Center.
PEDESTRIAN / HIKING TRAILS				
Concept	*Facilitate pedestrian crossings in Fort Baker. Per ROD this is common to all alternatives.*	*Improve existing trail system with some rerouting.*	*Improve existing trail system.*	*Improve and expand trail system.*
Julian Road	Julian Road is in poor condition with an eroded surface and narrowed by overhanging brush.	Rehabilitate Julian Road for improved mountain bike/pedestrian use.	Same as Alternative 3.	Same as Alternative 3.
Coastal Trail	Hikers traveling to youth hostel from Golden Gate Bridge must ascend many steep hills and take a roundabout, poorly marked route.	Reroute Coastal Trail parallel to Conzelman Road between current crossing on Conzelman Road and Lower Fisherman's parking area, then follow Field Road to connect with Battery Alexander to Rodeo Beach trail. Close and revegetate some sections of existing trail.	Stabilize Coastal Trail connection from Battery Alexander to Rodeo Beach.	Reroute Coastal Trail at Slacker Hill, between rifle range and riding stables, provide direct connector to riding stables; remove/restore trail between Conzelman Road and rifle range; reconnect to existing trail at riding stables. Close and revegetate some sections of existing trail.
San Francisco Bay Trail	Extend trail north along East Road shoulder (per *Fort Baker Plan*).	Widen East Road to provide wider paved shoulders for biking to the extent possi-	Extend trail northward along East Road shoulder.	Widen East Road to provide bike lanes and extend Bay Trail along East Road from

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
		ble and extend hiking trail along East Road shoulder from current southern connection to Alexander Avenue.		current southern connection to Alexander Avenue/East Road intersection.
Marine Mammal Center Access Road and Old Bunker Road	Current access road lacks sidewalks and requires pedestrians and school groups to walk in roadway.	Provide pedestrian access from Access Road to Rodeo Beach via either Old Bunker or through Fort Cronkhite.	Same as Alternative 3.	Same as Alternative 3.
Rodeo Valley Trail	Existing Rodeo Valley trail has segments that are inundated by standing water during most of year.	Improve drainage on Rodeo Valley trail east of Coastal Trail and harden surface to extend multi-use designation. Harden surface (permeable but not paved) from existing multi-use location to a new proposed bridge at Capehart housing and McCullough Road to accommodate bicycle use. Add new bridge at Rodeo Valley trailhead at Smith Road parking. Add signage for safety. Realign trail west of rifle range to improve drainage and allow restoration of riparian community.	Improve drainage on Rodeo Valley trail east of Coastal Trail.	Same as Alternative 2, but realign approximately 900′ of trail west of rifle range to improve drainage and allow restoration of riparian community. Add a new proposed boardwalk/trail bridge at Capehart housing and McCullough Road Add new bridge at Rodeo Valley trailhead at Smith Road parking.
Rodeo Lagoon Trail	Current trail has steep segments, stairs, rough and soft tread surfaces.	Upgrade and improve Rodeo Lagoon loop trail, make portions ADA accessible.	Improve Rodeo Lagoon loop trail to reduce severe erosion.	Upgrade Rodeo Lagoon loop trail to ADA grade standards but not hard-surfaced.
Slacker Road/ trail	Lower 1,200′ is steep, with up to 25% grades and severe ongoing erosion; upper portions not used. Pedestrians, bicyclists, and equestrians can use the trail to the launch site (viewpoint). The connection to the SCA trail is hiking only.	Existing road to viewpoint converted to trail for hikers and equestrians. Reroute portions with a more sustainable alignment. Access to two GGRO research sites provided via a new or improved foot trail.	Add additional cross drains to reduce erosion, retain research vehicle access.	Close road to all vehicles; remove all of road by regrading and revegetating upper portions including launch pad. Construct new foot trail (Coastal Trail) to the west.
Golden Gate Bridge Vista Point Underpass	Existing underpass and connections to Golden Gate Bridge have stairs, making route inaccessible to users with disabilities. Work with the Golden Gate Bridge Highway and Transportation District, Marin County, Caltrans, and other agencies as needed to encourage funding for pedestrian and bicycle improvements as future projects.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
Other Trails	Existing trails have poor connections, drainage and erosion problems, and overly steep sections. Ba-	Construct trail from Battery Alexander parking to Rodeo Beach (remove social trail).	Same as Alternative 1.	Construct trail from Battery Alexander to Rodeo Beach (remove social trail; same as Alternative 3).

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
	sic maintenance of trails would continue.	Remove and revegetate duplicate trail segments in vicinity of rifle range, stables, and Fort Barry. Convert Dubois Road (trail) to a pedestrian/bicycle trail between Julian Road and McCullough Road. Both pedestrians and bicyclists would use McCullough Road between Rodeo Valley trail and Dubois Road. . Permit cyclists on Rodeo Valley Connector Trail, an existing trail between Conzelman Road north to Bunker Road. This multi-use trail would allow use by pedestrians, equestrians, and bicyclists. Provide sidewalks with curb cut ramps at Bunker Road intersections in the Capehart housing area. Construct trail from Battery Alexander parking along Field Road by the YMCA to the Point Bonita trailhead. Construct new Rodeo Valley trailhead and bicycle/ equestrian/pedestrian bridge over Rodeo Creek at Smith Road. Construct bicycle / pedestrian tunnel parallel to Bunker Road under Alexander Avenue, parallel to roadway tunnel on Bunker Road, and a pedestrian/ bike path partly on the existing utility road between Fort Baker and the Barry-Baker tunnel. Construct sidewalk along north side of Danes Drive.		Construct new Coastal Trail from SCA trail to McCullough Road. Convert Dubois Road to a trail between Julian Road and McCullough Road, extend trail through the Capehart housing area to connect to Rodeo Valley trail via a new proposed bridge over Rodeo Creek (same as Alternative 3). Provide sidewalks with curb cut ramps at Bunker Road intersections in Capehart housing area (same as Alternative 3). Construct trail west of YMCA between Battery Alexander parking and Point Bonita trailhead. Construct new Rodeo Valley trailhead and bicycle/pedestrian/equestrian bridge over Rodeo Creek at Smith Road. Modify Rodeo Lagoon bridge on Bunker Road to accommodate pedestrians. Construct pedestrian/bike path along Bunker Road from Danes Drive to Fort Baker. Construct sidewalk along north side of Danes Drive (same as Alternative 3).
TRANSIT SERVICES				
Concept (per Fort Baker Plan ROD)	*Pursue the provision of direct transit service to Fort Baker by continuing consultation with Golden Gate Transit, the Marin County Transit District, the San Francisco Municipal Transit System, or another service provider to determine the feasibility and cost of such service. Also coordinate with public transit officials and tour companies to determine where buses can be accommodated given the geometry of roads in Fort Baker.*	*Modify existing services to provide additional service to the Marin Headlands and Fort Baker.* *Provide shuttle system within park.*	*Modify existing services to provide additional transit service to the Marin Headlands on weekends.* *Provide no parkwide shuttle system.*	*Modify existing services to provide additional service to the Marin Headlands and Fort Baker.* *Provide shuttle system within park and interchange with regional transit.*
Fort Baker Conference Center Shuttle	Provide shuttle (funded by the conference center) to Sausalito and other points	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
(per *Fort Baker Plan ROD*)	in vicinity (days of operation and frequency to be determined); accommodate bicycles.			
MUNI Service or Other Service Providers	Continue MUNI 76 service through the Marin Headlands on Sundays only, with a 60-minute frequency. Encourage expanded service.	Continue and improve service along the existing route; encourage adding Saturday service and expanding existing Sunday service (30-minute frequency both days).	Same as Alternative 1 except encourage adding Saturday service at the same level as existing Sunday service (60-minute frequency).	Same as Alternative 3.
GGT Service or Other Service Providers	GGT Service: Continue local service on Alexander Avenue (poorly marked and nearly inaccessible stops), seven days per week, 60-minute frequency. GGT 70/80: Continue service on U.S. 101 with stops at Spencer Avenue. Encourage expanded service.	GGT Service or Other Service Provider: Encourage offering direct service to main post area of Fort Baker (60-minute frequency daily). GGT 70/80: Same as Alternative 1.	GGT Service or Other Service Provider: Encourage local service (60- minute frequency) on Alexander Avenue, including service to transit transfer/interface at the U.S. 101/Alexander Avenue interchange. GGT 70/80: Same as Alternative 1.	GGT 10: Same as Alternative 3. GGT 70/80: Same as Alternative 1.
Other Shuttle Service	None.	Start new shuttle service to provide mobility between Fort Baker and the Marin Headlands, with 60-minute service frequency, seven days a week.	None.	Same as Alternative 3 plus provide additional access with connections to the north at the Manzanita transit center in Sausalito (six trips/day) and to the south at the Golden Gate Bridge toll plaza (seven trips/day).
Transfer Interface	None.	Work with service providers to identify southbound transit interface and implement MUNI / GGT / internal shuttle and transit transfer / interface location at U.S. 101 / Alexander Avenue northbound interchange.	Same as Alternative 3.	Same as Alternative 3.
Transit Stop Amenities	Transit stops very poorly marked, with no amenities.	Improve transit stops (benches, shelters, and signage) where needed.	Same as Alternative 3, but no shelters.	Same as Alternative 3.
Bus Turnarounds	No space for buses to turn around south or west of Battery Alexander parking area.	Add bus turnaround to end of Field Road at Point Bonita trailhead; extend MUNI route to turnaround.	Same as Alternative 1.	Add bus turnaround to Bird Island Overlook. Extend MUNI route to turnaround.
Transit / Ferry Interchange	No current transit / ferry interchange.	Provide internal shuttle and interchange with a new ferry service in Fort Baker if the new ferry service becomes a reality.	Same as Alternative 1.	Same as Alternative 3.
Funding	No specific funding proposals.	Fund increased transit service through charges for selected parking areas.	Fund increased transit service by means other than parking charges.	Same as Alternative 3.

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
Public Outreach Efforts	Alternative modes of travel promoted by providing reduced or free fares or other incentives to use transit or shuttle connections. Implementation of a ridesharing program.	Encourage public to use non-automobile modes of travel when planning trips to the Headlands and Fort Baker through websites, brochures, signage, etc.	Same as Alternative 3.	Same as Alternative 3.
CAR-FREE DAYS AND SPECIAL EVENTS				
Concept	*Require that all large events secure a park permit as part of the approval process. (Access modifications specified in Fort Baker Plan ROD.)*	*Implement access modifications for all modes during special events or at predetermined days to offer an alternative visitor experience.*	*Same as Alternative 3.*	*Same as Alternative 3.*
Fort Baker Plan ROD	TDM plan for Fort Baker conference center and all Fort Baker tenants.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
Roads and Parking	Special Events at Fort Baker: Overflow parking provided on East Road. Lower Conzelman Road opened for one-way westbound (outbound) traffic if feasible.	Special Events at Fort Baker: Same as Alternative 1. Special Events in Marin Headlands: Implement parking controls on selected roads, close selected roads or road segments (use permit would define roads and parking areas). Car-Free Days: Close selected roads or road segments on a limited trial basis (no more than seven days/year). Work with affected stakeholders, including park user group representatives, residents, and park partners, to refine the details of the car-free area and operation to be tested.	Special Events at Fort Baker: Same as Alternative 1. Special Events in Marin Headlands: Same as Alternative 3. Car-Free Days: None.	Special Events at Fort Baker: Same as Alternative 1. Special Events in Marin Headlands: Same as Alternative 3. Car-Free Days: Same as Alternative 3.
Bicycles and Pedestrians	No special event measures for bicycles and pedestrians.	Special Events: Implement controls; close road and trail segments. Car-Free Days: Implement controls and close road and trails segments. Provide exclusive access for bicycles and pedestrians to road segments normally open to vehicular traffic.	Special Events: Same as Alternative 3. Car-Free Days: None.	Special Events: Same as Alternative 3. Car-Free Days: Same as Alternative 3.
Transit and Shuttles	No special event measures using transit or shuttles.	Special Events: Increase transit/shuttle service as needed (provider to be determined). Car-Free Days: Increase transit/shuttle service. Close roadways to vehicular traffic except transit (level of service and provider to be determined).	Special Events: Same as Alternative 3. Car-Free Days: None.	Special Events: Same as Alternative 2. Car-Free Days: Same as Alternative 3.
Permits	Special event host required to complete special use permit and submit parking and transportation access/ management plan.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
NATURAL AND CULTURAL RESOURCE PROTECTION				
Concept for Natural Resources	*Continue existing conditions.*	*Restore or modify natural resources.*	*Same as Alternative 3.*	*Same as Alternative 3.*
Rodeo Beach	West half of current parking area is unpaved and partially located in seasonal creek channel. Pedestrians' shortcut down slope to the beach.	Remove, restore unpaved parking and revegetate to restore wet meadow. Remove drainage ditches, gullies, and culverts. Remove 300 feet of existing ranch road. Construct a road crossing at Mitchell Road with bridge or bottomless culvert to allow movement of water, sediments, and wildlife between the beach and the restored wetland complex. Restoration would be consistent with the CLR. Install fence along south edge of Mitchell Road to limit pedestrian shortcutting down slope to beach; install stairway for safe, non-eroding beach access.	Reduce size of unpaved portion and provide riparian stream buffer at beach parking lot. Install fence along south edge of Mitchell Road to limit pedestrian shortcutting down slope to beach; install stairway for safe, non-eroding beach access.	Same as Alternative 3.
Rodeo Lagoon	Portions of upper and lower Rodeo Lagoon are covered with large areas of fill dirt.	Excavate excess fill at two sites along Rodeo Lagoon.	Same as Alternative 1.	Same as Alternative 3.
Smith Road	An area with potential for fill removal and restoration of wetland and riparian communities.	Realign Smith Road closer to Bunker Road for partial restoration of wetland and riparian communities.	Remove Smith Road and restore wetland and riparian communities.	Same as Alternative 3.
Rifle Range/ Bunker Road Bypass	The rifle range is used as informal trailhead parking area; the paved Bunker Road bypass is open to unrestricted public vehicle traffic.	Close the rifle range and the Bunker Road bypass to unrestricted motor vehicle use; restore grass cover on the rifle range; remove trail bridge over Rodeo Creek.	Continue use of the rifle range as a trailhead parking area; allow use of the Bunker Road bypass to continue.	Close the rifle range and the Bunker Road bypass to all motor vehicle use; restore grass cover on the rifle range; remove trail bridge over Rodeo Creek; remove pavement; daylight culverts on bypass road.
NPS Marin District Roads and Trails Maintenance Yard	Current NPS maintenance yard is unpaved and source of eroded soil and sediments.	Reduce yard area and revegetate or possibly use for replacement parking when unpaved Rodeo Beach parking lot is removed and revegetated; regrade area to be less steep; move all vehicle parking to paved, erosion-resistant areas; build new garage; install vegetated drainage swales; revegetate remainder of former yard.	Same as Alternative 3, except would not be used for infill parking.	Same as Alternative 3.
Conzelman Road Erosion Gullies	Roadside drainage prior to 1997 was directed over steep soil slopes, causing three large gullies to form below Conzelman Road. Gullies have been stabilized and are no longer eroding; but large scars on hillside remain.	Refill previously eroded gullies with soil from other project sites within the headlands. Revegetate slope after refilling. If necessary, obtain soil from alluvial deposits below gullies.	Same as Alternative 1.	Same as Alternative 3.

PLAN ELEMENT	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)
Road Shoulders	Most steep road shoulders (greater than 3%–4% grades) have severe ongoing soil erosion; eroded soil is deposited in creeks and Rodeo Lagoon.	Undertake comprehensive erosion control treatment of unpaved shoulders and ditches on steep segments of road (i.e., >3%–4% grades).	Undertake limited erosion control treatment of unpaved shoulders and ditches on steep segments of road (i.e., >3%–4% grades).	Pave most shoulders and ditches.
Concept for Cultural Resources	*Continue existing conditions.*	*Restore specific cultural resources.*	*Same as Alternative 3.*	*Same as Alternative 3.*
Battery Mendell	Mendell Road and Bird Island Overlook are located on the site of former WWII anti-aircraft gun emplacement.	Close Mendell Road to traffic at Point Bonita trailhead and allow for future restoration of historic gun emplacements and historic setting on north side of Battery Mendell.	Close Mendell Road to traffic at Battery Mendell, remove modern paving to Bird Island Overlook, and allow for future restoration of historic gun emplacements.	No restoration.
Rifle Range	Currently open to vehicle traffic and used as parking area.	Close rifle range to all motor vehicle use; restore grass cover.	Delineate parking area on rifle range with barriers (e.g., logs) to limit impacts.	Same as Alternative 3.

2.11 SUMMARY OF IMPACTS AND MITIGATION

Table 2-2 summarizes the impacts of each alternative after mitigation measures have been taken. The mitigation measures identified in this table include the applicable mitigation identification symbol (e.g., GEO-1), a short statement (e.g., geologist consultation at Battery Spencer), and the applicable alternatives. A complete description of mitigation measures is provided in Chapter 4, "Environmental Consequences" under each impact topic.

Under Alternative 1, "no impacts" generally means that there would be no additional impact. However, in many cases existing situations are causing ongoing impacts, which would continue if no action was taken.

TABLE 2-2. SUMMARY OF IMPACTS AND MITIGATION

NOTE: Impact level after mitigation. Bold denotes a significant adverse impact.

RESOURCE TOPIC	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)	Mitigation Measures
IMPACTS ON TRANSPORTATION					
Transit					
Transit Market Opportunity: Change in the size of the current transit market	No impacts.	Marin Headlands: Long-term, moderate, beneficial. Fort Baker: Long-term, major, beneficial.	Marin Headlands: Long-term, moderate, beneficial. Fort Baker: No impacts.	Marin Headlands: Long-term, moderate to major, beneficial. Fort Baker: Long-term, major, beneficial.	None required (all alternatives).
Transit Service Quality: Change in transit services levels, intermodal connections, and accessibility	No impacts.	Marin Headlands and Fort Baker: Long-term, moderate, beneficial. Short-term, minor, adverse during construction.	Marin Headlands: Long-term, minor to moderate, beneficial. Short-term, minor, adverse (during construction). Fort Baker: Long-term, negligible,	Marin Headlands and Fort Baker: Long-term, major, beneficial. Short-term, minor, adverse during construction.	None required (all alternatives).

RESOURCE TOPIC	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)	Mitigation Measures
			beneficial. Short-term, minor, adverse during construction.		
Transit Capacity: Change in available transit capacity	No impacts.	Marin Headlands: Long-term, minor, beneficial. Fort Baker: Long-term, major, beneficial.	Marin Headlands: Long-term, major, beneficial. Fort Baker: No impacts.	Marin Headlands: Long-term, major, beneficial. Fort Baker: Long-term, major, beneficial.	None required (all alternatives).
Reduction in Automobile Trips					
Change in number of autos traveling to Marin Headlands or Fort Baker	No impacts.	Long-term, minor, beneficial.	No impacts.	Long-term, minor, beneficial.	None required (all alternatives).
Change in number of autos traveling within Marin Headlands or Fort Baker	No impacts.	Long-term, minor, beneficial.	No impacts.	Long-term, minor, beneficial.	None required (all alternatives).
Traffic Volume					
Change in daily traffic volumes	No impacts	Long-term, negligible, beneficial. Short-term, negligible to minor, adverse during construction.	McCullough Road (between Conzelman and Bunker Roads): Long-term, major, adverse due to one-way traffic. Conzelman Road: Long-term, minor, adverse. Danes Drive and Bunker Road (from Alexander Avenue to McCullough): Long-term, minor, beneficial. Throughout remaining study area: Long-term, negligible. Short-term, minor to moderate, adverse during construction.	Long-term, negligible, adverse. Short-term, minor to moderate, adverse during construction.	None required (all alternatives).
Level of Service: Changes in LOS Categories (only at specific intersections and roadways)	No impacts.	Conzelman Road / McCullough Road Intersection: Long-term, minor, beneficial. All other analyzed intersections and roadways: Long-term, negligible, beneficial. Short-term, minor to moderate, adverse during construction.	Conzelman Road / McCullough Road Intersection: Long-term, minor, beneficial. Alexander Avenue / Danes Drive Intersection: Long-term, minor, adverse to minor, beneficial. All other analyzed intersections and roadways: Long-term, negligible, beneficial at all other analyzed intersections and	Conzelman Road / McCullough Road Intersection: Long-term, minor, beneficial. Bunker Road/Danes Drive Intersection: Long-term, minor, beneficial. Alexander Avenue / Danes Drive Intersection: Long-term, negligible, adverse to minor, beneficial All other analyzed intersections and roadways: Long-term, negligible,	None required (all alternatives).

RESOURCE TOPIC	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)	Mitigation Measures
			roadways. Short-term, minor to moderate, adverse during construction.	adverse. Short-term, minor to moderate, adverse during construction.	
Vehicular Safety					
Effects to safe movement and travel speed	No impacts.	Long-term, major, beneficial.	Long-term, moderate, beneficial.	Long-term, major, beneficial.	SAF-1: Traffic monitoring (Alts. 2, 4). SAF-2: Visual barrier (Alt. 3).
Parking					
Supply and Utilization: Change in parking demand and supply during peak visitation periods	No impacts.	Long-term, minor, adverse. Short-term, minor, adverse during construction.	Long-term, minor, adverse.	Long-term, minor, adverse. Short-term, minor, adverse during construction.	None required (all alternatives).
Nonmotorized Access and Use					
Bicycle Access: Effects to ease and convenience of access	Long-term, minor, beneficial.	Long-term, major, beneficial. Short-term, minor, adverse during construction.	Long-term, minor, beneficial.	Long-term, major, beneficial. Short-term, minor, adverse during construction.	None required (all alternatives).
Bicycle Safety: Effects to safe maneuverability	Long-term, minor, beneficial.	Long-term, major, beneficial.	Long-term, minor, beneficial.	Long-term, major, beneficial.	None required (all alternatives).
Pedestrian Access: Effects to ease and convenience of access	Long-term, minor, beneficial.	Long-term, major, beneficial. Short-term, minor, adverse during construction.	Long-term, minor, beneficial.	Long-term, moderate, beneficial. Short-term, minor, adverse during construction.	None required (all alternatives).
Pedestrian Safety: Change in vehicle/bicycle conflicts	Long-term, minor, beneficial.	Long-term, major, beneficial.	Long-term, minor, beneficial.	Long-term, moderate, beneficial.	None required (all alternatives).
Wayfinding					
Effects to ease wayfinding	No impacts.	Long-term, minor, beneficial.	Long-term, minor, beneficial. Short-term, minor, adverse (due to one-way circulation concept).	Long-term, minor, beneficial.	None required (all alternatives).
Car-Free Days					
Private Vehicle Access: Change in ability to drive to destinations and find nearby parking	Not applicable.	Long-term, major, adverse due to no car access for a maximum of seven days per year.	Not applicable.	Long-term, major, adverse due to no car access for a maximum of seven days per year.	None required (all alternatives).
Access by Alternative Modes: Change in ability to access destinations by alternative modes	Not applicable.	Long-term, major, beneficial.	Not applicable.	Long-term, major, beneficial.	None required (all alternatives).
IMPACTS ON NATURAL RESOURCES					
Geology, Paleontology, Soils, and Seismicity					
Geologic and Paleontological Resources	No impacts.	Long-term, moderate, adverse due to alterations to existing exposed rock cut faces and associated loss of geo-	Long-term, negligible, adverse.	Long-term, moderate, adverse due to alterations to existing exposed rock cut faces and associated loss of	GEO-1: Geologist consultation at Battery Spencer (Alts. 3, 4).

RESOURCE TOPIC	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)	Mitigation Measures
		logic resources.		geologic resources.	
Soils, Seismicity, and Landslide Hazards: Change in risks to the public and environment	Long-term, moderate, adverse due to continued soil erosion on road and trail system.	Long-term, moderate, beneficial.	Long-term, minor, beneficial.	Long-term, moderate, beneficial.	None required (all alternatives).
Coastal Resources					
Effects to coastal resources.	No impacts.	Long-term, minor, beneficial.	Long-term, minor, beneficial.	Long-term, minor, beneficial.	None required (all alternatives).
Water Resources					
Groundwater	No impacts.	Long-term, negligible or less, adverse.	Long-term, negligible or less, adverse.	Long-term, negligible or less, adverse.	None required (all alternatives).
Water Quality: Changes to water quality conditions.	Long-term, moderate, adverse due to ongoing erosion.	Long-term, minor to moderate, beneficial. Short-term, moderate adverse during construction.	Long-term, minor, beneficial and moderate, adverse due to ongoing erosion. Short-term, moderate adverse during construction.	Long-term, minor to moderate, beneficial. Short-term, moderate, adverse during construction.	WQ-1: Project site management (Alts. 2, 3, 4). WQ-2: Implement sustainable trail design and construction standards (Alts. 2, 3, 4). WQ-3: Implement turbidity monitoring and response plan (Alts. 2, 3, 4). WQ-4: NPDES general construction permit and stormwater pollution prevention plan (Alts. 2, 3, 4). WQ-5: Adherence to MS4 permit (Alts. 2, 3, 4).
Floodplains	No impacts.	Long-term, negligible, adverse.	No impacts.	Long-term, negligible, adverse.	None required (all alternatives).
Flooding	No impacts.	Long-term, minor, adverse to negligible, beneficial.	Long-term, negligible, adverse.	Long-term, minor, adverse to negligible, beneficial.	None required (all alternatives).
Biological Resources					
Common Natural Communities: Changes in plant community size, continuity, or integrity	No impacts.	Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	None required (all alternatives).
Tree Removal: Changes to numbers of native and nonnative trees	No impacts.	Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	None required (all alternatives).
Invasive Weeds: Establishment and/or expansion of exotic species and ability to contain and reverse infestation	Long-term, negligible to minor, adverse.	Long-term, moderate beneficial. Short-term, negligible to minor, adverse during construction.	Long-term, moderate, beneficial. Short-term, negligible to minor, adverse during construction.	Long-term, moderate, beneficial. Short-term, negligible to minor, adverse during construction.	None required (all alternatives).
Wetlands: Changes to type and integrity of habitat; connectivity to adjacent	No impacts.	Long-term, moderate, beneficial. Net gain of .24 acres of wetland habitat plus 3 acres of wetland-	Long-term, moderate, beneficial. Net gain of 1.1 acres of wetland habitat.	Long-term, moderate, beneficial. Net gain of 2.93 acres of wetland habitat. Short-term impacts	WET-1: Implement Mitigation Plan (Alts. 2, 3, 4). WET-2: Implement WSOF BMPs (Alts. 2, 3,

RESOURCE TOPIC	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)	Mitigation Measures
sensitive habitats		habitat for Rodeo Beach parking lot. Short-term impacts offset with mitigation.	Short-term impacts offset with mitigation.	offset with mitigation.	4). WET-3: Culvert Placement (Alts. 2, 3, 4). WET-4: Smith Road Parking Lot (Alts 2, 3, 4)
Wildlife and Aquatic Life: Changes to habitat and populations, and potential for more/ less disturbance	No impacts.	Long-term, minor, beneficial. Short-term, minor, adverse during construction.	Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	WLD-1: Conduct preconstruction bird nesting surveys (Alts. 2, 3, 4). WLD-2: Amphibian management requirements (Alts. 2, 3, 4).
Special Status Species: Changes to habitat and populations; potential for increased/decreased disturbance					
Plant Species	No impacts.	Long-term, minor, adverse. Short-term, negligible to minor, adverse during construction.	Long-term, minor, adverse. Short-term, negligible to minor, adverse during construction.	Long-term, moderate, adverse. Short-term, negligible to minor, adverse during construction.	WLD-3: Special status plant requirements (Alts. 2, 3, 4).
Mission Blue Butterfly	No impacts.	Long-term, major, beneficial. Short-term, negligible to minor, adverse during construction.	Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	Long-term, major, beneficial. Short-term, negligible to minor, adverse during construction.	WLD-4: Construction activity window (Alts. 2, 3, 4). WLD-5: Mission blue butterfly management requirements (Alts. 2, 3, 4). WLD-6: Coastal Trail restoration (Alts. 3, 4).
Tidewater Goby	No impacts.	Long-term, major, beneficial. Short-term, negligible to minor, adverse during construction.	No short-or long-term impacts.	Long-term, major, beneficial. Short-term, negligible to minor, adverse during construction.	WLD-4: Construction activity window (Alts 2, 3, 4). WLD-7: Tidewater Goby management requirements (Alts. 3, 4).
Central California Coast Steelhead	No impacts.	Long-term, major, beneficial. Short-term, negligible to minor, adverse during construction.	No short-or long-term impacts.	Long-term, major, beneficial. Short-term, negligible to minor, adverse during construction.	WLD-4: Construction activity window (Alts. 2, 3, 4). WLD-8: Steelhead management requirements (Alts. 3, 4).
California Red-legged Frog	No impacts.	Long-term, major, beneficial. Short-term, negligible to minor, adverse during construction.	No short-or long-term impacts.	Long-term, moderate, beneficial. Short-term, negligible to minor, adverse during construction.	WLD-4: Construction activity window (Alts. 2, 3, 4). WLD-9: Red-legged frog management requirements (Alts 3, 4).
California Brown Pelican	No impacts.	Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	No short-or long-term impacts.	Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	WLD-4: Construction activity window (Alts. 2, 3, 4). WLD-10: California brown pelican management requirements (Alts. 3, 4).
Western Snowy Plover	No impacts.	Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	No short-or long-term impacts.	Long-term, minor, beneficial. Short-term, minor, adverse during construction.	WLD-4: Construction activity window (Alts. 2, 3, 4). WLD-11: Western snowy plover management requirements (Alts. 3, 4).
Salt Marsh Harvest Mouse	No impacts.	Long-term, negligible, adverse. Short-term, negligible to minor, adverse	No short-or long-term impacts.	Long-term, negligible, adverse. Short-term, negligible to minor, ad-	WLD-4: Construction activity window (Alts. 2, 3, 4). WLD-12: Salt marsh har-

RESOURCE TOPIC	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)	Mitigation Measures
		during construction.		verse during construction.	vest mouse management requirements (Alts. 3, 4).
Western Pond Turtle	No impacts.	Long-term impacts would be minor, adverse. Short-term, negligible to minor, adverse during construction.	No short-or long-term impacts.	Long-term impacts would be minor, adverse. Short-term, negligible to minor, adverse during construction.	WLD-4: Construction activity window (Alts. 2, 3, 4). WLD-13: Western pond turtle management requirements (Alts. 3, 4).
Salt Marsh Common Yellowthroat	No impacts.	Long-term, moderate, beneficial. Short-term, negligible to minor, adverse during construction.	No short-or long-term impacts.	Long-term, moderate, beneficial. Short-term, negligible to minor, adverse during construction.	WLD-4: Construction activity window (Alts. 2, 3, 4).
Allen's Hummingbird	No impacts.	Long-term, moderate, beneficial. Short-term, negligible to minor, adverse during construction.	No short-or long-term impacts.	Long-term, moderate, beneficial. Short-term, negligible to minor, adverse during construction.	WLD-4: Construction activity window (Alts. 2, 3, 4).
Bats	No impacts.	Long-term, moderate, adverse due to potential loss of roosting habitat. Short-term, negligible to minor, adverse during construction.	Long-term, moderate, adverse due to potential loss of roosting habitat. Short-term, negligible to minor, adverse during construction.	Long-term, moderate, adverse due to potential loss of roosting habitat. Short-term, negligible to minor, adverse during construction.	WLD-4: Construction activity window (Alts. 2, 3, 4). WLD-14: Tree removal habitat assessment (Alts. 2, 3, 4).
Air Quality					
Local Air Quality Effects	No impacts.	Long-term, negligible to minor, beneficial. Short-term, minor to moderate, adverse during construction.	Long-term, negligible to minor, beneficial. Short-term, negligible to moderate, adverse during construction.	Long-term, negligible to minor, beneficial. Short-term, minor to moderate, adverse during construction.	AQ-1: Dust control (all alternatives).
Regional Air Quality Effects	No impacts.	No impacts.	Long-term, negligible, adverse.	Long-term, negligible, beneficial.	None required (all alternatives).
IMPACTS ON CULTURAL RESOURCES					
National Register Historic District Roads and Related Properties: Effects resulting from physical changes to significant characteristics of resource or setting.	No impacts.	Long-term, moderate, adverse due to altering road widths/ alignments, rehabilitating road segments, reconfiguring intersections, providing new trails, and rehabilitating existing trails. Section 106 Summary: *Adverse effect* on the Forts Baker, Barry, and Cronkhite historic district.	Long-term, minor, beneficial to minor, adverse. Section 106 Summary: *No adverse effect* on the Forts Baker, Barry, and Cronkhite historic district.	Long-term, major, adverse due to altering road widths/alignments, rehabilitating roads, reconfiguring intersections, providing new trails and rehabilitating existing trails. Section 106 Summary: *Adverse effect* on the Forts Baker, Barry, and Cronkhite historic district.	Cultural landscape management requirements: • CR-1: Conzelman Road (Alts. 3, 4). • CR-2: Conzelman Road / McCullough Road intersection (Alts. 3, 4). • CR-3: Western Conzelman Road (Alts. 3, 4). • CR-4: Bunker Road and rifle range (Alts. 3, 4). • CR-5: Bunker Road / Old Bunker Road / Mitchell Road intersection (Alts. 2, 3, 4). • CR-6: McCullough Road (Alts. 2, 3, 4). • CR-7: Field Road / Mendell Road (Alts. 3, 4). • CR-8: East Road (Alts. 2, 3, 4). • CR-9: Dubois Road

RESOURCE TOPIC	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)	Mitigation Measures
					(trail) (Alts. 3, 4). •CR-10: Julian Road (Alts. 3, 4). •CR-11: Mitchell Road / Fort Cronkhite (Alts. 3, 4). •CR-12: Fort Barry Cantonment (Alts. 3, 4). •CR-13: Trails (Alt. 3). •CR-14: Bunker Road and rifle range (Alt. 2). •CR-15: Roads and Trails Maintenance Yard (Alts. 2, 3, 4).
Additional Cultural Resource Impacts					
•Polygon 23 — Southwest of Battery 129	No impacts.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	CR-16: Cultural landscape management requirements (Alts. 2, 3, 4).
•Polygon 24 — Slopes below Conzelman Road Southeast of Hawk Hill	No impacts.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	CR-17: Cultural landscape management requirements (Alts. 2, 3, 4).
•Polygon 26 — Kirby Cove Bowl below Conzelman Road	No impacts.	Long-term, minor to moderate beneficial.	Long-term, minor to moderate beneficial.	Long-term, minor to moderate beneficial.	CR-18: Cultural landscape management requirements (Alts. 2, 3, 4).
•Polygon 27 — Top of Battery 129 / Hawk Hill	No impacts.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	CR-19: Cultural landscape management requirements (Alts. 2, 3, 4).
•Polygon 28a — Lower Conzelman Road between Battery Spencer and U.S. 101	No impacts.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	CR-20: Cultural landscape management requirements (Alts. 2, 3, 4).
•Polygon 31 — Below West Conzelman Road, Upper to Lower Fisherman's Trailheads	No impacts.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	CR-21: Cultural landscape management requirements (Alts. 2, 3, 4).
•Polygon 36 — Fort Barry Eucalyptus Grove (north of Battery Rathbone–McIndoe)	No impacts.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	CR-22: Cultural landscape management requirements (Alts. 2, 3, 4).
•Polygon 37 – Fort Barry Scattered Pines (North of #36)	No impacts.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	CR-23: Cultural landscape management requirements (Alts. 2, 3, 4).
•Site 2 — Vicinity of T-1111 and Edge of Rodeo Lagoon	No impacts.	Long-term, negligible, adverse.	No impacts.	Long-term, negligible, adverse.	CR-24: Cultural landscape management requirements (Alts. 3, 4).
•Site 7 — New Bike Path and Underpass beneath Alexander	No impacts.	Long-term, negligible, adverse.	No impacts.	No impacts.	CR-25: Cultural landscape management requirements (Alt. 3).

RESOURCE TOPIC	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)	Mitigation Measures
Avenue, above Fort Baker Cantonment					
•Site 8 — Gully Refilling and Revegetation below Conzelman Road	No impacts.	Long-term, minor, adverse.	No impacts.	Long-term, minor, adverse.	CR-26: Cultural landscape management requirements (Alts. 3, 4).
IMPACTS ON VISITOR USE AND EXPERIENCE					
Visual and Aesthetic Resources					
Battery Spencer	No impacts.	Long-term, negligible, adverse. Short-term, minor, adverse during construction.	Long-term, negligible, adverse. Short-term, minor, adverse during construction.	Long-term, moderate, adverse due to road widening, hill cut, and paving. Short-term, minor, adverse during construction.	None required (all alternatives).
Hawk Hill	No impacts.	Long-term, moderate, adverse due to construction of fill-retaining wall. Short-term, minor, adverse during construction.	Long-term, minor, beneficial. Short-term, minor, adverse during construction.	Long-term, moderate, adverse due to construction of fill-retaining wall. Short-term, minor, adverse during construction.	None required (all alternatives).
Fort Cronkhite	No impacts.	Long-term, moderate, beneficial. Short-term, minor, adverse during construction.	Long-term, minor, beneficial. Short-term, minor, adverse during construction.	Long-term, minor, beneficial. Short-term, minor, adverse during construction.	None required (all alternatives).
Other Visual Resource Changes	No impacts.	Long-term, minor, beneficial. Short-term, minor, adverse during construction.	Long-term, minor, beneficial. Short-term, minor, adverse during construction.	Long-term, moderate, beneficial. Short-term, minor, adverse during construction.	None required (all alternatives).
Recreation and Visitor Enjoyment					
Access to Park Partner Activities	No impacts.	Car-Free Days: Long-term, moderate, adverse due to restricted auto access. All Other Times: Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	Car-Free Days: Long-term, moderate, adverse due to restricted auto access. All Other Times: Long-term, minor, beneficial. Short-term, negligible to minor, adverse during construction.	None required (all alternatives).
Variety of Park Experiences	No impacts.	Car-Free Days: Long-term, moderate, beneficial. All Other Times: Long-term, moderate, beneficial. Short-term, negligible to minor, adverse during construction.	Long-term, negligible, beneficial. Short-term, negligible to minor, adverse during construction.	Car-Free Days: Long-term, major, beneficial. All Other Times: Long-term, minor, beneficial. Short-term, negligible, adverse during construction.	None required (all alternatives).
Scenic Viewing	No impacts.	Bird Island Overlook and Battery Spencer: Long-term, moderate, adverse due to access changes. Slacker Hill: Long-	Battery Spencer, Hawk Hill, and Bird Island Overlook: Long-term, moderate, adverse due to access changes.	Battery Spencer and Slacker Hill: Long-term, moderate, adverse due to access changes. Other Viewing Areas: Long-term,	None required (all alternatives).

RESOURCE TOPIC	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)	Mitigation Measures
		term, minor, adverse. Hawk Hill: Long-term, minor, and beneficial. Other Viewing Areas: Long-term, negligible, beneficial. Car-Free Days: Long-term, moderate, adverse due to restricted auto access. Short-term, negligible to minor, adverse during construction.	Short-term, negligible to minor, adverse during construction.	negligible, beneficial. Car-free Days: Long-term, moderate, adverse due to restricted auto access. Short-term, negligible to minor, adverse during construction.	
Access to Aquatic Recreation	No impacts.	Long-term, minor, adverse at Rodeo Beach. Long-term, moderate, adverse due to restricted auto access on car-free days. Short-term, negligible to minor adverse during construction.	No impacts.	Same as alternative 3, with greater reduction of parking spaces in Fort Cronkhite.	None required (all alternatives).
Access to Interpretive Services	No impacts.	Car-Free Days: Long-term, minor, adverse. All Other Times: Long-term, minor, beneficial.	No impacts.	Car-Free Days: Long-term, minor, adverse. All Other Times: Long-term, minor, beneficial.	None required (all alternatives).
Noise					
Traffic Noise Levels	No impacts.	Long-term, negligible, beneficial.	Long-term, negligible, adverse.	Long-term, negligible, beneficial.	None required (all alternatives).
Non-Transportation Noise Sources	No impacts.	Long-term, minor, adverse.	Long-term, minor, adverse. Short-term, moderate, adverse during construction.	Long-term, minor, adverse. Short-term, moderate, adverse during construction.	NOI-1: Noise restrictions (Alts. 2, 3, 4). NOI-2: Employ noise-reducing construction practices (Alts. 2, 3, 4).
Human Health, Safety, and the Environment					
Hazardous Substances/Sites: Potential exposure to contaminants	No impacts.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	Long-term, negligible, adverse.	CON-1: Underground storage tank management (Alts 2, 3, 4). CON-2: Prepare materials management plan (Alts. 2, 3, 4). CON-3: Contamination surveys (Alts. 2, 3, 4). CON-4: Bunker Road at rifle range contamination testing (Alts. 2, 3, 4). CON-5: Stables area contamination testing (Alts. 2, 3, 4). CON-6: Lead-contaminated soils (Alts. 2, 3, 4). CON-7: Spill prevention plan and control plan (Alts. 2, 3, 4).
Fire and Emergency Services: Effects on emergency vehicle	Long-term, moderate, adverse due to continuing delay caused by one-lane	Long-term, moderate, beneficial.	Long-term, moderate, adverse due to one-way road system at	Long-term, moderate, beneficial.	PSS-1: Barry-Baker tunnel traffic signals (Alts. 3, 4).

RESOURCE TOPIC	ALTERNATIVE 1 NO ACTION (Also included in Alternatives 2–4)	ALTERNATIVE 3 ENHANCED MULTI-MODAL ACCESS (Moderate Change)	ALTERNATIVE 2 BASIC MULTI-MODAL ACCESS (Minimum Change)	ALTERNATIVE 4 MAXIMUM MULTI-MODAL ACCESS (More Significant Change)	Mitigation Measures
access	Barry-Baker tunnel.		McCullough Road and Barry-Baker tunnel.		
Personal Safety: Effects to visitor and non-visitor safety	See safety impacts under "Transportation." Short-term, minor, adverse during construction.	See safety impacts under "Transportation." Short-term, minor, adverse during construction.	See safety impacts under "Transportation." Short-term, minor, adverse during construction.	See safety impacts under "Transportation." Short-term, minor, adverse during construction.	None required (all alternatives).
Security of Personal Property: Effects to security of personal property	No impacts.	No impacts.	No impacts.	No impacts.	None required (all alternatives).
Seismic Conditions: Changes to seismic safety	No impacts.	No impacts.	No impacts.	No impacts.	None required (all alternatives).
SOCIAL AND ECONOMIC IMPACTS					
Park Visitation	No impacts.	Long-term, negligible, beneficial.	Long-term, negligible, beneficial.	Long-term, negligible, beneficial.	None required (all alternatives).
Local Employment	No impacts.	Long-term, minor, beneficial. Short-term, minor, beneficial during construction.	Long-term, negligible, beneficial. Short-term, minor, beneficial during construction.	Long-term, negligible, beneficial. Short-term, minor, beneficial during construction.	None required (all alternatives).
Quality of Life in Local Communities: Related to access to the study area and traffic congestion	No impacts.	Long-term, moderate, beneficial. Short-term traffic congestion during construction (see "Transportation" section).	Long-term, negligible to minor, beneficial. Short-term traffic congestion during construction (see "Transportation" section).	Long-term, negligible to moderate, beneficial. Short-term traffic congestion during construction (see "Transportation" section).	None required (all alternatives).
IMPACTS ON PARK OPERATIONS AND MANAGEMENT					
Staff and Resources	No impacts.	Long-term, minor, adverse.	No impacts.	Long-term, minor, adverse.	None required (all alternatives).
Annual Operating Budget and Funding Sources	No impacts.	No impacts.	No impacts.	No impacts.	None required (all alternatives).

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CHAPTER 3. AFFECTED ENVIRONMENT

The "Affected Environment" describes existing conditions in the Marin Headlands and Fort Baker and creates a baseline that can be used to understand and compare the potential direct, indirect, and cumulative effects of each alternative. Existing conditions are described for the following topics:

- Transportation
- Natural Resources
  - Geology, Paleontology, Soils and Seismicity
  - Coastal Resources and Processes
  - Water Resources
  - Biological Resources
  - Air Quality
- Cultural Resources
- Visitor Use and Experience
  - Visual and Aesthetic Resources
  - Recreation and Visitor Enjoyment
  - Noise
  - Human Health, Safety, and the Environment
- Social and Economic Environment
- Park Operations and Management

Environmental impacts on these resources and conditions are discussed in Chapter 4 of this document, and they follow the same order.

3.1 TRANSPORTATION

Information on existing transportation conditions was obtained primarily from the "Marin Headlands and Fort Baker Existing Conditions Report" (Nelson\Nygaard 2000) and the "Summer 2000 and Spring 2001 Data Collection Report" (Nelson\Nygaard 2001b).

3.1.1 TRANSIT

Transit service to the study area is extremely limited. On Sundays and holidays only the MUNI Route 76 line carries passengers from downtown San Francisco to destinations in the Marin Headlands. Seven days a week GGT Route 10 operates along Alexander Avenue adjacent to Fort Baker; Route 10 bus stops are located near the Alexander Avenue / U.S. 101 interchange and at the intersection of Alexander Avenue and East Road. Neither of these stops serves popular destinations in the Marin Headlands or Fort Baker, nor do they provide connections to MUNI's Sunday service to the Marin Headlands.

MUNI Route 76

The San Francisco Municipal Transit System's Sunday and holiday operation provides service every 60 minutes from San Francisco to the Marin Headlands between 9:30 a.m. and 5:30 p.m. Originating at the Caltrain Depot at 4th and Townsend streets, MUNI Route 76 proceeds through the south Market district, Polk Gulch, the Marina, to the Golden Gate Bridge toll plaza.

North of the Golden Gate Bridge, the route exits on Alexander Avenue adjacent to Fort Baker before crossing under U.S. 101 to serve the majority of popular visitor destinations in the southern Marin Headlands, including Battery Spencer, the rifle range, the riding stables, the visitor center, the Nike missile site, Battery Alexander, the Point Bonita Lighthouse, and Rodeo Beach. The bus line does not serve Fort Baker.

Bus shelters or stand-alone signs indicating bus service are not provided within the Marin Headlands. Yellow stripes and directional arrows painted on the pavement indicate the route and stops.

Bus bike racks accommodating up to two bicycles are provided on a first-come, first-served basis for all MUNI Route 76 buses. Buses are usually standard 40-foot transit buses that accommodate approximately 75 passengers (including both sitting and standing passengers).

GGT Routes 10, 70, 80

GGT Route 10 provides service to the vicinity of Fort Baker on weekdays from 6:30 a.m. to 8:30 p.m.; service frequency is every 30 minutes during the morning peak period and every 60 minutes for the remainder of the day. Weekend service is provided every 60 minutes between 7:45 a.m. and 7:45 p.m.

GGT Route 10 northbound stops are located at the Alexander Avenue exit ramp off northbound U.S.

101 and at the Alexander Avenue / East Road intersection. Southbound stops are at the Alexander Avenue / East Road intersection and at the Alexander Avenue / Danes Drive intersection. This route does not directly serve Fort Baker or the Marin Headlands.

Buses on GGT Route 10 are usually standard 40-foot transit buses that accommodate up to 53 passengers. Bus bike racks accommodate up to two bicycles and are provided on a first-come, first-served basis.

Sausalito Area Local Land Yacht (SALLY)

From 2001 to 2004 the Sausalito Area Local Land Yacht shuttle service provided free shuttle service through Sausalito, with connections to Fort Baker. One bus was operated during the peak summer season and at other times of the year as needed. Shuttle operations have been dormant since 2004, and future plans for the shuttle are to be determined.

Fort Baker Conference Center Shuttle

As part of the *Fort Baker Plan*, the conference center operator is required to provide or assist with providing a shuttle between the conference center, other sites in Fort Baker, sites in Sausalito, and parking areas. Airport connections will also be provided for conference center users, and the service could include connections to other attractions outside the study area. The operating details of the shuttle have not been determined, but it is assumed the service will start once the conference center is in operation.

3.1.2 ROADWAYS AND TRAFFIC

Access to the Park

Located just north of the Golden Gate Bridge, the Marin Headlands and Fort Baker study area spans former military sites on both sides of U.S. 101 in Marin County. The study area is within a reasonable travel distance from San Francisco and most communities in Marin County.

Access to the Marin Headlands is provided from Alexander Avenue at two entrances. The Conzelman Road entrance is off Alexander Avenue just north of the U.S. 101 south entrance ramp to the Golden Gate Bridge. The second entrance is at the eastern terminus of the Barry-Baker tunnel on Danes Drive.

Access to Fort Baker is provided at two entrances from Alexander Avenue — the Bunker Road entrance via Danes Drive and the East Road entrance on the east side of the park. From downtown Sausalito the most direct access to Fort Baker is by traveling south on Bridgeway Road to the East Road entrance.

The Marin Headlands and Fort Baker are connected to one another by Bunker Road, Alexander Avenue, and Lower Conzelman Road. However, vehicular access on Lower Conzelman Road has been restricted as a result of construction related to the Golden Gate Bridge seismic retrofit project, as well as post-September 11, 2001, security concerns. This road is expected to remain closed to vehicular traffic with the exception of use as an "overflow" route for traffic exiting Fort Baker under peak conditions and during some special events, and for service and emergency vehicles.

Main Roads in the Study Area

The main roads in the study area include the following:

- *U.S. 101* — an eight-lane major north-south freeway through the study area. To the north, U.S. 101 connects Marin County and parts of the East Bay (via the Richmond-San Rafael Bridge) with the study area. To the south, it provides access to San Francisco and other communities along the bay.
- *Conzelman Road* — a narrow, winding east-west road that runs along the southern edge of the Marin Headlands. Visitors may enter the Marin Headlands at the Conzelman Road / Alexander Avenue intersection and the U.S. 101 southbound on-ramps. The road is used extensively by bicyclists and the shoulder by pedestrians. Conzelman Road becomes one-way west of Hawk Hill. Lower Conzelman Road connects the trailhead lot in the Marin Headlands with Fort Baker, passing under the Golden Gate Bridge. However, the road is closed to vehicular traffic.
- *Alexander Avenue* — a two-lane arterial roadway between U.S. 101 and Sausalito. Access to Fort Baker is provided by Alexander Avenue via Danes Drive (and Bunker Road) and

East Road. Unlike all other roads in this plan that are under the jurisdiction and control of the National Park Service, Alexander Avenue is under the joint jurisdiction and control of Golden Gate National Recreation Area, Caltrans, and the Golden Gate Bridge Highway and Transportation District because it is an approach road to the Golden Gate Bridge.

- *East Road* — a two-lane, two-way north-south roadway that runs between Alexander Avenue and the Fort Baker parade ground.
- *Bunker Road* — a two-lane road between Fort Cronkhite, Fort Barry, Rodeo Valley and Fort Baker. To the north, it provides access to the Marin Headlands through the one-lane Barry-Baker tunnel between Fort Baker and the Fort Barry area. Motor vehicle travel through the tunnel alternates between eastbound and westbound traffic and is controlled by traffic signals on each end of the tunnel. Four-foot-wide, striped Class 2 bicycle lanes are provided for several hundred feet on both sides of the tunnel.

As described in Chapter 2, several geometric improvements will be made to roads in Fort Baker as part of the *Fort Baker Plan Record of Decision.*

Traffic Volumes and Flow

Information on traffic volumes and flow is based on the results of a comprehensive data collection effort performed on a total of 14 days during the summer of 2000 and the spring of 2001. Traffic data were collected on all of the park's major roads and key intersections on weekdays and weekends during both seasons. Observations were also made of the transportation mode used by visitors to access the park (Nelson\Nygaard 2001b). This information is organized as follows: Marin Headlands and Fort Baker, Alexander Avenue, and U.S. 101. The future conditions anticipated from the proposed Fort Baker conference center are also discussed.

Traffic Volumes in the Marin Headlands

Vehicle counts on Conzelman Road (west of the U.S. 101 southbound on-ramp) and Bunker Road (west of the Barry-Baker tunnel) indicate that the total combined daily vehicle trips entering or exiting the Marin Headlands on both roads is approximately 4,000 during a spring weekday and 5,800 during a summer weekday (Nelson\Nygaard 2001b).

As shown in Table 3-1, the average daily traffic volumes on spring weekend days is 9,400, and on summer weekend days about 10,200. Average daily traffic volumes on weekends are about twice that on the weekdays during spring and summer.

For both spring and summer, about two-thirds of all inbound and outbound trips into the Marin Headlands are via Conzelman Road. The other one-third are made via the Barry-Baker tunnel.

TABLE 3-1. AVERAGE DAILY TRAFFIC VOLUMES ENTERING AND EXITING THE MARIN HEADLANDS

Location	Entering (Westbound)		Exiting (Eastbound)		Total In and Out	
Weekday	**Summer 2000**	**Spring 2001**	**Summer 2000**	**Spring 2001**	**Summer 2000**	**Spring 2001**
Bunker Road	915	774	1,150	914	2,065	1,688
Conzelman Road	1,808	1,306	1,934	1,039	3,742	2,345
Total	2,723	2,080	3,084	1,953	5,807	4,033
Saturday						
Bunker Road	1,768	1,155	1,175	1,661	2,943	2,816
Conzelman Road	3,520	3,813	3,709	2,764	7,229	6,577
Total	5,288	4,968	4,884	4,425	10,172	9,393
Sunday						
Bunker Road	1,703	1,469	1,261	1,975	2,964	3,444
Conzelman Road	3,655	3,608	3,519	2,464	7,774	6,072
Total	5,358	5,077	4,780	4,439	10,138	9,516
Daily Average						
Bunker Road	1,002	928	1,317	1,172	2,319	2,100
Conzelman Road	2,414	2,043	2,316	1,523	4,730	3,566
Total	3,416	2,971	3,633	2,695	7,049	5,666

SOURCE: Nelson\Nygaard 2001b.
NOTE: Summer 2000 volumes were collected between August 9 and August 15. Spring 2001 volumes were collected between April 19 and May 2. Bunker Road counts were taken west of the Barry-Baker tunnel. Conzelman Road counts were taken west of the U.S. 101 southbound on-ramp.

TABLE 3-2. AVERAGE DAILY TRAFFIC VOLUMES ENTERING AND EXITING FORT BAKER

Location	Entering (Westbound)		Exiting (Eastbound)		Total In and Out	
Weekday	Summer 2000	Spring 2001	Summer 2000	Spring 2001	Summer 2000	Spring 2001
Bunker Road	527	297	574	401	1,101	698
East Road	521	412	448	337	969	749
Total	1,048	709	1,022	738	2,070	1,447
Saturday						
Bunker Road	554	373	613	496	1,167	869
East Road	753	641	597	549	1,350	1,190
Total	1,307	1,014	1,210	1,045	2,517	2,059
Sunday						
Bunker Road	551	382	927	499	1,478	881
East Road	1,095	662	667	564	1,762	1,226
Total	1,646	1,044	1,594	1,063	3,240	2,107
Daily Average						
Bunker Road	535	320	637	428	1,172	748
East Road	650	480	507	400	1,157	880
Total	1,185	800	1,144	828	2,329	1,628

SOURCE: Nelson\Nygaard 2001b.
NOTE: Summer 2000 volumes were collected between July 22 and August 15; spring 2001 between April 19 and May 2. Traffic data along southbound Bunker Road was adjusted to account for equipment malfunction. The adjustment was based on traffic counts collected at the adjacent Danes Drive / Bunker Road intersection.

Traffic Volumes in Fort Baker

As shown in Table 3-2, an average of 1,400 vehicles enter or exit Fort Baker by way of Bunker Road and East Road on a spring weekday, and approximately 2,000 on a summer weekday.

On Saturdays the average traffic volume in and out of Fort Baker is approximately 2,000 in the spring and 2,500 in the summer. On Sundays the traffic volume is approximately 2,100 in the spring and 3,200 in the summer. A trend of vehicles entering via East Road and exiting via Bunker Road is apparent during both seasons.

Alexander Avenue

During spring the average daily traffic volume, including eastbound and westbound trips, on Alexander Avenue just west of the intersection with East Road is approximately 10,500 on a Sunday and 11,100 on a Saturday. As shown in Table 3-3, these counts are 3% to 5% lower than the summer counts.

On every day except Sunday in spring, westbound daily volumes on Alexander Avenue exceed eastbound daily volumes during both seasons, suggesting that drivers use different routes for trips into and out of Sausalito and that southbound drivers are more likely to drive through Sausalito than northbound drivers.

On weekdays during both seasons Alexander Avenue experiences the most traffic between 4 p.m. and 7 p.m. On Saturdays the peak hour is 4 p.m. during the spring and 5 p.m. during the summer. On Sundays the peak hour is 2 p.m. during the spring and 4 p.m. in the summer.

U.S. 101

Average weekday daily traffic between the Golden Gate Bridge toll plaza and the south Sausalito interchange is about 115,000 vehicles in both directions. U.S. 101 frequently experiences congestion, particularly between the Waldo Tunnel and the Golden Gate Bridge toll plaza. According to Caltrans traffic data, heavily congested conditions are experienced in the southbound direction during

TABLE 3-3. AVERAGE DAILY VEHICLE COUNTS ON ALEXANDER AVENUE

	Eastbound		Westbound		Total	
Day of Week	Summer 2000	Spring 2001	Summer 2000	Spring 2001	Summer 2000	Spring 2001
Weekday	4,330	4,014	6,255	4,971	10,585	8,985
Saturday	5,330	5,344	6,134	5,729	11,464	11,073
Sunday	4,928	5,319	6,206	5,232	11,134	10,551
Daily Average	4,596	4,390	6,227	5,117	10,823	9,507

both the morning (7 to 9 a.m.) and afternoon (4 to 6 p.m.) peak commuting periods. Travel speeds begin to reduce substantially at the Waldo Tunnel and continue to drop through the Alexander Avenue interchange.

Fort Baker Conference Center

Traffic volumes and travel patterns in the study area can be expected to change as the *Fort Baker Plan* is implemented. Travel changes are documented in the *Fort Baker Plan Final Environmental Impact Statement* (NPS 1999a). Major changes in vehicle volumes and traffic level of service are not expected. As documented in Chapter 2, the *Fort Baker Plan Record of Decision* includes measures to mitigate any traffic impacts associated with the conference center. Measures in the plan include parking management; the conference center shuttle; a TDM program, including provisions for traffic management during special events; and a traffic monitoring program.

Level of Service

To evaluate the performance of intersections, turning movement counts were gathered at seven locations inside and outside park boundaries. Counts were performed on two weekend days between 2 p.m. and 6 p.m. when visitation at the park is highest. Three of the study intersections — Alexander Avenue / Danes Drive, Conzelman Road / Alexander Avenue (U.S. 101 southbound on-ramp), and Bunker Road / McCullough Road — were analyzed as two separate intersections because of their complex road geometry.

The turning movement counts were used to calculate the level of service (LOS) for each intersection. The level of service is defined by the *Highway Capacity Manual* (Transportation Research Board [TRB] 2000) as a measure of the ability of an intersection or roadway segment to accommodate traffic volumes. LOS values range from LOS A, which indicates free-flow conditions with minimal delay, to LOS F, which indicates congested conditions with extremely long delays. LOS A, B, C, and D are generally considered satisfactory service levels in urban areas. LOS E and LOS F are typically considered unacceptable.

The level of service for intersections is defined by the average control delay per vehicle, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. For signalized intersections, the average control delay and the level of service are estimated for each approach and for the intersection as a whole. Delay depends on a number of variables, including the quality of progression, the cycle length, the traffic signal green-light ratio, and the volume/capacity ratio for each approach to the intersection. For unsignalized intersections, the average control delay and the level of service are defined for each yielding movement and not for the overall intersection.

Two-lane roads that serve scenic and recreational areas have different purposes than urban roadways. Such roadways offer a unique driving experience, as well as a means of access to activity areas. High-speed operation is neither expected nor desired. These types of roadways are analyzed as Class 2 two-lane highways in the *Highway Capacity Manual*, which are defined in terms of percentage of time-spent-following (other vehicles) and average travel speed. It is the average percentage of travel time that vehicles must travel in platoons behind slower vehicles due to the inability to pass. This measure represents the freedom to maneuver and the comfort and convenience of travel. Average travel speed reflects the mobility on a two-lane roadway. On park roadways for which accessibility is paramount and mobility is less critical, the level of service is defined only in terms of percentage of time-spent-following, without consideration of average travel speed.

Table 3-4 shows the level of service for the peak hour at each intersection, as well as the worst performing approach or movement at each intersection. The hour with the highest observed traffic volumes was analyzed, regardless of the day, in order to capture worst case conditions. Most intersections in the study area operate at LOS C or better. The worst performing intersection is the Conzelman Road / Alexander Avenue / U.S. 101 southbound on-ramp. This intersection operates at LOS E during weekend peak hours in both spring and summer.

Intersection operations are somewhat worse during the spring for two intersections — the Alexander Avenue / U.S. 101 southbound off-ramp performs at LOS A during the summer and LOS C during the spring; the Alexander Avenue / U.S. 101 northbound ramp performs at LOS C during the summer and LOS E during the spring.

TABLE 3-4. INTERSECTION LEVELS OF SERVICE — WEEKEND PEAK HOUR

	Intersection	Level of Service		Worst Performing Approach	Level of Service	
		Summer	Spring		Summer	Spring
1	Bunker Road / McCullough Road (West Intersection)	A	A	Northbound Left: the left-turn movement from McCullough Road onto Bunker Road towards the rifle range	B	B
1	Bunker Road / McCullough Road (East Intersection)	A	A	Northbound Right: the right-turn movement from McCullough Road onto Bunker Road towards the Barry-Baker tunnel	A	A
2	Conzelman Road / McCullough Road	A	A	Southbound: all movements (left-turns and right-turns) from McCullough Road onto Conzelman Road	A	B
3	Alexander Avenue / U.S. 101 Southbound Off-Ramp	A	C	Westbound Left: the left-turn movement from the U.S. 101 southbound off-ramp onto southbound Alexander Avenue	D	F
3	Conzelman Road / Alexander Avenue (U.S. 101 southbound on-ramp)	E	E	Eastbound: all movements (left-turns and right-turns) from Conzelman Road onto Alexander Avenue (U.S. 101 southbound on-ramp).	F	F
4	Alexander Avenue / U.S. 101 Northbound Ramps	C	E	Northbound Left: the left-turn movement from the U.S. 101 northbound off-ramp onto Alexander Avenue towards the tunnel passing under U.S. 101.	F	F
5	Bunker Road / Danes Drive	A	A	Southbound: all movements (left and right turns) from Bunker Road onto Danes Drive/Bunker Road.	A	B
6	Alexander Avenue / Danes Drive (north intersection)	A	A	Eastbound Left: the left-turn movement from Danes Drive onto Alexander Avenue towards Sausalito.	C	C
6	Alexander Avenue / Danes Drive (south intersection)	A	A	Eastbound Right: the right-turn movement from Danes Drive onto Alexander Avenue toward U.S. 101.	B	B
7	Alexander Road / East Road	A	A	Westbound: all movements from the East Road onto Alexander Avenue.	B	B

SOURCE: Nelson\Nygaard 2001b.

3.1.3 VEHICULAR SAFETY

In multiple park locations the safe movement of vehicles is constrained by topography and the design of the road network. For example, drivers on Conzelman Road between U.S. 101 and Hawk Hill confront blind corners as the road winds around steep hillsides. Blind corners on Conzelman Road are a particular problem at overlook parking areas where drivers pulling in and out of parking spaces must avoid oncoming vehicular and bike traffic. Also, high parking demand at locations along Conzelman Road sometimes results in drivers parking illegally on shoulders and intruding into travel lanes. Problems related to parking maneuvers have also been identified along Mitchell Road and on Field Road and Mendell Road at the Point Bonita trailhead. The existing accident rate on Conzelman Road between U.S. 101 and McCullough is 5.5 accidents per million vehicle miles traveled (MVMT); more than twice the national average for two-lane roads (2.7 MVMT) (Robert Peccia & Associates 1999).

Another problem relates to the design of certain intersections in the Marin Headlands. Y-shaped intersections are found at Field Road and McCullough Road intersections with Bunker Road. A Y-shaped intersection remains at the intersection of Conzelman Road and McCullough Road, even though the intersection was modified to a partial T-shape in 1998. A V-shaped intersection exists at the intersection of Bunker Road and Old Bunker / Mitchell Road. These intersections have inadequate sight distances for left-turn movements, cause driver confusion, and poor angles of sight while making right turns.

Vehicular safety issues have also been identified at the east portal of the Barry-Baker tunnel, a narrow blind corner along McCullough Road, and along a curving one-way segment of Conzelman Road west of Hawk Hill where several curves lack proper super elevation. For a comprehensive description of vehicular safety issues, see “High Motor Vehicle Traffic Accident Locations and Safety Improvement Prescriptions” in Appendix C (Robert Peccia Associates 1999).

3.1.4 PARKING

As shown in Table 3-5, there are approximately 1,593 parking spaces in the Marin Headlands and 961 parking spaces in Fort Baker. An inventory of parking utilization conducted in July 2000 showed that the majority of parking areas in the study area are not used to capacity even during a sunny summer weekend day. The exceptions are areas at Battery Spencer, Overlook 1, and the Point Bonita trailhead, where there is high competition for a limited number of spaces. High rates of turnover were observed at Battery Spencer, with the vast majority of visitors staying for less than two hours.

The Point Bonita trailhead is within walking distance of the Battery Alexander lot, which is substantially underused. During special events at the Bay Area Discovery Museum and the Marin Headlands Center for the Arts, parking demand is high.

The *Fort Baker Plan* proposes to eliminate parking within Murray Circle in Fort Baker and to construct new parking for the Bay Area Discovery Museum on the north side of East Road. The *Marine Mammal Center Site and Facilities Improvements Environmental Assessment* proposes approximately 43 new parking spaces.

TABLE 3-5. PRIMARY PARKING AREAS IN MARIN HEADLANDS AND FORT BAKER

Location	Description	Designation	Surface	Number of Parking Spaces (est.)
Marin Headlands				
Conzelman Road				
Trailhead Lot	Lot	Marked	Paved	52
Connector Road (Trailhead Lot to Conzelman)	Shoulders	Unmarked	Gravel	20
Alexander Avenue to Battery Spencer	Outboard shoulder	Unmarked	Paved	16
Battery Spencer Lot	Outboard shoulder	Unmarked	Gravel	24
Overlook 1	Outboard shoulder	Unmarked	Gravel	8
Overlook 1 – Overlook 2	Outboard shoulder	Unmarked	Gravel	35
Overlook 1 – Overlook 2	Inboard shoulder	Unmarked	Paved	6
Overlook 2	Outboard shoulder	Unmarked	Gravel	15
Overlook 2 – McCullough	Outboard shoulder	Unmarked	Paved	10
McCullough to Hawk Hill	Outboard shoulder	Unmarked	Gravel	37
Hawk Hill	Outboard/inboard shoulder	Unmarked	Gravel	55
Hawk Hill to Upper Fisherman's Trailhead	Inboard shoulder	Unmarked	Gravel	6
Upper Fisherman's Trailhead Lot	Lot	Unmarked	Gravel	13
Upper Fisherman's Trailhead	Inboard shoulder	Unmarked	Gravel	33
Upper Fisherman's Trailhead to Field	North shoulder	Unmarked	Gravel	27
Lower Fisherman's Trailhead	Lot	Unmarked	Gravel	28
McCullough Road				
Near foot of Slacker Road	Outboard shoulder	Unmarked	Gravel	6
On Julian at Coastal Trail Gate	Lot	Unmarked	Gravel	5
Bunker Road				
Warehouse	Lot	Unmarked	Gravel	28
Lagoon picnic area	Lot	Unmarked	Gravel	6
North Shoulder at Miwok/Bobcat trailhead	Shoulder	Unmarked	Gravel	15
Riding Stable Lot	Lot	Unmarked	Gravel	12
Rifle Range (north side of Bunker Road)	Lot	Unmarked	Grass/gravel	20
Smith Road (across from stables)	Head-in	Unmarked	Gravel	35
Northeast of rifle range/south side of Bunker Road	Grass field	Unmarked	Gravel	100
Capehart Housing Area	Street-side, drive-ways	Unmarked	Gravel	128
Field Road				
Bunker to Mendell	Shoulder	Unmarked	Gravel	12
Visitors Center Lot	Lot	Striped	Paved	27
Nike Missile Site	Lot	Unmarked	Paved	25
Three Sisters	Lot	Unmarked	Gravel	9
Battery Alexander Lot	Lot	Marked	Gravel	60
YMCA	Lot	Striped	Paved	44
Point Bonita Trailhead	Head-in	Unmarked	Gravel	9
Mendell Road				
Battery Mendell	Head-in	Unmarked	Gravel	10

Location	Description	Designation	Surface	Number of Parking Spaces (est.)
Roadside shoulder parking	Shoulder	Unmarked	Gravel	20
Bird Island Overlook	Lot	Unmarked	Gravel	30
Fort Barry				
Headlands Center for the Arts	Lot	Unmarked	Gravel	12
Along Simmonds Road and Rosenstock Road	Head-in and lot	Some marked	Mixed gravel and paved	55
Mitchell Road				
Bunker to Rodeo Beach Lot	Head-in	Unmarked	Gravel	150
Fort Cronkhite	Varies	Varies	Gravel	116
Rodeo Beach Paved Lot	Lot	Striped	Paved	94
Rodeo Beach Gravel Lot	Lot	Marked	Gravel	80
Old Bunker Road				
Home Away from Homelessness	Lot	Unmarked	Gravel	3
Maintenance Yard, Government Vehicle Lot	Lot	Unmarked	Gravel	12
R and T Employee Lot	Lot	Unmarked	Paved	13
Visitor Lot	Lot	Unmarked	Gravel	10
Maintenance Yard to the Marine Mammal Center	Parallel	Striped	Paved	19
Marine Mammal Center	Lot	Striped	Paved	43
Total				**1,593**
Fort Baker				
East Bunker Road	Shoulders	Unmarked	n/a	8
East Road	Shoulders	Unmarked	Paved	58
Bay Area Discovery Museum	Lot	Striped	Paved	240
Waterfront	Lot	Striped	Paved	210
Fort Baker Retreat and Conference Center Area	Varies	Varied	Paved	445
Total				**961**

SOURCE: NPS, Golden Gate National Recreation Area, 2005.

3.1.5 BICYCLE ACCESS

Access

Bicyclists can access the Marin Headlands and Fort Baker from either San Francisco or Sausalito. From San Francisco bicyclists can cross the Golden Gate Bridge, use the pedestrian underpass at the bridge's northern terminus, and enter the Marin Headlands via the trailhead lot. On weekends bicyclists must use the Golden Gate Bridge west sidewalk, eliminating the need to cross under the bridge. With the current closure of Lower Conzelman Road, the only way for bicyclists to access Fort Baker is through Vista Point, requiring them to cross vehicular traffic twice (the Vista Point off- and on-ramps) before joining the pathway parallel to U.S. 101 and then following Alexander Avenue to Danes Drive or East Road.

From Sausalito bicyclists may ride along the shoulders of Alexander Avenue to the Danes Drive or East Road bike lane. The Danes Drive bike lane, which is interrupted by a right-turn lane for cars heading down Bunker Road, feeds into the striped Class 2 bike lanes of the Barry-Baker tunnel. Bicyclists use the one-way tunnel in the same manner as drivers. When activated by a bicyclist, a flashing warning light on either side of the tunnel alerts drivers to the presence of bicyclists.

Bicycle Network

Except for the Barry-Baker tunnel and several hundred feet on either side of its entrances on Bunker Road, bike lanes are not provided on the park's roadway network in the Marin Headlands, and bicyclists must share the roadway with automobiles. On Conzelman Road bicyclists confront narrow winding curves, steep road segments, and limited sight distances. On the straight sections of Bunker Road, cyclists travel alongside motor vehicles that frequently exceed the posted 35 mph speed limit.

The Fort Baker road network is similar. Bicyclists generally share the roadways with drivers. Along East Road paved parking pullouts and the shoulder on the east side of the road alleviate some of the conflicts with automobiles. On the west side, however, bicyclists coming from Sausalito must share a shoulderless roadway with vehicles. The same situation exists on both sides of Bunker Road.

Although bicyclists are permitted on the wider portions of the trail network in the Marin Headlands

(such as fire roads), a few sections of the Coastal Trail and a few of the short steep trails leading to the coastline are restricted to hikers or hikers and equestrians. Bicyclists are prohibited from all segments of the San Francisco Bay Trail within Fort Baker. Bicycles are only permitted on wider trails that are former roads or fire roads. No bikes are permitted on single track trails from Spencer Avenue bus stops on U.S. 101.

There are no bike facilities such as lockers or rental facilities in the study area. However, bike racks are located at the Bay Area Discovery Museum, the youth hostel, and the Marin Headlands visitor center.

3.1.6 PEDESTRIAN ACCESS AND TRAILS

Access to the Park

The Marin Headlands can be accessed from San Francisco by walking across the Golden Gate Bridge and following the pedestrian underpass from Vista Point to the trailhead lot. The pedestrian underpass is accessed by stairs; no ramp access is provided. Pedestrians are not allowed in the Barry-Baker tunnel; therefore, the tunnel to Bunker Road does not offer an alternative access point for pedestrians. From Sausalito pedestrians can walk along the shoulders of Alexander Avenue to the Conzelman Road entrance to the headlands. However, the walk requires substantial time, and there are no sidewalks along Alexander Avenue.

Fort Baker can be accessed from San Francisco by walking across the Golden Gate Bridge and following the pedestrian trail past Vista Point to the multi-purpose trail along U.S. 101. Pedestrians can continue from the trail to the shoulders of Alexander Avenue and access the park via the shoulders of East Road. From Sausalito pedestrians can access Fort Baker by walking along the shoulders of East Road. East Bunker Road is less desirable for pedestrian access because the road is narrower and more winding than East Road. Additionally, the Bunker Road underpass beneath Alexander Avenue in Fort Baker does not have a striped shoulder or other pedestrian accommodations.

Trail Network in the Marin Headlands

Sidewalks are generally not provided in the Marin Headlands, and pedestrians reach park destinations either by using the trail network or sharing roads with vehicles. On some roads within the headlands gravel or grassy shoulders are wide enough that pedestrians do not have to walk within the traffic lanes. The exceptions are at the base of the Conzelman Road entrance, the stretches of Conzelman Road along popular tourist destinations such as Battery Spencer and Hawk Hill, the entire one-way stretch of Conzelman Road above Black Sands Beach, and Simmonds Road between the Marin Headlands Center for the Arts and the Marin Headlands hostel.

Access between the Marin Headlands and Fort Baker is limited by the restrictions on pedestrians in the Barry-Baker tunnel and the Alexander Avenue underpass beneath U.S. 101, and the lack of sidewalks along Alexander Avenue. An unpaved road that loops around Vista Point and crosses beneath the Golden Gate Bridge to the Marin Headlands was closed for seismic repairs to the bridge and remains closed today because of bridge security concerns.

The primary east/west linking components of the Marin Headlands' extensive trail network are the Coastal Trail and the Rodeo Valley trail. The Coastal Trail runs from Lower Conzelman Road northward to Slacker Hill, and then westward through the park's interior valley and along the southern edge of Rodeo Lagoon. The Rodeo Valley trail connects the northeastern part of the Marin Headlands to the Capehart housing area and continues to the Fort Cronkhite area along an alignment parallel to Bunker Road. Other trail segments connect Conzelman Road to Horseshoe Bay, Upper Fisherman's trailhead to Black Sands Beach, Field Road to the Point Bonita Lighthouse, and Battery Alexander to Rodeo Lagoon.

Trail Network in Fort Baker

There are few sidewalks or formal pedestrian paths and a limited trail network alongside Fort Baker's vehicular road network. Pedestrians use the paved roadways, parking areas, and open spaces to navigate between the Bay Area Discovery Museum, the parade grounds, and the waterfront. The San Francisco Bay Trail follows the southern and eastern coastlines of the Fort Baker area. Lower Conzelman Road connects Fort Baker with the trailhead lot in the Marin Headlands. The road has been closed for security reasons but is open for pedestrian and bike access.

Proposed improvements in the *Fort Baker Plan* include eliminating parking and cars in the central waterfront area and improving the San Francisco Bay Trail alignment through the site.

3.1.7 MODE SHARE (AUTO, TRANSIT, PEDESTRIAN, BICYCLE)

The transportation mode used by visitors to access the park was recorded through manual counts of automobile passengers, pedestrians, bicyclists, and transit riders entering the Marin Headlands and Fort Baker. Data were collected at key points in the study area's road network, including primary routes to the major activity areas.

Observations were performed between 7 a.m. and 7 p.m. on one weekday and two weekend days during the summer of 2000 and the spring of 2001. Table 3-6 shows the total number of visitors by mode to the Marin Headlands and Table 3-7 to Fort Baker during these observation periods.

3.1.8 WAYFINDING INFORMATION

Wayfinding signs are limited on the regional road network leading to the park entrances. On eastbound and westbound Alexander Avenue signs indicate directions to destinations in the Marin Headlands and Fort Baker. However, not all of the signs are clear, are well situated, or use consistent nomenclature. On U.S. 101 there is a GGNRA sign for southbound traffic before the Alexander Avenue exit, but there is no sign for northbound traffic leading to the entrances for the Marin Headlands and Fort Baker.

Inside the park signs indicating the direction and distance to key destinations are limited. Signs indicating the direction and distance of park exits are not provided. The "Marin Headlands and Fort Baker Existing Conditions Report" includes a full inventory of the location and messages for all directional signage in the Marin Headlands and Fort Baker (Nelson\Nygaard 2000).

3.1.9 ACCESS DURING SPECIAL EVENTS

A special park use permit is required for special events. Events at Fort Baker are regulated by the "Special Park Use Guidelines for East Fort Baker." Special event managers are required to provide services and information to encourage travel by alternative modes and to minimize road congestion and overflow parking, as described in Chapter 2.

3.2 NATURAL RESOURCES

3.2.1 GEOLOGY, PALEONTOLOGY, SOILS, AND SEISMICITY

Geologic Setting

The study area is within the Coast Ranges geological province of California. The Marin Headlands and Fort Baker are part of a block of folded and faulted marine sedimentary and volcanic rock of Cretaceous and Jurassic age comprising the Franciscan complex and overlying geologically younger sediments. The hills of the Marin Headlands and Fort Baker are primarily underlain by sedimentary chert, volcanic greenstone, and to a much lesser extent sedimentary greywacke. Soft alluvial deposits cover the Rodeo Valley and Fort Baker Valley floors and smaller valley pockets throughout the hills (NPS 1999a, 2004a).

The long rock cut excavations along Conzelman Road, and to a lesser extent McCullough, Field, and Bunker roads, expose a very interesting range of rock types, formations, and faults. These exposed rock faces total over 1.8 miles (2.95 km) in length and have a total exposed face area of approximately 13,640 square yards (11,400 sq m). Because of the unique nature and easy access to these exposures, the Marin Headlands and Fort Baker are heavily visited by geology classes, organized study tours, NPS interpretive activities, and individuals interested in geology and paleontology. The rock cut at Battery Spencer is one of the most popular sites because it exhibits a thrust fault contact between the chert and greenstone. A similar thrust fault contact between the chert and greenstone is also exposed on Conzelman Road at Battery 129 (Hawk Hill), and other chert and greenstone contacts are exposed at the former quarry along Rodeo Lagoon and along the roads and trails elsewhere in the Marin Headlands and Fort Baker (NPS 2004a). As a result of the frequent use of the Marin Headlands and Fort Baker as a geologic and paleontological classroom, the area has been extensively studied and surveyed.

Paleontology (Fossils)

Nearly all of the chert in the Marin Headlands and Fort Baker and the larger Franciscan complex contains radiolarian, a single-celled protistan marine

TABLE 3-6. TRANSPORTATION MODE OF ACCESS USED BY VISITORS TO THE MARIN HEADLANDS

Mode	Volume		Visitors		Percentage of Total	
	Summer 2000	Spring 2001	Summer 2000	Spring 2001	Summer 2000	Spring 2001
Data collected Friday, August 4, 2000, and Friday, April 27, 2001						
Vehicle	2,724	1,743	5,242	2,989	88.3%	91.0%
Pedestrian	1	2	1	2	0.0%	0.1%
Bicycle	116	100	116	100	2.0%	3.0%
Bus*	20	12	577	195	9.7%	5.9%
Total			5,936	3,286	100.0%	100.0%
Data collected Saturday, August 5, 2000, and Saturday, April 21, 2001						
Vehicle	4,184	5,300	8,927	11,807	90.5%	91.2%
Pedestrian	29	34	29	34	0.3%	0.3%
Bicycle	501	816	510	816	5.1%	6.3%
Bus*	12	11	406	286	4.1%	2.2%
Total			9,863	12,943	100.0%	100.0%
Data collected Sunday, August 6, 2000, and Sunday, April 22, 2001						
Vehicle	4,420	4,636	10,003	10,489	92.3%	91.7%
Pedestrian	14	23	14	23	0.1%	0.2%
Bicycle	351	679	351	679	3.2%	5.9%
Bus*	19	16	474	250	4.4%	2.2%
Total			10,842	11,441	100.0%	100.0%

SOURCE: Nelson\Nygaard 2001b.
*Bus includes school buses, private buses, chartered buses, and MUNI buses.

TABLE 3-7. TRANSPORTATION MODE OF ACCESS USED BY VISITORS TO FORT BAKER

Mode	Volume		Visitors		Percentage of Total	
	Summer 2000	Spring 2001	Summer 2000	Spring 2001	Summer 2000	Spring 2001
Data collected Friday, August 4, 2000, and Friday, April 27, 2001						
Vehicle	1,180	669	1,765	1,005	88.5%	86.9%
Pedestrian	32	7	32	7	1.6%	0.6%
Bicycle	28	10	28	10	1.4%	0.9%
Bus*	6	9	169	135	8.5%	11.7%
Total			1,994	1,157	100.0%	100.0%
Data collected Saturday, August 5, 2000, and Saturday, April 21, 2001						
Vehicle	1,144	1,076	2,214	2,034	93.2%	90.9%
Pedestrian	41	16	41	16	1.7%	0.7%
Bicycle	80	50	80	50	3.4%	2.2%
Bus*	2	6	40	138	1.7%	6.2%
Total			2,375	2,238	100.0%	100.0%
Data collected Sunday, August 6, 2000, and Sunday, April 22, 2001						
Vehicle	1,627	1,042	3,344	1,965	87.9%	91.0%
Pedestrian	36	55	36	55	0.9%	2.5%
Bicycle	34	49	34	49	0.9%	2.3%
Bus*	14	2	392	90	10.3%	4.2%
Total			3,806	2,159	100.0%	100.0%

SOURCE: Nelson\Nygaard 2001b.
*Bus includes school buses, private buses, chartered buses, and MUNI buses.

organism. Aside from the radiolaria, the only other known fossil in the vicinity was recovered from sandstone close to the Golden Gate Bridge and outside any areas proposed for change in this plan. The radiolaria is considered a very common fossil in the Marin Headlands because of its abundance (Elder, pers. comm. 2004; Murchey, pers. comm. 2004).

Soils

The Marin Headlands and Fort Baker are primarily covered with soils of the Cronkhite-Barnabe, Tamalpais-Barnabe, and Rodeo complexes. These soils are characterized by slow to moderate permeability, rapid stormwater runoff, and a high hazard of soil erosion, soil creep, and occasional land sliding (Natural Resources Conservation Service 1985). As previously discussed, trails, roadways, and parking areas have resulted in soil erosion. In some locations such as Conzelman Road, culvert improvement projects have been undertaken to control erosion. Although these projects have stopped gully erosion, the scarring remains. Smaller, less visible

gullies are present along many Marin Headlands roads. To avoid gullies, pedestrians take shortcuts to reach destinations without formal trails, contributing to soil impacts.

Twenty known sites with major soil erosion problems on roads and trails are listed in Table 3-8, and their locations are noted on Figure 3.1. Most of these sites are the result of (1) unpaved roads and trails that are too steep and lack proper drainage facilities (culverts, water bars, etc.); (2) undefined parking areas that are larger than needed; or (3) many undefined areas where unrestricted automobile use over the past 80 years has compacted and denuded stabilizing vegetation.

TABLE 3-8. EXISTING ROAD AND TRAIL SOIL EROSION DESCRIPTIONS

Map Site No.	Site Name	Current Situation Description	Erosion Rating
1	Lower Conzelman Road Shoulders	Heavy parking pressure has devegetated approximately 600 feet (180 m) of road shoulders, and the 12% slope has contributed to severe gullying.	Severe
2	Battery Spencer Parking Area	Unpaved 200-foot (60 m) long parking area on 4% slope exhibits some gullying.	Moderate
3	Conzelman Road, Overlook #1 to Overlook #2	Guardrail installed 6′–12′ from road edge, over 2,145 feet (650 m) distance, allowing space for heavy parking pressure to devegetate outboard road shoulder, plus 3%–5% slope has resulted in some erosion and moderate gullying.	Moderate
4	Slacker Road (trail) (Coastal Trail)	Extremely steep, 3,300 linear feet (100 m) of unpaved road (>25% grades) with severe gullying.	Severe
5	McCullough Road Outboard Shoulder	Approximately 560 feet or more (170+ m) of roadway drainage is concentrated on shoulder and has caused gullying and erosion of outboard road fill slopes	Moderate
6	Erosion Scars below Conzelman Road	Roadway drainage has caused gullying and erosion of outboard fill slopes.	Severe
7	West Conzelman Road (west of Hawk Hill)	Approximately 330 feet (100 m) of inboard ditch with 20% grade has resulted in gullying.	Minor
8	Upper Fisherman's Parking Area	Steep slopes within the unpaved parking area cause some gullying, also runoff flows down beach access trail.	Low
9	Lower Fisherman's Parking Area	Sheet flow over the large unpaved parking area is causing minor erosion.	Low
10	Field Road Shoulders at Point Bonita Trailhead	Heavy parking pressure has devegetated 330 feet (100 m) of road shoulders, 6% slope, with some gullying.	Moderate
11	Rodeo Lagoon–Battery Alexander Ridge Trail	Steep (25%–30% grades), braided, multiple track trail gullies present in sandy soil ridge.	Moderate
12	Mitchell Road to Rodeo Beach — Multiple Social Trails	Foot traffic runs straight down slope to beach.	Moderate
13	Rodeo Beach Parking Area	Unpaved parking area is at the bottom of a major drainage basin.	Severe
14	Marin Roads and Trails Maintenance Yard and Marine Mammal Center Access Road	The 0.6-acre unpaved yard is in a steep (10%–15%) sloping area.	Severe
15	Former Quarry and Incinerator Site (north side of Rodeo Lagoon on Bunker Road)	The 0.3-acre area is kept bare of vegetation by compacted soil and occasional parking use, with gentle 2%–3% slopes.	Minor
16	Headlands Visitor Center “Back Driveway" (former Bodsworth Road)	The 200-foot (60 m), unpaved, steep (15%) drive is used by NPS vehicles, and the slope is devegetated.	Low
17	Rodeo Valley Stables Parking Area	The 0.2-acre unpaved parking area is sloping, and upland runoff worsens erosion.	Moderate
18	Rifle Range Trailhead Parking	The most heavily used portion is now bare soil; sheet erosion runoff flows directly into Rodeo Creek	Moderate
19	Lower Julian Road	The steep unpaved road, lack of recent maintenance grading, and insufficient ditch relief culverts have resulted in severe gullying.	Severe
20	East Road, North Side (Fort Baker)	The large unpaved sloping area is occasionally used for overflow parking.	Low

SOURCE: NPS 1994.

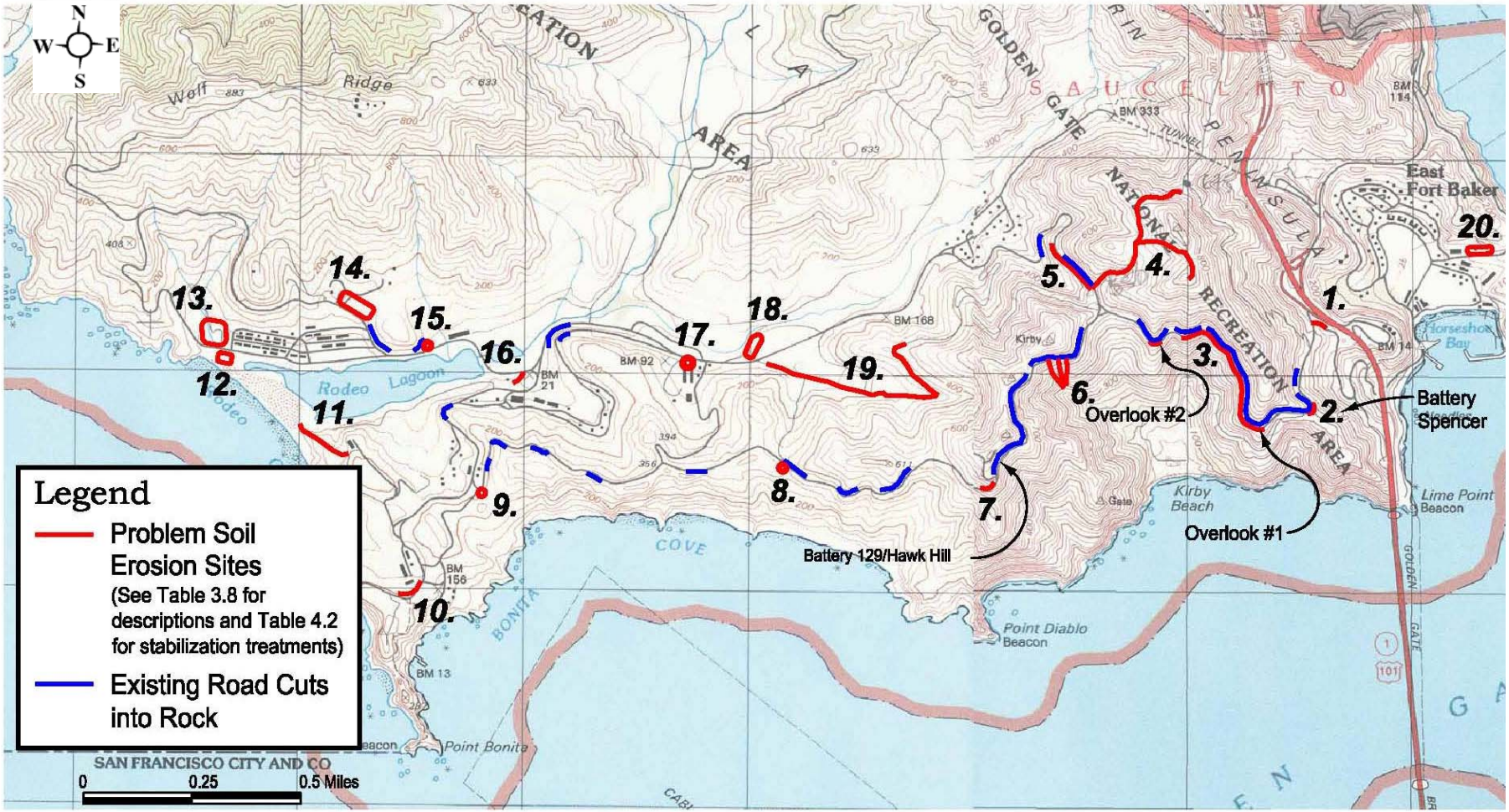


FIGURE 3.1 GEOLOGY AND SOIL EROSION LOCATIONS

United States Department of the Interior / National Park Service

June 2007 • 641/20625

Seismic Hazards

The San Francisco Bay area is considered seismically active. Earthquakes are an unavoidable geologic hazard at the Marin Headlands and Fort Baker. The San Francisco Bay area region contains both active and potentially active faults. The closest active faults to the Marin Headlands and Fort Baker are the San Andreas Fault, approximately 4 miles west, and the Hayward fault, approximately 19 miles east. Other active regional faults include the Rodgers Creek fault about 24 miles northeast, and the San Gregorio-Hosgri-Seal Cove fault zone about 22 miles southwest. Recent studies by the U.S. Geological Survey indicate there is a 62% likelihood of a Richter magnitude 6.7 or higher earthquake occurring in the Bay Area in the next 30 years. Should this occur, an earthquake on the closer faults would cause the Marin Headlands and Fort Baker to experience strong to very strong ground shaking, and an earthquake on the more distant faults would cause moderate to strong ground shaking (Association of Bay Area Governments 2003). Seismic ground shaking may trigger landslides or debris flows and may cause secondary ground failures, including liquefaction, lateral spreading, and ground lurching.

Seismic Tsunami Hazards

Between 1868 and 1968, 19 tsunamis were reported at the Golden Gate. The maximum recorded height was 7.4 feet. The U.S. Geological Survey has estimated a tsunami frequency probability similar to that used for flood probability predictions, with a 50-year tsunami being approximately 7.0 feet; a 100-year tsunami, 7.9 feet; and a 500-year tsunami, 15.3 feet high. The low-lying areas at Fort Cronkhite, Rodeo Beach, and around Rodeo Lagoon could be flooded by such waves. The low-lying shoreline at Fort Baker could also be flooded by the larger waves.

Landslide Hazards

The geologic map of southern Marin County (Rice et al. 1976) shows several landslide locations in the study area. According to a map showing the distribution of slides and earth flows in Marin County, the study area "contains few if any large, mapped landslides but locally contains scattered small landslides and questionable, identified larger landslides." Several debris-flow source areas are located on the slopes of the Marin Headlands and Fort Baker according to a map of principal debris-flow source areas in the county (Wentworth, et al. 1997).

Over the past 22 years, the road and trail systems in the study area have remained remarkably stable. Known landslide sites that have or are expected to affect the road and trail system are summarized below:

- Conzelman Road (approximately 660 feet [200 m] east of the McCullough Road intersection) — This small slide begins on the outboard edge of the road and extends southwest and approximately 250–300 vertical feet below the road. In 1995 and 1997, years in which there were extremely high rainfall storm events, the outboard shoulder of the road settled as much as 10 vertical feet below the road. Repairs in 1997 diverted the road surface drainage runoff from the slide area and stabilized the slope under the road with geogrid reinforcement. Since the implementation of those repairs, no movement or cracking of the road pavement has been observed.
- Black Sands/Upper Fisherman's Trail — This trail from the parking area to the beach formerly traversed several large landslides aggravated by coastal erosion. The trail was relocated in 2004 to a new alignment around the observed slides.
- West Conzelman Road erosion/slide site — This site approximately 1,320 feet (400 m) west of the Upper Fisherman trailhead is an erosional scarp at the joint between sedimentary and volcanic rock types. Over the years the head of this scarp has advanced closer to the edge of the road pavement and is now within 1 foot of the pavement.
- Slide at the southwest corner of the Alexander Avenue/Danes Drive intersection.

There are numerous other sites where roads, trails, or parking areas are causing, or are affected by, severe soil erosion and resultant potential for debris flows (see Table 3-8 and Figure 3.1). Over the years several of these sites have caused temporary road and trail damage and closures.

3.2.2 COASTAL RESOURCES AND PROCESSES

The shoreline in the study area is made of three distinct shoreline types. The Pacific Ocean shoreline is characterized by steep, rocky headlands, such as Tennessee Point and Point Bonita, and the Rodeo Beach sand spit, which forms Rodeo Lagoon. The Golden Gate Channel shoreline is characterized by rocky headlands, smaller sand and gravel beaches, and strong tidal currents. The third zone is the San Francisco Bay shoreline, which includes Fort Baker's Horseshoe Bay.

The Rodeo Beach sand spit typically blocks the mouth of Rodeo Creek in the summer, fall, and early winter months of each year. After the winter rains have increased the level of Rodeo Lagoon high enough, the lagoon overflows the sand spit and the creek then cuts down through the sand spit. This lowers the lagoon water level until spring, when the reduced lagoon outflow is again blocked by the wave-caused sand movement. The process then repeats itself. During the late fall and early winter before the rising lagoon level has breached the sand spit, the lagoon level nearly touches the underside of the Bunker Road bridge over Rodeo Lagoon.

In a few locations past land use activities, particularly the transportation infrastructure, have modified coastal resources, including the placement of fill across coastal dunes and in wetlands for roads and parking areas. Large storm events mobilize sediments that are transported in the ocean. The road prisms function as dams at existing culverts that are undersized and often become blocked, causing localized flooding. Within the study area nearly all of the roads and trails are located sufficiently far from the shoreline that there are few sites with coastal processes or erosion that damage or threaten to damage the road and trail system. The specific sites where there is ongoing damage or the potential for damage to occur are listed below:

- At the mouth of Rodeo Lagoon, the creek occasionally runs up against the soil slope that supports Mitchell Road in the vicinity of the Rodeo Beach parking areas — This creek flow, along with pedestrian foot traffic on the same slope to the beach and occasionally high ocean waves, may eventually erode this slope and partially wash out the road.
- The Point Bonita Lighthouse access trail — Several areas of ongoing coastal sea cliff erosion may undermine and sever the trail and bridges.
- The bluffs below Conzelman and west Conzelman Roads erosion/slide area

3.2.3 WATER RESOURCES

Surface Water

Fort Baker

Fort Baker lies within a rectangular watershed covering approximately 0.5 square mile. A streambed originally flowed through the site, and this central stream was fed by a series of small tributaries from each of the site's adjacent valleys. Given the area's dry summers, it is likely that these streams were ephemeral, though some may have received some spring-fed moisture throughout the year. This streambed was filled when the original structures and the parade ground along Murray Drive were developed, and the drainage was diverted to an underground pipe system that remains today. Over time, a trunk line drainage system was developed to serve the entire developed area. This trunk line system consists of catch basins, pipes, and concrete-lined swales. The system gathers and diverts stormwater from the site and adjacent hill slopes to four major storm drain outfalls along the seawall at Horseshoe Bay. The system does not involve any pumps and is drained entirely by gravity flow (NPS 1999a).

In 1999 studies were completed for Fort Baker in order to preliminarily assess the condition of the existing storm drain system and to make recommendations for improvements.

In 2002 the majority of the storm drain collection system was cleaned in order to recapture the available capacity of the remaining system. At that time it was found that some sections of the storm drain system have structural damage. In 2005 funding was approved to further investigate and correct the existing damage, to correct suspected cross-connections to the sewer system, and to improve buildings with poor drainage collection systems.

In 2004 a large construction project was completed that now enables the major drainage system to pass

a 100-year storm, and the smaller, secondary laterals to pass a 10-year event.

Stormwater within the watershed ultimately discharges to Horseshoe Bay by means of surface runoff, or through shallow groundwater in the alluvial fill at the base of the hills. The beneficial uses of this basin are ocean commercial and sport fishing, estuarine habitat, fish migration, navigation, preservation of rare and endangered species, water contact recreation, non-contact water recreation, shellfish harvesting, fish spawning, and wildlife habitat (San Francisco Regional Water Quality Control Board [SFRWQCB] 1995). There are no permanent streams or ponds at Fort Baker. A reservoir near Battery Duncan, near the northeast boundary of the site, is supplied by the Marin Municipal Water District.

Compacted, unpaved roads and parking areas function much like impervious surfaces, allowing surface water runoff to behave essentially the same as runoff on paved or roofed surfaces. In the Marin Headlands and Fort Baker area the fairly high clay content in the soil further contributes to this impervious condition.

Marin Headlands

The Marin Headlands include approximately 3.6 square miles of the Rodeo Valley watershed. One tributary, Gerbode Creek, and a number of intermittent drainages flow into Rodeo Creek and Rodeo Lagoon, ultimately discharging into the Pacific Ocean. These surface water features cover approximately 1.6% of the total Marin Headlands and Fort Baker study area. Changes to topography, vegetation, and watercourses, as well as the construction of roads, parking lots, buildings, trails, and other built features (such as coastal artillery batteries, the rifle range, and the parade grounds) have altered the rates and volumes of surface water drainage within this watershed. Ongoing soil erosion from increased surface runoff and the many areas of bare soil roads, parking, and trails is a problem in nearly all developed areas of the watershed (NPS 2002a, 2003b).

The San Francisco Regional Water Quality Control Board identifies beneficial uses of Rodeo Lagoon to include marine habitat, water contact recreation, non-contact water recreation, saltwater habitat, and wildlife habitat (SFRWQCB 1995). Beneficial uses of Rodeo Creek include cold water habitat, marine habitat, rare and endangered species, water contact recreation, non-contact water recreation, fish spawning, and wildlife habitat (SFRWQCB 1995). Water quality objectives for these beneficial uses include standards for typical water quality parameters such as coliform bacteria, dissolved oxygen, pH, temperature, and turbidity, as well as for specific constituents such as un-ionized ammonia, arsenic, cadmium, copper, cyanide, lead, mercury, nickel, silver, and zinc.

The primary water resource and water quality concern in the Marin Headlands portion of the study area is ongoing soil erosion and associated sediment delivery at various sites. Erosional gullies along much of the Julian Road trail is responsible for sediment that is transported via overland flow and culverts to Rodeo Creek. The lower portion of Slacker Road (trail) is steep, with grades up to 25% and areas with severe ongoing soil erosion. The trail from Battery Alexander to Rodeo Lagoon has steep segments and severe erosion. The Marin NPS roads and trails maintenance yard is unpaved and a source of eroded soil and sediments. The Rodeo Beach parking lot is partially unpaved and located within a seasonal creek channel. Along Smith Road there is an area where fill removal and restoration of wetland and riparian communities could occur.

Groundwater

Unless otherwise designated by the Water Quality Control Board, all groundwaters are considered suitable, or potentially suitable, for municipal or domestic use. The maintenance of existing high quality groundwater is the primary objective (SFRWQCB 1995), with a focus on limiting bacteria, organic, and inorganic chemical constituents, and taste and odor such that the beneficial uses are not adversely affected. The median of coliform organisms in groundwater, sampled over a seven-day period, is to be less than 1.1 MPN/100ml (SFRWQCB 1995).

Fort Baker

No wells are in operation at Fort Baker. The underlying Franciscan bedrock is relatively impermeable. Rainwater flows to the bay across or beneath the 1,000-foot length of waterfront on Horseshoe Bay. The direction of groundwater movement is expected to mimic the slope of the ground surface. Groundwater reportedly occurs at shallow depth beneath the southern portion of the site. Ground-

water was found at 5–6 feet below the ground surface during the excavation and removal of underground tanks (NPS 1999a). The water table is tidally influenced in the lower areas of the site.

Marin Headlands

No wells occur in the Marin Headlands. The local bedrock structure is generally oriented in a northwest to westerly trend, dipping southwest at angles ranging from 15 to 75 degrees from the horizontal (Oerter 2003). Differential erosion of rock types is suspected of creating hollows within the bedrock where alluvium can collect and become saturated with shallow groundwater, creating wetlands (Oerter 2003). Numerous springs throughout the watershed feed Rodeo Creek well into the summer months. The total volume of water stored in the aquifer is unknown.

Water Quality

Fort Baker

To date, no sampling and analysis of groundwater quality has occurred. The National Park Service has recommended that the U.S. Army perform groundwater investigations at the down gradient edge of Fort Baker to verify that chemical plumes from hazardous material sources are not migrating into Horseshoe Bay.

Chemicals have likely been introduced into Horseshoe Bay by boat maintenance activities, groundwater flow, and the storm drain system. U.S. Army boat maintenance activities were conducted until the 1950s and included washing, sanding, repairing, and painting. Since 1959, the Presidio Yacht Club has used the docks and maintenance facilities in the cove, performing essentially the same boat maintenance activities previously performed by the Army. Maintenance dredging is periodically performed in Horseshoe Bay. The Army has collected 19 sediment samples from the perimeter of Horseshoe Bay and found elevated levels of polyaromatic hydrocarbons, arsenic, copper, lead, and mercury. Elevated concentrations of chemicals were primarily near the docks. Applicable saltwater quality objectives are listed in the Water Quality Control Board's 1995 *Basin Plan*, followed by the National Toxics Rule as applicable to the San Francisco Bay region, and then the proposed California Toxics Rule (SFRWQCB 1995).

Marin Headlands

Water quality sampling and analysis have primarily focused on surface water. Studies from 1986 to 1988 and from 1997 to 1998 determined that water quality was generally good with a few exceptions. Rodeo Lagoon was found to have high pH values (9.3), possibly related to photosynthesis by algae (Madej 1988). In addition, cadmium concentrations were above levels recommended by the Environmental Protection Agency, and wet weather fecal coliform at all sample sites, including Rodeo Lagoon in 1997–98, were found to be above the California Department of Health Services' surface water objectives. High sediment loading was found at sample sites downstream from the stables, and low dissolved oxygen levels near the Rodeo Dam.

No groundwater studies are known for the Marin Headlands area. However, because of its past use as a military base, there could be some groundwater contamination. Other groundwater and surface water contamination by nutrients and fecal coliform may be the result of dog, horse, wildlife, and human waste (NPS 1999b). The horse stable area in particular is likely to be a source of both nitrogen and coliform.

Floodplains

Fort Baker

Fort Baker is not in a 100-year floodplain zone (USACE 1997). However, two areas of Fort Baker are subject to localized flooding: the entrance to the Bay Area Discovery Museum, and the roadway west of building 670 (due to undersized and clogged culverts and storm drain inlet clogging). Planned improvements should correct both of these conditions within the next two years.

Marin Headlands

The areas immediately around Rodeo Creek and its principal tributary are within a 100-year floodplain zone (FEMA 1996). Areas of minimal flooding also exist outside the 100-year floodplain along Rodeo Creek. Areas of minimal flooding are not expected to cause flood hazards to structures. No other areas are prone to flooding.

Large storm events mobilize sediments that are then transported in surface flows. The road prisms function as dams, and existing culverts are under-

sized and often become blocked, causing localized flooding.

3.2.4 BIOLOGICAL RESOURCES

This section describes common and sensitive biological resources known or with potential to occur in the study area. The information presented is based on a literature review, a reconnaissance site visit, data on file with the National Park Service, database searches, professional knowledge of the local biological issues, and site-specific field surveys.

Overview of Biological Resources

The Marin Headlands and Fort Baker study area is at the northern edge of the Golden Gate Channel, in the central coast region of the California floristic province, and a rich assemblage of plants and animals occurs within the study area. The biological resources are influenced by the maritime climate, which includes the moderating influence of the Pacific Ocean and San Francisco Bay. Mild winter temperatures, low summer temperatures, and the presence of summer fog extend the flowering period of many plants and the activity patterns of many animals. Salt spray and strong winds also greatly influence the plants and animals in the immediate coastal area.

The study area is near the migration routes of anadromous fish and marine species that spawn in the bay. Rodeo Lagoon supports habitat for numerous species of wintering waterfowl. The study area has had a long history of human use that has also affected the plants and animals that occur here. Weedy vegetation occurs along roads and beside developed areas. Ornamental plants have been cultivated within and beside the developed areas during the use of the Marin Headlands for ranching and military facilities in the earlier part of the 20th century. Parts of the natural vegetation were formerly grazed from the late 19th century to the early 20th century.

Existing Habitats and Vegetation

Common Natural Communities

A vegetation map of the study area has been prepared by NPS staff at Golden Gate National Recreation Area. While the map is not detailed enough for determining the small acreage of impact resulting from implementation of the proposed project, it does provide a general overview of the extent of different habitat types in the study area (see Table 3-9). The natural communities, as classified for the purposes of this analysis, are briefly described below.

Coyote Brush Scrub. Coyote brush scrub is the most widely distributed plant community in the

TABLE 3-9. ACREAGE OF HABITAT TYPES PRESENT IN THE STUDY AREA

GGNRA Mapping Vegetation Type	Classification of Natural Communities for this Study	Acres / Hectares
Active Pasture or Agriculture	n/a	16.74 / 6.78
Arroyo, Red, Black, and Yellow Willow	Willow Scrub	84.88 / 34.38
Beaches or Mudflats	n/a	45.01 / 18.23
Built-up Urban Disturbance	n/a	222.95 / 90.29
Bulrush / Cattail	n/a	4.00 / 1.62
California Bay / Coast Live Oak	Trees	20.25 / 8.20
Coyotebrush / California Sagebrush	Coastal Scrub	506.17 / 205.00
Disturbed	Mowed Grassy Field	41.18 / 16.68
Dune Lupine / Dune Sagewort / Dunegrass	n/a	52.54 / 21.28
Dunes	n/a	115.43 / 46.75
Eucalyptus	Trees	67.95 / 27.52
Introduced Perennial Grassland (Deschampsia)	n/a	46.25 / 18.73
Mature Coyotebrush / Coffeeberry / Poison Oak	Coyote Brush Scrub	604.80 / 244.94
Monterey Pine / Monterey Cypress	Trees	63.01 / 25.52
Native Weedy Grassland	Annual Grassland	517.08 / 209.42
Open Grassy Coyotebrush / Yellow Bush Lupine	Coyote Brush Scrub	141.10 / 57.15
Pacific Reedgrass / Carex / Juncus	Wet Meadow	71.84 / 29.10
Pickleweed / Saltgrass	n/a	0.31 / 0.13
Water	Drainage Channel	1,289.07 / 522.07
Total		**3,910.54 / 1,583.78**

study area. Typical shrub species include coyote brush (*Baccharis pilularis*), coffee berry (*Rhamnus californica*), poison oak (*Toxicodendron diversilobum*), California blackberry (*Rubus ursinus*), sticky monkeyflower (*Mimulus aurantiacus*), lizard tail sunflower (*Eriophyllum lanatum*), and California sagebrush (*Artemisia californica*). Toyon (*Heteromeles arbutifolia*) and huckleberry (*Vaccinium ovatum*) shrubs are present in some areas. The herbaceous component of this plant community includes cow parsnip (*Heracleum lanatum*), bracken fern (*Pteridium aquilinum*), and bee plant (*Scrophularia californica*). The overall cover in this plant community is typically high. In several locations within the study area, especially in the immediate vicinity of the coastline and on sandy substrates, the coyote brush community has been heavily infested with iceplant, a nonnative invasive weed. Approximately 746 acres of coyote brush scrub are present in the study area.

Coastal Scrub. Coastal scrub occurs on sandy substrates and rocky outcrops at scattered locations throughout the study area. Typical shrub species in this plant community include bush lupine (*Lupinus arboreus*) and California sagebrush. Herbaceous components include braken fern, California poppy, and bee plant. Cover ranges from open to dense. Approximately 506 acres of coastal scrub are present in the study area.

Annual Grassland. Annual grassland occurs on dry hillsides in scattered locations in the study area. Common species include wild oats (*Avena fatua*), soft chess (*Bromus hordeaceus*), Italian ryegrass (*Lolium multiflorum*), rattlesnake grass (*Briza major*), velvet grass (*Holcus lanatus*), and ripgut brome (*Bromus diandrus*). Common forbs include English plantain (*Plantago lanceolata*), spring vetch (*Vicia villosa*), shortpod mustard (*Hirschfeldia incana*), Italian thistle (*Carduus pycnocephalus*), and bristly ox tongue (*Picris echioides*). Native wildflowers such as California poppy, miniature lupine (*Lupinus bicolor*), and blue dicks (*Dichelostemma capitata*) are present as well. Approximately 517 acres of annual grassland are present in the study area.

Mowed Grassy Field. Mowed grassy fields occur around buildings and structures in the study area, along roadsides, and around the perimeter of parking lots and other heavily used areas. The largest single area of mowed grassy field occurs at the rifle range. Species in this plant community are typically the same as those described above under annual grassland, but the communities differ in the amount of mowing they receive. Approximately 41 acres of disturbed areas including mowed grassy field are present in the study area.

Trees. Most trees in the study area spread from landscaped areas that were originally planted as windbreaks and are not native to the Marin Headlands. Common species include Monterey cypress (*Cupressus macrocarpa*), eucalyptus (*Eucalyptus* spp.), acacia (*Acacia* spp.), and pines (*Pinus* spp.). A few bigcone Douglas-fir (*Pseudotsuga macrocarpa*) trees and redwood (*Sequoia sempervirens*) trees have been planted along Bunker Road and in the vicinity of the Capehart housing complex. Other native trees found in scattered locations include coast live oak (*Quercus agrifolia*) and madrone (*Arbutus menziesii*). Several large tree-like specimen of toyon are also present in the study area. The total number of trees in the study area is not known, but 131 acres have been classified as eucalyptus or Monterey pine / Monterey cypress.

Invasive Weeds. Invasive weeds occur in scattered locations along roadsides and in other disturbed areas. Among the most conspicuous are jubata grass (*Cortaderia jubata*), fennel (*Foeniculum vulgare*), iceplant (*Carpobrotus edulis*), thoroughwort (*Argeratina adenophora*), French broom (*Genista monspessulana*), and Scotch broom (*Cytisus scoparius*). Some of the herbaceous species described under annual grassland, such as Italian thistle, and some of the tree species described under trees, such as acacia, eucalyptus, Monterey pine, and Monterey cypress, are also considered invasive weeds, due to their ability to spread naturally into native plant communities.

Wetlands

A revised version of the Wetland Statement of Findings in support of the Preferred Alternative (Alternative 3) is included as Appendix F of the Final Environmental Impact Statement. The Wetlands Statement of Findings describes the occurrence, extent, and Cowardin classification of wetlands that were mapped within the project area, explains the steps the NPS has taken to avoid and minimize impacts to these wetland resources, and describes the compensatory mitigation that is proposed for those wetland impacts which are un-

avoidable. The Wetland Statement of Findings was written under the guidance of NPS Directors Order 77-1, Wetland Protection.

According to the WSOF the following wetlands are present in the project area:

- *Palustrine emergent* — herbaceous (e.g., sedge, rush, grass) habitat within the Rodeo Lagoon watershed and subject to various runoff and flooding regimes
- *Palustrine scrub-shrub* — riparian scrub (e.g., willow) habitat within the Rodeo Lagoon watershed and subject to various runoff and flooding regimes
- *Estuarine unconsolidated bottom* — Rodeo Lagoon itself and adjacent wetlands, which are sustained by a mix of tidal and freshwater input
- *Estuarine emergent* — emergent wetland fringe surrounding Rodeo Lagoon, which is sustained by a mix of fresh and tidal water input

The WSOF provides a map of locations of the wetlands that are in the overall project area and describes the impacts of the Preferred Alternative on each wetland feature. Wetlands have been mapped using the U.S. Army Corps of Engineers' methodology (USACE 1987). Figure 3.2 shows an overview of this USACE jurisdictional wetlands. A narrow "study area" was defined in this process, and all jurisdictional wetlands were delineated within the boundaries of potential ground disturbance associated with project construction. However, the WSOF maps also show wetlands outside the narrow "study area" that were mapped previously by NPS as Cowardin wetlands (Cowardin et al. 1979), and described in Appendix F. The Cowardin wetland classification is the standard used by the National Park Service. The USACE wetland delineation is necessary for regulatory compliance under Sections 401 and 404 of the Clean Water Act.

Wildlife and Aquatic Life

A wide variety of wildlife and aquatic species inhabit the study area and the Golden Gate National Recreation Area as a whole. This is largely a result of the diverse habitats and the low level of human disturbance throughout much of the area.

The Rodeo Beach and Rodeo Lagoon area provide foraging and loafing habitat for a variety of aquatic birds, such as grebes, gulls, terns, pelicans, cormorants, shorebirds, ducks, egrets, and herons. The lagoon waters support several fish species, including the prickly sculpin (*Cottus asper*), threespine stickleback (*Gasterosteus aculeatus*), and the federally endangered tidewater goby (*Eucyclogobius newberryi*) (Fong 1999a). Several species of seal and sea lion are known to occur in the area and could haul out on nearby beaches. However, they are unlikely to use Rodeo Beach because of the relatively high levels of human disturbance. Rodeo Lake and Creek provide open water, marsh, riparian, and other wetland habitats. These areas support the highest overall wildlife diversity within the study area because they are used by a combination of aquatic and terrestrial wildlife species. Fish, amphibians, and aquatic reptiles dependent on freshwater aquatic habitats are largely restricted to these portions of the study area. A high diversity of aquatic and terrestrial bird species also use these habitats for foraging and nesting, and mammals depend on them as a source of food and water.

Coastal scrub, grasslands, and other upland habitats that dominate the study area support a diverse community of reptiles, birds, mammals, and invertebrates including the federally endangered mission blue butterfly species. These habitats are used by a particularly wide variety of bird species, many of which use them for nesting. White-crowned sparrows (*Zonotrichia leucophrys*), red-winged blackbirds (*Agelaius phoniceus*), savannah sparrows (*Passerculus sandwichensis*), and song sparrows (*Melospiza melodia*) were the most commonly detected species in grasslands (PRBO 2001). The most abundant species in coastal scrub were white-crowned sparrows, spotted towhees (*Pipilo maculatus*), and wrentits (*Chamaea fasciata*). Additionally, at least 44 species of butterflies occur in the Marin Headlands, illustrating the importance of native habitat fragments within largely developed landscapes (NPS 2005c).

Patches of woodland are also scattered throughout the study area. In most cases, these patches are dominated by nonnative trees (e.g., eucalyptus and cypress), and native wildlife diversity is relatively low. However, tall eucalyptus, Monterey pine and

cypress trees may provide nesting sites for raptors including red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), and great horned owl (*Bubo virginianus*). Additionally, some of these stands of non-native trees may support fairly high diversities of birds because of the structure that these trees provide and the associated ecotones with more natural habitats. For example, at Kirby Cove forest-associated birds such as woodpeckers and nuthatches are found with adjacent areas of coastal scrub, and riparian habitat. The diversity of birds is typically related to the stand size and shape, as well as it topography and climate (e.g., stands of trees Hawk Hill on the ridge top are more exposed than places like Kirby Cove, however its ridge top position is may likely be a reason that it attracts migratory birds). Additionally, stands of eucalyptus may provide transitional roosting habitat for migrating monarch butterflies (*Danaus plexippus*). Non-native and designed landscape vegetation also support generalist and opportunistic species such as the Eurasian starling (*Sturnus vulgaris*) and western scrub-jay (*Aphelocoma californica*).

Special Status Species

Special status species include plants and animals in the following categories:

- species listed or proposed for listing as threatened or endangered under the Endangered Species Act or the California Endangered Species Act
- species considered as candidates for listing as threatened or endangered under the Endangered Species Act or the California Endangered Species Act
- species identified by the California Department of Fish and Game as California species of special concern
- species identified by United States Fish and Wildlife Service as species of concern
- plants listed as endangered or rare under the California Native Plant Protection Act
- animals fully protected in California under the California Fish and Game Code
- plants listed by the California Native Plant Society as rare, threatened, or endangered in California and elsewhere (list 1) or rare, threatened or endangered in California but more common elsewhere (list 2)

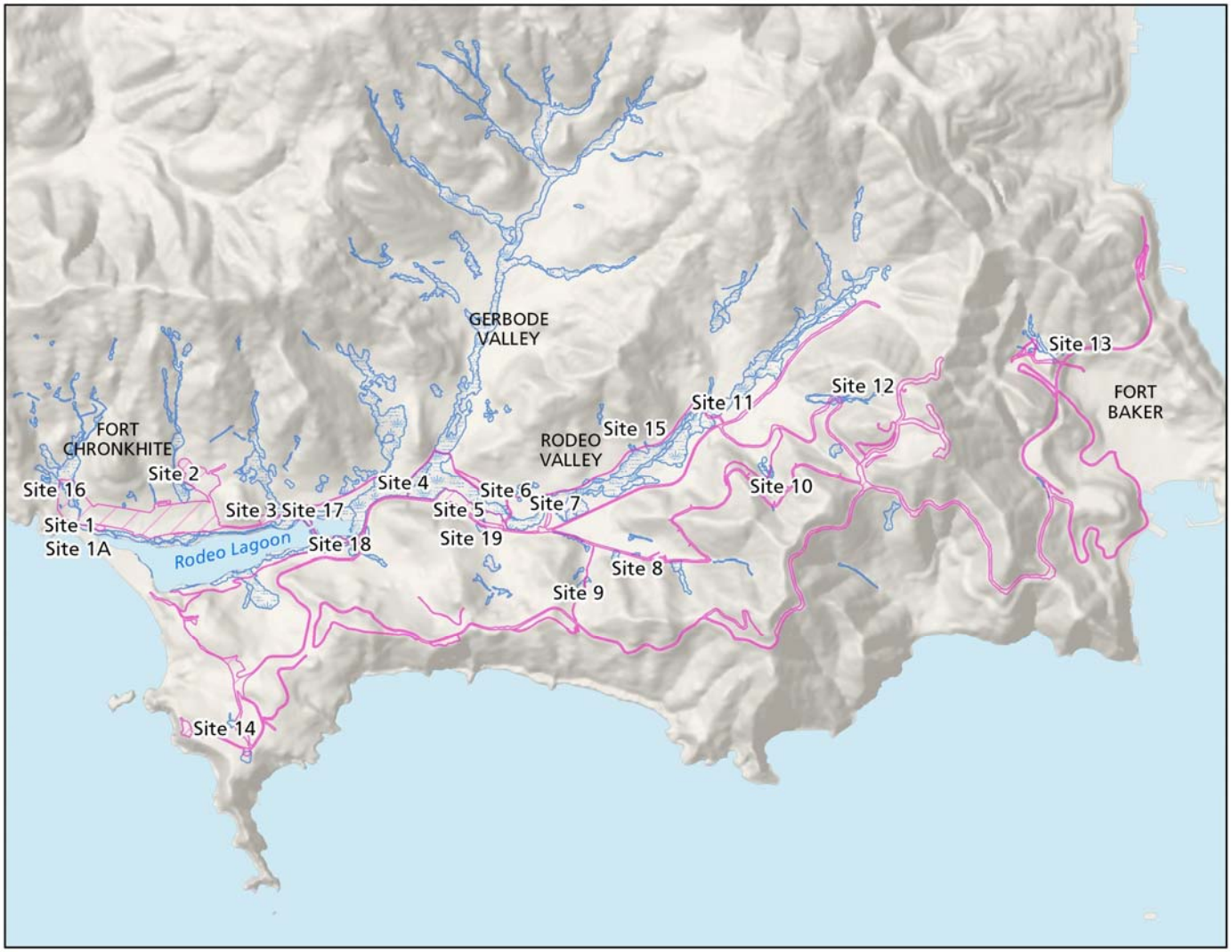


FIGURE 3.2 WETLAND FEATURES IN THE MARIN HEADLANDS AND FORT BAKER STUDY AREA

SOURCE: WRA Environmental Consultants 2006.

Special Status Plant Species

Special status plant species present include the following:

- Coast rock cress (*Arabis blepharophylla*)
- Franciscan thistle (*Cirsium andrewsii*)
- San Francisco wallflower (*Erysimum franciscanum*)

Based on the literature review, 61 special status plant species were initially identified as having potential to occur in the study area. Of these 61 species, 13 were eliminated from further analysis because of a lack of suitable habitat in the study area. In addition, Presidio manzanita (*Arctostaphylos hookeri* ssp. *ravenii*), Presidio clarkia (*Clarkia franciscana)*, San Francisco Lessingia (*Lessingia germanorum)*, and Santa Cruz bush-mallow (*Malacothamnus fasciculatus* var. *nesioticus*) were eliminated from further analysis because they are only known from one to a few occurrences in San Francisco or San Mateo counties, and park resource staff do not expect them to occur in the Marin Headlands (Fritzke, pers. comm. 2006). Of the remaining species, 31 occur in coastal scrub or coastal bluff scrub, 10 in wetland habitats (including freshwater and saltwater marshes and swamps), and 32 in grassland habitats (including valley and foothill grassland and coastal prairie; note that species were counted twice if they occur both in coastal scrub and coastal prairie). These plants include species listed under the federal Endangered Species Act as threatened or endangered, listed by California as threatened or endangered, and locally rare species of special concern to the park. A table providing detailed information on these species, including their common and scientific names, listing status, habitat, and known distribution, is provided in Appendix D.

In May 2005 focused special status plant surveys were conducted by URS Corporation for six species: Sonoma alopecurus (*Alopecurus aequalis* var. *sonomensis*), marsh sandwort (*Arenaria paludicola*), yellow larkspur (*Delphinium luteum*), white-rayed pentachaeta (*Pentachaeta bellidiflora*), showy Indian clover (*Trifolium amoenum*), and soft bird's beak (*Cordylanthus mollis*). All six of these species are federally listed as endangered. The survey was conducted within the blooming periods of all six species. Suitable salt marsh habitat that could support soft bird's beak is not present in the study area. Potential habitat is present for the remaining five species targeted in the survey; however, none of these species was identified in the study area. No other information on the potential presence and distribution of the other special status plant species in the study area is available at this time.

Three species in the table in Appendix D — coast rock cress (*Arabis blepharophylla*), Franciscan thistle (*Cirsium andrewsii*), and San Francisco wallflower (*Erysimum franciscanum*) — have known populations in the Marin Headlands. These populations are mentioned and described in a 2004 report on monitoring and surveying of 43 rare plants within Golden Gate National Recreation Area and the San Francisco Water District. Monitoring of these populations, however, was not conducted in 2004 (NPS 2004d).

Special Status Wildlife Species

The U.S. Fish and Wildlife Service and the California Natural Diversity Database list many special status wildlife species that have potential to occur in the general vicinity of study area. However, most of these species are restricted to habitats absent from the study area and are therefore not discussed in this document. Species with very restricted ranges that do not include the study area (e.g., Point Reyes Peninsula, San Francisco Peninsula, and San Pablo Bay) are also excluded from the discussion. A variety of special status birds could occur in the study area, but the special status designation of most birds applies only to nesting individuals. Therefore, discussion in this section is limited to species that are likely to nest in the study area, and the following discussion focuses on those that could be reasonably expected to occur in the study area. This determination was based on results of surveys, review of available information regarding the species' local range and status, habitats present, and information collected during the reconnaissance surveys conducted for this project. Six of the species are federally listed as threatened or endangered; the remaining species are considered species of special concern by California Department of Fish and Game and/or federal species of concern by the U.S. Fish and Wildlife Service.

Mission Blue Butterfly. The mission blue butterfly (*Icaricia icarioides missionensis*) is federally listed as endangered. The butterfly was first collected in 1937 from the Mission District of San

Francisco. Today a small colony is located on Twin Peaks. The species has also been collected from Fort Baker. The majority of the remaining colonies are found on San Bruno Mountain in San Mateo County. Other colonies have been discovered in San Mateo County at Milagra and Sweeney Ridges in Golden Gate National Recreation Area. Colonies are located at elevations ranging from 690 to 1,180 feet. Some colonies occur in the fog belt of the coastal range. Coastal chaparral and coastal grasslands dominate the vegetation type where colonies are found (May & Associates 2007).

Adults have one generation per year, with a flight period from mid-February to early July at the Marin Headlands and late May to mid-June at San Bruno Mountain. Mission blue butterflies occur at the Marin Headlands in the planning area and to the north to the Alta Avenue fire road above Marin City (May & Associates 2007).

In 1994 the park initiated a long-term mission blue butterfly monitoring program at Milagra Ridge and Marin Headlands. A total of 30 permanent transects were installed, with additional transects added at Fort Baker and select locations over the past five years.

In 1998 mission blue butterfly abundance was the lowest in five years, coincident with El Niño conditions with elevated winter and spring rainfall, which may have contributed to the significant dieback of host plants. Butterfly numbers remained low from 1998 to 2002 (with peak daily counts ranging from 8 to 15 total individuals observed on all transects), but increased somewhat from 2003 to 2005 (15 to 23). The highest peak daily counts were observed from 1994 to 1997 (26 to 52) (May & Associates 2007).

Other recent studies involving mapping of host and plants, and studies using GIS modeling to predict the location of areas with mission blue butterfly habitat characteristics, have identified patches of existing habitat (host plants) and predicted mission blue butterfly habitat in the immediate project vicinity along most of the roads and trails proposed for improvements (Conzelman and East roads, the Coastal Trail, and Slacker Road (trail)) (May & Associates 2007).

In response to the butterfly's endangered status, the park initiated a broad-scale habitat restoration program to remove French broom, pampas grass, and other targeted invasive plant species throughout its habitat in the park during the late 1980s and early 1990s. Habitat restoration efforts have continued annually consistent with recovery objectives, with large-scale tree removal efforts performed at Slacker Ridge and Hawk Hill in consultation with the U.S. Fish and Wildlife Service, as well as thoroughwort removal throughout the coastal drainages. The Golden Gate Bridge District also recently restored 18 acres of mission blue butterfly habitat at Fort Baker and Kirby Cove as a part of a mitigation requirement for the bridge's seismic retrofit project.

California Freshwater Shrimp. The California freshwater shrimp (*Syncaris pacifica*) is federally listed as endangered. This species is restricted to coastal streams in Marin, Sonoma, and Napa counties. California freshwater shrimp are found in low-gradient streams with structurally diverse banks, exposed roots, overhanging woody debris, and/or overhanging vegetation (USFWS 1998). Streams in the study area do not provide suitable habitat for the California freshwater shrimp; therefore, this species is not discussed further.

Tidewater Goby. The tidewater goby is federally listed as endangered. This species occurs in slightly brackish waters along the entire California coast. Tidewater gobies are often found in waters of relatively low salinities, in the uppermost brackish zone of larger estuaries and coastal lagoons. However, they can tolerate a wide range of salinities and regularly range into freshwater or high salinity areas (USFWS 2000). Rodeo Lagoon supports the only extant tidewater goby population in the San Francisco Bay area. Surveys from 1996 to 1999 documented a variable density of tidewater gobies in the lagoon. Densities were somewhat consistent, ranging from 6.3 to 12.2 individuals per square meter in three of the survey years, although densities of 40.3 individuals per square meter were documented in one of the survey years (Fong 1999a). Surveys in fall 2005 indicated higher than average goby densities in Rodeo Lagoon (NPS unpublished data). Seasonal sampling by NPS personnel found that densities of gobies are typically highest during the fall and lowest during the winter.

Steelhead. The Central California Coast evolutionarily significant unit of steelhead (*Oncorhynchus mykiss*) is federally listed as threatened. This species is an anadromous fish that spends its adult life

in the ocean and returns to freshwater to spawn. Steelhead enter freshwater and migrate upstream during higher flow events with associated lower water temperatures, generally between December and May. Spawning occurs from November to April, when adults pair to lay and fertilize thousands of eggs in freshwater gravel nests excavated by females. Depending on water temperatures, eggs incubate for several weeks to months before hatching as larvae, which later emerge from the gravel as young juveniles. Juveniles may spend from a few hours to several years in freshwater areas before migrating to the ocean (National Oceanic and Atmospheric Administration [NOAA] 2004). Small numbers of steelhead have been documented in the Rodeo Lagoon watershed.

Although overall steelhead densities are low in Rodeo Creek, the condition of similarly aged steelhead is better in the Rodeo Creek watershed than in the Redwood Creek watershed (Fong 2005). It is unclear whether the fish are anadromous and naturally occurring. Past historical records have indicated that Rodeo Lake was stocked by the California Department of Fish and Game when the U.S. Army managed the Marin Headlands. In addition, Rodeo Lagoon is closed to the Pacific Ocean for much of the year, open from a few weeks to a couple months during the winter and late spring. Spawning habitat for steelhead in Rodeo Creek is limited due to a low abundance of sandy or gravelly substrates (Fong 2005).

California Red-legged Frog. The California red-legged frog (*Rana aurora draytonii*) is federally listed as threatened. The final rule on designated critical habitat, published in the *Federal Register* on April 13, 2006, does not include a red-legged frog critical habitat unit within the Marin Headlands or any of Golden Gate National Recreation Area (USFWS 2006a). California red-legged frogs typically breed in deep, still, or slow-moving water with dense riparian or emergent vegetation and are rarely found far from water during the dry season. This subspecies is known to occur in a number of locations in Marin County (USFWS 2002). Rodeo Lake provides suitable breeding habitat for California red-legged frogs. One individual was observed in the lake in 1997 and at least five were observed in 2004–5, when breeding activity was also documented (Wood 2005). The quality of habitat provided by the lake is enhanced by the absence of bullfrogs and exotic fish that prey on red-legged frogs. In addition, juvenile red-legged frogs were observed in October 2005 using the eastern shoreline of Rodeo Lagoon due to the abundance of flying insects (NPS unpublished data). The subspecies could also use Rodeo Creek, although it is not anticipated to provide suitable breeding habitat, and California red-legged frogs are only likely to utilize it for dispersal purposes. A habitat assessment of two Rodeo Creek tributaries that run along the western and eastern sides of the stables south of Bunker Road was conducted in 2005. Both tributaries were determined to provide sufficient cover and structure to support non-breeding habitat for the subspecies, but suitability is limited by the ephemeral nature of the water, which typically dries up in late spring or early summer.

Western Snowy Plover. The Pacific coast breeding population of the western snowy plover (*Charadrius alexandrinus nivosus*) is federally listed as threatened. On March 22, 2004, the U.S. Fish and Wildlife Service determined that substantial information existed to support the possible delisting of the species, and a status review was initiated (USFWS 2004b). This population of snowy plovers occurs along coastal beaches and primarily nests on sand spits, dune-backed beaches, beaches at creek and river mouths, and salt pans at lagoons and estuaries. Snowy plovers do not nest within the study area, but they are known to nest elsewhere in coastal Marin County (USFWS 2001). The western snowy plover occurs within the park at Ocean Beach and Crissy Field from mid July through early May. There are no breeding sites in or adjacent to the action area; snowy plovers have been observed on rare occasions and for short periods of time (over a few days) at Rodeo Beach (May & Associates 2007).

California Brown Pelican. The California brown pelican (*Pelecanus occidentalis californicus*) is federally listed as endangered. Nesting is restricted to islands in the Gulf of California and along the outer coast from Baja California to West Anacapa and Santa Barbara islands in southern California. Non-breeding California brown pelicans range northward along the Pacific Coast from the Gulf of California to Washington and southern British Columbia (May & Associates 2007).

The California brown pelican is common in coastal areas of Golden Gate National Recreation Area

from April through December. From January through March, pelicans are less frequently seen in the park and in much smaller flocks. The park has significant roost areas for brown pelicans, and they have been observed roosting at Seal Rocks, Alcatraz Island, and in the Marin Headlands at Bird Island and Rodeo Beach (at the western end of Rodeo Lagoon). Bird Island is one of the largest roosting sites in northern California, with up to several thousand pelicans. Pelicans by the hundreds also bathe, feed, and roost in nearby Rodeo Lagoon. When they are on the lagoon, the pelicans tend to use the western two-thirds of the water area, occasionally using the eastern third of the lagoon. The pelicans primarily roost at the west edge of the lagoon in the early morning, and during storms on a point of sand near the southwest corner (May & Associates 2007).

Salt Marsh Harvest Mouse. The salt marsh harvest mouse (*Reithrodontomys raviventris*) is federally and state listed as endangered; it has fully protected status under the California Fish and Game Code (sec. 4700). This species is restricted to the San Francisco Bay area and inhabits salt marshes with dense cover, particularly pickleweed. Based on extensive trapping of harvest mice, the western extent of the mouse's range was determined to be Corte Madera Marsh in eastern Marin County. Therefore, potential habitat at Rodeo Lagoon is outside this species' range (May & Associates 2007). Salt marsh harvest mice were reportedly trapped at Rodeo Lagoon in 1992, although subsequent review of the trapping records concluded the individuals were likely misidentified western harvest mice. Rodeo Lagoon used to be breached regularly, resulting in higher salinity levels from tidal influence. However, this no longer occurs, which may be partially responsible for the lack of pickleweed habitat around the lagoon. Therefore, even if the salt marsh harvest mouse may have once occurred at Rodeo Lagoon, current conditions (low salinity levels and lack of pickleweed) would likely preclude its presence today (May & Associates 2007).

Western Pond Turtle. The western pond turtle (*Emmys marmorata*) is a federal and state species of concern. This species occurs in aquatic habitats, such as streams, ponds, freshwater marshes, and lakes. Pond turtles require still or slow-moving water with in-stream emergent woody debris, rocks, or other similar features for basking sites. Their nests are typically located on unshaded upland slopes in dry substrates with clay or silt soils. Rodeo Lake and potentially portions of Rodeo Creek provide suitable aquatic habitat for pond turtles, and open upland habitats nearby may provide suitable nesting habitat.

Foothill Yellow-legged Frog. The foothill yellow-legged frog (*Rana boylii*) is a federal and state species of concern. This frog species occurs in shallow, partly shaded streams, preferably with riffles and at least some small- to medium-sized cobble substrate. Egg masses are deposited on the downstream side of cobbles or boulders, over which a relatively thin, gentle flow of water occurs. Streams in the study area are heavily shaded and do not provide suitable habitat for the foothill yellow-legged frog. Therefore, this species is not discussed further.

Salt Marsh Common Yellowthroat. The salt marsh common yellowthroat (*Geothlypis trichas sinuosa*) is a federal and state species of concern. Within Marin County this species typically occurs in freshwater marsh, coastal swales, and riparian thickets and swamps. It can also occur in brackish marsh, salt marsh, and upland habitats with dense groundcover, such as mustard, dock, and nettle (Shuford 1993). Salt marsh common yellowthroats are common nesters in suitable habitat throughout Marin County and are likely to nest within the study area.

Allen's Hummingbird. Allen's hummingbird (*Selasphorus sasin*) is a federal species of concern. It occurs in a variety of coastal habitats, including riparian, coastal scrub, coniferous forest, eucalyptus groves, and to a limited extent, oak woodland (Shuford 1993). As with yellowthroats, Allen's hummingbird is a common nesting species in the region and is likely to nest in the study area.

Bat Species. A number of bat species that are federal and/or state species of concern could occur in the study area, including Townsend's western big-eared bat (*Corynorhinus townsendii townsendii*), greater western mastiff-bat (*Eumops perotis*), long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), long-legged myotis (*Myotis volans*), and Yuma myotis (*Myotis yumanensis*). These species could forage throughout the study area. Trees in the study area could provide suitable roost sites for some species, although most individuals are anticipated to roost in buildings.

3.2.5 AIR QUALITY

Air Quality Pollutants and Ambient Air Quality Standards

Air quality regulations focus on the following air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM), and lead. Each pollutant is briefly described below, including source types and health effects. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health effects criteria documents are available, they are commonly referred to as "criteria air pollutants."

The Environmental Protection Agency has established primary and secondary national ambient air quality standards for the following criteria air pollutants: ozone, CO, NO_2, SO_2, respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead (see Table 3-10). The primary standards protect the public health, and secondary standards protect public welfare. In addition to the national ambient air quality standards, the California Air Resources Board (CARB) has established state ambient air quality standards for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and criteria air pollutants. In most cases the California standards are more stringent than the national standards. Differences are generally explained by the health effects studies that were considered during the standard-setting process and the interpretation of the studies. The California ambient air quality standards also incorporate a margin of safety to protect sensitive individuals (see Table 3-10).

Ozone

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight, and is the primary component of smog. Ozone is not directly emitted into the air, but is formed through complex chemical reactions between precursor emissions of reactive organic gases (ROG) and oxides of nitrogen (NO_X) in the presence of sunlight. Reactive organic gases are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. Nitrogen oxides are a group of gaseous compounds that also result from fuel combustion.

Ozone in the upper atmosphere acts in a beneficial manner by shielding the earth from harmful ultraviolet radiation emitted by the sun. However, ozone in the lower atmosphere is a major health and environmental concern. Topography and meteorology play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provide the optimum conditions for ozone formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. Therefore, ozone is a regional pollutant that often affects large areas. In general, ozone concentrations over or near urban and rural areas reflect interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry (Godish 1991).

Carbon Monoxide

Carbon monoxide is a colorless, odorless, and poisonous gas produced by incomplete combustion of carbon in fuels, primarily from mobile sources (vehicles). In fact, 77% of the nationwide CO emissions are from mobile sources. The other 23% are from wood-burning stoves, incinerators, and industrial sources.

Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (US EPA 2005).

Nitrogen Dioxide

Nitrogen dioxide is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide, which reacts through oxidation in the atmosphere to form nitrogen dioxide (US EPA 2005). The combined emissions of nitric oxide and nitrogen dioxide are referred to as nitrogen oxides (NO_X), which are reported as equivalent nitrogen dioxide. Because nitrogen dioxide is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local NO_X emission sources.

TABLE 3-10. AMBIENT AIR QUALITY STANDARDS AND DESIGNATIONS

Pollutant	Averaging Time	California Standards		National Standards[1]		
		Standards[2, 3]	Attainment Status (Marin County)[6]	Primary[3, 5]	Secondary[3, 6]	Attainment Status (Marin County)[7]
Ozone	1-hour	0.09 ppm (180 µg/m^3)	N (Serious)	0.12 ppm[9] (235 µg/m^3)	Same as Primary Standard	N[9]
	8-hour	0.070 ppm[8]	–	0.08 ppm (157 µg/m^3)		N (Marginal)
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	A	35 ppm (40 mg/m^3)	–	A
	8-hour	9 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	–	–	0.053 ppm (100 µg/m^3)	Same as Primary Standard	U/A
	1-hour	0.25 ppm (470 µg/m^3)	A	–		–
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	–	0.030 ppm (80 µg/m^3)	–	U/A
	24-hour	0.04 ppm (105 µg/m^3)	A	0.14 ppm (365 µg/m^3)	–	
	3-hour	–	–	–	0.5 ppm (1300 µg/m^3)	
	1-hour	0.25 ppm (655 µg/m^3)	A	–	–	–
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	N	50 µg/m$^{3, 6}$	Same as Primary Standard	A
	24-hour	50 µg/m^3		150 µg/m$^{3, 6}$		
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	N	15 µg/m^3	Same as Primary Standard	U
	24-hour	–	–	65 µg/m^3		
Lead[10]	30-day Average	1.5 µg/m^3	A	–	–	–
	Calendar Quarter	–	–	1.5 µg/m^3	Same as Primary Standard	A
Sulfates	24-hour	25 µg/m^3	A	No National Standards		
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m^3)	U			
Vinyl Chloride[10]	24-hour	0.01 ppm (26 µg/m^3)	U/A			
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer; visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) because of particles when the relative humidity is less than 70%.	U			

SOURCES: California Air Resources Board 2005, U.S. Environmental Protection Agency 2005.

1. National standards (other than ozone, PM, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when 99% of the daily concentrations, averaged over three years, are equal to or less than the standard. The $PM_{2.5}$ 24-hour standard is attained when 98% of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the EPA for further clarification and current federal policies.

2. California standards for ozone, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, PM, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

3. Concentration expressed first in units in which it was promulgated (i.e., parts per million [ppm[or micrograms per cubic meter [µg/m3[). Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. U — Unclassified: A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or non-attainment.
   A — Attainment: A pollutant is in attainment if the state standard for that pollutant was not violated at any site in the area during a three-year period.
   N — Non-attainment: A pollutant is designated non-attainment if there was a least one violation of a state standard for that pollutant in the area.
   NT — Non-attainment/Transitional: A subcategory of the non-attainment designation. An area is designated non-attainment/transitional to signify that the area is close to attaining the standard for that pollutant.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. N – Non-attainment: Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.
   A — Attainment: any area that meets the national primary or secondary ambient air quality standard for the pollutant.
   U — Unclassifiable: any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

8. This concentration was approved by the Air Resources Board on April 28, 2005, and is expected to become effective in early 2006.

9. The 1-hour ozone NAAQS was revoked on June 15, 2005.

10. The California Air Resources Board has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Inhalation is the most common route of exposure to nitrogen dioxide. Because the compound has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure.

Sulfur Dioxide

Sulfur dioxide is produced by such stationary sources as coal and oil combustion, steel mills, refineries, and pulp and paper mills. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. Sulfur dioxide is a respiratory irritant with constriction of the bronchioles occurring with SO_2 inhalation at 5 ppm or more. On contact with the moist mucous membranes, sulfur dioxide produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects.

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. It consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by condensation and/or transformation of sulfur dioxide and reactive organic compounds (US EPA 2005). $PM_{2.5}$ includes a subgroup of finer particles that have an aerodynamic diameter of 2.5 micrometers or less (CARB 2005).

The adverse health effects associated with PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances adsorbed onto fine particulate matter, which is referred to as the piggybacking effect, or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (US EPA 2005). $PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and contain substances that are particularly harmful to human health.

Lead

Lead is found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of EPA regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector have declined dramatically (95% between 1980 and 1999), and levels in the air decreased by 94% between 1980 and 1999. As a result of the phaseout of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose “hot spot” problems in some areas. As a result, the California Air Resources Board identified lead as a toxic air contaminant.

Air Quality Monitoring and Air Quality Condition

The Bay Area Air Quality Management District operates a regional air quality monitoring network that regularly measures the concentrations of the major criteria air pollutants. The San Rafael station is the closest to the study area with recent data for ozone, CO, and PM_{10}. Table 3-11 summarizes the air quality data from the most recent three years.

Air quality conditions in the study area are determined by such natural factors as climate and topography, in addition to the ambient air pollutant emission concentrations. These factors are discussed separately below.

Attainment Area Designations

Ambient concentrations of criteria air pollutants are used as indicators of air quality conditions (Table 3-11). Both the California Air Resources Board and the Environmental Protection Agency use ambient monitoring data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify those areas with air quality problems and thereby initiate planning efforts for improvement. The three basic

designation categories are non-attainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of the non-attainment designation that is called non-attainment transitional, which is given to non-attainment areas that are progressing and nearing attainment. Attainment designations with respect to the study area are shown in Table 3-10 for each criteria air pollutant.

Climate and Topography

The study area is located in the San Francisco Bay area air basin, which is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays that distort normal wind flow patterns. The Coast Range splits, resulting in a western coast gap (Golden Gate) and an eastern coast gap (Carquinez Strait), which allow air to flow in and out of the basin and the Central Valley.

Regional flow patterns affect air quality by moving pollutants downwind of sources. Localized meteorological conditions, such as moderate winds, disperse pollutants and reduce pollutant concentrations. An inversion layer develops when a layer of warm air traps cooler air close to the ground. Such temperature inversions hamper dispersion by creating a ceiling over the area and trapping air pollutants near the ground. During summer mornings and afternoons, these inversions are present over the study area. During summer's longer daylight hours, plentiful sunshine provides the energy needed to fuel photochemical reactions, producing ozone.

In the winter temperature inversions dominate during the night and early morning hours but frequently dissipate by afternoon. The greatest pollution problems during winter months are from CO and NO_X. High CO concentrations occur on winter days with strong surface inversions and light winds.

Local meteorology of the study area is represented by measurements recorded at the San Rafael station. The normal annual precipitation, which occurs primarily from November through February, is approximately 35 inches. January temperatures range from a normal minimum of 41°F to a normal maximum of 57°F. July temperatures range from a normal minimum of 54°F to a normal maximum of 81°F (NOAA 1992). The annual predominant wind direction and speed is from the northwest at approximately 20 mph (CARB 1994).

3.3 CULTURAL RESOURCES

Known cultural resources in the study area, including the historic Forts Baker, Barry, and Cronkhite, are described below. The information presented in this section is based on the *Historic Road Charac-*

TABLE 3-11. SUMMARY OF ANNUAL AMBIENT AIR QUALITY DATA (2002–2004)

	2002	2003	2004
Ozone			
Maximum concentration (1-hr / 8-hr avg, ppm)	0.077 / 0.056	0.087 / 0.067	0.091 / 0.063
Number of days state standard exceeded 1-hr	0	0	0
Number of days national 1-hr/8-hr standard exceeded	0/0	0/0	0/0
Carbon Monoxide			
Maximum concentration (8-hr avg, ppm)	1.88	2.03	1.96
Number of days state standard exceeded	0	0	0
Number of days national standard exceeded	0	0	0
Respirable Particulate Matter (PM_{10})			
Maximum concentration (µg/m3)	69.6	39.1	51.0
Number of days state standard exceeded (measured/calculated[1])	3/18.4	0/0	1/6.1
Number of days national standard exceeded (measured/calculated[1])	0/0	0/0	0/0

SOURCES: CARB 2005, U.S. EPA 2005.
NOTE: Measurements from the San Rafael station are in parts per million (ppm) or micrograms per cubic meter (µg/m3).
1. Measured days are those days that an actual measurement was greater than the level of the state daily standard or the national daily standard. Measurements are typically collected every six days. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

terization Study completed in April 2004 for the National Park Service (Pacific Legacy 2003; Feierabend 2004).

The area of potential effect includes an indirect area of potential effect, which consists of the entire historic district that is listed on the National Register of Historic Places, and a direct area of potential effect, which includes roadways, trails, and natural resource mitigation / enhancement sites, as defined below:

1. a 20-foot corridor from the edges of roads and parking areas involved in project alternatives; in areas where resources begin within the 20-foot zone and extend beyond that, the area of potential effect should expand to encompass the entire resource
2. the 20-foot corridors on either side of trails where work would occur in the project alternatives
3. the specific sites (polygons) for natural resource mitigation/enhancements for the alternatives

Several areas within the Marin Headlands and Fort Baker area, such as Fort Baker's historic structures and enhancement of the World War II cantonment at Fort Cronkhite, have been the subject of previous planning efforts. The *Fort Baker Plan* specifies that Moore Road and the Alexander Avenue overpass be stabilized and preserved in their existing form, and that East Road, Murray Circle, East Bunker Road, McCullough Road, and McReynolds Road be rehabilitated and reused (NPS 1999a, Appendix A). In addition, the "Memorandum of Agreement between the National Park Service and the California State Historic Preservation Officer Regarding the Fort Baker Plan" (NPS 2000c) stipulates that a plan to preserve the Fort Baker historic dump in place should be developed in consultation with the state, taking into account the potential for erosion from waves and vandalism, and identifying the potential for archeological documentation and salvage at a future date to provide information on the daily life and activities at Fort Baker during the historic period. Finally, the *Final General Management Plan Amendment* (NPS 1994) calls for a special effort to protect Fort Cronkhite as mitigation for the removal of similar World War II cantonments at Crissy Field. These commitments should be carried over to the current planning effort.

3.3.1 HISTORIC OVERVIEW AND CONTEXT

The earliest inhabitants of the Marin Headlands were the Coast Miwok, who lived in present-day Marin and Sonoma counties. At the point of contact with European explorers, the Miwok were comprised of 14 tribes; the Huimen tribe's territory included the present-day headlands. Once colonized by the Spanish in the late 1700s, the headlands were reserved as a future fort site, perhaps to complement the Presidio built on the San Francisco side of the entrance to the bay. After Mexican independence in 1821, however, the potential of the headlands for military purposes fell by the wayside, and the land was granted in 1838 as part of the Rancho Sausalito to William Richardson, an English immigrant who married into the Presidio commandant's family. His claim to the land was challenged after California became part of the United States in 1850, following the Treaty of Guadalupe Hidalgo, and most of the land ended up in the ownership of Samuel Throckmorton, one of the lawyers involved in the case. The federal government gradually negotiated purchases of many of the southern portions of the headlands with Throckmorton directly; other parcels, particularly in the northern and western areas of the headlands, were lost through his various court cases to other owners, who often sold or leased the land to dairy ranchers, who built their own dirt access roads.

The evolution of the Marin Headlands and Fort Baker study area is the result of the evolving mission of the U.S. Army in the region. Army engineers surveyed the coastline for defensible harbors in 1850 and noted San Francisco Bay as a usable deep-draft harbor. Land was reserved for military purposes around the harbor during 1849–52, but actual defenses were constructed at San Francisco beginning in 1853 to guard the naval anchorage located there. The fortress at Fort Point and the gun batteries on Alcatraz Island were completed by 1860, but further major construction was interrupted by the Civil War.

The Lime Point Military Reservation was set aside by President Millard Fillmore in 1850 as the site for a strong defense fortification. Lime Point, located under the north tower of the Golden Gate Bridge, was originally intended to complement Fort Point across the bay, but plans for the large defensive battery were stalled by the 1870s. Most of the defenses were generally abandoned during the 1870s and 1880s, since the Army did not have

enough manpower to garrison the nearly useless old guns.

During the years following the termination of the harbor defense construction in the 1870s, several critical advances took place in the design and construction of heavy ordinance, which allowed for the construction of longer ranged weapons. Coupled with these developments was a growing alarm in the military over the lack of effective harbor defenses. In 1885 President Grover Cleveland appointed a joint Army, Navy, and civilian board headed by Secretary of War William C. Endicott to recommend action. An 1886 report recommended a massive $127 million construction program for some 29 sites around the coastline. In 1888 Congress created the Army Board of Ordinance and Fortification to test weapons and implement the new program. In 1890 a more modest building program was funded under the direction of the Army Corps of Engineers.

The old Lime Point Military Reservation on the north Marin County shore was transformed in 1897 into Fort Baker, followed by the creation of Fort Barry to the west in 1904 as the garrisons followed the big guns seaward, concluded by construction of 16-inch Battery Townsley roughly 4 miles northwest of the Golden Gate in 1937 and the creation that same year of Fort Cronkhite to house its gun crews. Not all of the planned batteries were completed, but roads to reach the proposed sites were often put in first, before any other construction began; for example, the eastern portion of Conzelman Road, the main artery along the southern ridge of the headlands, was constructed in 1870, while the fog signal station at Lime Point was not completed until 1883.

Plans were drawn up in 1890 by a Board of Engineers for modern Endicott-type batteries stretching on this northern shore from Point Cavallo westward to Point Bonita. Construction soon began on Battery Spencer (transferred from the Engineers to the Artillery in 1897), Batteries Kirby and Duncan (both finished in 1900), and Battery Orlando Wagner (completed in 1901).

At the end of the 19th century, when artillery of greatly increased range and caliber came into use, the line of defenses that protected San Francisco Bay shifted westward to a line stretching from Point Bonita to Point Lobos. North of the Golden Gate at Point Bonita, this would require a whole new series of gun emplacements on the Marin Headlands. It would represent an attempt to match the size and range of the heaviest guns that could be carried on an enemy warship, and by locating batteries on the westernmost points of land north and south of the strait and west of San Francisco Bay, keep enemy warships beyond a range from which they could shell the city and its harbor.

It was not until after the beginning of the 20th century that Army engineers actually began constructing large gun emplacements north of the Golden Gate at new locations to the west, toward the ocean. This land was technically the western end of Fort Baker, but it was known unofficially at first as the Point Bonita Military Reservation. Here, the Corps of Engineers constructed, more or less concurrently, five batteries: Mendell, Alexander, Edwin Guthrie, Samuel Rathbone, and Patrick O'Rorke.

While the batteries were being constructed, no garrison to house the men who manned the guns was being built, and the first detachment of an officer and 23 enlisted men from Fort Baker, which arrived at the Point Bonita batteries in July 1903, was forced to live initially in the magazines of Batteries Mendell and Alexander and then in several successive temporary camps. Finally on July 16, 1904, the Secretary of War authorized a permanent post for two companies of the Coast Artillery Corps.

The early military roads (up through World War I) were generally designed for horses and wagons, and were very labor intensive to build. They were primarily transportation corridors between the forts, as well as connectors between the Point Bonita Lighthouse and the Lime Point Signal Station. The buildings at Forts Baker and Barry were mostly constructed between 1900 and 1910, and the roads put in during this period were increasingly constructed with macadam (i.e., covered with compacted broken stones and asphalt rather than left as bare soil). They tended to be fairly narrow (10′–16′ wide) and followed the natural contours of hills or used switchbacks on steep slopes, with ditches, swales, and culverts for drainage from winter rains and the many small springs in the headlands. Road materials were often mined from local quarries, some of which are still visible.

Between the World Wars (1917–37) the area received little active use from the Army and was

promoted for tourism and hiking, but the military still maintained the area's infrastructure. In 1935 a Civilian Conservation Corps (CCC) camp was established at Fort Barry (near the Capehart housing area), and in 1937 the Golden Gate Bridge was completed, causing a dramatic change in circulation patterns between Marin and San Francisco, as commuters and delivery trucks could now drive directly into the city. The construction of the Golden Gate Bridge, through the western and northern edges of Fort Baker had a major impact on the fort's landscape and road system and caused major reshaping of Lime Point Ridge. The bridge approach road cut off a portion of Conzelman Road where it looped around the current Vista Point hill. As a result, Conzelman Road was realigned under the new bridge and connected with the U.S. 101 access ramps and the end of Alexander Avenue. The historic timbered tunnel between Forts Baker and Barry, which was built in 1917–18, was enlarged and lined with concrete in 1935–37.

The land that eventually became Fort Cronkhite had historically been used for dairy ranching. In 1937 Congress appropriated funds to purchase 800 acres at Tennessee Point (north of Rodeo Lagoon and northwest of Fort Barry), where an immense battery would be built. In March 1938 excavation on Wolf Ridge for the new firing platforms began. Battery Townsley and its reserve magazine both were completed and transferred to the Coast Artillery Corps in July 1940. The battery was one of two with the largest guns ever used by the United States — two 16″ guns that had a range of roughly 26 miles. Unlike the guns of the 1850s, which had a 2.5-mile range and could barely control the narrowest part of the Golden Gate Strait between Fort Point and Lime Point, the new guns could keep an enemy fleet far out at sea and out of range of the city and the harbor. On July 1, 1940, the first 16″ round ever fired from the Pacific Coast of the continental United States was fired here.

The cantonment of World War II-type wood frame "temporary" barracks, mess halls and kitchens, orderly rooms, and other structures at Fort Cronkhite was actually built before the United States entered World War II; its buildings were rushed to completion during the spring and early summer of 1941, and the first garrison was established on June 20, 1941, while finishing touches were still being put on the barracks.

The increased international tensions in the late 1930s brought another round of road construction and improvements to the Marin Headlands, with an increased reliance on constructing roads using cut-and-fill alignments, often the shortest distance between two locations. The roads also tended to be wider than previous roads and usually two lanes (18′–22′) to accommodate faster traffic and heavier vehicles. Increasingly the roads were paved with asphalt and fitted with more modern culvert systems for drainage. Due to concerns during the 1950s about the Cold War, a radar control center and Nike missile battery was added to Forts Barry and Cronkhite, with associated housing in the Capehart area. During this period, the area's road system received a great deal of maintenance, repair, and upgrades of older roads to accommodate more modern traffic patterns.

By the 1960s the Army had named or renamed most of the roads at Forts Baker, Barry, and Cronkhite for soldiers of the Coast Defense Artillery who had fought in the Pacific in the early days of World War II and were killed in action or died later, under atrocious conditions, in prison camps. The renamed roads included Colonel Paul D. Bunker and Captain James East.

In 1961 California acquired the undeveloped portions of Fort Baker, and later in the 1960s the Army decided Forts Baker, Barry, and Cronkhite were no longer needed for military purposes, and parts of the forts were declared excess government property. In 1972 the area was established as part of the Golden Gate National Recreation Area, with ownership transferred to the National Park Service. The maintenance of roads and facilities shifted incrementally from the Army to the National Park Service and was mostly conducted on an as-needed basis rather than a regular schedule. Traffic patterns in the area changed correspondingly, increasingly serving recreational users interested in accessing the spectacular views of San Francisco and the Pacific Ocean from the headlands, as well as visiting sites such as the Point Bonita Lighthouse and making use of local trails and recreation facilities.

In response to the historical development of the Marin Headlands, the landscape has also changed over time. For example, in the late 1700s the Spanish brought cattle, along with hay for fodder and dried grasses for packing. These exotic annual

grasses scattered and prospered, in many instances overtaking the native grasses. The dairy farmers allowed the cattle to browse, essentially mowing the shrubs and forbs. As a result, most of the landscape was bare when the military occupied the area. Between 1870 and 1905, strategic planting was undertaken in the Fort Baker area to camouflage the guns. In some areas plantations of eucalyptus were used as screenings and windbreaks, such as along East Road to screen the service area, or in front of the officer's quarters along Simmonds Road. Many of these groves have outgrown their original configuration. Also, when residences were built, exotic and other nonnative plantings were added, such as Monterey pine, cypress, acacia, fir, and white calla lilies.

As a result of the historical development, the road system and military fortifications, with their diverse landscapes and use of natural features, represent a layering of different time periods in the area's rich history. The roads and other infrastructure were not designed or built with views or vistas in mind, nor ease of recreation access, but for the Army's utilitarian purposes of efficient movement between various forts and facilities. The road network still reflects the periodic bursts of development of the military's infrastructure and its shifting needs for transportation. With the evolution of the Golden Gate National Recreation Area as a major urban park, new expectations and values associated with the National Park Service have been overlaid on this existing historic framework.

3.3.2 ROAD TYPES AND FUNCTIONS

While individual roads may have played particular roles when first constructed, the resulting system on today's landscape can be broken into primary, secondary, and tertiary functional categories:

Primary Roads

Primary roads include east-west cross-reserve connectors, north-south entrance roads, and access roads from outside the park. Conzelman, Bunker, East, and Alexander Roads are generally the widest roads found in the headlands, serving as primary connector routes, with secondary roads branching off from their main stems. They are two-lane roads that have been frequently paved and regularly maintained, and in some instances widened, with broad shoulders and moderate-to-heavy visitor traffic. The general alignment of these roads has remained consistent with modifications to accommodate increased traffic volumes and provide safe corridors for contemporary use.

Secondary Roads

Secondary roads serve as connectors between the coastal and valley east-west routes and include McCullough, Julian, Field, and Mitchell roads. These roads are typically designed for two-way traffic, and they generally begin or end near a building cluster or complex. They may be considered as splinter roads off the primary system to access a developed area. They tend to be narrower than the primary roads and hence have lower speed limits.

Tertiary Roads

Streets and drives within the forts and developed cluster areas, or that serve activity points off primary or secondary roads outside developed areas, include Mendell, Simmonds, Rosenstock, and Bodsworth roads; the Fort Cronkhite streets; the Marine Mammal Center access road; and Smith Road. These roads are designed at a more pedestrian-level scale and have many small-scale design features (such as curbing, retaining walls, sidewalks, tree-lined edges) that create a more formal character. A subcategory of tertiary roads includes roads such as Dubois Road (trail) and Slacker Road, (trail) which provided access to activity sites outside developed cantonment areas. These roads serve similar functions but lack the small-scale design features found on tertiary roads within developed areas (see Figure 2.1 and Figure 2.2 for road locations).

Periods and Levels of Significance and Integrity

Forts Baker, Barry, and Cronkhite were listed as a historic district on the National Register of Historic Places in 1973, with a period of significance covering 1866–1972. The military presence in the headlands, however, continued until 1973, and the United States Army continued to make road modifications up until that time. From 1973 to the present, road modifications have been made under the direction of the National Park Service. In the *Historic Road Characterization Study* and in this analysis, the roads have been evaluated with an understanding of the last round of major modifications by the Army, when that information is available.

Each road has its own construction history and reflects features from the different time periods, all of which are considered in determining the road's historic integrity. In some cases a road itself may have had few changes since it was constructed, but other contributing features to the landscape (such as building clusters) may have been introduced adjacent to it. In other instances a road may be the only feature left of an entire complex and by itself may no longer retain historic integrity as defined by the *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation* (NPS 1990). Many primary roads have lost their smaller-scale features due to adjustments (such as expanded shoulders, off-road parallel parking, road widening, and curve straightening). In contrast, some less-trafficked secondary and tertiary roads have deteriorated because of inadequate maintenance, but they often retain many of the small-scale features that date from the original period of construction, so they could be readily rehabilitated.

The historic integrity of individual roads is not the same as their importance in terms of contribution to the overall integrity of the historic district. Those roads with district-wide significance are Conzelman Road, East Road, West Bunker/Old Bunker Road, East Road, and Alexander Avenue. Roads with high individual significance but less important district-wide significance are McCullough, Julian, Field, Mendell, Simmonds, Rosenstock, Bodsworth, and Mitchell roads, as well as the Fort Cronkhite roads. All of these roads, including Dubois, contribute to the historic district. Slacker Road (trail), the Marine Mammal Center access road, and Smith Road no longer contribute to the district.

3.3.3 Individual Roads and Character-Defining Features Sensitive to Change

This section summarizes each road segment's key character-defining features that are considered sensitive to change in order to properly analyze impacts. Greater detail on specifics of each road's individual history and current conditions can be found in the *Historic Road Characterization Study*. A detailed inventory of historic features within the road corridors can be found in *Road Work Ahead* (Barker and Barnaal 2005).

Primary Roads

Conzelman Road

Conzelman Road is a paved, primary road. It consists of lower, middle, and western segments. Its primary features are

- a continuous connection from east to west, U.S. 101 to Field Road
- direct association and relationship with military fortifications and structures along its edges
- relationship to natural topography, following the coastal edge
- vertical and horizontal alignment
- distinctive cut slopes, highlights of exposed folded layers of rock
- unpaved shoulders (not continuously unpaved)
- spectacular and steep coastal edge and sensitive road alignment to these conditions

Lower Conzelman Road

Character-defining features of Lower Conzelman Road (from Fort Baker to the trailhead parking area to Conzelman Road) that are sensitive to change include:

- alignment
- width and relationship to cut slope
- paved roadway
- unpaved grass and aggregate shoulders and ditches; shoulders degraded on the 650-foot segment to trailhead lot due to heavy parking pressure

Middle Conzelman Road

Character-defining features along middle Conzelman Road, from U.S. 101 to McCullough Road, include:

- alignment and curvature following contours of the landscape
- steep cut rock slopes and associated pull-outs, color highlights from rock slopes
- open vistas, views of other parts of Conzelman Road on the landscape

- relationship to military structures at edge of road as one approaches Hill 129 and Battery Rathbone-McIndoe
- paved two-lane surface
- at Battery Spencer — scale or curve; water supply masonry route on surface of cut rock; approach to Battery Spencer complex, including concrete gates; approach to Battery Kirby complex, including gate
- intersection of Conzelman and McCullough roads, altered in the 1990s to a T intersection with preserved Y features

Western Conzelman Road

Character-defining features along Conzelman Road from McCullough Road to Field Road include:

- alignment and relationship to coastal edge and topography
- narrow width of roadbed, resultant slow driving speed
- unpaved shoulders
- repetitive appearance of military structures and ruins along road, defining the edge of the road and reinforcing the purpose of the road for access
- historic small-scale features such as stone walls, concrete curbing, and gutters that define road edge (particularly around Battery Wallace)
- open views down to Forts Barry and Cronkhite, providing an understanding of the physical relationship between the coast defense structures along the ridges and the forts set down in the protected valleys

Bunker Road

Bunker Road is a paved, primary road. It consists of eastern and western segments, plus Old Bunker Road.

East Bunker Road

Character-defining features sensitive to change from Danes Drive to the Murray Circle intersection include:

- roadbed alignment, descent to Fort Baker
- road width and soft shoulders until closer to Fort Baker
- relationship of tree massing to the road near the Fort Baker entrance
- stone retaining wall on south side at the Alexander Avenue overpass
- use of concrete pavement (under existing asphalt overlay)
- concrete waterway, and concrete curb and gutter near the entry to Fort Baker
- view through the underpass of Alexander Avenue

West Bunker Road

Character-defining features of Bunker Road sensitive to change from the Danes Drive intersection west to the Old Bunker Road / Mitchell Road intersection include:

- alignment of the road with respect to topography and landscape setting
- role as a connector road between east and west, following the valley margin
- intersections are secondary to east-west flow on Bunker Road, which is the primary route
- road width (two-lane and paved) and soft grass shoulders and ditches
- close relationship to built features adjacent to the roadbed, including the rifle range, the Capehart housing area, warehouse by the lagoon (note that the rifle and the pistol range comprise a historic military complex of structures, constituting a distinct component landscape within the larger cultural landscape of the historic district)
- one-lane alternate one-way Barry-Baker tunnel
- intersection of Bunker / Old Bunker / Mitchell roads, with a historic Y configuration that frames the approach to the Fort Cronkhite cantonment

Old Bunker Road

Character-defining features of Old Bunker Road sensitive to change include:

- alignment of road with respect to topography and the rise in grade to access Wolf Ridge and Battery Townsley

- role as connector to the former Nike missile site and Wolf Ridge
- road width and soft shoulder treatment of grass on the west and paved gutter on the east

East Road

East Road is a paved, primary road. Its character-defining features sensitive to change include:

- alignment
- roadside pullouts that indicate the former roadbed alignment
- oak/toyon woods framing view
- open vistas out to San Francisco Bay
- formal entry into Fort Baker and connection to Sausalito
- ongoing recreational use
- historic access to Battery Cavallo
- windrow of eucalyptus trees along roadbed descending down into Fort Baker
- World War II-era concrete curbing, gutters, drop inlets, and other associated drainage features
- masonry and concrete drainage features along uphill side of road
- exposed geologic features (i.e., cut rock faces) along west side of road
- use of railing along bayside of road in steep areas
- small-scale features that formalize approach into Fort Baker (sidewalk, curbing)
- Alexander Avenue overpass, dating to the Golden Gate Bridge's construction period, at the north end of East Road
- Fort Baker historic dump on downslope of road

Alexander Avenue

Alexander Avenue is a paved, primary road. Unlike all other roads in this plan that are under the jurisdiction and control of the National Park Service, Alexander Avenue is under the joint jurisdiction and control of Golden Gate National Recreation Area, Caltrans, and the Golden Gate Bridge Highway and Transportation District because it is an approach road to the Golden Gate Bridge. Its character-defining features sensitive to change include:

- alignment
- role as a connector between U.S. 101 and Sausalito
- extensive cut-and-fill grading to accommodate high-speed alignment
- exposed rock faces in cut excavations
- same light fixtures as used on the Golden Gate Bridge
- white post-and-timber railing along road edge
- distant vistas
- paved shoulders

Field Road

Field Road is a paved, primary road. Its character-defining features sensitive to change include:

- main access to Point Bonita Lighthouse and major fortifications, including Battery Alexander and the Nike missile site
- primary historic access to Fort Barry and associated batteries
- relationship of road to historic support buildings that line one segment of Field Road, and relationship to surrounding topography
- long-range views and vistas out to adjacent headlands and Rodeo Lagoon
- combination of mowed grass shoulders and ditches and World War II era concrete drainage structures along roadbed
- road alignment and width
- overhead powerlines along road edge
- intersection of Bunker and Field roads, with a historic Y alignment, framing the approach to the Fort Barry cantonment.

Mitchell Road

Mitchell Road is a paved, primary road. Its character-defining features sensitive to change include:

- alignment along lagoon's edge
- head-in parking on south side of road
- buildings along street edge, remnants of former cantonment

- large "yard" at west end of cantonment, accessed from road
- concrete gutters at intersections with Haggart-Glassburn Loop on the north side
- mowed grass shoulders and ditches (except where there is parking)

Secondary Roads

McCullough Road

McCullough Road is a paved, secondary road. Its character-defining features sensitive to change include:

- role as a paved connector road between ridge and valley
- alignment to negotiate the grade change
- long exposed rock cut slopes along inboard side of road
- soft grass and aggregate shoulders
- World War II features such as culverts, earthen gutters, and earthen shoulders
- intersection of McCullough and Bunker roads, with a historic Y configuration

Mendell Road

Mendell Road is a paved, secondary road. Its character-defining features sensitive to change include:

- narrow width and alignment of access road to Battery Mendell (existing pavement is modern and makes current road appear narrower than the original unpaved road underneath)
- primary use as a service and access road that terminated at Battery Mendell, then extended to Position 81 (present Bird Island Overlook)
- relationship between the rear apron at Battery Mendell (the battery's work area) and the roadbed
- openness and ocean views from the overlook turnaround

Tertiary Roads

Simmonds Road

Simmonds Road is a paved, tertiary road. Its character-defining features sensitive to change include:

- alignment and width
- paved asphalt surface
- relationship to buildings with road as connector
- transitions from buildings to roadside, paths to buildings
- tree plantings to define street's edge, accenting particular places
- entry gate posts (although, due to current one-way traffic circulation, these are now located at the exit of Fort Barry)
- historic concrete gutters and sidewalks
- contrast of landscaping from openness outside the fort (near Bunker Road and Field Road) to more enclosed sense of space near the parade ground; marks a sense of arrival and features become more pedestrian-scaled
- remnant guard posts along downhill side of road en route to Bunker Road
- remnant concrete and earthen swales along uphill side of road

Rosenstock Road

Rosenstock Road is a paved, tertiary road. Its character-defining features sensitive to change include:

- road width and alignment
- paved asphalt surface
- stone work, retaining walls, edging, curbing
- relationship between the road and the residential buildings — service access, not the front door
- intimate, personal scale of road as a driveway, not a through-road

Bodsworth Road

Bodsworth Road is a paved, tertiary road. Its character-defining features sensitive to change include:

- width and alignment
- paved asphalt surfacing

Fort Cronkhite Streets

Haggart-Glassburn Loop, Kirkpatrick Street, and Edison Street are paved, tertiary roads within Fort Cronkhite. Existing parallel parking on streets in the cantonment area is damaging road edges and

historic fabric. Character-defining features sensitive to change are listed below.

Haggart-Glassburn Loop

- functions as a transition between the two grids of the eastern and western cantonments
- small-scale features such as concrete gutters, curbing
- width and alignment of road
- crowning, narrow shoulders, downhill side slopes
- relationship of buildings to loop configuration
- parking in central area between buildings in the loop

Kirkpatrick Street

- typical street layout from the World War II era
- width and alignment
- crowning, narrow shoulders, downhill side slopes
- relationship to buildings lining street, setback of buildings
- stepped paths to buildings
- concrete gutters on uphill side
- utility poles line street edge, further define street grid
- curved alignment at west end of cantonment area

Edison Street

- west end depicts a typical street layout from the World War II era
- width and alignment
- crowning, narrow shoulders, downhill side slopes
- relationship to buildings lining the street, setback of buildings
- stepped paths to buildings
- concrete gutters on uphill side
- utility poles line street edge, further define street grid
- curved alignment at west end of cantonment area

Unpaved Roads / Trails

Julian Road

Julian Road is an unpaved road that is currently used as a trail. Its character-defining features sensitive to change include:

- original grading and alignment
- narrow one-lane width, typical of early roadways
- relationship to topography, little major manipulation (grading and earthmoving) to accommodate roadbed
- graded earth drainage ditch, which runs along the road at the bottom
- surface material, which is a medium to fine red chert, quarried nearby
- alignment alongside former rifle range, defines edge of the range

Dubois Road (trail)

Dubois is an unpaved road that has become overgrown and is now used as a trail. Its character-defining features sensitive to change include:

- use as an early connector route between Julian and Bunker roads
- alignment complements topography and changing grade

Non-Contributing Roads

The following paved and unpaved roads are used for access and parking. They no longer contribute to the historic district.

- Slacker Road (trail) (unpaved)
- Marine Mammal Center access drive (paved)
- Smith Road (paved)

The Rifle Range

Character-defining features of the rifle range that are sensitive to change include:

- boundaries formed by access roads
- mowed grass
- berms and pits

3.3.4 TRAILS

Historic records and documentation of trails in the project area are somewhat limited. The basic information maps prepared by the U.S. Army typically did not delineate trails, nor were formal contract plans prepared for trails. Today's trails are in most cases remnants of previous circulation features — former unpaved roadbeds or wagon roads that over time were used less and less by the military but more frequently by visitors and local users. These trail segments either were gradually perpetuated through use, or more often were abandoned, overgrown, and disappeared. In instances where roads were abandoned and became trails, their alignment has not changed dramatically.

Trails or segments of trails that are considered historic include the Rodeo Valley trail, the Coastal Trail, the Battery Alexander to Rodeo Beach trail, and the Rodeo Lagoon (South Shore) trail. Detailed descriptions of these trail segments in the Marin Headlands can be found in "Appendix C: Supplemental Trail Assessment" to the *Historic Road Characterization Study* (Feierabend and Kruse 2006).

Battery Rathbone–McIndoe Trails

Social trails occur west of the Upper Fisherman's trailhead to Battery Rathbone-McIndoe, then to the Lower Fisherman's trailhead. These existing social trails are not historic.

Battery Alexander to Rodeo Beach Trail (Battery Smith–Guthrie)

The Battery Alexander to Rodeo Beach trail route is historic, although it has had severe erosion and its condition is poor. Character-defining features sensitive to change include:

- general alignment
- scale as a foot trail
- continued use as a connector between Battery Alexander and Rodeo Beach

Coastal Trail — Rifle Range to Conzelman Trail Segment, and Conzelman to Rodeo Stables Trail Segment

The Coastal Trail includes the historic segments from the rifle range (Julian Road) to Conzelman Road (Upper Fisherman's trailhead) and from Conzelman Road (Upper Fisherman's trailhead) to the Rodeo stables. Character-defining features sensitive to change include:

- unpaved nature of trail
- scale as a footpath for the rifle range to Conzelman trail segment
- use as a connector between the rifle range and Conzelman trail segment
- continued use as a connector between Conzelman and the Rodeo stables trail segment

Rodeo Valley Trail

The Rodeo Valley trail includes historic segments from Building T1111 to the Bobcat Trail junction and from the Bobcat Trail junction to a point north of the foot of McCullough Road. Character-defining features sensitive to change include:

- alignment
- unpaved treatment
- narrow, one-lane character

Battery Alexander Parking Area to Point Bonita Trailhead

This is an existing social trail along the west edge of the YMCA center and is not historic.

Rodeo Lagoon (South Shore) Trail

The Rodeo Lagoon trail is also a segment of the Coastal Trail and is located on the south shore of Rodeo Lagoon. The eastern two-thirds of the trail retains its historic integrity; whereas the western third has been so heavily modified that it no longer retains historic integrity. Character-defining features sensitive to change include:

- general alignment of eastern two-thirds alongside Rodeo Lagoon
- unpaved surface

3.3.5 ARCHEOLOGICAL RESOURCES

Archeological monitoring of park-approved undertakings has been conducted in the district for many years to ensure that previously unknown prehistoric and historic sites were not impacted by ground-disturbing activities or other federal undertakings. These reconnaissance level efforts have identified at least two areas within the historic district with prehistoric deposits, one of which is south of Rodeo Lagoon and within the area of po-

tential effect. Park partners have found numerous isolated artifacts near Rodeo Lagoon and in other Marin Headlands locations.

In December 2005 NPS staff conducted an intensive pedestrian archeological survey to supplement existing cultural resource inventories for the headlands road corridors (Barker and Barnaal 2005). This survey effort mapped small-scale features and remnants of this landscape's historic fabric within the area of potential effect (except for trails, natural resource polygons, and wetland sites), which were not included in previous study efforts that focused on the transportation framework. While many of these features would not be directly impacted by the transportation plan actions, avoidance is key to their long-term management and should be taken into consideration as mitigation measures as the project moves forward into design and development.

3.4 VISITOR USE AND EXPERIENCE

3.4.1 VISUAL AND AESTHETIC RESOURCES

Views of the study area and views of the surrounding area from the Marin Headlands and Fort Baker are discussed to establish the visual character and aesthetic quality of the study area and surrounding region from key viewing locations (see Figure 3.3). The discussion related to Fort Baker is derived from the *Fort Baker Plan*.

Study Area Character and Views

Fort Baker

Fort Baker is in a valley at the northern entrance to San Francisco Bay, east of the Golden Gate, and contains historic structures, scenic views, natural features, and recreational opportunities. The visual character of Fort Baker is largely defined by military structures and roads constructed by the U.S. Army, as well as features of the natural environment. Fort Baker retains elements of its original military design, including a cluster of historic buildings arranged around a 10-acre parade ground, which lend it a campus-like appearance. Natural features, including steep, wooded slopes rising from the bay, a mile of rocky bay shoreline, and the harbor at Horseshoe Bay, further enhance the visual character of the site. Fort Baker is physically separated from the urban environment, creating the impression of peacefulness, serenity, and seclusion. Intangible qualities that contribute to the character of Fort Baker include natural quiet, solitude, sounds of nature, and natural darkness. The designed massing of cypress and eucalyptus trees for windbreaks is still discernible, although it has overgrown the original design.

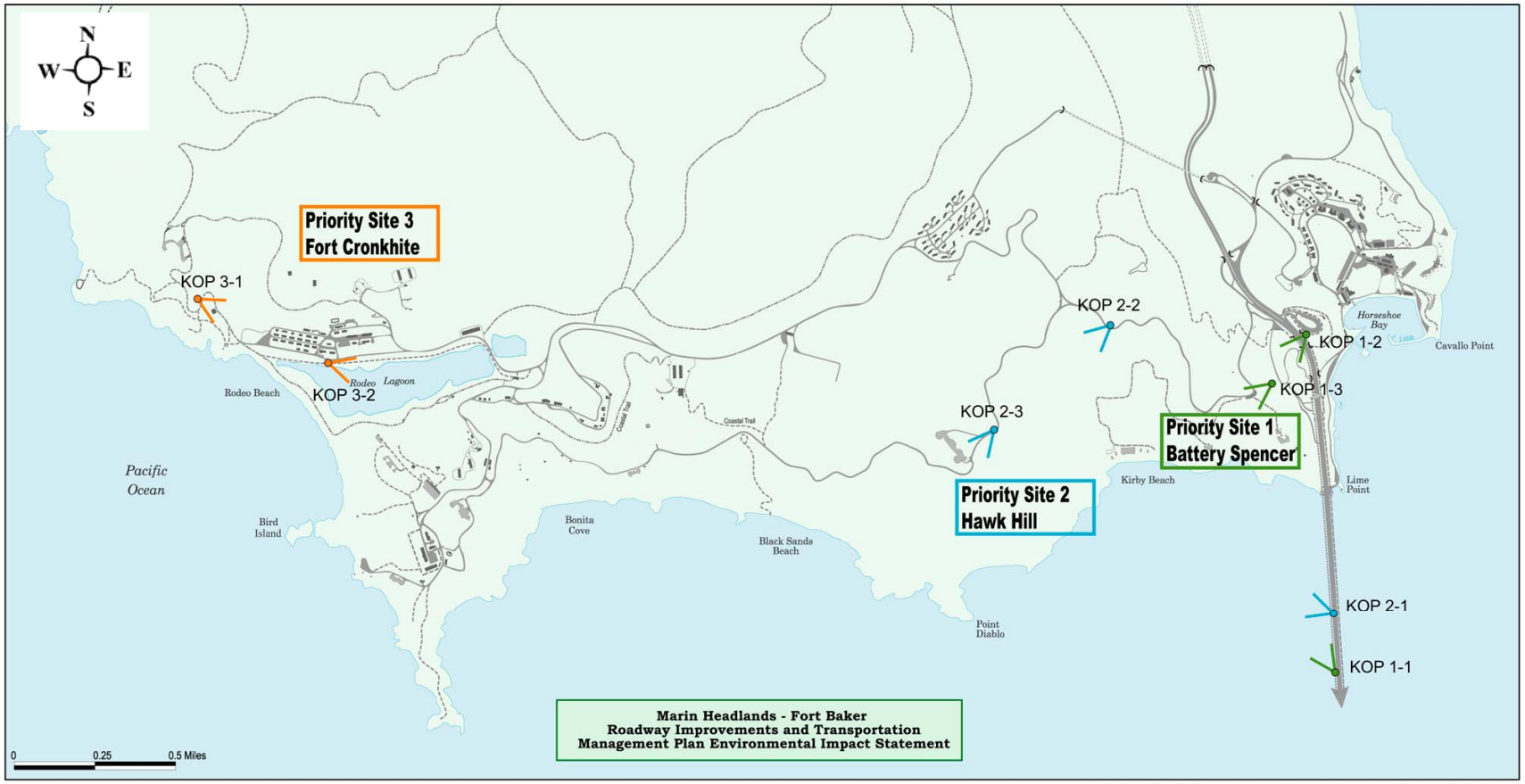
Fort Baker can be briefly viewed by pedestrians, bicyclists, and motorists on the Golden Gate Bridge. Other important viewpoints include Vista Point (an overlook between the Golden Gate Bridge and Fort Baker), and San Francisco Bay (e.g., views by boaters and windsurfers).

Marin Headlands

The Marin Headlands begin immediately north of the Golden Gate Bridge and expand westward from U.S. 101 to the Pacific Ocean. The visual environment includes steep cliffs, rolling hills, and a valley floor leading to Rodeo Beach, as well as narrow roadways, military structures, fortifications, and other historic structures built by the U.S. Army. The Army undertook extensive landform manipulation and plantings to conceal the military fortifications. The military roads followed the existing topography. The designed massing of the cypress and eucalyptus trees for windbreaks can still be seen, although they have now spread far beyond the original areas. The Golden Gate Channel and Pacific Ocean shores have cliffs up to 600 feet high. Point Bonita Lighthouse is located at the southwestern portion of the study area.

Intangible qualities contributing to the character of the Marin Headlands include natural quiet, solitude, scenic vistas, sounds of nature, and natural darkness.

Important locations with views of the Marin Headlands include the Golden Gate Bridge, San Francisco Bay, and U.S. 101. The high cliffs forming the southern edge of the headlands are prominently visible to pedestrians and bicyclists crossing the Golden Gate Bridge. Boaters also have prominent views of the cliffs and beaches along the southern and western edges of the headlands. Motorists on U.S. 101 have brief views of the headlands from the highway.



Priority Sites and Key Observation Points

KOP Locations and Orientation

KOP 2-1 refers to Priority Site 2, Key Observation Point 1

FIGURE 3.3 LOCATION OF THREE PRIORITY SITES AND EACH KEY OBSERVATION POINT

SOURCE: EDAW

Views from the Study Area

Fort Baker

Within Fort Baker principal viewing locations are along the southern waterfront. Views to the southwest include the Golden Gate Bridge, the Pacific Ocean, and the northwest shore of the San Francisco Peninsula. Views to the south include San Francisco Bay, the northern shoreline of San Francisco, the San Francisco skyline, the Presidio, Crissy Field, and Fort Mason. Views to the east include the San Francisco-Oakland Bay Bridge, Alcatraz Island, the Berkeley Hills, and Angel Island. East Road, which was originally built to provide the residents of Sausalito with a scenic pleasure drive, also offers expansive views of San Francisco Bay.

Many of the views from Fort Baker are obstructed by overgrown vegetation, particularly from Battery Duncan, East Road, and Bunker Road. Many of the original views from the parade ground to the waterfront and beyond have been obscured by tree plantings (mostly eucalyptus and acacia) and nonhistoric structures. Center Road and the parking lot associated with it also create a visual barrier between the parade ground and the waterfront.

Marin Headlands

Within the Marin Headlands, principal viewing locations are along the southern and western cliffs. The headlands provide visitors with a variety of built and natural images representing the historic uses of the area. A single view can yield a close look at a solid defense site of the 1890s, such as that of Battery Godfrey, and simultaneously include one of the elegant Moderne towers of the Golden Gate Bridge of the late 1930s. Views to the south include the Golden Gate Bridge, the Pacific Ocean, and the northwest shore of the San Francisco Peninsula. Views to the southeast include San Francisco Bay, the northern shoreline of San Francisco, and the San Francisco skyline. Views to the east include the San Francisco-Oakland Bay Bridge and Alcatraz Island.

Prevalent views of the open water are seen along the roadways of the Marin Headlands. North of the protective hills is a valley formed by Rodeo Creek, which leads to Rodeo Lagoon and Rodeo Cove. This relatively level area provides a contrast to the dramatic hills that surround it and serves as a naturally protected area for the cantonments of Forts Barry and Cronkhite. Fort Cronkhite is at the western edge of the Marin Headlands at Rodeo Beach. Dramatic views of the valley floor, Pacific Ocean, and Rodeo Lagoon are available from Fort Cronkhite.

Description of Priority Sites and Key Observation Points

The analysis of visual resources for the transportation plan is based on three priority sites: Battery Spencer, Hawk Hill, and Fort Cronkhite, as well as a general description of the remainder of the study area's visual resources. Each of these priority sites was evaluated from two to three key observation points (KOPs), representing the most commonly experienced views of these areas.

Priority Site 1: Battery Spencer Parking Area

The Battery Spencer priority site is in the southeast portion of the study area, west of U.S. 101. This site includes the area along Conzelman Road, extending from the Battery Spencer parking area (east) to the Overlook 1 bend (west). The Battery Spencer parking area is at a relatively high elevation, on a steep sloping, south-facing hillside.

The Battery Spencer parking area is mainly viewed from areas to the east and south. Publicly accessible viewing points from this direction include the Golden Gate Bridge, the Cavallo Point viewing area of Fort Baker, and Vista Point at Fort Baker. Battery Spencer can also be viewed, but to a lesser extent, from the Hawk Hill area to the west. The key observation points for Battery Spencer are from the Golden Gate Bridge, Vista Point, and Battery Spencer itself.

Key Observation Point 1 — Golden Gate Bridge

The Golden Gate Bridge (U.S. 101 northbound) receives a peak-hour volume of traffic of 8,300 vehicles, with an annual average daily traffic volume of 108,000 vehicles (Caltrans 2001). Therefore, a large number of people view Battery Spencer from this key observation point. Because of the length of the Golden Gate Bridge, the viewing distance toward Battery Spencer would range from the distant middleground to a foreground view. In general, a high vehicular speed (posted 45 mph limit) is common on the bridge; therefore, the view that motorists would experience of Battery Spencer would last for a short to moderate time.

Along with motorists, pedestrians and bikers also experience this view, but for a moderate to long time. Battery Spencer is at a higher elevation than the Golden Gate Bridge; therefore, viewers have to look up slightly to see the site. Photo 3.1 shows the existing view from this key observation point.

Photo 3.1. Battery Spencer seen from the Golden Gate Bridge.

Key Observation Point 2 — Golden Gate Bridge Vista Point

The Golden Gate Bridge Vista Point is a designated visitor destination and viewing area immediately northeast of the Golden Gate Bridge, east of Battery Spencer. This viewpoint is designed to focus the visitor's attention toward the east and south, at both the bay and the city of San Francisco. While the majority of viewers look to the southeast toward San Francisco, foreground to middleground views of the Battery Spencer site (toward the west) are also offered. Because this is a designated viewing area, the view from this key observation point can last from a long to a very long time. The non-uniqueness of the hillside to the west, and the ease of access to the Battery Spencer site itself, tends to reduce the duration of views toward this location. The Vista Point viewing area is accessible by car and trail. The vast majority of viewers arrive by vehicle (large buses are common). Photo 3.2 shows the existing view from this key observation point.

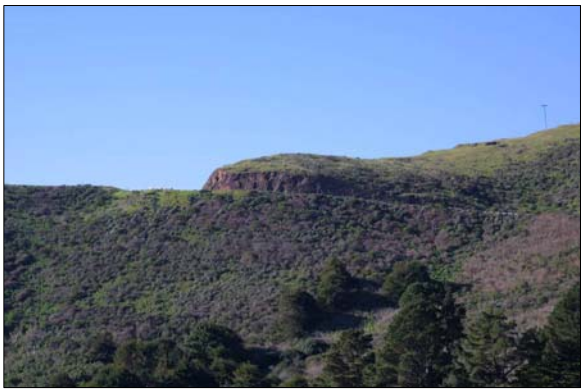


Photo 3.2. Battery Spencer from Vista Point.

Key Observation Point 3 — Battery Spencer Parking Area

The Battery Spencer overlook area is typically crowded on weekends. The parking area is 1/8-mile north of the overlook, and limited parking restricts the number of vehicles at any given time. People at the site can spend a long time enjoying views. Motorists, however, have much shorter views because of the curving road and rather short viewing area from the road. Motorists, pedestrians, and bicyclists all have an immediate foreground view of the Battery Spencer area. The sharp elevation increase to the north restricts the views from this priority site to the east, south, and west. This key observation point provides an elevated viewing position, allowing for unobstructed, long-distance views. Photo 3.3 shows the existing view.

Photo 3.3. The Battery Spencer overlook.

Priority Site 2: Hawk Hill

The Hawk Hill priority site is near the center of the study area along Conzelman Road, north of Point Diablo (see Figure 3.3). Like Battery Spencer, Hawk Hill is on a steep sloping, south-facing hillside. The Hawk Hill site is at a high elevation, near the crest of the hill.

The highest quality views of the Hawk Hill priority site are from the east and southeast. Publicly accessible views of the Hawk Hill site are attainable from Battery Spencer, as well as from the Golden Gate Bridge. Neither of these viewpoints is in the foreground viewing distance, and both are at a lower elevation. The key observation points for Hawk Hill include Golden Gate Bridge, Overlook 2, and Hawk Hill itself.

Key Observation Point 1 — Golden Gate Bridge

A large number of viewers (pedestrians, bicyclists, and motorists) can see Hawk Hill from the Golden Gate Bridge. Hawk Hill is at a higher elevation than the bridge, so viewers must look up slightly to see it. Hawk Hill is also farther west than Battery Spencer (in the distant middleground view), so it is out of the normal cone of vision for drivers on the bridge, but it would be in the cone of vision of pedestrians and cyclists on the bridge. Photo 3.4 shows the existing view from this key observation point. Some of the most visually prominent features in this view are the three deep eroded gullies that scar the slopes below Conzelman Road east of Hawk Hill. In fact the scars of these gullies are plainly visible from much of San Francisco as far east as Pier 39.

Photo 3.4. Hawk Hill from the Golden Gate Bridge.

Key Observation Point 2 — Overlook 2

The gravel parking area at Overlook 2 accommodates only a few parking spaces. Drivers who are able to park at this location (or walk from Overlook 1) can enjoy a long duration middleground view of Hawk Hill. Non-stationary viewers from this location (bicyclists and motorists) would have a short duration. Because of the vehicular traffic on Conzelman Road, a large number of motorists pass by Overlook 2. However, the view of Hawk Hill is out of the normal cone of vision for motorists. Photo 3.5 shows the existing view from this key observation point.

Photo 3.5. Hawk Hill from Overlook 2.

Key Observation Point 3 — Hawk Hill

Hawk Hill has two large designated parking areas, which allow for a large number of stationary viewers. Long duration views are common for pedestrians because of the ample parking area, as well as for bicyclists and motorists because the parking areas are commonly used as turnaround locations. Photo 3.6 shows the western portion of Hawk Hill in the immediate foreground.

Photo 3.6. Hawk Hill.

Priority Site 3: Fort Cronkhite

The Fort Cronkhite priority site is near the northwestern corner of the study area. This site includes a large area of development (compared to the majority of the study area). The visual analysis mainly focuses on the parking area to the west, and Mitchell Road to the south. Fort Cronkhite is at a low elevation, with hills blocking long distant views to the north, east, and south. Rodeo Beach is immediately west of Fort Cronkhite.

Publicly accessible foreground viewpoints of Fort Cronkhite are attainable from the east (Bunker Road), the south (the Point Bonita area and Field Road), and the west (along the Coastal Trail). The steep sloping topography that surrounds the fort, and the winding roads and trails in the vicinity limit long duration views when driving (to the southeast), or hiking the trails (to the west). The key observation points for Fort Cronkhite include the Coastal Trail (to the west) and 2) Mitchell Road (looking east).

Key Observation Point 1 — Coastal Trail

The Coastal Trail key observation point has an elevated viewing location in comparison to Fort Cronkhite, which provides for high-quality, unobstructed views. Fort Cronkhite is in the immediate foreground to middleground viewing distance from the Coastal Trail key observation point, which is mainly accessible to pedestrians and bicyclists (mountain bikers). The duration of view from the Coastal Trail would be moderate (for bicyclists) to long (for pedestrians). A similar view can be experienced to both the north and south along the Coastal Trail. Photo 3.7 shows the existing view from this key observation point.

Photo 3.7. Fort Cronkhite from the Coastal Trail.

Key Observation Point 2 — Mitchell Road

The view of Fort Cronkhite from Mitchell Road is possible for pedestrians, bicyclists, and motorists. The duration of view ranges from short (for motorists) to long (for pedestrians). Because the popular Rodeo Beach and Coastal Trail are accessed from the parking lot immediately to the west, this key observation point experiences a large number of viewers (approximately 3,170 people per day). Photo 3.8 shows the existing view from this key observation point.

Photo 3.8. Fort Cronkhite from Mitchell Road.

Visual Resource Description of Remainder of the Study Area

In addition to the priority sites discussed in the previous section, the visual quality of much of the remainder of the study area is characterized by the undeveloped rustic setting, stunning hills, valleys, coastline, and spectacular views outward over the Pacific Ocean and San Francisco Bay. Views of the foreground, particularly the built environment of the road, parking, and trail system, show a landscape degraded by past land use and transportation facilities. Examples include undefined barren parking and pullout areas (such as those on East Road that extend up to 40-feet off the road), many parking areas that lack definition and thus have expanded over time to cover many times more area than necessary, road shoulders with spectacular views that on busy days are partially obstructed by parked cars, and many hillsides scarred by eroded gullies or decades old bulldozed tracks, and trails. One of the most unsightly areas is the NPS roads and trails maintenance yard, which has equipment, materials, and junk stored outside, within public view. In the same vicinity is the Marine Mammal Center outdoor storage area; however, this site is scheduled for improvements.

3.4.2 RECREATION AND VISITOR EXPERIENCE

Recreation and visitor experience refer to recreation and other activities available to visitors and the character and quality of visitors' experiences while in the park. The 1980 *General Management Plan* includes the following management objectives related to visitor use and experience:

- *Making the recreation area readily available to the broadest variety of park users* — This objective is to be achieved by pursuing the extension of transit services into the park; offering recreational opportunities to a diversity of park users; imparting knowledge through interpretation, education, and information programs; and encouraging community organizations to use park areas for recreation and educational programs.
- *Providing a broad variety of park experiences* — This objective is to be achieved by offering a wide variety of uses; developing a trail system for hikers, cyclists and equestrians; providing overnight opportunities; and providing commercial services where needed.

Current aspects of visitor experience were studied using visitor surveys as part of the *Transportation Management Study* (Nelson\Nygaard 2002d). Visitor use and experience may be influenced by improvements considered in this *Final Environmental Impact Statement.*

Visitor Experience

Access

Approximately 88% of summer visitors travel to the park by automobile, while less than 5% use transit, which is available from San Francisco to the Marin Headlands only on Sundays (MUNI Route 76, SALLY used to provide service from Sausalito to Fort Baker during the spring, summer and fall but has been discontinued). Approximately 5% of visitors reported using a bicycle to enter the park. Because of the park's geographic location, an insignificant number enter the park by walking. The limited availability of transit service to the park, combined with its remote location for most residential neighborhoods, means that access to the park is largely limited to people with automobiles.

Types of Park Experiences

Based on a survey of park visitors in 2000, the primary park experiences enjoyed by visitors include the following (Nelson\Nygaard 2000):

- going to the beach — 28%
- visiting historic sites — 21%
- hiking — 15%
- visiting the Bay Area Discovery Museum — 11%
- biking — 5%

Other activities mentioned by respondents (less than 5% each) included visiting the Marine Mammal Center, seeing the ocean, picnicking, sightseeing, and special events (Nelson\Nygaard 2000).

Scenic Viewing

Visitors may access popular scenic viewing areas along Conzelman Road, within Rodeo Valley, around Rodeo Lagoon, along East Road, and along Horseshoe Bay by any available travel mode. The Marin Headlands features an extensive trail network from which many of the park's scenic vistas may be viewed. However, the park's most popular viewing areas are along Conzelman Road. In certain locations, such as Battery Spencer and the overlook points, pedestrians can access viewing areas not accessible by vehicle. However, the entire length of Conzelman Road is a scenic viewing corridor in which pedestrians, bicyclists, and vehicles share the roadway.

Hiking, Biking, and Equestrian Activities

The Marin Headlands features an extensive trail network (see section 3.1.5 for a more detailed description of bicycle access options and section 3.1.6 for pedestrian access). Sidewalks are generally not provided in the Marin Headlands, and pedestrians reach park destinations either by the trail network or sharing the road network with vehicles. There are few sidewalks or formal pedestrian paths and a limited trail network along Fort Baker's road network.

With the exception of the Barry-Baker tunnel, bike lanes are not provided in the study area. Consequently, bicyclists share roadways with vehicle drivers. Many of the routes used by bicyclists include sharp curves and narrow lanes that make it difficult for drivers to see bicyclists. As a result,

bike use is limited primarily to enthusiasts who are not as concerned with safety as typical, family-oriented cyclists. Bicyclists are permitted on the wider portions of the trail network in the Marin Headlands, but there are few sections of the Coastal Trail and a few short steep trails leading to the coastline where only hikers and equestrians are permitted.

Equestrians are permitted on the Coastal Trail from the bottom of Slacker Hill west to Bunker Road near the historic rifle range, where they share this multi-use section with cyclists and pedestrians. Equestrians, bicyclists, and hikers are allowed on Slacker Road (trail) to the launch site. Equestrians and pedestrians are allowed on the trail from that general area south and west to the Lagoon Trail, which encircles Rodeo Lagoon. Starting at the end of Old Bunker Road, equestrians may ride the Coastal Trail to Wolf Ridge (although they are not permitted on the Wolf Ridge Trail). In addition, equestrians are permitted on the Miwok Trail and Bobcat Trail, which also permit cyclists and pedestrians, and Rodeo Valley Trail, which allows pedestrians. The section of Rodeo Valley Trail from western bridge to Bobcat Trail allows bicyclists as well as pedestrians and equestrians. Equestrian activities at existing facilities will be addressed through a separate planning process for the Marin Headlands.

Aquatic Recreation

The study area's main waterfront sites include Horseshoe Bay, Rodeo Beach, and Black Sand Beach. Kayaking and sailing are popular recreational activities that originate at Horseshoe Bay. Rodeo Beach is a popular site for surfing. These features are generally accessible by private vehicle and have nearby parking facilities. Rodeo Beach is accessible by transit only on Sundays.

Information and Interpretive Services and Programs

Information and interpretive services are available at the visitor center on Field Road, at the Nike missile site, and at park partner facilities, including the Bay Area Discovery Museum at Fort Baker, the Marine Mammal Center, and the Headlands Institute. The visitor center is open daily between 9:30 a.m. and 4:30 p.m. There are few other formal interpretive signs or other information resources in the park. The visitor survey revealed that "lack of information" (4% of respondents) and "poor signage" (30%) were problems for visitors (Nelson\ Nygaard 2000). Both NPS and park partners offer educational and interpretive programs.

Park Partner Facilities and Activities

An unusual characteristic of the Golden Gate National Recreation Area compared to other national parks is that many of its visitor programs are run by private nonprofit park partners, who occupy the historic military buildings and contribute to the overall maintenance requirements of the park. Partners at the Marin Headlands and Fort Baker include a variety of organizations ranging from museums to hostels. All of these partners occupy facilities or operate activities in the study area.

Park Partner Activities

Visitors can access recreational and educational activities provided by park partners by private vehicle, scheduled bus drops (such as school groups), or by visitors willing to make the strenuous bike ride into the park. Transit services provide connections to park partner activities in Fort Baker during the spring, summer, and fall and to the Marin Headlands on Sundays.

Bay Area Discovery Museum. The Bay Area Discovery Museum is housed in a group of historic buildings in east Fort Baker. The museum is a nonprofit organization that provides participatory educational exhibitions and programs for children, with a focus on the arts, humanities, science, and technology. The museum is open Tuesday through Friday from 9 a.m. to 4 p.m. and Saturday and Sunday from 10 a.m. to 5 p.m.

The Golden Gate Raptor Observatory. The Golden Gate Raptor Observatory is a cooperative program of three staff members and over 250 volunteers who study the autumn migration of 19 different species of raptors in the Marin Headlands. The office is in Fort Cronkhite. The observatory offers weekend public programs on Hawk Hill to introduce the basics of migration.

The Headlands Center for the Arts. The Center for the Arts is housed in nine historic buildings on Simmonds Road in Fort Barry. The center provides studio space for 29 artists who live and work at the center for up to five months. The center hosts a variety of community and educational programs

throughout the year, including talks, performances, open houses, and readings.

The Headlands Institute and Yosemite National Institute. Both institutes are housed in seven historic buildings in Fort Cronkhite off Bunker Road. They offer year-round adult and student programs focused on the natural environment and contain event, conference, and retreat facilities. Programs include multi-day youth summer activities, adult and family seminars, and a training program for environmental educators.

The Marin Headlands Hostel (Hostelling International — Marin Headlands). The hostel is housed in multiple historic buildings in Fort Barry. It offers overnight accommodations and is a short walk from Rodeo Lagoon and Beach.

Marine Mammal Center. The Marine Mammal Center is a marine wildlife research and rescue organization that rescues and rehabilitates injured, sick, or orphaned marine mammals for return to the wild. The center, which is located in Fort Cronkhite off Bunker Road, has a visitor center, gift shop, classroom, and marine mammal hospital. The center is open to the public from 10 a.m. to 4 p.m., daily. Construction of a new marine mammal center is expected to be completed in late 2007.

The YMCA Point Bonita Outdoor Education and Conference Center. This multi-purpose conference facility is in Fort Barry off Field Road. Facilities include meeting rooms, lodging, recreational areas, and a campfire amphitheater. The center can accommodate up to 150 people for overnight or extended stays, and it offers day camps, outdoor educational programs, nature hikes, picnic areas, and a dining hall serving three meals a day.

Antenna Theater. An audio tour provider, Antenna Theater offers program interpretation support services for Golden Gate National Recreation Area. Their office is in Fort Cronkhite off Bunker Road in one of the World War II vintage barracks buildings.

Home Away from Homelessness. This is a respite program for shelter-based families. Acting in partnership with National Park Service, Home Away acquired the use of a cottage (Beach House) on park land in the Marin Headlands.

Foundation for Deep Ecology. This organization is dedicated to the preservation of wild nature through land acquisition, activism, publishing, and grant making. Their office is in Fort Cronkhite.

Marin Headlands Native Plant Nursery. The nursery grows over 30,000 plants each year to restore natural habitats within Golden Gate National Recreation Area. The nursery is one of six native plant nurseries in the park.

Fort Baker Conference and Retreat Center. The Fort Baker conference and retreat center is currently being developed in the historic buildings around the Fort Baker parade ground and in the adjacent nonhistoric Capehart area. The center would provide adequate space for meetings, dining, and overnight accommodations.

3.4.3 NOISE

Noise is generally defined as sound that is loud, disagreeable, or unexpected. Sound is mechanical energy transmitted in the form of a wave due to a disturbance or vibration.

Because of the ability of the human ear to detect a wide range of sound-pressure fluctuations, sound-pressure levels are expressed in logarithmic units called decibels (dB). Noise levels are expressed as A-weighted decibels (dBA). Humans typically have a reduced hearing sensitivity at low frequencies compared with their response at high frequencies, and the A-weighting of noise levels closely correlates to the frequency response of normal human hearing. Typical indoor and outdoor noise levels based on the dBA scale are presented in Figure 3.4.

With respect to how humans perceive increases in noise levels, a 1 dBA increase is imperceptible, a 3 dBA increase is barely perceptible, a 6 dBA increase is clearly perceptible, and a 10 dBA increase is subjectively perceived as approximately twice as loud (Egan 1988). For this reason, an increase of 3 dBA or more is generally considered a degradation of the existing noise environment.

Sound travels uniformly outward from a point source in a spherical pattern with an attenuation rate of 6 dBA per doubling of distance. However, from a line source (e.g., a road) sound travels uniformly outward in a cylindrical pattern with an attenuation rate of 3 dBA per doubling of distance.

Atmospheric conditions (wind, temperature, humidity) and the presence of a barrier (hill, trees, wall building, etc.) between the source and receptor may affect noise levels.

Negative effects of noise exposure include physical damage to the human auditory system, interference with everyday activities, and disease. Gradual hearing loss results from sustained exposure to moderately high noise levels over a period of time as opposed to traumatic loss, which is due to sudden exposure to extremely high noise levels over a short period. Noise may interfere with or interrupt sleep, relaxation, recreation, and communication. Although most interference may be classified as annoying, the inability to hear a warning signal may be considered dangerous. Noise may also be a contributor to diseases associated with stress, such as hypertension, anxiety, and heart disease. The degree to which noise contributes to such diseases depends on the noise frequency, band width, level, and exposure time (Caltrans 1998).

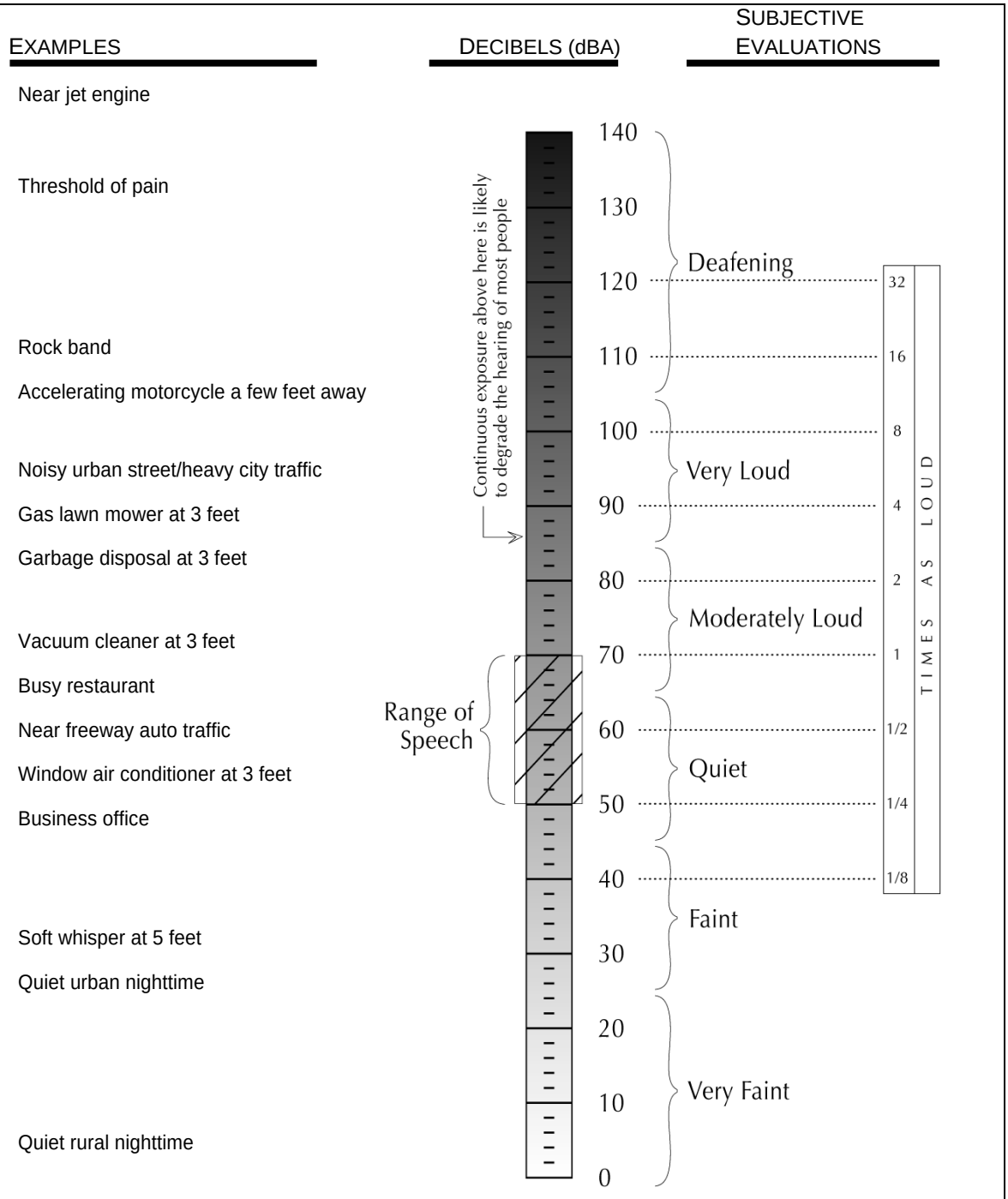


FIGURE 3.4 TYPICAL NOISE LEVELS

SOURCE: EGAN 1988, EDAW 2005.

Existing Natural Sounds and Noise Sources

Natural sound sources within the study area include, wind, waves, and wildlife. Existing noise within the study area emanates primarily from vehicular traffic on area roadways. As expected, traffic noise is dominant along the U.S. 101 corridor. At Marin Headland sites that are west of the Slacker

Hill ridgeline, highway noise is blocked by the hills. Also, Fort Baker is less affected by the highway noise because it is situated lower than U.S. 101. In addition to these primary noise sources, there is intermittent air traffic noise because the study area is under the flight path for some flights associated with both the Oakland and San Francisco airports. Managing ambient urban noise is difficult because of the unpredictability of the sources and the dispersal throughout the landscape. Preserving natural quiet (and natural sounds) and reducing human sounds, including those from cars and buses, is an NPS objective. Background noise levels within the study area range from approximately 50 to 60 dBA, depending primarily on distance from area roadways.

The FHWA traffic noise model (FHWA 1988) was used to predict traffic noise levels along area roadways for current conditions based on trip distribution estimates for this project. Table 3-12 summarizes noise levels at 50 feet from the centerline of the near travel lane for the roadway segments in the study area. The roadway noise levels presented in the table represent worst-case potential noise exposure, which assumes no natural or artificial shielding between the roadway and a receptor located 50 feet from the centerline of the near travel lane.

In addition, an ambient noise survey was conducted on July 20, 2005 (a weekday) to document the typical existing noise environment at various locations, specifically at noise-sensitive receptors within the study area (see Table 3-13). Noise-sensitive land uses generally include those uses where exposure to noise would result in adverse effects, as well as uses where quiet is an essential element of the expected experience. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Noise-sensitive uses within the study area include the Capehart housing area, the Bay Area Discovery Museum, the Marin Headlands hostel, and the Marine Mammal Center, as well as various wildlife habitat areas. The dominant noise sources noted during the survey were vehicle traffic on area roadways. None of the noise levels for these noise-sensitive sites currently exceeds the FHWA guidelines for considering noise abatement.

TABLE 3-12. SUMMARY OF MODELED EXISTING TRAFFIC NOISE LEVELS

Roadway Segment and Location	Noise Level (dBA) 50 Feet from Centerline of Near Travel Lane
Bunker Road (west of Barry-Baker tunnel)	56.24
Bunker Road (east of Barry-Baker tunnel)	53.27
Conzelman Road	59.33
East Road	53.22
Alexander Ave.	62.93
U.S. 101	77.16

SOURCE: Data modeled by EDAW in 2005.
NOTE: Based on total (in and out) daily average traffic volumes for summer conditions.

TABLE 3-13. AMBIENT NOISE SURVEY MEASUREMENTS

Location	Time	Noise Level (dBA)		
		L_{eq}	L_{max}	L_{min}
Marin Headlands Hostel	1:15–1:35 p.m.	47.0	63.1	36.5
Marine Mammal Center	1:48–2:08 p.m.	55.1	75.4	40.8
Capehart Housing Area (Bunker Road)	2:20–2:35 p.m.	60.1	77.0	40.2
Capehart Housing Area (East Bunker Road)	2:45–3:09 p.m.	55.0	71.9	50.2

SOURCE: Data collected by EDAW 2005.
NOTE: All measures taken on the afternoon of July 20, 2005.
L_{eq} (Equivalent Noise Level) — The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value is calculated, which is then converted back to dBA to determine the L_{eq}.
L_{max} (Maximum Noise Level) — The maximum instantaneous noise level during a specific period of time; may also be referred to as the "peak (noise) level."
L_{min} (Minimum Noise Level) — The minimum instantaneous noise level during a specific period of time.

3.4.4 HUMAN HEALTH, SAFETY, AND THE ENVIRONMENT

The focus of this discussion is on hazardous materials within the study area as a result of military use over the last 100 years, as well as fire, police, and emergency medical service access, and seismic and tsunami safety considerations in the Marin Headlands and Fort Baker. Public safety as it relates to vehicle, bicycle, and pedestrian uses is discussed under "Transportation" (sec. 3.1).

Several areas within the Marin Headlands and Fort Baker have been affected by hazardous substances released over the 100 years of military use. Contamination of soil and possible impacts to groundwater in these areas could affect the implementation of the proposed plans in several areas.

The status of the U.S. Army's environmental remediation efforts in the Marin Headlands and Fort Baker is discussed below. Analysis of the remediation efforts is covered in separate environmental documentation being prepared by and for the Corps of Engineers. Because the subject contamination occurred during the stewardship of the Army, the Corps is serving as agent on behalf of the Department of Defense, the responsible agency. The primary sources of information used for this summary are reports generated by Army consultants for hazardous substance investigation and cleanup at Forts Baker and Barry (USACE 1997, 1998; Reidel 1995; Remedial Constructors, Inc. 1996, 1998a, 1998b, 1998c); material provided by NPS consultants (Erler & Kalinowski 1998); and the "Draft Final Records Research Report for Fort Baker" (USACE 2004).

The Corps has conducted extensive investigations at Fort Baker to determine, locate, and identify the extent and scope of hazardous substances in the environment. The Corps has also conducted a moderate amount of investigation, although limited cleanup to date, at Fort Barry. The Corps' environmental investigation at Fort Cronkhite is scheduled to begin in 2008.

There are currently no reported issues with public safety in the park related to personal safety or security of personal property, with the possible exception of remaining unexploded ordnance at Fort Barry.

The National Park Service also has an ongoing system of environmental audits conducted for each park on a two-year cycle. These audits review all NPS and park partner operations that use potentially polluting substances to ensure proper storage, usage, and methods of disposal.

Known and Suspected Hazardous Substances and Contaminated Sites

During the site investigation of Fort Baker, eight areas were identified with elevated soil concentrations of polycyclic aromatic hydrocarbons, pesticides, metals, and petroleum hydrocarbons. Of the eight areas, four have been recommended for advancement to a remedial and feasibility investigation. These areas include the storm drain system, Horseshoe Bay, a petroleum tank site near building 637, and a concrete basin near building 407. The four remaining areas (an engine repair shop, a small paint shed, soil beneath the deck of the historic boat shop, and the vehicle wash rack adjacent to building 691) have been cleaned up. In addition, a number of petroleum release sites have been identified and are being addressed by the Army.

Underground storage tanks likely remain throughout the Marin Headlands and Fort Baker. These tanks may have held heating oil, solvents, or fuel, and over time may have started leaking into the surrounding soils. As the Corps of Engineers proceeds with their more detailed surveys and studies of Forts Barry and Cronkhite, the remaining tanks should be located, removed, and any surrounding contaminated soils cleaned up.

Soils at the Fort Barry rifle range (also including the long rifle range and the revolver range) are contaminated with lead, copper, and antimony above currently accepted regulatory levels. There may also be unexploded shells and grenades at the rifle range. Although the highest metal levels were documented at the target berm (southeast end), soils at the firing line near Bunker Road also exceed acceptable levels. The Corps is responsible for taking remediation actions at this site.

Contaminants found at the indoor horse stable arena (a former blimp hangar), which also served as a motor pool, include zinc, lead, acetone, and hydrocarbon in the soil around the perimeter of the building. Although various contaminants of concern exist at the site above regulatory levels, the Corps recommended additional investigation for lead only.

The area between the existing stables and Bunker Road was the site of a former Army fuel station. Four soil borings at this site did not discover any remaining hydrocarbons. However, the soil borings may not have been precisely placed and hydrocarbon-contaminated soil may remain. The Fort Barry site inspection conducted in 2003 located a 5,000-gallon underground storage tank likely holding gasoline. The tank is on the ridge approximately 600 feet northwest and 100 feet above the current barn and horse stables. This tank, within a concrete vault, is scheduled for future removal, along with an investigation of a supply pipeline leading from the tank to the former fuel station.

The Corps removed an underground storage tank from Battery 129/Hawk Hill (above the road) in 1992. Hydrocarbons from diesel fuel were found to

have contaminated soil around the former tank site at levels that will require further investigation.

The Corps removed two underground kerosene tanks at Battery Mendell in 1992. Although no additional underground storage tanks were discovered during survey conducted in 2003, additional tanks could be located at this site.

In addition to potentially contaminated sites and soils discussed elsewhere, lead-based paint chips falling off the buildings have likely contaminated the soil within approximately 3 to 6 feet from drip lines of buildings constructed before 1955. At Fort Baker, the future retreat and conference center operator will abate these lead-contaminated soils as the buildings are rehabilitated. Although extensive testing has not yet been initiated, it is assumed that similar lead paint contamination exists around the buildings at both Forts Barry and Cronkhite. Given that the buildings at Fort Cronkhite are half as old as those at Forts Baker and Barry, and thus have had fewer years of paint peeling and scraping, there may be lower levels of lead contamination at Fort Cronkhite.

Public Safety Services

Fire and emergency services at the Marin Headlands and Fort Baker are provided by the NPS fire department. Fire Station 2, at Fort Cronkhite, has primary responsibility for fire protection of the area. The Presidio Fire Station, located on the main post of the Presidio of San Francisco, provides reinforcements to Fire Station 2. Additionally, the NPS fire department maintains formal mutual aid agreements with the Sausalito and San Francisco fire departments. The alternating one-way lane through the Barry-Baker tunnel on Bunker Road is a bottleneck for emergency vehicles. Consequently, emergency response vehicles travel to and from the Marin Headlands over Conzelman and McCullough roads.

The National Park Service provides police services to the Marin Headlands and Fort Baker through the United States Park Police and NPS rangers. In addition, there are memorandums of understanding with the Marin County sheriff's office for support services. The United States Park Police headquarters is located at Fort Scott at the Presidio of San Francisco.

Seismic Conditions

As previously discussed, the Marin Headlands is in an area of high probability for a future severe earthquake (see sec. 3.2.1). The low-lying shoreline areas of the Marin Headlands and Fort Baker such as Rodeo Beach, Fort Cronkhite, and Fort Baker are also subject to the risk of tsunami run-up and flooding.

3.5 SOCIAL AND ECONOMIC ENVIRONMENT

This section describes the existing social and economic conditions in communities surrounding the Marin Headlands and Fort Baker, providing background information and establishing the regional context for the study area.

3.5.1 VISITOR POPULATION

The many diverse sites that comprise Golden Gate National Recreation Area attract millions of visitors each year. Between 2003 and 2004 visitation averaged approximately 13.6 million visitors annually (NPS 2006a). Visitation to the Marin Headlands and Fort Baker is over 1 million people annually. Characteristics and demographics of visitors that frequent the study area, based on a visitor survey conducted Labor Day weekend 2000 are provided below (Nelson\Nygaard 2000):

- Less than half of the visitors to the study area (41%) were first-time visitors.
- More than half of the visitors planned their visit on the same day they visited the study area (53%).
- Most visitors spent longer than an hour in the Marin Headlands and Fort Baker (87%). More than three hours was the most common length of stay (32% of visitors).
- Only 15% of visitors came to the park alone.
- Local visitors (from the greater Bay Area, including San Francisco and Marin County) represented 68% of all visitors.
- San Francisco residents accounted for 23% of visitors, and Marin County, 16%.
- More than 50% of the respondents were between the ages of 21 and 39, and 23% were under 18. Only 3% were over 65.

- Almost three-quarters of the respondents (71%) had completed a four-year degree or post-graduate study. Only 10% of respondents did not attend at least some college.

Traffic growth rates can be used as an estimate of potential increases in visitation. Traffic growth is expected to average 0.7% per year through 2023 for parklands in southwestern Marin County (David Evans & Associates 2004). Therefore, potential increases in visitation will also occur.

3.5.2 LOCAL COMMUNITIES

One of nine Bay Area counties, Marin County is linked to San Francisco by the Golden Gate Bridge and to the East Bay by the Richmond-San Rafael Bridge. Marin County is bordered on the north and northeast by Sonoma County and on the west by the Pacific Ocean. The 520 square miles of Marin County offer a wide range of landscapes, from the tidal flats of the coastline to Mount Tamalpais, rising 2,600 feet above sea level, and from the dense stands of redwood and pine to the inland grasslands and exposed rocky areas of the Pacific coastline. The 141,400 acres of federal, state, and county parkland, county open space, and two water districts' lands devoted to recreation (Marin County 2001a), has made the county a recreation destination for the entire Bay Area.

Sausalito, which borders the northern tip of Fort Baker, encompasses about 2.5 square miles along the San Francisco Bay in the southern part of Marin County. The city is characterized by a Mediterranean style village with restaurants and shops hugging the waterfront and houses in pastel colors climbing the hillsides behind.

Socioeconomic issues pertaining to surrounding communities as identified in public meetings or agency consultations relate to quality of life issues such as traffic congestion and access to the Marin Headlands and Fort Baker. Population and economic characteristics of Marin County, Sausalito, and San Francisco are described below to provide a context for the impact discussion.

Marin County

The population of Marin County was 230,096 in 1990 and 247,289 in 2000, indicating a 7.5% increase over 10 years (U.S. Bureau of the Census 2001). Population growth is somewhat lower for Marin County compared to other Bay Area counties.

The median household income for Marin County was $48,544 in 1989 and was $71,306 in 1999. The 1999 median household income was well above the national median of $41,994. In 1999, 6.6% of Marin County residents were below poverty level, which was lower than the national average of 12.4%.

Marin County residents are predominantly white (78.6%), according to the 2000 Census. The county also has a large Hispanic/Latino population, which represents 11.1% of the residents. Asians comprise 4.5% and African-Americans 2.8% of the population.

City of Sausalito

Sausalito is closer to the Marin Headlands and Fort Baker than any other community. Its 1990 population was 7,152, and in 2000, 7,330, an increase of 2.5% over 10 years.

The median household income for Sausalito residents was $60,471 in 1989 and $87,469 in 1999. These income levels have all been consistently well above the national median household income levels. In 1999, 5.1% of Sausalito residents were below poverty level, which was lower than the county figure (6.6%) and well below the national level (12.4%).

Similar to the county as a whole, the residents of Sausalito are predominantly white, 89.4%. The city's Hispanic/Latino and African-American populations are lower than those of the county, 3.3% compared to 11.1% for Hispanic/Latino and 0.6% compared to 2.8% for African-American. The Asian population is similar, 4.1% as compared to 4.5% in the county.

City and County of San Francisco

The City and County of San Francisco grew from 723,959 residents in 1990 to 776,733 residents in 2000, an increase of 7.3%. The median household income was $55,221 in 1999, with 11.3% of residents below the poverty level.

The racial composition of San Francisco is different than that of Marin County and Sausalito. The 2000 Census indicates that 43.6% of the residents

are white, with Asians making up 30.7%, Hispanic/Latino 14.1%, and African-Americans 7.6%.

3.6 PARK OPERATIONS AND MANAGEMENT

Information about park operations and management is largely derived from the *Fiscal Year 05 Annual Park Program Summary: Golden Gate National Recreation Area* (Golden Gate National Parks Association and Golden Gate National Recreation Area 2005). The Marin Headlands and Fort Baker study area constitutes approximately 3,000 acres (or 4%) of parkwide total. Because these various parks and recreation sites share administrative resources, the information from the operating plan and budget refers to the entire Golden Gate National Recreation Area and is not specific to the Marin Headlands and Fort Baker.

3.6.1 STAFF AND RESOURCES

Management functions are divided into several divisions, including Public Affairs and Special Park Uses, Planning and Technical Services, Natural Resources Management and Research, Business Management, Cultural Resources and Museum Management, Maintenance and Engineering (the largest division), and Visitor Protection (law enforcement and emergency services). A unit of the United States Park Police assists with issues of public safety and enforces compliance with park regulations. The park also includes an interpretation unit that provides visitor programs and visitor information.

Golden Gate National Recreation Area has approximately 269 permanent employees and 60 full-time non-permanent employees. Additionally, the park draws on the resources of volunteers whose total labor contribution is equivalent to 174 full-time employees.

The accomplishment of the park's mission is further supplemented by park partners including the Golden Gate National Parks Conservancy, concessioners, onsite non-profit organizations, student interns, the Student Conservation Association, contractors, and joint work agreements with adjoining jurisdictions.

3.6.2 EXISTING MAINTENANCE AND PARK OPERATIONS IN THE MARIN HEADLANDS AND FORT BAKER

The majority of the park's existing transportation infrastructure, including roads, trails, and parking areas, was constructed by the U.S. Army 50 or more years ago to serve military functions. In many cases the infrastructure is poorly suited to the area's current function as a recreational facility. The current physical condition of the road network also results in a variety of ongoing maintenance needs. At the Marin roads and trails maintenance area, NPS maintenance equipment is parked out in the salty, corrosive marine air, leading to premature deterioration. All of these challenges to the park's operations and maintenance needs are gradually worsening as the park's roadway infrastructure ages and visitation increases.

The lack of consultation under the Endangered Species Act for road and trail maintenance activities in mission blue butterfly habitat greatly inhibits proper maintenance of these facilities. Basically no work off the pavement can occur. As a result, over a decade of rockfall deposits have accumulated on the shoulders of roads, such as Conzelman Road.

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential environmental consequences of implementing any of the alternatives being considered. It is organized by resource topic and provides a standardized comparison among alternatives based on topics described in Chapter 1 and further described in Chapter 3. In accordance with the National Environmental Policy Act, impacts are described in terms of context, intensity, and duration; cumulative impacts and mitigating measures for adverse impacts are also described. The analysis for each impact topic includes the methods used to assess the type and relative level of impact. Consistent with NPS policy, a determination of whether natural or cultural resource impacts would result in the impairment of park resources or values is made for each topic.

The impacts of Alternative 1 (the No-Action Alternative) are described first because they are the baseline for comparing the other alternatives, then the impacts of the Preferred Alternative (Alternative 3) are described, followed by the impacts of Alternatives 2 and 4.

4.1 INTRODUCTION

4.1.1 GENERAL METHODOLOGY FOR ANALYZING IMPACTS

Potential impacts or effects are described in terms of type, context, duration, and intensity, which are generally defined below, while more specific impact thresholds are given for each resource at the beginning of each resource section.

- *Type of Impact* — Impacts can be either beneficial or adverse. A beneficial impact would be a positive change in the condition or appearance of the resource or a change that would move a resource toward a desired condition. An adverse impact would be a change that would move the resource away from a desired condition or would detract from its appearance or condition.
- *Context* — Context describes the area or location (site-specific, local, parkwide, or regional) in which the impact would occur. Site-specific impacts would occur at the location of the action, local impacts would occur within the general vicinity of the study area, parkwide impacts would affect a greater portion of the park, and regional impacts would extend beyond park boundaries.
- *Duration* — Duration describes the length of time an effect would occur, either short term or long-term. Short-term impacts would generally last only during the implementation period, and the resources would resume their pre-construction conditions afterwards. Long-term impacts would last beyond the implementation period, and resources might not resume their pre-construction conditions for a longer period of time following construction.
- *Intensity* — Intensity describes the degree, level, or strength of an impact. For this analysis, intensity has been categorized into negligible, minor, moderate, and major. Because definitions of intensity vary by resource topic, intensity definitions are provided separately for each impact topic.
- *Direct and Indirect Impacts* — NPS policy requires that direct and indirect impacts be considered, but not specifically identified. A direct effect would occur at the same time and place as the action. An indirect effect would be caused by an action but would be later in time or farther removed in distance, but would still be reasonably foreseeable.

4.1.2 CUMULATIVE IMPACT SCENARIO

The Council on Environmental Quality (CEQ) regulations that implement the provisions of the National Environmental Policy Act requires that cumulative impacts be assessed in the decision-making process for federal projects. Cumulative effects are defined by the CEQ regulations as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time.

The cumulative impact analysis includes projects both inside and outside the park. Cumulative impacts were determined by combining the impacts of each alternative with other past, present, and reasonably foreseeable future actions within the park and outside the park, as described below.

Actions within the Study Area

Past Actions

Golden Gate Bridge Security. Since September 11, 2001, security measures at the Golden Gate Bridge have included closing Lower Conzelman Road to vehicular traffic under the bridge.

H. Dana Bowers Memorial Vista Point Improvements, Phase 1. Caltrans rehabilitated Vista Point in Fort Baker in 2004. Improvements included new restrooms, replacing and adding landscaping, installing a central plaza with a memorial to the United States Navy, and improving circulation and accessibility through the site. Circulation improvements included widening the bicycle ramp leading from the Golden Gate Bridge and path through the central island, delineating parking lot crossings, and relocating the path between traffic lanes and the entrance to the site for a safer and more direct northbound connection to U.S. 101 (San Francisco Bay Trail Project [SFBTP] 2000).

Bay Area Discovery Museum Expansion. Museum expansion included improvements to the building and parking facilities. All improvements have been completed, including a new entry pavilion and store, new art studios, and a 2.5-acre outdoor discovery area for children.

United States Coast Guard Vessel Traffic Service Radar Tower at Point Bonita. The U.S. Coast Guard built a new 120-foot Vessel Traffic Service (VTS) radar tower 120 feet north of the existing 60-foot tower at Point Bonita on Coast Guard property. Construction was completed in 2006 (NPS 2005e).

Current and Future Actions

Parklands Water Shuttle Study. The National Park Service produced the *GGNRA Water Shuttle Access Study & Conceptual Plan Summary* in March 2006 to evaluate the demand and demonstrate the feasibility of a parklands recreational water shuttle system. The study concluded that such a system is feasible and that there is "significant potential for productive ridership on a recreational water shuttle system, particularly during higher tourist (peak summer) visitation periods." The study predicts a reasonable expectation of 837 (spring 2020 weekday) to 4,103 (summer 2020 weekend) daily peak season riders. The study identified four alternative routes (three water-based and one land-based), the advantages and disadvantages of each, as well as potential issues associated with terminal sites. The route alternatives included various combinations of stops at the following sites: San Francisco (Ferry Building, Fisherman's Wharf, Fort Mason, Presidio); Fort Baker; Sausalito; Angel Island; and Berkeley. Next steps include preparation of necessary NEPA actions, refinement of the alternatives, updates to costs and ridership forecasts, and coordination with the Water Transportation Authority (WTA) ferry system (NPS 2006d).

Future Improvements to Alexander Avenue and U.S. 101. As previously mentioned, Alexander Avenue is unlike all other roads in this plan that are under the jurisdiction and control of the National Park Service; Alexander Avenue is under the joint jurisdiction and control of Golden Gate National Recreation Area, Caltrans, and the Golden Gate Bridge Highway and Transportation District because it is an approach road to the Golden Gate Bridge. The National Park Service is working with the district, Caltrans, the City of Sausalito, and Marin County to address transportation issues along Alexander Avenue that impact park areas.

As mentioned under Section 1.5, a significant amount of planning activities and funding have been invested in evaluating and implementing improvements for Alexander Avenue. The NPS has initiated a planning study to identify and evaluate a range of planning and design solutions to improve multi-modal access and safety on Alexander Avenue between the Golden Gate Bridge and Sausalito City limits. The study purpose is to define a consensus master plan for the corridor segment that provides access to the Marin Headlands and Fort Baker. This study was initiated in January 2008 with all the stakeholders. Currently, the Golden Gate Bridge Highway and Transportation District (GGBHTD) has not taken any board action on Alexander Avenue improvements and no funding is available to implement improvements at this time.

For the purposes of this EIS, the following specific improvement concepts for Alexander Avenue are assumed. The specific improvement projects that are recommended from the ongoing Alexander Avenue Planning Study may vary from this list:

- *Bicycle Lanes* — Establish Class 2 bicycle lanes (5 feet or 1.5 m wide) on Alexander Avenue from U.S. 101 to the north park boundary/Sausalito city limits, as specified in the *Marin County Bicycle and Pedestrian Plan* (Marin County 2001b). These bicycle lanes could be accommodated without any cut-and-fill earthwork or widening of bridges north of the Danes Drive intersection. Due to past uneven pavement resurfacing in the shoulder area, the roadway would need to be resurfaced before the bike lanes could be established. Between U.S. 101 and Danes Drive, excavation in the 500-foot-long rock cut would be required to accommodate the bike lanes.
- *Underpass* — Establish Class 2 bike lanes and pedestrian sidewalks, which would require either replacing the existing narrow Alexander Avenue underpass (under U.S. 101) or adding parallel underpasses to accommodate bicycles and pedestrians. Due to the need to minimize disruption of traffic on U.S. 101 and Alexander Avenue, extensive coordination with Caltrans would be required to implement this project.
- *Sidewalks* — Establish pedestrian sidewalks along Alexander Avenue throughout the U.S. 101 interchange area, starting at the foot of Conzelman Road on the west, extending under U.S. 101, and then along the east side of Alexander Avenue to the Danes Drive intersection. These sidewalks would connect transit stops with the trail network of the Marin Headlands and Fort Baker.
- *Transit Stops* — Relocate and improve U.S. 101/Alexander Avenue transit stops and add a new southbound stop. The proposed relocation of the northbound stop would provide improved sight distance for buses stopping in the midst of traffic exiting U.S. 101 onto Alexander Avenue. From this safer location, users could walk 0.25 mile back to the Golden Gate Bridge Vista Point on the existing Class 1 sidewalk/bike path.
- *Guardrails* — Replace the existing nonstandard timber guardrails with FHWA crash-tested, steel-backed timber guardrails to improve safety. The appearance of this proposed guardrail would be similar to the existing timber guardrail and would maintain the historic integrity of the roadway.
- *ADA Ramps* — Construct ADA and bicycle accessible ramps to the east and west sides of the north end of the Golden Gate Bridge to access the existing "catwalk" path under the bridge. Because Fort Baker and the Marin Headlands are separated by U.S. 101, providing these ramps would improve the connections between both park areas.

Fort Baker General Landscape History and Analysis Report. Recommendations for the cultural landscape at Fort Baker, which were published in 2001 (Golden Gate National Parks Association and Golden Gate National Recreation Area), include the long-term rehabilitation and maintenance of the historic features of Fort Baker. Specific recommendations include (1) protecting cultural and archeological resources, adopting appropriate landscape management practices, and nominating the landscape for listing on the National Register of Historic Places; and (2) designing recommendations for buildings, circulation, parking, and land use.

Fort Baker Plan. The following actions are proposed in the *Fort Baker Plan* and the *Record of Decision* (NPS 1999b and 2000b).

- *Fort Baker Retreat and Conference Center* — A retreat and conference center will be established in Fort Baker. The center will be established around the historic parade ground and will consist of a combination of new construction and rehabilitated historic buildings. The center will have a maximum of 225 rooms for overnight accommodations. Up to 455 parking spaces will be provided in existing garages and lots in Fort Baker (NPS 1999a). The conference lodge opened July 2008.
- *Fort Baker Waterfront* — Improvements to the Fort Baker waterfront include removing the existing wooden bulkhead and restoring the beach at the waterfront; relocating the existing road to the north side of the water-

front open space; and providing a new 50-car visitor parking lot (NPS 1999a). A schedule for this project does not exist at the current time.

- *Fort Baker Marina and Historic Boat Shop* — The existing marina and historic boat shop at Fort Baker will be converted to public use and used as a center for community meetings and programs. It will house supporting services and include food service (NPS 1999a). A schedule for this project does not exist at the current time.
- *Fort Baker Open Space, Natural Habitats, and Trails* — Approximately 42 acres of natural habitat in Fort Baker will be maintained and restored, a portion of which is mission blue butterfly habitat. Minor trail improvements will include improved trail surfaces, interpretive signs along trails, and a small amount of new trail construction (NPS 1999a). A schedule for this project does not exist at the current time.

Marine Mammal Center Renovations. The parking and roadway improvements proposed in the *Marine Mammal Center Site and Facilities Improvements Environmental Assessment* and the "Finding of No Significant Impact" are included in the no-action and action alternatives for this project because the NEPA process has been completed and the projects are under construction. Parking will be improved along the existing access road and in the proposed new parking lot at the center. In addition, the Marine Mammal Center project will renovate the existing facilities to better care for marine mammals and to educate the public.

Mission Blue Butterfly Habitat Restoration. The primary objective of the *San Bruno Elfin and Mission Blue Butterflies Recovery Plan* (USFWS 1984) is to protect, maintain, and enhance existing populations of the two endangered butterfly species. The portion of the plan relevant to this environmental impact statement is the establishment of a mission blue butterfly colony in Fort Baker, one of the only areas of appropriate habitat for the butterfly in the Bay Area.

For the mission blue butterfly, management activities are focused on:

- protecting known populations at San Bruno Mountain and Fort Baker in the Marin Headlands
- protecting essential habitat outside these two locations through cooperative agreements with adjacent landowners, purchase of conservation easements, or similar land conservation agreements
- restoring historic coastal scrub habitats by controlling nonnative plants (e.g., gorse, French broom, pampas grass) that threaten the associated host and nectar plants used by this species (e.g., silverleaf lupine, coast buckwheat).
- preventing further habitat degradation through use of cooperative agreements, conservation easements, and recreational planning to control and prevent non-compatible uses (e.g., off-road vehicle use).
- preventing further habitat degradation from herbicides, pesticides, other toxicants, and off-road vehicle use.

GGNRA Fire Management Plan. The National Park Service issued a "Record of Decision" for the *Final Fire Management Plan Environmental Impact Statement* in February 2006. The proposed action describes a strategy for managing fire in the park to reduce risks to the public, firefighters, sensitive resources, and park facilities.

Proposed fire management policies that apply to the Marin Headlands and Fort Baker include prescribed burns in the Marin Headlands to manage coastal scrub, prescribed test burns to enhance mission blue butterfly habitat, and the reduction of fuel hazards near historic structures and heavily developed areas that receive high visitation. Several roads and trails within the Marin Headlands are currently designated as fire roads: portions of Bunker Road and Simmonds Road, and a portion of the Coastal Trail between the riding stables and Slacker Hill.

Coastal Trail Corridor Enhancement Project. Golden Gate National Recreation Area received a grant in 2004 from the Gordon and Betty Moore Foundation to preserve, enhance, and restore disturbed coastal habitats within subwatersheds supporting the Coastal Trail between Muir Beach in Marin County through the Marin Headlands, the Presidio and Lands End in San Francisco County,

and at Mori Point in San Mateo County. Actions supported by the grant would result in the preservation and enhancement of 970 acres (393 ha) and the restoration of 30 acres (12 ha) of disturbed coastal habitat.

San Francisco Bay Trail Project. The San Francisco Bay Trail is a planned recreational corridor that will circle San Francisco and San Pablo bays with a continuous 400-mile trail for bicycling, hiking, and walking. The San Francisco Bay Trail Project, a nonprofit organization, makes available grant funds for trail construction and maintenance. Individual trail segments are built, owned, managed, and maintained by cities, counties, and park districts. The trail will have a segment that follows East Road from Sausalito through Fort Baker to the Golden Gate Bridge (SFBTP 2000).

Maintenance Operations. Ongoing park maintenance may create cumulative impacts for activities proposed as part of the transportation management plan. Operations that may be of specific relevance include the maintenance of roadways, parking facilities, trails, and buildings, as well as erosion control practices.

Headlands Institute Campus Planning and Environmental Assessment. The Headlands Institute, an environmental education park partner on the east side of Fort Cronkhite, is proposing to enhance its Fort Cronkhite campus. The renovated campus is to be a teaching model of stewardship and sustainable living with state-of-art learning facilities to match and make the most of the unique resources of the Marin Headlands. The primary objectives of the proposed project are to

1. Preserve, protect, rehabilitate, and interpret the site's layered natural and cultural resources.
2. Renovate all aspects of the campus — update classrooms and labs to provide students with state-of-the-art learning tools; improve sleeping and dining facilities to comfortably and efficiently accommodate students; and reconfigure or expand classrooms, labs, and accommodations to better serve students.
3. Provide an efficient, comfortable, safe, and universally accessible place to learn and work.
4. Integrate the indoor and outdoor spaces on the campus with the defining resources of the site.
5. Minimize environmental impacts to the area and the park resources, including impacts caused by traffic, circulation, and programming on and off campus.

The current campus accommodates 200 students a day, which enables the institute to reach approximately 10,000 students a year. The Headlands Institute, through this planning process, will look at options to expand its programs up to a capacity of 350 participants, while maintaining the quality of the educational experience. The institute will study alternatives for achieving the project objectives through options with historic building rehabilitation as well as new construction. The alternatives will also look at options for improving circulation around the campus, as well as relocating current parking, consistent with other planning efforts. As part of this plan, the fill at the ends of the riparian corridor would be removed to "daylight" the riparian corridor. An environmental assessment will be prepared for this project. Public and agency scoping for the project occurred in summer 2007. An environmental document ready for public review is anticipated for spring 2009.

Cultural Landscape Report on the Headlands Institute Campus Landscape. The National Park Service prepared a cultural landscape report for the Headlands Institute Campus in Fort Cronkhite January 2008. The existing campus has become inadequate for the Institute due to lack of facilities and aging of the landscape character, and the CLR is intended to develop a long-term plan for management of the cultural landscape to address these issues. The report identifies rehabilitation as the most appropriate treatment to enhance the overall historic character of the landscape. The report specifically recommends that additions to the landscape be compatible with its historic utilitarian and military character, non-historic features be removed when possible, and future land uses be limited to activities that require minimal change to historic features. Regarding parking at the Nike complex, the report recommends maintaining the parking lots at the east and west end of the complex, and if new parking lots are required, they should be placed in inconspicuous locations or where they can reestablish historic spatial patterns, such as on building footprints.

Cultural Landscape Report for Forts Barry and Cronkhite. The National Park Service is preparing a cultural landscape report for Forts Barry and Cronkhite. The report will consist of:

- a districtwide landscape analysis with broadscale treatment guidelines relevant throughout the historic district
- individual landscape analyses for the built-up areas of Fort Barry and Fort Cronkhite, including documentation, analysis, and treatment recommendations specific to each fort
- focused treatment recommendations for certain areas relating to the need for site-specific mitigations evolving from the transportation plan

The completed report will guide future site preservation, rehabilitation, and enhancement work in a manner similar to the "Fort Baker Cultural Landscape Report." In particular, the report for Forts Barry and Cronkhite will be used to guide the design of infill parking and many of the road modifications proposed in this environmental impact statement, and it will provide guidance to resolve any conflict in use of an area between the two plans. The anticipated start date for the cultural landscape report is fall 2007, with completion anticipated in 2009.

Hawk Hill Planning Effort and Associated Cultural Landscape Report. The park has begun a separate planning effort examining upgrades to amenities and accessibility. An accessible loop trail is part of this effort, and a portion of the loop trail is included in this FEIS. The accessible loop is being planned through the Hawk Hill planning team.

The associated CLR, drafted January 2008, identifies erosion, spread of non-historic invasive species, lack of adequate pedestrian circulation, and structural deterioration as ongoing issues, noting that the project is intended to restore habitat for the Mission Blue Butterfly and improve the site for public visitation and use by the Golden Gate Raptor Observatory. The report recommends rehabilitation as the most appropriate treatment. Phase 1 of the project involves full or partial removal of the Monterey Pines as part of a restoration of Mission Blue Butterfly habitat on the western slope of the gun batteries, as well as replacement of non-historic stairs and rails, and installation of new pedestrian circulation. Phase 2 involves repairs to historic structures, possible addition of amenities, improvements to the viewing area/Hawk Migration observation point, and creation of a large-group gathering area. (NPS 2008).

Regional Actions

Past Actions

Golden Gate Bridge Seismic Retrofit. Phase 1 of the seismic retrofit of the Golden Gate Bridge was completed in April 2002 and entailed structural upgrades to the north approach viaduct of the bridge. The retrofit allows the bridge to better respond to earthquake motions without damage. Phase 2 of the seismic retrofit is underway, and Phase 3 will follow (GGBHTD 2003).

Current and Future Actions

Draft Transportation 2030 Plan for the San Francisco Bay Area and Bay Area Transportation Blueprint for the 21st Century. The *Draft Transportation 2030 Plan* (Metropolitan Transportation Commission [MTC] 2004, 2005) provides the vision for the San Francisco Bay region's transportation system for the next 25 years specifies a detailed set of investments and strategies throughout the region from 2005 through 2030 to maintain, manage, and improve the surface transportation system. The plan is updated every three years to reflect new planning priorities and changing projections of growth and travel demand.

Projects identified in the plan, which are relevant to this transportation management plan, are the expansion of the Manzanita park-and-ride facility and the capital improvement programs for Golden Gate Transit and the San Francisco Municipal Railway. Funds are committed for a portion of each of these projects and programs; however, there is a funding shortfall for each project and program as well. The Metropolitan Transportation Commission anticipates that the additional funds may become available over the near to mid-term of the *Transportation 2030 Plan* through voter approval or legislative action.

The *Bay Area Transportation Blueprint for the 21st Century* (MTC 2000) presents a vision of the Bay Area's transportation future without the financial constraints imposed by the regional transportation plan. No projects identified in the blueprint

would affect the transportation alternatives considered in this *Final Environmental Impact Statement;* however, regional issues affect funding sources.

Southwest Marin Comprehensive Transportation Management Plan and Post Pilot Transportation Projects. As explained in Chapter 1, the proposed Southwest Marin comprehensive transportation management plan was a joint planning effort that began in 2000 and involved the National Park Service, Marin County, Caltrans, and California State Parks to develop a master transit plan for local, state, and national park sites in the west Marin area. In 2005 the partnering agencies agreed to end the project and focus on the following series of smaller pilot transportation projects in the area:

- *Muir Woods Shuttle* — For 2005 and 2006 Marin County contracted with Golden Gate Transit to operate weekend and holiday shuttle service from Memorial Day to Labor Day between Muir Woods and parking areas at Marin City and Manzanita near U.S. 101 on the east side of Marin County. The service carried over 10,000 passengers each year.
- *Intelligent Transportation System (ITS) Pilot* — The National Park Service led this effort by deploying portable changeable message signs, by working with the Metropolitan Transportation Commission staff to get Muir Woods and Stinson Beach included in the 511 telephone information system, and by deploying traffic counters on key roads and at key parking areas to count traffic and visitation. Two portable changeable message signs units were deployed to inform visitors that parking at key park locations was full on U.S. 101, the 511 messages became active in late July 2005, and nine traffic counters were deployed between Mill Valley and Stinson Beach. The National Park Service continued studying possible pilot applications of web-cameras to show parking areas via the Internet, Highway Advisory Radio (HAR), and upgraded traffic counters.
- *Traffic Management* — Both the National Park Service and Marin County deployed additional rangers and deputy sheriffs to assist in traffic and parking management at Muir Woods and Stinson Beach between Memorial Day and Labor Day.

Marin Countywide Plan. Land use on the portions of the project site not owned by the National Park Service is guided by the County's General Plan, the *Marin Countywide Plan* (Countywide Plan), which was adopted on November 6, 2007.

The *Marin Countywide Plan* specifically addresses land use issues in the unincorporated areas of Marin County, and it represents the county's position on issues of interjurisdictional and regional concern. Relevant goals of the plan include (Marin County 2007):

•A Preserved and Restored Natural Environment. Marin watersheds, natural habitats, wildlife corridors, and open space will be protected, restored, and enhanced.

- Less Traffic Congestion. Marin community members will have access to . . . additional transportation choices for pedestrians, bicyclists, and transit users that reduce traffic congestion.
- A Reduced Ecological Footprint. Marin residents and businesses will increasingly use renewable energy, fuel efficient transportation choices, and green building and business practices.
- Collaboration and Partnerships. Marin public agencies, private organizations, and regional partners will reach across jurisdictional boundaries to collaboratively plan for and meet community needs.

The current update renames the corridor that the Marin Headlands and Fort Baker study area includes from Coastal Recreation Corridor to the Coastal Corridor, recognizing that issues, opportunities, and constraints in the corridor go beyond recreation. The Coastal Corridor is reserved for federal parklands and other recreational land uses, as well as preservation of existing small coastal communities (Marin County 2007).

The "Natural Systems and Agriculture" element of the updated plan outlines policies for protecting the county's natural resources and ensuring that the design of the built environment is compatible with the natural setting. The current plan recommends that Golden Gate National Recreation Area

be "retained in its natural state to the greatest extent possible." Relevant policies that support desired outcomes include enhancing native habitat and biodiversity; protecting sensitive biological resources; conserving wetlands, riparian areas, and baylands; protecting people and property from flooding and inundation; sustainabily managing open space; preserving open space; preserving and expanding the trail network; and appropriately designing, locating, managing, and maintaining trails (Marin County 2007).

The "Transportation" element of the updated plan includes existing and projected conditions of the transportation system and county policy concerning transportation. To accommodate the travel demand associated with the land use projections, this element specifies the improvements needed for achieving an acceptable level of service and how those improvements would be provided. This element also includes objectives, policies, and programs to facilitate the planning and public review process for the transportation system. Relevant policies that support desired outcomes include reducing vehicle miles traveled, promoting transportation alternatives, increasing bicycle and pedestrian access by connecting to state and federal parklands, encouraging and supporting expansion of local bus and ferry services, supporting regional transit initiatives, and increasing clean-fuel vehicle use (Marin County 2007).

4.1.3 IMPAIRMENT OF PARK RESOURCES AND VALUES

NPS *Management Policies 2006* require the analysis of potential effects to determine whether or not actions would impair park resources. As mandated by the 1916 Organic Act and reaffirmed by the 1970 General Authorities Act, as amended, the fundamental purpose of the national park system is to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values. However, the laws do give NPS managers the discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values.

Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values. An impact to any park resource or value may constitute an impairment, but an impact would be more likely to constitute an impairment to the extent that it has a major or severe adverse effect on a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. In this environmental impact statement, impairment is addressed in the conclusion section of each natural and cultural resource impact topic.

4.2 TRANSPORTATION IMPACTS

4.2.1 TRANSIT

Methodology for Impact Assessment

The transportation impacts of the alternatives have been determined for motorized travel modes (private vehicles and transit) and non-motorized modes (pedestrians and bicycles). Implementation of the alternatives may result in changes in the mode of transportation used by travelers to and within the park. Changes in travel mode are expected to be primarily associated with shifts from private motorized vehicles to transit. As a result, transportation impacts affecting the motorized travel modes were determined in an integrated fashion, as shown in Figure 4.1. As shown in the figure, the alternatives include changes in transit service and parking charges, which would result in impacts to the market opportunity for transit, the service quality provided by transit, and the capacity of transit.

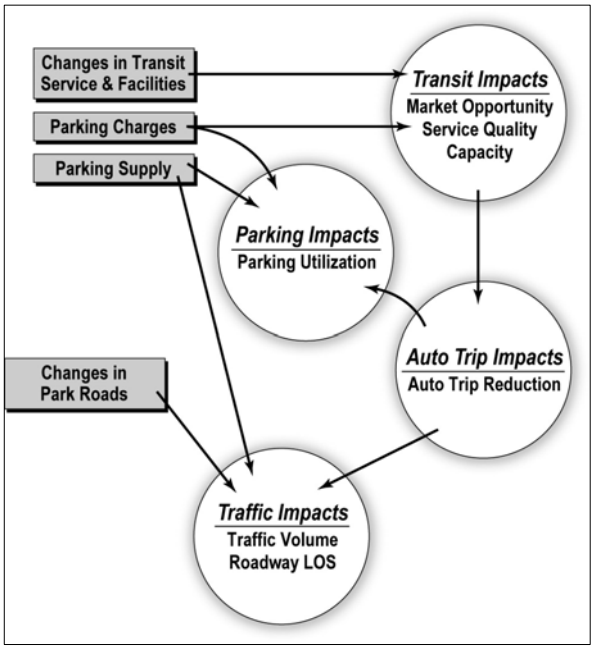


FIGURE 4.1 VEHICULAR TRANSPORTATION IMPACT METHODOLOGY

SOURCE: David Evans and Associates, Inc.

The transit impacts of the alternatives could affect the number of auto trips made to and within the park. The auto trip impacts, in combination with the changes in parking supply and park roads included in the alternatives, would cause impacts to traffic on specific park roads, including changes in traffic volume and changes in roadway level of service.

Parking impacts are also addressed for motorized travel modes. Parking impacts are measured by parking use, which would be affected by changes in parking supply and parking costs included in the alternatives and, potentially, by changes in auto trips.

Impacts to nonmotorized travel address changes in pedestrian travel and bicycle travel. These impacts were considered to be independent of the impacts to motorized travel.

Short-term impacts would be temporary in nature and associated with the implementation of an action (e.g., related to construction activities). Information regarding the specific duration of construction for the proposed projects was used to estimate short-term impacts. In contrast, long-term impacts would result from permanent changes in transit service, roadway design and operation, parking supply, or vehicular travel along the park's road system.

Each action alternative is compared to the No-Action Alternative (Alternative 1). A beneficial impact would be a change that would move the transportation resource toward a desired condition. An adverse impact would be a change that would move the transportation resource away from a desired condition.

Methodology and Impact Thresholds for Transit Impacts

Transit impacts were evaluated in three areas: transit market opportunity, transit service quality, and transit capacity.

Transit Market Opportunity

Transit market opportunity refers to the percentage of park visitors on a peak summer weekend day who have the option of taking transit to the park. Based on data collected in the summer of 2000, approximately 10,842 visitors go to the Marin Headlands and 3,806 visitors to Fort Baker on a peak Sunday. The percentage of these visitors who actually use transit to reach either area is very small. However, a much larger percentage of this visitor market has the *opportunity* to take transit to the park on Sundays. For the purpose of this evaluation, transit is assumed to be available if it is possible to make a transit trip by means of one service operator from the trip origin to destinations inside the park. Consequently, the possibility of a visitor reaching the park by transferring from one transit operator such as AC Transit to another operator like the San Francisco Municipal Transit System is not considered in the estimated size of the transit market. (If visitors who could reach the park with one transfer, e.g., from Bay Area Rapid Transit to the San Francisco Municipal Transit System or AC Transit to Golden Gate Transit, were included in the analysis, the size of the transit market would be much larger.)

For each alternative the percentage point change in transit market opportunity was calculated for the Marin Headlands and Fort Baker. Separate estimates were prepared for Saturdays and Sundays. For example, transit services are not provided on Saturdays to the Marin Headlands. Consequently, the existing transit market is 0% of the park visitor

population. If MUNI Route 76 service was added on Saturdays, the park would become transit accessible to residents of San Francisco. Since 35% of park trips begin in San Francisco, the transit market would increase from 0% to 35% of the park visitor population.

The following thresholds are based on the consulting team's experience analyzing the appropriate intervals for changes in utilization of transit services for recreational trips:

Negligible: The size of the current transit market would not change.

Minor: The size of the transit market would change by less than 20%.

Moderate: The size of the transit market would change by 20% to 40%.

Major: The size of the transit market would change by more than 40%.

An increase in the size of the transit market would be a beneficial impact, and a reduction an adverse impact.

Transit Service Quality

Transit service quality refers to the efficiency and utility of the transit operations to and inside the park. Key criteria defining transit service quality include accessibility to park destinations (the proximity of transit to major destinations), service levels (frequency of service, hours of service), and intermodal connections (ease of transfer between transit services).

A composite qualitative assessment was made of the way that these three criteria would be perceived by potential transit users. The magnitude of impact was described as the level of change from existing transit conditions based on the following intensity thresholds:

Negligible: There would be no change in transit service quality,

Minor: The change in transit service quality would be slightly detectable to the transit riding population.

Moderate: The change in transit service quality would be readily apparent and could encourage higher or lower rates of transit utilization.

Major: The change in transit service quality would be substantial and could lead to major, long-term changes in travel behavior.

An improvement in transit service quality would be a beneficial impact, and a reduction in transit service quality an adverse impact.

Transit Capacity

Transit capacity refers to the total number of daily seats available on transit services that provide direct access to the Marin Headlands and Fort Baker. This is defined by the number of seats multiplied by the number of runs on a Saturday and Sunday during the peak summer season between 8 a.m. and 7 p.m. Capacity on the proposed internal shuttle is not included because it has not been designed as an access service.

The percentage increase in the total available transit capacity on a weekend day during the peak season was calculated for the Marin Headlands and Fort Baker. It was assumed that the number of park visitors using transit service to the park would not be high enough to displace other transit riders from these services.

The following thresholds are based on estimates of the change in available transit capacity:

Negligible: Available transit capacity would change by less than 20%.

Minor: Available transit capacity would change by 21% to 100% of existing capacity.

Moderate: Available transit capacity would change by 101% to 200% of existing capacity.

Major: Available transit capacity would change by more than 200% of existing capacity.

These thresholds are based on professional judgment regarding the potential effects of changes in transit capacity. Given the fact that there is currently so little transit service to the park, any additional transit service would result in a substantial increase from existing levels. Consequently, high thresholds have been defined so that the level of impact is not overstated relative to the existing levels of transit service.

An increase in transit capacity would be a beneficial impact, and a reduction an adverse impact.

Methodology for Reductions in Automobile Trips and Impact Thresholds

Automobile Trip Reduction Accessing the Park

The percentage of the park vehicle trips that could potentially shift to transit was estimated for each alternative. The estimated reduction in vehicle use is based on professional judgment regarding the influence of proposed parking changes, new transit services, and changes in transit service levels on visitors' mode choices for travel to the park. A ridership forecasting model was not used in this evaluation. (See Nelson\Nygaard 2005 for the complete methodology used for the evaluation.)

The following intensity thresholds reflect professional judgment about the implications of varying levels of automobile trip reduction on the transportation networks in Golden Gate National Recreation Area:

Negligible: The number of automobile trips would not change.

Minor: There would be less than a 15% change in automobile trips due to a shift to/from transit.

Moderate: There would be between a 16% and 30% change in automobile trips due to a shift to/from transit.

Major: There would be more than a 30% change in automobile trips due to a shift to/from transit.

The shift of an automobile trip to a transit trip would be a beneficial impact, and the shift of a transit trip to an automobile trip would be an adverse impact.

Automobile Trip Reduction inside the Park

The action alternatives feature auto-trip reduction strategies, such as expanded transit service, new shuttle programs, parking fees, and pedestrian/bicycle facility improvements that could encourage travelers within the park to switch to alternative modes. For each alternative the percentage of automobile trips that could be potentially shifted to non-auto modes was calculated based largely on case study knowledge of the impacts of auto-trip reduction strategies on recreational trips. A ridership forecasting model was not used in this evaluation. (See Nelson\Nygaard 2005 for the complete methodology used for the evaluation.)

The following intensity thresholds reflect professional judgment about the implications of varying levels of auto reduction on the transportation networks in the park:

Negligible: The number of automobile trips inside the park would not change.

Minor: Less than 15% of the automobile trips inside the park would shift to/from transit.

Moderate: Between 16% and 30% of the automobile trips inside the park would shift to/from transit.

Major: More than 30% of the automobile trips inside the park would shift to/from transit.

The shift of an automobile trip to a transit trip would be a beneficial impact, and the shift of a transit trip to an automobile trip would be an adverse impact.

Impacts of Alternative 1 — No-Action Alternative

Impact Analysis

Transit

Transit Market Opportunity. For trips to the Marin Headlands or Fort Baker on either Saturday or Sunday, there would be no change in the percentage of the visitor population who could access the park by transit. Consequently, the alternative would not have an impact on transit market opportunity.

Transit Service Quality. No changes would occur in park accessibility, days, frequency of transit service, or intermodal connections since new transit services would not be introduced under this alternative. Transit access to the park would be limited to those destinations within the Marin Headlands that are already served on Sundays by MUNI Route 76. Intermodal connections between the MUNI Route 76 and Golden Gate Transit would continue to be possible at the Golden Gate Bridge toll plaza but not within the park. Consequently, this alternative would not have an impact on transit service quality. The Fort Baker conference center shuttle would benefit conference center patrons, providing airport connections, access from

the conference center to parking sites in Fort Baker and Sausalito, and possibly to local attractions.

Transit Capacity. There would be no change in the daily number of transit seats on Sunday under Alternative 1 for either the Marin Headlands or Fort Baker. Consequently, this alternative would have no impact on transit capacity.

Reduction in Automobile Trips

Accessing the Park. With the exception of the Fort Baker conference center shuttle, new transit services would not be introduced under this alternative. Consequently, the alternative would not have an impact on auto reduction to the Marin Headlands or Fort Baker.

Inside the Park. New transit services inside the park would not be introduced under this alternative. Parking fees would not be charged. Consequently, this alternative would not have an impact on auto-trip reduction for trips within the Marin Headlands and Fort Baker.

Cumulative Impacts

Transit

Alternative 1 would have no direct impacts on transit. As a result, there would be no cumulative impacts associated with this alternative.

Reduction in Automobile Trips

Alternative 1 would have no direct impacts on automobile trip reduction. As a result, there would be no cumulative impacts associated with this alternative.

Mitigation Measures

There would be no mitigation measures for this alternative.

Conclusion

There would be no long-term, short-term, or cumulative impacts to transit or automobile trip reduction under Alternative 1.

Impacts of Alternative 3 — Preferred Alternative

Impact Analysis

Transit

Transit Market Opportunity. Providing trips to the Marin Headlands on Saturdays by means of the MUNI Route 76 would be encouraged and would raise the transit market size from zero to 35% of the visitor population. This increase would be a long-term, moderate, beneficial impact.

Continuing MUNI Route 76 service to the Marin Headlands on Sundays would result in no change in the transit market size. The alternative would have no additional impact on transit market opportunity on Sundays.

Providing transit service directly to Fort Baker every day of the week would create a transit market in San Francisco and Marin County on Saturdays and Sundays. The resulting 57% increase in transit market size would be a long-term, major, beneficial impact on both days.

Transit Service Quality. Providing MUNI Route 76 service on Saturdays would be encouraged and would enhance access to Marin Headlands park destinations on this day. Providing an internal shuttle service would also improve access to destinations within the Marin Headlands and Fort Baker. Providing transit access to Fort Baker would also be beneficial. Similar to Alternative 1, the Fort Baker conference center shuttle would benefit conference patrons only.

Increasing service frequency on MUNI Route 76 to every 30 minutes from once an hour would be encouraged and would reduce waiting times by half. The combined services of the MUNI Route 76 and the internal shuttle would further reduce waiting times for trips within the park. The Golden Gate Bridge toll plaza would continue to serve as an intermodal transfer point for transit services.

Rerouting existing GGT Route 10 on Alexander Avenue would be encouraged to provide direct service to the main post area of Fort Baker at 60-minute intervals seven days per week, thus providing improved service.

On eastbound Alexander Avenue near the northbound U.S. 101 on-ramps, intermodal transfers would be possible between northbound GGT

Route 10, northbound MUNI Route 76, and the internal shuttle. For the southbound transit interface, the park would work with GGT and other service providers to identify a feasible location for the interface. The park would also work in collaboration with GGT, MUNI, and the shuttle service providers to develop an interface that could provide connections among these transit services. A new bicycle/pedestrian tunnel and trail under Alexander Avenue and sidewalks alongside Danes Drive would provide a bicycle and pedestrian connection between Fort Baker and these stops.

Overall, the improvement in transit accessibility, service levels, and intermodal connections would have a long-term, moderate, beneficial impact on transit service quality. Road construction and trail improvements included in this alternative could cause disruptions to transit service. The resulting service quality impacts would be short term, minor, and adverse.

Transit Capacity. Increasing service frequency on the MUNI Route 76 buses to every 30 minutes from once an hour would be encouraged and would double the total daily number of available bus seats on a Sunday from 328 to 656. This 100% increase in seat numbers would have a long-term, minor, beneficial impact on transit capacity for the Marin Headlands. On Saturdays transit capacity would increase from zero to 656 seats, a long-term, major, beneficial impact.

Currently, there is no direct transit service to Fort Baker. Providing such service would provide up to 559 daily transit seats, resulting in a long-term, major, beneficial impact on transit capacity. Overall, transit improvements under this alternative would represent a long-term, major, beneficial improvement in transit capacity.

Reduction in Automobile Trips

Accessing the Park. Establishing parking fees in selected areas of the park in conjunction with increased frequencies on MUNI Route 76 are expected to shift 0.44% of current vehicular trips to the Marin Headlands to transit. The parking fees in tandem with providing transit service directly to Fort Baker would be expected to shift 0.71% of current vehicular trips to Fort Baker to transit. These shifts would constitute a long-term, minor, beneficial impact on automobile trip reduction.

Inside the Park. MUNI Route 76 as well as the internal shuttle would provide an alternative mode of transit for trips within the Marin Headlands. Within Fort Baker park users would have the option of using the internal shuttle. These transit options, in conjunction with parking fees, could result in a 2.5% reduction of internal automobile trips in both areas of the park. This estimated shift would constitute a long-term, minor, beneficial impact.

Cumulative Impacts

Transit

Transit Market Opportunity. The NPS water shuttle access study could result in ferry service that would provide water access to Fort Baker from intercept areas in San Francisco. The ferry would provide connections to Fort Baker served by the proposed rerouted GGT Route 10, and with transfers, the same as MUNI Route 76.This service to Fort Baker would increase the transit market opportunities in San Francisco, which would result in impacts to the transit market that would be moderate and beneficial.

When added to the transit service to Fort Baker included in Alternative 3, the overall cumulative impact on the transit market opportunity for Fort Baker would be long-term, major, and beneficial. The majority of impacts would result from improvements proposed in Alternative 3.

Transit service changes other than those included in Alternative 3 are not proposed for the Marin Headlands. Consequently, there would be no cumulative impacts on transit market opportunity for the Marin Headlands.

Transit Service Quality. The NPS water shuttle access study would potentially provide ferry service to Fort Baker, improving access to destinations in Fort Baker and providing opportunities for new intermodal connections from San Francisco to Fort Baker. In the study Fort Baker was identified through surveys as one of the most preferred alighting stops, and 30% of users desiring to go to Fort Baker indicated they would take a connecting shuttle to the Marin Headlands Additional parking capacity at the Manzanita park-and-ride facility would improve intermodal connections for drivers wanting to access the park via transit service. In addition, policies established in the *Marin Coun-*

tywide Plan support promoting transportation alternatives, increasing bicycle and pedestrian access by connecting to federal parklands, encouraging and supporting expansion of local bus and ferry services, and supporting regional transit initiatives. These actions would have long-term, moderate, beneficial impacts on transit service quality in the Marin Headlands and Fort Baker. When combined with the actions proposed under Alternative 3, cumulative impacts to transit service quality would be long-term, moderate, and beneficial.

Transit Capacity. No other proposed projects would provide transit service to the Marin Headlands, so there would be no cumulative impacts on transit capacity in the Marin Headlands.

The NPS water shuttle access study assessed providing ferry services to Fort Baker in some of the alternatives. Assuming that the service was initiated as described in the study (12 trips per weekend day year-round, and 8 trips per summer weekday on a 149-passenger ferry) for an additional 1,490 daily ferry transit seats, the impact on transit capacity for access to Fort Baker would likely be major and beneficial. When combined with the major, beneficial impacts of Alternative 3, cumulative impacts to transit capacity in Fort Baker would be major and beneficial. Most of the impacts would be a result of Alternative 3 transit and ferry improvements.

Reduction in Automobile Trips

Accessing the Park. The NPS water shuttle access study could provide ferry service to Fort Baker from San Francisco. However, most users of the service would require another form of transportation or connecting transit service to access the ferry terminals in San Francisco. Although the service would enhance transit access to Fort Baker, it would be unlikely to provide a faster or more convenient means of accessing the Marin Headlands. Consequently, the reduction in overall automobile travel to the Marin Headlands and Fort Baker would be long-term, minor beneficial. The *Marin Countywide Plan's* policies include reducing vehicle miles traveled, and promoting transit alternatives described above. Implementation of these policies, in conjunction with the ferry service and Alternative 3, would result in long-term, minor, beneficial impacts depending on the extent of the effects of the plan.

Inside the Park. No other proposed projects would provide transit service inside the Marin Headlands and Fort Baker, and there would be no cumulative impacts.

Mitigation Measures

There would be no mitigation measures for this alternative.

Conclusion

For trips to the Marin Headlands Alternative 3 would have a long-term, moderate, beneficial impact on transit market opportunities on Saturdays and no impact on Sunday. There would be no cumulative impacts on transit market opportunity for trips to the Marin Headlands. For trips to Fort Baker, Alternative 3 would have a long-term, major, beneficial impact on Saturdays and Sundays. Cumulative impacts would be long-term, major, and beneficial.

Alternative 3 would have a long-term, moderate, beneficial impact on transit service quality. Short-term impacts due to construction would be minor and adverse. Cumulative impacts would be long-term, moderate, and beneficial.

The impact on transit capacity for trips to the Marin Headlands on Sundays under Alternative 3 would be long-term, minor, and beneficial. The impact for travel to Fort Baker on Saturdays and Sundays would be long-term, major, and beneficial. There would be no cumulative impacts on transit capacity for trips to the Marin Headlands. Cumulative impacts to transit capacity in Fort Baker would be major and beneficial.

Providing transit options for access to the Marin Headlands and Fort Baker under Alternative 3 would have a long-term, minor, beneficial impact in terms of reducing the number of automobile trips. Combined with policies defined in the *Marin Countywide Plan*, cumulative impacts would be long-term, minor, and beneficial.

Providing shuttle service within the study area would have a long-term, minor, beneficial impact on the number of in-park automobile trips. There would be no other internal projects resulting in cumulative impacts reducing automobile trips within the Marin Headlands and Fort Baker.

Impacts of Alternative 2

Impact Analysis

Transit

Transit Market Opportunity. Providing MUNI Route 76 service to the Marin Headlands on Saturday would be encouraged and would allow visitors from San Francisco to access the park by transit, increasing the size of the transit market from zero to 35% of the visitor population. This increase would be a long-term, moderate, beneficial impact.

For trips to the Headlands on Sunday, MUNI Route 76 service is already available to San Francisco residents, so there would be no change in the transit market size. Consequently, this alternative would have no impact on transit market opportunity on Sundays.

No new transit service to Fort Baker would be introduced under Alternative 2. Consequently, this alternative would have no impact on transit market opportunity.

Transit Service Quality. Providing MUNI Route 76 service on Saturdays would be encouraged and would enhance access to park destinations within the Marin Headlands. Service levels on MUNI Route 76 would not change, and no other supplementary transit services would be introduced. New Saturday service would have a long-term, moderate, beneficial impact on transit service quality to the Marin Headlands. Intermodal connections between transit providers would continue to be possible at the Golden Gate Bridge toll plaza, as well as at the new transit interfaces at the U.S. 101 / Alexander Avenue interchange. These improvements would be available on Saturdays and Sundays, but they would likely be imperceptible to the majority of park visitors. Similar to Alternative 1, the Fort Baker conference center shuttle would benefit conference patrons only. Access changes would have a long-term, minor, beneficial impact on the quality of transit service to Marin Headlands on Sundays and a long-term, negligible, beneficial impact on transit service to Fort Baker on Saturdays and Sundays.

Transit service could be disrupted during the construction activities associated with road rehabilitation under this alternative. The disruptions would result in short-term, minor, adverse impacts to transit service quality.

Transit Capacity. There would be no change in the number of transit seats on Sunday under Alternative 2 for the Marin Headlands. Consequently, there would be no impact on transit capacity. Adding Saturday service on the MUNI Route 76 route would have a long-term, major, beneficial impact on transit capacity to the Marin Headlands. There would be no transit service changes for Fort Baker, and no impact on transit capacity to Fort Baker.

Reduction in Automobile Trips

Accessing the Park. No reduction in automobile trips to the Marin Headlands or Fort Baker is expected under Alternative 2. Transit services such as the MUNI Route 76 from San Francisco or the existing GGT Route 10 on Alexander Avenue would not be competitive with driving in terms of travel times, costs, or transfers. Alternative 2 would have no impact on the number of automobiles accessing the park.

Inside the Park. With the exception of MUNI Route 76 service that would be encouraged on Saturdays, no new transit services would be introduced under this alternative. Consequently, the alternative would not have an impact on auto-trip reduction for trips within the Marin Headlands or Fort Baker.

Cumulative Impacts

Transit

Transit Market Opportunity. There would be no cumulative impacts to transit market opportunities for Fort Baker or the Marin Headlands.

Transit Service Quality. The NPS water shuttle access study could provide ferry service to Fort Baker. Such service would improve access to destinations in Fort Baker and provide opportunities for new intermodal connections at Fort Baker. Additional parking at the Manzanita park-and-ride facility would improve intermodal connections for drivers wanting to access the park on transit. These actions would have moderate, beneficial impacts on transit service quality in the Marin Headlands and Fort Baker. When combined with Alternative 2, cumulative impacts to transit service quality would be moderate and beneficial.

Transit Capacity. There would be no cumulative impacts for transit capacity to the Marin Headlands or Fort Baker.

Reduction in Automobile Trips

Accessing the Park. There would be no cumulative impacts to auto reduction for travel to the park.

Inside the Park. There would be no cumulative impacts to auto reduction within Fort Baker or the Marin Headlands.

Mitigation Measures

There would be no mitigation for this alternative.

Conclusion

For trips to the Marin Headlands, Alternative 2 would have a long-term, moderate, beneficial impact on transit market opportunity on Saturdays and no impact on Sunday. For trips to Fort Baker the alternative would have no impact on transit market opportunity. There would be no cumulative impacts.

Transit service quality in the Marin Headlands would result in a long-term, moderate, beneficial impact on Saturdays due to encouraging new MUNI Route 76 service and a minor, beneficial impact on Sundays due to existing service on MUNI Route 76. There would be negligible, beneficial impacts to transit service quality to Fort Baker. Short-term impacts due to construction would be minor and adverse. Cumulative impacts would be moderate and beneficial.

Transit capacity to the Marin Headlands would be enhanced on Saturdays, resulting in long-term, major, beneficial impacts. There would be no additional impact on transit capacity for trips to the Marin Headlands on Sundays or Fort Baker. There would be no cumulative impacts.

Alternative 2 would have no impact on automobile trips to the Marin Headlands and Fort Baker or within the study area.

Impacts of Alternative 4

Impact Analysis

Transit

Transit Market Opportunity. On Saturdays visitors from San Francisco would have transit access to the Marin Headlands by means of MUNI Route 76, which the park would encourage, or the park access shuttle serving the Golden Gate Bridge toll plaza. The transit market size would increase from zero to 57% of the visitor population. This increase would be a long-term, major, beneficial impact.

For trips to the Marin Headlands on Sundays, MUNI Route 76 service is already available to San Francisco residents. However, the access shuttle would provide transit service for Marin County, increasing the size of the transit market from 35% to 57%. This 22% increase in the transit market would be a long-term, moderate, beneficial impact to the transit market opportunity for the Marin Headlands on Sundays.

Providing transit service to directly serve Fort Baker all days of the week would create a transit market for travel from San Francisco and Marin County on Saturdays and Sundays. The park access shuttle would provide another transit option for these two counties. The resulting 57% increase in transit market size would be a long-term, major, beneficial impact on both days.

Transit Service Quality. Providing MUNI Route 76 service on Saturdays would enhance accessibility to park destinations within the Marin Headlands. Providing an internal shuttle service and extending it to collection points outside the park would also improve accessibility for destinations within the Marin Headlands and Fort Baker. Similar to Alternative 1, the Fort Baker conference center shuttle would benefit conference patrons only.

Encouraging increased frequency of service on MUNI Route 76 to every 30 minutes from every 60 minutes would reduce waiting times for the service by half. The combined transit services of the MUNI Route 76 and the internal shuttle would further reduce waiting times and improve transit access for trips within the park. The Golden Gate Bridge toll plaza would continue to serve as an intermodal transfer point for transit services, as well as the park shuttle. In addition, several new intermodal transfer points would be available under this alternative. On eastbound Alexander Avenue near the northbound U.S. 101 on-ramps, intermodal transfers would be possible between northbound GGT Route 10, northbound MUNI Route 76, and the internal shuttle. It also would be possible to transfer between GGT routes and the extended internal shuttle at the Manzanita transit center in Sausalito.

The overall effect of the transit program under Alternative 3 would be long-term, major, and beneficial in the quality of transit service. Disruptions to transit service could occur during the construction of road and trail improvements. The resulting impacts would be short term, minor, and adverse.

Transit Capacity. Decreasing the time between MUNI Route 76 buses from 60 minutes to 30 minutes would be encouraged and would double the total number of bus seats on a Sunday from 328 to 656. Providing a park access shuttle would provide an additional 147 seats, resulting in a total of 803 daily transit seats to the Marin Headlands. The same number of transit seats would be provided on Saturdays (no service is currently available). The resulting impacts to transit capacity for the Marin Headlands would be long-term, major, and beneficial.

The park access shuttle and Golden Gate Transit or another provider would increase transit seats to Fort Baker from 0 to 706 per day. This would result in a long-term, major, beneficial impact to transit capacity.

Reduction in Automobile Trips

Accessing the Park. Parking fees would be implemented at a higher rate under Alternative 4 than under Alternative 3. The higher fees, combined with increased frequencies on MUNI Route 76 that would be encouraged, are expected to shift 0.88% of current vehicular trips to the Marin Headlands to transit. The parking fees in combination with access to Fort Baker are expected to shift 1.42% of current vehicular trips to Fort Baker to transit. Both of these shifts would result in a long-term, minor, beneficial impact on auto reduction.

Inside the Park. The MUNI Route 76 and the internal shuttle would enhance alternative modes of transportation for trips within the Marin Headlands. Within Fort Baker park users would have the option of using the internal shuttle. These transit options, combined with higher parking fees, would result in a 5.0% reduction in internal auto trips in both areas of the park. This shift of automobile trips to transit would be a long-term, minor, beneficial impact.

Cumulative Impacts

Transit

Transit Market Opportunity. The NPS water shuttle access study would potentially provide ferry service to Fort Baker from intercept areas in San Francisco. The ferry would provide connections to the same areas in the Marin Headlands and Fort Baker served by GGT Route 10 and, via transfers, MUNI Route 76. The study predicts a reasonable expectation of 837 (spring 2020 weekday) to 4,103 (summer 2020 weekend) daily peak season riders, which would result in impacts to the transit market that would be minor and beneficial.

When added to the transit service to Fort Baker included in Alternative 4, overall cumulative impacts would be long-term, major, and beneficial on the transit market opportunity for Fort Baker. The majority of impacts would result from improvements proposed in Alternative 4.

Transit service changes other than those included in Alternative 4 are not proposed for the Marin Headlands. Consequently, there would be no cumulative impacts on transit market opportunity for the Marin Headlands.

Transit Service Quality. The NPS water shuttle access study would potentially provide ferry service to Fort Baker. The service could improve access to destinations in Fort Baker and provide opportunities for new intermodal connections from San Francisco to Fort Baker. Additional parking capacity at the Manzanita park-and-ride facility would improve intermodal connections for drivers wanting to access the park by transit. In addition, policies established in the *Marin Countywide Plan* support promoting transportation alternatives, increasing bicycle and pedestrian access by connecting to federal parklands, encouraging and supporting expansion of local bus and ferry services, and supporting regional transit initiatives. These actions would have long-term, moderate, beneficial impacts on transit service quality in the Marin Headlands and Fort Baker. When combined with the actions proposed under Alternative 4, cumulative impacts to transit service quality would be long-term, major, and beneficial. The majority of the impacts would be related to Alternative 4 transit improvements.

Transit Capacity. The NPS water shuttle access study assessed ferry services to Fort Baker in some alternatives. Assuming that the service was initi-

ated as described in the study, the impact on transit capacity for access to Fort Baker would likely be major and beneficial, as described for Alternative 3. When combined with the major beneficial impacts of Alternative 4, cumulative impacts to transit capacity in Fort Baker would be major and beneficial. Most of the impacts would be a result of Alternative 4 transit and ferry improvements.

Reduction in Automobile Trips

Accessing the Park. The NPS water shuttle access study could provide ferry service to Fort Baker from San Francisco. However, most users of the service would require another form of transportation or connecting transit service to access the ferry terminals in San Francisco. Although the service would enhance transit access to Fort Baker, it would be unlikely to provide a faster or more convenient means of accessing the Marin Headlands. Consequently, the reduction in overall automobile travel to the Marin Headlands and Fort Baker would be long-term minor beneficial.

The *Marin Countywide Plan's* policies include reducing vehicle miles traveled, and promoting transit alternatives described under Alternative 3. Implementation of these policies and ferry service, in conjunction with Alternative 4, would result in long-term, minor, beneficial impacts depending on the extent of the effects of the plan.

Inside the Park. No other projects would provide transit service inside the Marin Headlands and Fort Baker, so there would be no cumulative impacts.

Mitigation Measures

There would be no mitigation measures for this alternative.

Conclusion

Alternative 4 would have a long-term, major, beneficial impact on transit market opportunity for trips to the Marin Headlands on Saturdays and a long-term, moderate, beneficial impact on Sundays. There would be no cumulative impacts on transit market opportunity for trips to the Marin Headlands.

For trips to Fort Baker Alternative 4 would have a long-term, major, beneficial impact on transit market opportunity on Saturdays and Sundays. Cumulative impacts would be major and beneficial.

Alternative 4 would result in a major, long-term, beneficial impact to transit service quality for the Marin Headlands and Fort Baker. Short-term impacts due to construction would be minor and adverse. Cumulative impacts would be major and beneficial.

Alternative 4 would have a long-term, major, beneficial impact on transit capacity for trips to the Marin Headlands and Fort Baker. There would be no cumulative impacts to transit capacity for the Marin Headlands, and there would be major beneficial cumulative impacts to transit capacity for Fort Baker.

Alternative 4 would have a long-term, minor, beneficial impact on reducing access trips by automobile to the Marin Headlands and Fort Baker. Cumulative impacts would be long-term, minor, and beneficial.

The impact on reducing auto trips within the park would be long-term, minor, and beneficial. There would be no cumulative impacts.

4.2.2 TRAFFIC

Methodology for Analyzing Impacts

Traffic

Traffic Volume

Many of the visitor programs in Fort Baker and the Marin Headlands are run by private nonprofit park partners who occupy the historic military buildings. Non-recreational trips made by employees of the park partners are included in the existing counts accessing the park and were estimated from employment data collected from the park partners (Nelson\Nygaard 2000). Employee trips from the Marin Headlands and Fort Baker are estimated to be less than 5% of the existing traffic on a weekend day. This estimated figure does not include trips generated by the future Fort Baker conference center. The park partners identified no major staff expansion plans that would change these proportions of employee trips in the future. This amount of non-recreational travel is considered negligible with regard to traffic forecasts for this project and would fall within the normal fluctuations of traffic. Therefore, the non-recreational trips were not projected separately from general traffic volumes.

Visitation trends were estimated from data presented in the *Transportation Management Study* (Nelson\Nygaard 2002d). The annual vehicle counts entering the Marin Headlands from 1986 to

1998 varied widely from year to year and contained several years of incomplete data (1995–97 and 1999–2000). The Barry-Baker tunnel was closed from 1989 to 1995. High and low volume years could be a result of many factors, including weather, the local and national economies, regional events, and construction. A straight-line projection for a 10-year period (1987–98) shows an average annual growth rate of 0.6%.

The annual count for vehicles entering Fort Baker from 1997 to 2000 shows that visitation is decreasing, most likely due to the base closure. However, these traffic volumes are anticipated to stabilize and likely increase with the planned redevelopment of the fort, as shown in the travel demand analysis for the *Fort Baker Plan Final Environmental Impact Statement* (NPS 1999a). That plan shows traffic increases are expected on Alexander Avenue, Bunker Road, and East Road.

The growth rates assumed for the travel model development outlined for the proposed Southwest Marin comprehensive transportation management plan were 0.5% for residents and 0.5% for visiting tourists (Cambridge Systematics 2002). While this effort was suspended in early 2005, the traffic growth model developed for the study is relevant to this project and has been applied here. The growth factor for residents was based on the percentage change in population for Marin County, assuming that the average per-person frequency of visiting study area sites will remain unchanged across the forecast period. The growth rate for visiting tourists was a default assumption. The 2023 recreational travel forecast model showed an average annual growth rate of 0.5% for weekdays and 0.7% for weekends, averaged across the summer, spring, and winter seasons.

A 0.7% weekend growth rate was applied to the roadway segment traffic volumes calculated from existing counts. The expected traffic volumes for the *Fort Baker Plan* were added to the traffic forecasts for 2023 along Alexander Avenue, Bunker Road, and East Road. The new information was based on a proposed 350-unit conference center. The approved plans for the conference center are 225 rooms (30% less), so the projected growth is expected to be less. No adjustments were made to account for non-recreational trips, as they are considered minor in relation to the overall park traffic volumes.

To evaluate the changes in traffic volumes that would be generated under each alternative, 2023 daily traffic volumes were redistributed based on proposed changes to the roadway network, shifts and/or reductions in parking supply, and estimated reductions in automobile trips due to transit service. The reduction factors in automobile trips were used for this analysis (Nelson\Nygaard 2005).

Daily traffic volumes were calculated for the following roadway segments for each alternative under summer weekend conditions, which represents the highest volume of traffic:

- Conzelman Road/Lower Conzelman Road:
  - Alexander Avenue to Battery Spencer
  - Battery Spencer to McCullough Road
  - McCullough Road to Hawk Hill
  - Hawk Hill to Field Road
- McCullough Road – Conzelman Road to Bunker Road
- Danes Drive / Barry-Baker tunnel to Alexander Avenue
- Barry-Baker tunnel
- Bunker Road:
  - West tunnel to McCullough Road
  - McCullough Road to Field Road
  - West of Field Road
- Field Road/Mendell Road – Bunker Road to Bird Island Overlook
- Bunker Road East – East Tunnel to Fort Baker
- East Road – Fort Baker to Alexander Avenue
- Alexander Avenue
  - U.S. 101 to Danes Drive
  - Danes Drive to East Road

These locations were selected based on each segment's importance to the roadway network, its relevance to the park's main entrances and exits, and its importance in serving park destinations. The traffic projections for these locations for the year 2023 are shown in Figure 4.2.

Daily traffic volumes for 2023 on the roadway segments for each alternative will be compared to Alternative 1 to measure the impact of changes in the amount of vehicle travel on different roadway segments in the study area by alternative.

Impact intensities for traffic volume are defined below:

Negligible: The change in daily traffic from Alternative 1 on a roadway segment would be less than 15%.

Minor: The change in daily traffic from Alternative 1 on a roadway segment would be between 15% and 40%.

Moderate: The change in daily traffic from Alternative 1 on a roadway segment would be between 41% and 70%.

Major: The change in daily traffic from Alternative 1 on a roadway segment would be more than 70%.

A decrease in daily traffic volume would be a beneficial impact, and an increase in daily traffic volume an adverse impact.

These intensity levels were based on previous work at national parks, including Yosemite National Park, regarding the ability of visitors to notice changes in traffic volume in the study area and how normal day-to-day variations in volumes should be considered in establishing impact thresholds. The intensities were also based on the specific recognition of the day-to-day variation in traffic. For example, in August 2000 the average weekday traffic entering and exiting Fort Baker was 2,070 vehicles, and on a weekend day 2,880 vehicles, a difference of about 39%. Thus, a traffic volume change similar to the difference between a weekday and a weekend day in August in the Fort Baker area would have a minor impact. Traffic entering and exiting the Marin Headlands on a weekday was 5,800 vehicles, and on a weekend day, 10,155 vehicles, a difference of about 75%. As a result, a traffic volume change with a major impact would be equal to or greater than the traffic volume difference between a weekday and a weekend day in August in the Marin Headlands.

Level of Service

To evaluate impacts on the level of service, seven locations were selected for analysis, including five intersections and two roadway segments. The roadway segments were analyzed using procedures for two-lane roads in the *Highway Capacity Manual* (TRB 2000), which identifies six levels of service to quantify the performance of a roadway section, ranging from LOS A (the best operating conditions) to LOS F (the worst operating conditions).

The intersection analysis was conducted following the procedures for unsignalized intersections as outlined in the *Highway Capacity Manual*. Six

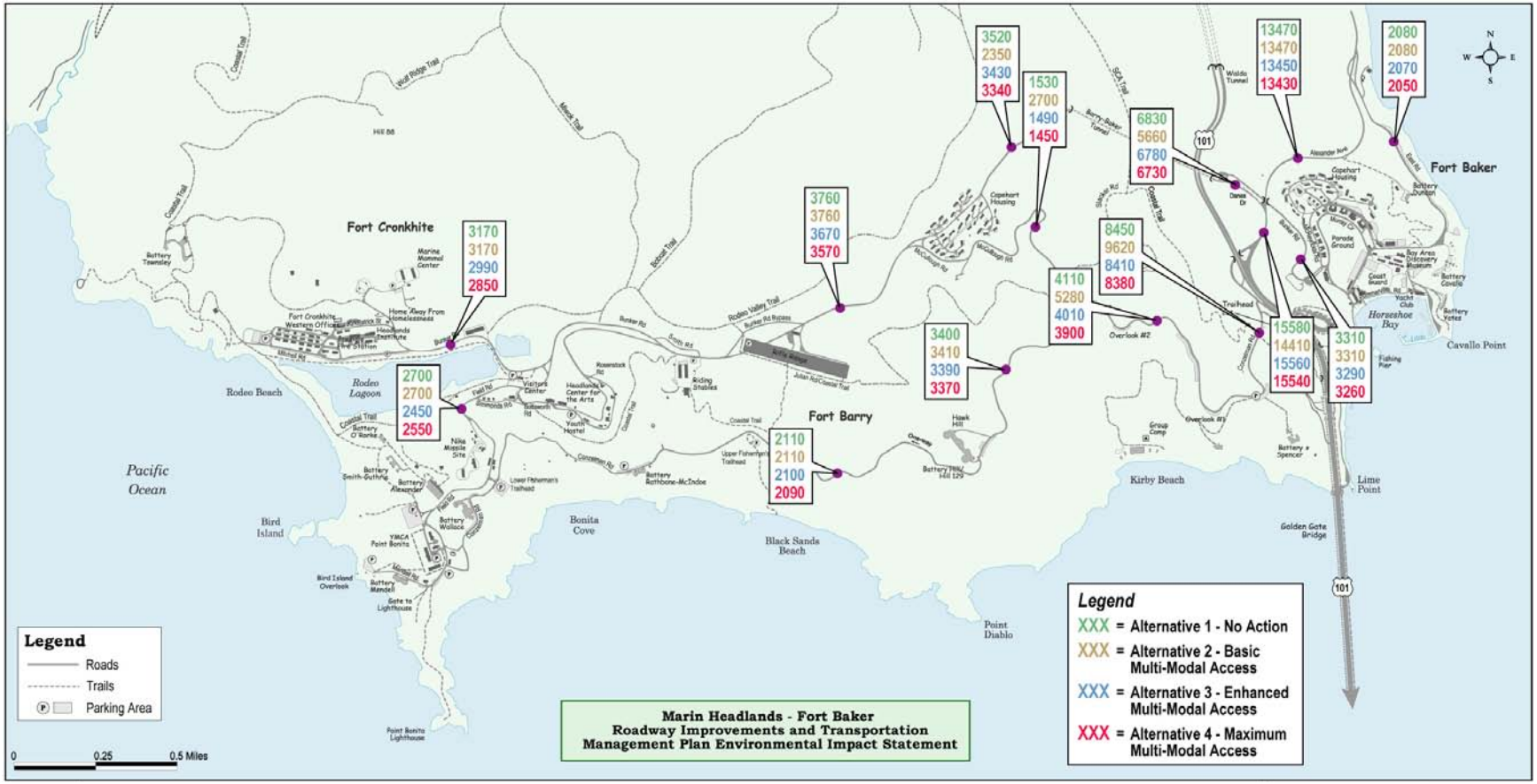


FIGURE 4.2 PEAK-SEASON WEEKEND TRAFFIC VOLUMES — YEAR 2023

United States Department of the Interior / National Park Service June 2007 • 6451/20627

SOURCE: David Evans and Associates, Inc.

levels of service (LOS A through LOS F) are defined for intersections, based on the average total delay to a motorist at the intersection. An intersection described as LOS A has the lowest delay, while LOS F is the most delay.

Levels of service were analyzed for the following intersections and roadway segments:

- Intersections:
  - Alexander Avenue / Danes Drive
  - McCullough Road / Bunker Road
  - McCullough Road / Conzelman Road
  - Danes Drive / Bunker Road (east end of the Barry-Baker tunnel)
  - U.S. 101 / Alexander Avenue interchange (ramp intersections)
- Roadway Segments:
  - Conzelman Road (between McCullough Road and U.S. 101)
  - Alexander Avenue (between Conzelman Road and Danes Drive, vicinity of U.S. 101 interchange)

The Alexander Avenue intersections and roadway segment were chosen for analysis due to existing congestion experienced in those areas, especially in the vicinity of the U.S. 101 interchange. The Bunker Road intersections and Conzelman Road intersection and roadway segment were chosen because these areas will be most affected by the changes in the roadway network proposed by the alternatives.

Intersection/Roadway Segment	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Conzelman Road / McCullough Road	B	A	A	A
Bunker Road / McCullough Road	B	B	B	B
Bunker Road / Danes Drive	B	B	B	A
Alexander Avenue / Danes Drive – *Unsignalized*	C	D	C	C
Alexander Avenue / Danes Drive – *Signalized*	-	B	-	B
Alexander Avenue/ US 101 NB Ramps	F	F	F	F
Conzelman Road – US 101 to McCullough Rd	C	C	C	C
Alexander Avenue – Conzelman Rd to Danes Dr	D	D	D	D

Impact intensities for levels of service are defined below:

Negligible: The level of service for individual locations would remain the same.

Minor: The level of service would change by one category and would remain at an acceptable level of service (LOS A, B, C or D).

Moderate: The level of service would change by more than one category and would remain at an acceptable level of service (LOS A, B, C or D).

Major: The level of service would change by one or more categories and would deteriorate to an unacceptable level of service (LOS E or F) or would improve from an unacceptable level to an acceptable level (LOS A, B, C or D).

An improvement in the level of service grade would be a beneficial impact, and a reduction in the level of service would be an adverse impact.

Vehicular Safety

Vehicular safety refers to the safe movement and travel speed of vehicles throughout the park's road network. A safe road network ensures that vehicles have adequate sight distances at corners, intersections, and parking areas; minimizes the possibility for conflicts between motorized vehicles, pedestrians, and bicyclists; and allows for vehicles to easily stay within their travel lanes.

Each alternative was evaluated on the basis of its expected impact on vehicular safety according to the following impact thresholds.

Negligible: There would not be a perceptible change in vehicular safety.

Minor: Slight changes to vehicular safety conditions at selected locations would be detectable to the visitor population.

Moderate: Substantial changes to vehicular safety conditions would change the number of roadway accidents

at several locations inside the park.

Major: A wide change in vehicular safety conditions would dramatically change the possibility for roadway accidents throughout the park.

An improvement in vehicular safety, including the potential for reducing the number of roadway accidents in the park, would be considered a beneficial impact. A reduction in vehicular safety, including the increased potential for roadway accidents, would be an adverse impact.

Parking Utilization

Parking utilization refers to the balance between parking supply and demand during peak visitation periods. A parking utilization study conducted in the summer of 2000 documented parking use at major park recreation sites on a summer weekend day. The study was conducted only at the major use sites and not for the entire park because of the large number of minor parking facilities. At no point does the parking demand exceed overall parking supply under current conditions on a typical visitation day.

Using the results of the 2000 study and traffic growth estimates for year 2023, expected parking utilization was projected for the Marin Headlands and Fort Baker under each alternative. The utilization rates were compared with the planned capacity at each site in order to identify locations where supply and demand would be out of balance on a peak summer weekend day in 2023.

The following impact thresholds were established for parking utilization:

Negligible: There would not be a perceptible change in the current parking balances and/or imbalances at any locations.

Minor: A change in the current parking balances and/or imbalances would be perceptible at a few specific locations.

Moderate: A change in the current parking balances and/or imbalances would be perceptible at several specific locations.

Major: A change in the current parking balances and/or imbalances would be perceptible at a majority of parking locations or all locations.

TABLE 4-1. PARKING UTILIZATION ANALYSIS

Parking Area	Current Number Parking Spaces	Peak Utilization (no. of occupied parking spaces)	Planned Number of Parking Spaces				Projected Utilization of Parking Spaces in 2023			
			Alt. 1	Alt. 3	Alt. 2	Alt. 4	Alt. 1	Alt. 3	Alt. 2	Alt. 4
Hawk Hill	55	20	55	55	23	50	43%	43%	102%	46%
Marin Headlands Visitor Center	27	16	27	27	27	27	70%	69%	70%	69%
Battery Alexander Lot	60	6	60	68	68	68	12%	10%	10%	10%
Bird Island Overlook	30	6	30	0	0	9	24%	0	0	77%
Fort Barry (Headlands Center for the Arts, Simmonds Road, Rosenstock Road)	67	32	67	67	67	67	56%	56%	56%	55%
Battery Spencer	24	24	24	21	10	19	118%	134%	282%	146%
Trailhead Lot	52	36	52	50	50	50	81%	84%	85%	83%
Battery Mendell and Mendell Road	30	35	30	0	30	10	137%	0	137%	405%
Rodeo Beach (Paved and Unpaved Lots)	174	65	174	94	149	94	44%	81%	51%	80%

Parking Summary	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Fort Baker	961	961	944	944
Marin Headlands	1,593	1,338	1,330	1,408
Total	2,554	2,299	2,274	2,352

SOURCE: Nelson\Nygaard Consulting Associates.

Table 4-1 summarizes the results of the parking utilization analysis. The data for peak utilization was collected in July 2000 and refers to the maximum number of spaces that are used in a given parking area during a weekend day. The percentages for projected utilization in 2023 refer to the expected demand for parking spaces in relation to the planned number of parking spaces. Percentages greater than 100% indicate that demand will exceed available spaces. The assumed parking demand levels in 2023 were based on the parking utilization rates in 2000 adjusted by the projected traffic growth factors (1.175 for Alternatives 1 and 2, 1.169 for Alternative 3, and 1.156 for Alternative 4). Total parking changes under each alternative are shown in Appendix C.

A reduction in the demand for parking in relation to parking supply or an increase in parking supply relative to parking demand would be a beneficial impact. An increase in parking demand or a decrease in parking supply would be an adverse impact.

Impacts of Alternative 1 — No-Action Alternative

Impact Analysis

Traffic

Traffic Volume. Year 2023 traffic projections were calculated using an annual growth rate of 0.7% applied to the roadway segment traffic volumes calculated from existing counts. The expected traffic volumes from the *Fort Baker Plan* were added to the traffic forecasts for 2023 along Alexander Avenue, Bunker Road, and East Road. Because the roadway network, parking supply, and transit service would remain the same as existing, no other factors were applied to the traffic volumes on each roadway segment.

There would be no traffic volume changes in the Marin Headlands or Fort Baker as a result of this alternative. Therefore, there would be no traffic volume impacts. The estimated traffic volumes under each alternative are summarized in Figure 4.2.

Level of Service. An LOS analysis was performed for five intersections and two roadway segments. Peak-hour traffic at these locations was estimated based on existing peak-hour percentages and expected alternative traffic distributions. The Conzelman Road / McCullough Road, Bunker Road / Danes Drive, Alexander Avenue / Danes Drive, and Alexander Avenue / U.S. 101 northbound on-ramp intersections were analyzed as unsignalized T intersections. The Bunker Road / McCullough Road intersection was analyzed as the existing unsignalized Y intersection.

There would be no changes to the level of service at intersections within the Marin Headlands or Fort Baker under existing conditions, and proposed improvements are not anticipated to affect levels of service at park intersections.

Vehicular Safety

Roadway improvements would not be adopted under Alternative 1. Consequently, there would be no impacts to vehicular safety.

Parking Utilization

Parking supply would not be changed under Alternative 1, and there would be no actions that would change the demand for parking. There would be no impact on parking utilization.

Cumulative Impacts

Alternative 1 would have no direct impacts on traffic, vehicular safety, or parking utilization. As a result, there would be no cumulative impacts associated with this alternative.

Mitigation Measures

There would be no mitigation measures for this alternative.

Conclusion

There would be no long-term, short-term, or cumulative impacts to traffic, vehicular safety, or parking utilization as a result of this alternative.

Impacts of Alternative 3 — Preferred Alternative

Impact Analysis

Traffic

Traffic Volume. The reduction in automobile trips impacts under Alternative 3 were applied to the traffic volumes accessing the park and circulating within the park. Almost 17% of existing parking spaces within the Marin Headlands would be eliminated under this alternative. Some of the

parking shifts under this alternative would be along roadway segments, such as along Field Road and Mitchell Road. The parking occupancies recorded in 2000 (Nelson\Nygaard 2000) show almost all locations operating under capacity during a peak season weekend. Therefore, it was assumed that the proposed parking reductions would have little effect on overall travel patterns and vehicular volumes. With the closure of Mendell Road to Bird Island Overlook, a shuttle route serving Rodeo Beach and Field Road, and more parking proposed along Bunker Road, reduced traffic volumes were assumed along Mitchell Road and Field Road. The parking reductions proposed at Battery Spencer and Hawk Hill were assumed to have little effect on traffic volumes along Conzelman Road since this alternative would not include an active parking management system to inform drivers of full parking lots, except for Battery Spencer.

This alternative would result in negligible beneficial impacts to the traffic volumes within the Marin Headlands and Fort Baker (see Figure 4.2).

Construction activities within the park to modify roadways, intersections, and parking areas would cause short-term impacts to traffic volumes along specific roadway segments. Lane closures and detours would decrease traffic volumes on roadway segments under construction and possibly increase traffic volumes on segments along alternate routes. Minor increased traffic would occur along Mitchell/Bunker Roads with the construction related to the wetland restoration of the Rodeo Beach unpaved parking lot. Construction traffic would include workers conducting the work as well as dump trucks moving earthen fill to and from the wetland and borrow site. A total of approximately 2,300 cubic yards of fill will be needed to fill gullies and site grading for the unpaved parking lot wetland restoration project. Most of this fill material will be available on-site, but some (up to 100 cubic yards) would be hauled in from the wetland restoration mitigation sites. This would generate up to five new trips (based on use of 10-cy dump trucks), likely over the course of 1-2 days. Because almost all construction would be done during the day on weekdays, no traffic impacts are anticipated during weekend peak visitation. However, best management practices would be followed during construction, and overall impacts would be short term and negligible to minor.

Level of Service. An LOS analysis was performed for five intersections and two roadway segments. The Conzelman Road / McCullough Road intersection was analyzed as a roundabout, and impacts on the level of service would be long-term, minor, and beneficial. The Bunker Road / McCullough Road, Bunker Road / Danes Drive, Alexander Avenue / Danes Drive, and Alexander Avenue / U.S. 101 northbound on-ramp intersections were analyzed as unsignalized T intersections. Impacts on the level of service at these intersections and roadway segments would be long-term, negligible, and beneficial.

Construction activities at roadways, intersections, and parking areas under this alternative would have short-term impacts on the level of service at specific intersections and roadway segments. Lane closures and detours would affect traffic volumes and traffic capacity on roadway segments under construction and possibly increase traffic volumes on alternate routes. Best management practices would be followed during construction, and overall impacts would be short term, minor to moderate, and adverse.

Vehicular Safety

Slopes would be excavated at three blind corners along Conzelman Road to improve sight distances. Additional space would be provided at the overlook parking areas to make it possible to partially back out of parking spaces without entering traffic lanes. Partial pullouts would be closed to parking by moving the guardrail closer to the edge of the travel lane or by grading a steeper sideslope unsuitable for parking. Parallel parking would be restricted only to those areas with adequate sight distances and space for vehicles to pull fully off the road. At Hawk Hill the head-in parking area would be expanded by a retaining wall and additional parallel parking would be provided on the inboard side of Conzelman Road to limit conflicts between parking movements and traffic flows. The existing turnaround would be enlarged to reduce the numbers of vehicles that must back up while turning around.

The Conzelman Road / McCullough Road intersection would be converted to a roundabout, thereby allowing a safe turnaround and improved capacity and safety for all turning movements. Several intersections would be redesigned as T

intersections to improve sight distances for left-turn movements.

The intersection of U.S. 101 and Conzelman Road would be improved to accommodate the turning radius of buses to keep them on the roadway. As part of the reduction in parking at the Lower Fisherman's parking area, the entrance would be narrowed to channel vehicles entering this parking area and reduce potential for turning conflicts.

Additional space would be provided along Mitchell Road for head-in parking stalls to facilitate backing movements into the travel lanes. In certain locations, head-in parking stalls would be converted to parallel stalls. Just before the east portal of the Barry-Baker tunnel, a lighted "turning traffic ahead" warning sign would be installed inside the tunnel for eastbound traffic.

A blind curve along a narrow stretch of McCullough Road would be widened to provide improved sight distance and adequate room for buses to stay within the travel lanes. The shoulders of Bunker Road would be widened at blind corners to improve safety.

At the Point Bonita trailhead visitors would be directed to the Battery Alexander parking area. Parallel parking would be blocked in areas with inadequate space and sight distance. The result of these efforts would be to minimize the conflicts in this area between parking movements and traffic flows.

Along the one-way stretch of Conzelman Road, several improvements would be implemented to slow traffic and keep vehicles on the roadway. These improvements include improving the superelevation, widening the pavement on a sharp curve, and installing warning signs to encourage slower traffic speeds.

The composite effect of these safety improvements would be to address existing vehicular safety issues throughout the park, including the locations where high rates of accidents have been reported (see "High Motor Vehicle Traffic Accident Locations and Safety Improvement Prescriptions" in Appendix C for descriptions of high accident locations.) As a result, this alternative would have a long-term, major, beneficial impact on vehicular safety.

Parking Utilization

Safety improvements at Battery Spencer would cause a net reduction in the number of parking spaces. Signage would be used to manage parking at Battery Spencer, such as directing visitors to the trailhead parking lot as an alternative to the Battery Spencer parking lot, and implementing ITS signage informing visitors what to do when the lot is at capacity and directing them to those locations. Fewer parking spaces would result in a long-term, moderate, adverse impact on parking utilization at Battery Spencer.

No parking would be provided along Mendell Road or at Bird Island Overlook, both of which would be closed to motor vehicles. Visitors to these areas would need to park at Battery Alexander and walk. Some visitors would find this inconvenient or otherwise undesirable, resulting in a long-term, moderate, adverse impact at this location.

Parking would be provided off Julian Road near the intersection of McCullough Road and Conzelman Road to offset some of the informal parking spaces removed along Conzelman. Removal of the unpaved parking at Rodeo Beach, and parking changes to Fort Cronkhite in general, are discussed in more detail under Section 4.5. Parking imbalances are not expected to occur at these and other primary recreation sites in the study area with these changes. Parking changes under this alternative would likely be perceptible to many visitors; however, they would affect only a few specific locations. Consequently, Alternative 3 would have a long-term, minor, adverse impact on parking utilization when considering the entire study area. During construction some parking spaces could be inaccessible, resulting in a short-term, minor, adverse impact.

Cumulative Impacts

Traffic

Traffic Volume. Policies established in the *Marin Countywide Plan* support promoting transportation alternatives, reducing vehicle miles traveled, increasing bicycle and pedestrian access by connecting to federal parklands, encouraging and supporting expansion of local bus and ferry services, and supporting regional transit initiatives. Implementation of these policies and the proposed ferry between San Francisco and Fort Baker would have a

long-term negligible beneficial effect on traffic volumes throughout the park. These policies and projects combined with Alternative 3, result in cumulative negligible beneficial impacts on traffic.

Level of Service. None of the projects considered for cumulative impacts (see sec. 4.1.2) would be expected to impact the level of service experienced on park roads and intersections. Therefore, there would be no cumulative impacts to levels of service in the Marin Headlands or Fort Baker.

Vehicular Safety

The proposed resurfacing of Alexander Avenue and upgrading its guardrails and shoulders to allow the addition of bike lanes, as well as actions proposed under the Alexander Avenue Planning Study and the improvements planned by the park to improve safety in the Fort Baker area, would have a long-term, minor, beneficial impact on safety. In combination with Alternative 3, cumulative impacts to vehicular safety would be long-term, major, and beneficial. Most of the impacts would be a result of Alternative 3 vehicular safety improvements.

Parking Utilization

The *Fort Baker Plan* proposed a new 50-car parking lot at the Fort Baker waterfront, and a new parking facility at the Bay Area Discovery Museum. These new lots have been constructed and increased parking supply in Fort Baker, improving the parking balance at these specific locations, with a long-term, minor, beneficial impact.

The proposed NPS parklands water shuttle study would potentially provide ferry service between Fort Baker and San Francisco. The service could result in increased parking demand in Fort Baker as a result of San Francisco-bound ferry passengers parking in the park and then boarding the ferry. The amount of increased parking demand in Fort Baker would depend on how the final study addressed parking pricing and feeder bus connections to ferry terminal sites. Assuming that efforts would be made to minimize parking demand within the park, the ferry service would have long-term, minor, adverse impacts on parking utilization in Fort Baker.

Overall, beneficial impacts from parking improvements and potential ferry service in Fort Baker would be negligible to minor, depending on the balance between increased demand for ferry parking and increased supply at the waterfront and the Bay Area Discovery Museum. In combination with Alternative 3, cumulative impacts to parking in the Marin Headlands and Fort Baker would be minor and adverse. The majority of these impacts would result from actions under Alternative 3.

Mitigation Measures

SAF-1: Traffic Monitoring. Traffic accident rates would be monitored at the stop-controlled Bunker Road / Old Bunker Road / Mitchell Road intersection to determine if a redesigned intersection is needed to address long-term vehicular safety impacts.

SAF-2: Visual Barrier. Y-intersections at Bunker Road and McCullough Road and Bunker Road and Field Road would be replaced by T-intersections. To prevent visitors from driving on the closed remnant Y-intersections, which would be hazardous to vehicle safety, the park would plant native coastal scrub at both ends of the closed road connections. The vegetation would not be planted along the entire remnant road, but only at the ends to discourage driving and enhance safety.

Conclusion

There would be a long-term, negligible beneficial impact on average daily traffic volumes in the Marin Headlands and Fort Baker study area, and cumulative impacts would be negligible beneficial. Short-term impacts due to construction would be adverse and negligible to minor.

Alternative 3 would have a long-term, minor, beneficial impact to the level of service at the Conzelman Road / McCullough Road intersection. At all other intersections and roadway segments analyzed, impacts on the level of service would be long-term, negligible, and beneficial. Short-term impacts due to construction would be adverse and minor to moderate. There would be no cumulative impacts on level of service.

Alternative 3 would have a long-term, major, beneficial impact on vehicular safety because of correcting various safety problems associated with poor sight distances, minimizing conflicts between parking movements and traffic flows, and widening or closing certain roadway segments to remove

hazards. Cumulative impacts would be long-term, major, and beneficial.

Alternative 3 would have a long-term, minor, adverse impact on parking utilization. Short-term impacts due to construction would be minor and adverse. Cumulative impacts to parking would be long-term, minor, and adverse.

Impacts of Alternative 2

Impact Analysis

Traffic

Traffic Volume. Two major changes to the roadway network under this alternative would affect traffic flow within the study area. The Barry-Baker tunnel would operate with one-way eastbound traffic in contrast to the existing two-way, reversible traffic flow with signalized control. Therefore, all of the existing westbound tunnel traffic would be diverted to westbound Conzelman Road and northbound McCullough Road. McCullough Road would be converted to one-way operation in the northbound direction. All of the existing southbound McCullough Road traffic would be expected to be diverted to Bunker Road through the Barry-Baker tunnel and the Danes Drive / Alexander Avenue intersection. Traffic flow changes under this alternative would be limited to the Conzelman Road / Bunker Road / Alexander Avenue loop. No changes would be made to the roadway network west of McCullough Road.

Parking at Battery Spencer would be reduced substantially, most likely degrading traffic operations and safety in the area as a result of drivers trying to get to the fewer available spaces. However, it is not expected that the amount of traffic trying to access the area and traffic volumes along Conzelman Road would be reduced.

Circulation changes for entering and exiting traffic within the Marin Headlands from two-way operation to one-way operation would have a long-term, major, adverse impact on traffic volumes along McCullough Road between Conzelman Road and Bunker Road. One-way operation would have a minor adverse impact along Conzelman Road by increasing traffic volumes from Battery Spencer to McCullough Road, and a minor beneficial impact along Danes Drive and Bunker Road from Alexander Avenue to McCullough Road by decreasing traffic volumes. There would be negligible impacts on traffic volumes on all other roadway segments (see Figure 4.2).

Construction activities would result in short-term impacts to traffic volumes along specific roadway segments. Lane closures and detours would decrease traffic volumes on roadway segments under construction and possibly increase traffic volumes on alternate routes. However, best management practices would be followed during construction, and overall impacts would be short term, minor to moderate, and adverse.

Level of Service. An LOS analysis was performed for five intersections and two roadway segments, as described under Alternative 3. The Conzelman Road / McCullough Road, Bunker Road / Danes Drive, Alexander Avenue / Danes Drive, and Alexander Avenue / U.S. 101 northbound on-ramp intersections were analyzed as unsignalized T intersections. The Alexander Avenue / Danes Drive intersection could be signalized if signal warrants were met. The Bunker Road / McCullough Road intersection would be converted to a T configuration.

This alternative would have a long-term, minor, beneficial impact to the level of service at the Conzelman Road / McCullough Road intersection. If the Alexander Avenue / Danes Drive intersection remained unsignalized, this alternative would have a long-term, minor adverse impact on the level of service. However, if this intersection was improved to a T configuration and signalized, this alternative would have a minor beneficial impact on the level of service. Impacts on the level of service at all other intersections and roadway segments analyzed would be long-term, negligible, and beneficial under this alternative.

Construction activities would result in short-term impacts to the level of service at specific intersections and roadway segments. Lane closures and detours would decrease traffic volumes and traffic capacity on roadway segments under construction and possibly increase traffic volumes on alternate routes, possibly affecting the level of service on these routes. However, best management practices would be followed during construction, and overall impacts would be short term, minor to moderate, and adverse.

Vehicular Safety

Overlook parking areas with blind corners along Conzelman Road would be delineated and reduced. Partial pullouts would be eliminated by moving the guardrail closer to the edge of the travel lane. Parallel parking would be restricted only to those areas with adequate sight distance. At Hawk Hill head-in parking spaces would be converted to parallel parking to reduce conflicts between parking movements and traffic flows.

Several intersections would be redesigned as T intersections to improve sight distances for left-turn movements. These intersections include Conzelman / McCullough; Bunker / Field; Bunker / McCullough; and Bunker, Old Bunker, and Mitchell. At the latter intersection, a stop sign would be installed on Bunker Road for westbound traffic. Traffic accident rates would be monitored at this location for a minimum of three years.

Just before the east portal of the Barry-Baker tunnel, a lighted "turning traffic ahead" warning sign would be installed inside the tunnel for eastbound traffic.

Converting McCullough Road to a one-way road would make it easier for buses to stay within the travel lane around tight curves.

At the Point Bonita trailhead visitors would be directed to the Battery Alexander parking area. Parallel parking would be blocked in areas with inadequate space. The result of these changes would be to minimize the conflicts in this area between parking movements and traffic flows.

Several improvements would be implemented along the one-way stretch of Conzelman Road to slow traffic and keep vehicles on the roadway. These improvements would include installing the correct superelevation, widening of the pavement on one curve by 3 feet (1 m), the placement of rumble strips, and the installation of warning signage to encourage slower traffic speeds.

The composite effect of these improvements would be to address existing vehicular safety issues at several locations in the park, including the locations where high accident rates have been reported (see the "High Motor Vehicle Traffic Accident Locations and Safety Improvement Prescriptions" in Appendix C). The alternative would have a long-term, moderate, beneficial impact on vehicular safety.

Parking Utilization

Reconfiguring parking at Battery Spencer to improve safety would substantially reduce the number of parking spaces, causing a long-term, moderate, adverse impact on parking utilization at this location. Parking demand would continue to exceed supply along Mendell Road, and parking would be eliminated at Bird Island Overlook. Parking for the overlook would be available on Mendell Road and at the nearby Battery Alexander parking lot. The resulting imbalances between parking supply and demand at multiple locations would likely be perceptible to visitors.

Parking imbalances would not be expected to occur at other primary recreation sites within the study area. Consequently, Alternative 2 would have a long-term, minor, adverse impact on parking utilization overall when considering the entire study area.

Cumulative Impacts

Traffic

Traffic Volume. As described under Alternative 3, implementation of policies established in the *Marin Countywide Plan* and the proposed ferry service would have a long-term negligible beneficial effect on traffic volumes. These policies and projects, when combined with Alternative 2, have negligible adverse cumulative impacts.

Level of Service. None of the projects considered for cumulative impacts (see sec. 4.1.2) would impact the level of service experienced within the study area. Therefore, there would be no cumulative impacts.

Vehicular Safety

Like Alternative 3, the proposed resurfacing of Alexander Avenue and upgrading its guardrails and shoulders to allow the addition of bike lanes, as well as actions proposed under the Alexander Avenue Planning Study and the improvements planned by the park to improve safety in the Fort Baker area, would have a long-term, minor, beneficial impact on safety. In combination with Alternative 2, cumulative impacts to vehicular safety would be long-term, moderate, and beneficial.

Most of the impacts would be a result of Alternative 2 vehicular safety improvements.

Parking Utilization

The *Fort Baker Plan* proposed a new 50-car parking lot at the Fort Baker waterfront and a new parking facility at the Bay Area Discovery Museum. These new lots have been constructed and increased parking supply in Fort Baker, improving the parking balance in these few specific locations, with a long-term, minor, beneficial impact.

The proposed NPS parklands water shuttle study would potentially provide ferry service between Fort Baker and San Francisco. The service could result in increased parking demand in Fort Baker as a result of San Francisco bound ferry passengers parking in the park and then boarding the ferry. The amount of increased parking demand in Fort Baker would depend on the way that the final plan addressed parking pricing and feeder bus connections to ferry terminal sites. Assuming that efforts would be made to minimize parking demand within the park, the ferry service would have a long-term, minor, adverse impact on parking utilization in Fort Baker.

Overall impacts from the parking improvements and potential ferry service at Fort Baker could be long-term, negligible to minor, and beneficial depending on the balance between increased demand for ferry parking and additional supply at the waterfront and the Bay Area Discovery Museum. In combination with Alternative 2, cumulative impacts to parking in the Marin Headlands and Fort Baker would be minor and adverse. The majority of these impacts would result from Alternative 2.

Mitigation Measures

SAF-1: Traffic Monitoring. Traffic accident rates would be monitored at the stop-controlled Bunker Road / Old Bunker Road / Mitchell Road intersection for a minimum of three years to determine if a redesigned intersection is needed to address long-term vehicular safety impacts.

Conclusion

Traffic circulation changes on McCullough Road between Conzelman Road and Bunker Road would have a long-term, major, adverse impact on traffic volumes; one-way operation on Conzelman Road would have a long-term, minor adverse impact; and decreased traffic volumes would have a long-term, minor beneficial impact along Danes Drive and Bunker Road from Alexander Avenue to McCullough Road. Impacts on all other roadway segments would be long-term, negligible, and adverse. Short-term impacts due to construction would be minor to moderate and adverse. Cumulative impacts would be long-term, negligible, and adverse.

Alternative 2 would have a long-term, minor beneficial impact to the level of service at the Conzelman Road / McCullough Road intersection. If the Alexander Avenue / Danes Drive intersection remained unsignalized, the impact on the level of service would be long-term, minor and adverse; however, improving this intersection to a T configuration and adding a signal would have a minor beneficial impact on the level of service. The long-term LOS impacts at all other intersections and roadway segments would be negligible and beneficial. Short-term impacts due to construction would be minor to moderate and adverse. There would be no cumulative impacts to the traffic level of service under Alternative 2.

Alternative 2 would have a long-term, moderate, beneficial impact on vehicular safety. Cumulative safety impacts would be long-term, moderate, and beneficial.

Alternative 2 would have a long-term, minor, adverse impact on parking utilization. Cumulative impacts to parking in the Marin Headlands and Fort Baker would be minor and adverse.

Impacts of Alternative 4

Impact Analysis

Traffic

Traffic Volume. Impacts on traffic volumes as a result of reducing automobile trips under Alternative 4 were analyzed. No changes were made to vehicular volumes as a result of parking reductions. However, it was assumed that a shuttle route to Rodeo Beach and Bird Island Overlook and more parking along Bunker Road under this alternative would reduce traffic volumes along Mitchell Road and Field Road.

The transit initiatives and changes to the parking supply included in this alternative would have a long-term, negligible, adverse impact on average

daily traffic volumes along the roadway segments within the study area (see Figure 4.2).

Construction activities within the park to modify roadways, intersections, and parking areas would have short-term impacts to traffic volumes along specific roadway segments. Lane closures and detours would decrease traffic volumes on roadway segments under construction and possibly increase traffic volumes on alternate routes. However, best management practices would be followed during construction, and overall impacts would be minor to moderate and adverse.

Level of Service. An LOS analysis was performed for five intersections and two roadway segments, as described under Alternative 3. The Conzelman Road / McCullough Road intersection was analyzed as a roundabout. The Bunker Road / McCullough Road, the Bunker Road / Danes Drive, the Alexander Avenue / Danes Drive, and the Alexander Avenue / U.S. 101 northbound on-ramp intersections were analyzed as unsignalized T intersections. The Alexander Avenue / Danes Drive intersection could be signalized if signal warrants were met.

This alternative would have a long-term, minor, beneficial impact to the level of service at the Conzelman Road / McCullough Road and the Bunker Road / Danes Drive intersections. If the Alexander Avenue / Danes Drive intersection remained unsignalized, this alternative would have a negligible impact on the level of service; however, if a signal was installed, the impact on level of service would be minor and beneficial. Impacts on the level of service at all other intersections and roadway segments analyzed would be negligible and adverse.

Construction activities would have short-term impacts to the level of service experienced at specific intersections and roadway segments. Lane closures and detours would affect traffic volumes and decrease capacity on roadway segments under construction and possibly increase traffic volumes on alternate routes. These changes could affect the level of service. However, best management practices would be followed during construction, and overall impacts would be minor to moderate and adverse.

Vehicular Safety

Slopes would be excavated at three blind overlook corners along Conzelman Road to improve sight distances. These excavations would be deeper than those performed under Alternative 3, accommodating medians between travel lanes and parking areas. The excavations of curves along Conzelman Road would provide the greatest amount of sight distance of any of the alternatives. Additional space would be provided at the overlook parking areas to provide a circulation aisle and to make it possible for drivers to back out of parking spaces without entering travel lanes. Partial pullouts would be eliminated by moving the guardrail closer to the edge of the travel lane. Parallel parking would be restricted only to those areas with adequate sight distances. At Hawk Hill the road bench would be widened to provide adequate space for head-in parking, and the existing turnaround would be enlarged.

The Conzelman Road / McCullough Road intersection would be converted to a roundabout, providing a turnaround and adequate capacity for all turning movements. The intersections at Bunker Road / Field Road; Bunker Road / McCullough Road; and Bunker Road / Old Bunker Road / Mitchell Road would be redesigned as T intersections. At the latter intersection a stop sign would be installed on Bunker Road for westbound traffic. Traffic accident rates would be monitored at this location for a minimum of three years.

Along Mitchell Road additional space would be provided for head-in parking stalls to facilitate backing movements onto the roadway. In certain locations head-in parking stalls would be converted to parallel stalls.

A lighted “turning traffic ahead” warning sign would be installed inside the east portal of the Barry-Baker tunnel for eastbound traffic.

A blind curve along a narrow stretch of McCullough Road would be widened so that large vehicles could stay within the travel lanes.

Visitors to the Point Bonita trailhead would be directed to the Battery Alexander parking area. Parallel parking would be blocked in areas with inadequate space. This would minimize conflicts between parking movements and traffic flows.

Several improvements would be implemented along the one-way stretch of Conzelman Road to slow traffic and keep vehicles on the roadway. These improvements include modifying the superelevation, expanding the paved width by 3 feet (1 m), placing rumble strips, and installing warning signs to encourage slower traffic speeds.

The composite effect of these safety improvements would be to address existing vehicular safety issues throughout the park, including the locations where high rates of accidents have been reported (see "High Motor Vehicle Traffic Accident Locations and Safety Improvement Prescriptions" in Appendix C for descriptions of high accident locations). As a result, Alternative 4 would have a long-term, major, beneficial impact on vehicular safety.

Parking Utilization

As safety improvements were made at Battery Spencer, parking would be reduced under this alternative, causing a long-term, moderate, adverse impact on parking utilization at this site. Providing park shuttle bus service would partially mitigate the parking impacts at Battery Spencer by providing connections to alternative parking areas. Parking demand would exceed supply along Mendell Road. The imbalances between parking supply and demand at Battery Spencer and Mendell Road would likely be perceptible to many visitors. Alternative parking locations would help offset adverse impacts, but there would be a long-term, minor, adverse impact to parking utilization.

During the construction of road, parking, and trail improvements, some parking spaces could be inaccessible. The resulting impacts would be short term, minor, and adverse.

Cumulative Impacts

Traffic

Traffic Volume. As described under Alternative 3, implementation of policies established in the *Marin Countywide Plan* and the proposed ferry service would have a long-term beneficial effect on traffic volumes that would be negligible. These policies and projects, when combined with Alternative 4, would be long-term, negligible, and beneficial.

Level of Service. None of the projects considered for cumulative impacts (see sec. 4.1.2) would impact the level of service within the study area, so there would be no cumulative impacts to levels of service in the Marin Headlands or Fort Baker.

Vehicular Safety

The proposed resurfacing of Alexander Avenue and upgrading of its guardrails and shoulders to allow for bike lanes, as well as actions proposed under the Alexander Avenue Planning Study and the improvements planned by the park to improve safety in the Fort Baker area, would have a long-term, minor, beneficial impact on safety. In combination with Alternative 4, cumulative impacts to vehicular safety would be long-term, major, and beneficial. Most of the impacts would be a result of Alternative 4 vehicular safety improvements.

Parking Utilization

The *Fort Baker Plan* proposes a new 50-car parking lot at the Fort Baker waterfront and a new parking facility at the Bay Area Discovery Museum. These new lots will increase parking supply in Fort Baker, improving the parking balance in these few specific locations, and will have a long-term, minor, beneficial impact.

The proposed NPS parklands water shuttle study would potentially provide ferry service between Fort Baker and San Francisco. The service could result in increased parking demand in Fort Baker if San Francisco bound ferry passengers parked at Fort Baker and boarded the ferry. The amount of increased parking demand at Fort Baker would depend on the way that the final plan addressed parking pricing and feeder bus connections to ferry terminal sites. Assuming that efforts would be made to minimize parking demand within the park, the ferry service would have long-term, minor, adverse impacts on parking utilization in Fort Baker. There would be no cumulative impacts to parking utilization in the Marin Headlands.

Overall impacts from the parking improvements and potential ferry service in Fort Baker could be long-term, negligible to minor, and beneficial depending on the balance between increased demand for ferry parking and included supply at the waterfront and the Bay Area Discovery Museum. In combination with Alternative 4, cumulative impacts to parking in the Marin Headlands and Fort

Baker would be minor and adverse. The majority of these impacts would result from Alternative 4.

Mitigation Measures

SAF-1: Traffic Monitoring. Traffic accident rates would be monitored at the stop-controlled Bunker Road / Old Bunker Road / Mitchell Road intersection to determine if a redesigned intersection is needed to address long-term vehicular safety impacts.

Conclusion

There would be a long-term, negligible, adverse impact on the average daily traffic volumes along roadway segments in the study area. Short-term impacts due to construction would be minor to moderate and adverse. There would be long-term, negligible, cumulative impacts to traffic volumes on park roads.

Alternative 4 would have a long-term, minor, beneficial impact to the level of service at the Conzelman Road / McCullough Road and the Bunker Road / Danes Drive intersections. If the Alexander Avenue / Danes Drive intersection remained unsignalized, the impact on the level of service would be negligible and adverse; however, if this intersection was signalized, the impact would be long-term, minor, and beneficial. Long-term impacts on the level of service at all other intersections and roadway segments analyzed would be negligible and adverse. Short-term impacts due to construction would be minor to moderate and adverse. There would be no cumulative impacts to the traffic level of service under Alternative 2.

Alternative 4 would have a long-term, major beneficial impact on vehicular safety as a result of road widening, improved sight distances, safety improvements at parking areas, and guardrail and media installation. Cumulative impacts would be long-term, major, and beneficial.

Alternative 4 would have a long-term, minor, adverse impact on parking utilization. Short-term impacts due to construction would be minor and adverse. Cumulative impacts would be minor and adverse.

4.2.3 NONMOTORIZED USE AND ACCESS

Methodology and Intensity of Impacts

Impacts on Bicyclists

The quality of bicycling conditions in the study area could be affected by various elements of the alternatives that propose physical changes to roadways, new trails, or new bikeways. A qualitative assessment was made of the impact that each alternative would have on bike access and safety.

Bike Access

Bike access refers to the ease and convenience of accessing park destinations by means of biking. The bike circulation network was evaluated for each alternative on the basis of its expected success in connecting popular destination areas, as well as linking the Marin Headlands and Fort Baker. The following intensity thresholds, based on professional judgment, were used to evaluate the magnitude of change experienced by visitors:

Negligible: Bike accessibility would not change.

Minor: Changes in bike accessibility would be slightly detectable to the user population.

Moderate: Changes in bike accessibility would be readily apparent and could lead to changed patterns in bicycle circulation.

Major: Changes in bike accessibility would be substantial and could potentially lead to long-term changes in travel behavior.

Enhanced bike accessibility to park destinations would be a beneficial impact, and reduced or impaired access would be an adverse impact.

Bike Safety

Bike safety refers to the safe maneuvering of bicycles throughout the park in a manner that would minimize the possibility for conflicts with motorized vehicles and pedestrians. Proposed changes in the roadway design, bikeway infrastructure, and circulation systems were evaluated for each alternative according to the following thresholds to assess their impact on the safety of the park's bike network:

Negligible: Bike safety would not change.

Minor: Changes in bike safety would be slightly detectable to the user population.

Moderate: Changes in bike safety would be readily apparent to the user population but would affect less than a majority of bicyclists.

Major: Changes in bike safety would be substantial and would affect a majority of bicyclists.

Improved bike safety conditions would be a beneficial impact, and the increased potential for bike accidents and injuries would be an adverse impact.

Impacts on Pedestrians

The quality of pedestrian conditions in the study area could be affected by various elements of the alternatives that propose physical changes to roadways, trails, and bikeways. A qualitative assessment was made of the impact that each alternative would have on pedestrian access and safety.

Pedestrian Access

Pedestrian access refers to the ease and convenience of accessing park destinations as well as transit facilities by walking. The pedestrian circulation network was evaluated for each alternative on the basis of how well it connected popular destination areas and linked the Marin Headlands and Fort Baker. The following intensity thresholds, based on professional judgment, were used to evaluate the magnitude of change experienced by visitors:

Negligible: Pedestrian accessibility would not change.

Minor: Changes in pedestrian accessibility would be slightly detectable to the user population.

Moderate: Changes in pedestrian accessibility would be readily apparent and could lead to changed pedestrian circulation patterns.

Major: Changes in pedestrian accessibility would be substantial and could potentially lead to long-term changes in travel behavior.

Enhanced pedestrian accessibility to park destinations would be a beneficial impact, and reduced or impaired access would be an adverse impact.

Pedestrian Safety

Pedestrian safety refers to the ability of pedestrians to walk throughout the study area in a manner that would minimize the possibility for conflicts with motorized vehicles and bicycles. Proposed changes in roadway design, pedestrian infrastructure, and circulation systems were evaluated for each alternative to assess their impact on the safety of the park's pedestrian network. The following intensity thresholds, based on professional judgment, were used to evaluate the magnitude of change experienced by visitors:

Negligible: Pedestrian safety would not change.

Minor: Changes in pedestrian safety would be slightly detectable to the user population.

Moderate: Changes in pedestrian safety would be readily apparent to the user population but would affect less than a majority of pedestrians.

Major: Changes in pedestrian safety would be substantial and would affect a majority of pedestrians.

Improved pedestrian safety conditions would be a beneficial impact, and an increased potential for pedestrian accidents and injuries would be an adverse impact.

Impacts on Wayfinding

Wayfinding refers to the ease of locating destinations in the study area by all modes of transportation. Factors affecting wayfinding include the design and operation of roadways, as well as the visibility of signage. A qualitative assessment was made of the change in wayfinding for each alternative.

The magnitude of change in wayfinding was measured according to the following thresholds:

Negligible: There would be no perceptible change in wayfinding for visitors.

Minor: Changes in wayfinding would be slightly detectable to visitors.

Moderate: Changes in wayfinding would be readily apparent but would affect less than a majority of park visitors.

Major: Changes in wayfinding would be substantial and would affect the majority of park visitors.

The improvement in the legibility of the park's circulation network and wayfinding would be a beneficial impact, and a reduction in the legibility of the park's circulation network would be an adverse impact.

Impacts of Car-Free Days

Car-free days are proposed on a limited number of days in Alternatives 3 and 4. During car-free days, private vehicle access would be restricted in some areas, special parking facilities would be provided, and transit services would be expanded, as proposed in Chapter 2. The alternatives incorporating car-free days were evaluated for impacts on access to park features by private vehicles and impacts to access by alternative travel modes, which collectively include transit, bicycle, and pedestrian travel.

Private Vehicle Access

This impact measure refers to the ease and convenience of driving to destinations within the park and finding parking close to desired destinations. For each alternative proposing car-free days, the impact on private vehicle access was evaluated according to the following thresholds:

Negligible: Car-free days would have an imperceptible effect on the ability of visitors to access park destinations in private vehicles.

Minor: Car-free days would have a perceptible impact on the ability of visitors to access a few park destinations in private vehicles.

Moderate: Car-free days would have a moderate impact on the ability of park visitors to access a few popular destinations in private vehicles or a perceptible impact on visitor access to most park destinations in private vehicles.

Major: Car-free days would substantially change the ability of visitors to access most park destinations in private vehicles.

An improvement in the ease of traveling to park destinations by private car would be a beneficial impact, and more difficult travel to park destinations by private vehicle would be an adverse impact.

Access by Alternative Modes

Access by alternative modes includes travel to destinations in the park by transit, bicycle, and/or walking. The impact of car-free days on access by alternative modes was evaluated according to the following thresholds:

Negligible: Car-free days would not have a perceptible impact on access to park destinations by transit, bicycling, or walking.

Minor: Car-free days would have a perceptible impact on access to a few park destinations by transit, bicycling, or walking.

Moderate: Car-free days would have a perceptible impact on access to most park destinations, or a moderate impact on access to a few popular destinations by transit, bicycling, or walking.

Major: Car-free days would substantially change access to most park destinations by transit, bicycling, or walking.

An improvement in the ease or convenience of traveling to park destinations by transit, bicycling, or walking would be a beneficial impact, and more difficult or less convenience in traveling to park destinations would be an adverse impact.

Impacts of Alternative 1 — No Action Alternative

Impact Analysis

Impacts on Bicyclists

Bike Access. Extending the San Francisco Bay Trail along East Road would improve access to scenic views and improve connectivity between Fort Baker and Alexander Avenue. However, bicyclists would continue to have to share the roadway with motorists. The alternative would have a long-term, minor, beneficial impact on bike access.

Bike Safety. There is currently no dedicated bike lane on East Road, and bicyclists must travel in lanes with vehicle traffic. Extending the San Francisco Bay Trail along the majority of the East Road shoulder would improve safety for bicyclists, resulting in a long-term, minor, beneficial impact to bike safety.

Impacts on Pedestrians

Pedestrian Access. The only pedestrian access improvement under Alternative 1 would be the extension of the San Francisco Bay Trail along East Road. Besides improving access to the scenic viewing areas along East Road, this improvement would improve connectivity between Fort Baker and Alexander Avenue. The alternative would have a long-term, minor, beneficial impact on pedestrian access.

Pedestrian Safety. There is no dedicated path for pedestrians on East Road, and pedestrians are often forced to walk in the travel lanes and around parked vehicles on the roadway shoulder. Extending the San Francisco Bay Trail along East Road would improve safety for pedestrians in this area. However, for about 0.25 mile the road is too narrow to accommodate a separate pedestrian path, and it would still be necessary for pedestrians to walk in the travel lane or along the narrow road shoulder in this area. Overall, these improvements would have a long-term, minor, beneficial impact on pedestrian safety.

Impacts on Wayfinding

The present signage and route marking system would continue. This alternative would not have an impact on wayfinding.

Impacts of Car-Free Days

Car-free days are not proposed under this alternative, so there would be no impacts on private vehicle access or access by alternative modes.

Cumulative Impacts

Impacts on Bicyclists

Bike Access. As described for the cumulative impacts scenario (see sec. 4.1.2), providing Class 2 bike lanes on Alexander Avenue would improve bike access between the Golden Gate Bridge and Sausalito, as well as between the Marin Headlands and Fort Baker. Improvements under the Alexander Avenue Planning Study include improving non-motorized access across the Golden Gate Bridge and into Fort Baker via West Bunker Road. Proposed improvements to the bike and pedestrian underpass of the Golden Gate Bridge would enhance bike access to the Marin Headlands. Recent improvements to the H. Dana Bowers Memorial Vista Point included widening and relocating the bike/pedestrian path between Vista Point and the Golden Gate Bridge to provide a more direct northbound connection to the bridge. This action improved bike access to Fort Baker. Together these improvements would have long-term, moderate, beneficial impacts on bike access in the Marin Headlands and Fort Baker.

When combined with the actions of Alternative 1, cumulative impacts to bike access would be long-term, moderate, and beneficial. Most of the impacts would result from other projects in the area.

Bike Safety. Bike improvements along Alexander Avenue, at the Golden Gate Bridge, and at Vista Point would enhance bicycle safety on major bike access routes to the Marin Headlands and Fort Baker. The improvements would have long-term, minor, beneficial impacts on bike safety. These improvements, when combined with the safety measures proposed under Alternative 1, would have long-term, minor, beneficial cumulative impacts to bike safety.

Impacts on Pedestrians

Pedestrian Access. As described in the cumulative impacts scenario (see sec. 4.1.2), providing sidewalks along Alexander Avenue throughout the U.S. 101 interchange area would enhance access to the study area, improve pedestrian connectivity between the Marin Headlands and Fort Baker, and improve access to transit stops. Access between Vista Point and the trailhead lot and between Vista Point and the Golden Gate Bridge would also be enhanced through improvements to the Golden Gate Bridge's northern underpass and the bike/pedestrian path between the bridge and Vista Point. These improvements had long-term, moderate, beneficial impacts to pedestrian access in the Marin Headlands and Fort Baker.

When combined with the improvements proposed under Alternative 1, cumulative impacts to pedestrian access would be long-term, moderate, and beneficial. Most of the impacts to pedestrian ac-

cess to the Marin Headlands and Fort Baker would result from other projects in the area.

Pedestrian Safety. Providing sidewalks along Alexander Avenue throughout the U.S. 101 interchange area would enhance pedestrian safety around park entrances and transit stops. Improved trail surfaces in Fort Baker (part of the *Fort Baker Plan*) and the delineation of parking lot crossings at Vista Point would also improve pedestrian safety. The resulting impacts would be long-term, minor, and beneficial. In combination with the improvements proposed under Alternative 1, these improvements would result in long-term, minor, beneficial cumulative impacts on pedestrian safety in the Marin Headlands and Fort Baker.

Impacts on Wayfinding

Alternative 1 would have no direct impact on wayfinding. As a result, there would be no cumulative impacts associated with this alternative.

Impacts of Car-Free Days

Alternative 1 would not propose car-free days. As a result, there would be no cumulative impacts associated with this alternative.

Mitigation Measures

There would be no mitigation for nonmotorized access and uses under this alternative.

Conclusion

Alternative 1 would have a long-term, minor, beneficial impact on bike access and safety as a result of extending the San Francisco Bay Trail along East Road. Cumulative impacts would be long-term, minor to moderate, and beneficial.

Alternative 1 would have a long-term, minor, beneficial impact on pedestrian access and safety as a result of improving the San Francisco Bay Trail along East Road. Cumulative impacts would be long-term, minor to moderate, and beneficial.

Alternative 1 would not have an impact on wayfinding.

Car-free days would not be proposed under this alternative.

Impacts of Alternative 3 — Preferred Alternative

Impact Analysis

Impacts on Bicyclists

Bike Access. Surfacing the Rodeo Valley trail to accommodate bicycles on a Class 1 bike path would substantially improve access between the Capehart housing area and Fort Cronkhite. Access to the trail from Bunker Road would be made possible by way of two new bridges, one near the northern terminus of McCullough Road and the other at Smith Road. Bike access between the Point Bonita trailhead and Bird Island Overlook would be enhanced by the Class 1 bike path on Mendell Road.

The striping of an uphill Class 2 bike lane on Conzelman Road between Lower Conzelman and McCullough Road would not introduce a new bike access route. However, the lane would formalize bike access along the most frequently used road segment in the park.

Rehabilitating Julian Road would enhance the bike connection between the Conzelman Road / McCullough Road intersection and the rifle range. Access to Fort Baker would be improved by the new off-road Class 1 bike and footpath from Danes Drive parallel to East Bunker Road and through a new tunnel below Alexander Avenue. The paved shoulders on East Road would be widened to improve this bicycle route. Additional width would be provided where possible in the shoulder area for bicyclists.

Cyclists would be allowed on the trail between Conzelman Road north to Bunker Road, referred to as the Rodeo Valley Connector Trail. Allowing bicycle use on this trail would improve the bike circulation system as it would provide a bicycle connection from Conzelman into Rodeo Valley. Cyclists would also be able to connect to the Rodeo Valley trail using Dubois Road (trail), which would be converted to a pedestrian/bicycle trail between Julian Road and McCullough Road. Both pedestrians and bicyclists would use McCullough Road between Rodeo Valley trail and Dubois Road.

The combined effect of these changes would be a more convenient, higher capacity, and more enjoyable bike circulation system. Changes in bike use

patterns would likely occur, especially in the Bunker Road corridor in the Marin Headlands and the East Bunker Road corridor in Fort Baker. The increased viability of biking as a means of accessing study area destinations would likely generate more biking use as a mode of park access and internal circulation. As a result, this alternative would have a long-term, major, beneficial impact on bike access. Construction activities could disrupt segments of the bike routes, resulting in minor adverse impacts in the short term.

Bike Safety. Providing off-road Class 1 bike paths along the Rodeo Valley trail and Mendell Road in the Marin Headlands, and parallel to East Bunker Road in Fort Baker, would reduce the potential for conflicts between bicyclists and motor vehicle drivers in these corridors. Widening the shoulders of East Road would provide an improved route for bicyclists and pedestrians. Other than the pullout areas, no formal parking would be provided along East Road. Therefore, conflicts between cyclists and parked vehicles would be minimal. During the seven car-free days or special events, cars could be parked along East Road. During those limited occasions, there would be increased activity in general along East Road, which would require visitors to be more alert to potential safety issues.

Providing an uphill Class 2 bike lane on Conzelman Road would improve safety, particularly along the winding sections of Conzelman Road where there are blind curves. This lane would be constructed on Conzelman Road from Alexander Avenue to McCullough Road. The widening of the sharp, blind curve on McCullough Road would also substantially improve the safety of biking on this road.

The combined effect of these changes would be substantially safer biking conditions and an increased viability of biking as a mode of transportation within the study area. Consequently, Alternative 3 would have a long-term, major, beneficial impact on bike safety.

Impacts on Pedestrians

Pedestrian Access. Extensive changes to the pedestrian trail network under Alternative 3 would substantially change the way pedestrians access study area destinations. Extending the San Francisco Bay Trail would improve access to scenic viewing areas along East Road and improve connectivity between Fort Baker and Sausalito. Separating the Bay Trail from bike use alongside East Road would benefit pedestrians. An access route based on new and existing trails would provide a pedestrian pathway between Battery Alexander and the Point Bonita Lighthouse. Closing Mendell Road to vehicle traffic would allow a new ADA accessible pedestrian connection to be provided between the Point Bonita trailhead and Bird Island Overlook. Access from Fort Cronkhite to the Marine Mammal Center would be enhanced by providing sidewalks along Old Bunker Road and the Marine Mammal Center access road. Rehabilitating Julian Road would enhance its viability as a pedestrian route between Rodeo Valley and Conzelman Road. Hardened surfaces at Battery Spencer and Overlooks 1 and 2 would further enhance pedestrian access to the most popular scenic viewing areas.

Rerouting the Coastal Trail from the interior valley to the Conzelman Road corridor would enhance pedestrian access to the viewing areas along Conzelman Road, including Hawk Hill. New trails connecting to the rerouted Coastal Trail at Battery Rathbone-McIndoe would enhance connectivity to visitor destinations along Bunker Road in one direction and to Battery Alexander in the other.

Pedestrian access between Battery Alexander and Rodeo Lagoon would be improved by a new trail route using a less steep switchback. Along the lagoon, sand matting would improve access for wheelchair as well as pedestrian users. On the northern edge of the lagoon, installing a stabilized soil sidewalk along the south side of Mitchell Road would improve visitor access to the beach and other destinations in Fort Cronkhite.

Connectivity between Alexander Avenue and Fort Baker would be enhanced by developing an off-road pedestrian path between Danes Drive and Fort Baker and a sidewalk along the north edge of Danes Drive.

The hardened (permeable) surfacing of the Rodeo Valley Trail would create a continuous off-road pedestrian connection between the Capehart housing area and Rodeo Lagoon. Removing the rifle range trail bridge would not have adverse impacts on pedestrian connections to the Rodeo Valley trail because a new bridge would be provided at Smith Road. Pedestrians would also be able to access the trail by way of a new bridge just north of the Bun-

ker Road / McCullough Road intersection in the Capehart housing area. Rehabilitating Dubois Road (trail) as a hiking trail would enhance pedestrian access between the Rodeo Valley trail and Julian Road.

Slacker Road (trail) would be a rerouted pedestrian/equestrian-only trail. The reroute would retain the connection to the SCA Trail. The existing route to the top of Slacker Hill would be converted from a road to a trail and some of the existing route would be removed and the site restored. The re-route would maintain access to the two GGRO research sites. Access to the east side of the launch site would be maintained for its views of the bay and city. The spur road leading from this trail that currently provides access to a raptor observatory research site would be closed and restored; access to this site would be provided through a new foot trail. Existing access to the other GGRO research site would be retained.

These changes would greatly enhance the viability and enjoyment of walking in the Marin Headlands and Fort Baker not only for recreational purposes, but also as a mode of access to key park destinations. Consequently, this alternative would have a long-term, major, beneficial impact on pedestrian access. Construction activities could disrupt walking routes, resulting in short-term, minor, adverse impacts to pedestrian access.

Pedestrian Safety. Rerouting the Coastal Trail along the shoulder of Conzelman Road would separate pedestrians from vehicles on the park's most popular scenic corridor. Separating the San Francisco Bay Trail extension from road shoulders that would be used by vehicles and cyclists would provide safer conditions for pedestrians along East Road.

New bus stops on Field Road near the visitor center and west of the Bunker Road / McCullough Road intersection would include a variety of pedestrian safety features, including short sidewalks, curb cuts, and crosswalks. Also, sidewalks with curb cut ramps would be installed at all intersections along Bunker Road in the Capehart housing area.

Providing an off-road trail connection between Battery Alexander and Point Bonita would eliminate the need for pedestrians to share Field Road with vehicles. Access to the Marine Mammal Center, a destination site popular with young children and school groups, would be made safer by constructing a sidewalk on Old Bunker Road and the center's access road, with a crosswalk connecting the two sidewalks.

Providing a larger diameter vehicle turnaround at Hawk Hill would reduce the number of automobile back-up maneuvers in an area with high pedestrian volumes. A sidewalk east of the turnaround would provide safe pedestrian access to viewing areas.

Installing a sidewalk along Mitchell Road would provide pedestrians with a safer way of walking along the waterfront. Closing Mendell Road to vehicular traffic would allow pedestrians to access Bird Island Overlook from the Point Bonita trailhead without having to share the roadway with vehicles. Also, pedestrians would be able to walk around the scenic viewing areas at Bird Island Overlook without the potential for conflicts with vehicle drivers using the area as a turnaround.

Installing signage for safety, such as share the trail and slow speeds for cyclists, at Rodeo Valley Trail would enhance safety for pedestrians and all trail users on this route.

The extensive trail improvements included in Alternative 3 would enhance safety by encouraging park visitors to use the trails instead of the roadways to access major park destinations. The combined effect of these improvements would be a long-term, major, beneficial impact on pedestrian safety.

Impacts of Wayfinding

Improving transit stops with benches and signs would increase the visibility of transit services in the study area. This would have a long-term, minor, beneficial impact on wayfinding.

Impacts of Car-Free Days

Private Vehicle Access. Designating car-free days would result in major changes in the availability of private vehicle access by visitors to portions of the Marin Headlands on one day a month. (Provisions would be made to accommodate access to work sites for NPS and park partner staff.) Visitors would not be able to drive west of McCullough Road on Conzelman Road or west of Smith Road on Bunker Road. Nor would visitors be able to drive to many popular destinations, including Fort

Cronkhite, Rodeo Beach, Battery Alexander, the Nike missile site, the Point Bonita YMCA, the visitor center, the Marin Headlands Center for the Arts, Hawk Hill, and the hostel. Visitor parking would be established at Smith Road and on the Bunker bypass, where shuttle bus service would be available. The lot at Smith Road would provide parking for 150 vehicles. On car-free days, this number of spaces may be insufficient to meet demand. The result may be more overflow parking along the shoulders of Bunker Road, which is already a disturbed area. On car-free days visitors would not be able to drive on the internal roads within Fort Baker. Private vehicles would be restricted to a one-way loop route using East Road to enter Fort Baker and Bunker Road to exit. Visitors to Fort Baker would not be able to drive around the main post area or the waterfront on car-free days. However, the number of parking spaces allocated to the Bay Area Discovery Museum would not change. Other visitors to Fort Baker would park on one lane of East Road.

New parking would be developed along East Road as decided in the Fort Baker Plan and would provide the parking capacity committed to in that plan. Until these lots are built, overflow parking would continue to occur along the waterfront. These new parking lots would provide the spaces that are committed to the Bay Area Discovery Museum.

Car-free days would be implemented on a limited, trial basis on off-peak days, such as one Sunday per month. The park would work with park partners to determine how to provide access to visitors and with recreational groups to determine how to transport gear. As a result of restricting private vehicle access to many of the park's popular destinations on these days, Alternative 3 would have a long-term, major, adverse impact to private vehicle access only on car-free days.

Access by Alternative Modes. Shuttle services to destinations within the Marin Headlands and Fort Baker would be expanded on car-free days. These shuttle routes would substantially expand transit service convenience for visitors arriving by private vehicle and parking in designated areas and for visitors arriving by public transit. Bicycle and pedestrian travel would be facilitated on the portions of the road systems in the Marin Headlands and Fort Baker that would be closed to private vehicle travel on car-free days.

An expanded shuttle service, combined with closing portions of the road system to private vehicles on car-free days, would result in long-term, major, beneficial impacts to access to park destinations by alternative modes on these days.

Cumulative Impacts

Impacts on Bicyclists

Bike Access. As described in the cumulative impacts scenario (see sec. 4.1.2), providing Class 2 bike lanes on Alexander Avenue would substantially improve bike access between the Golden Gate Bridge and Sausalito, as well as between the Marin Headlands and Fort Baker. Improvements under the Alexander Avenue Planning Study include improving non-motorized access across the Golden Gate Bridge and into Fort Baker via West Bunker Road. Proposed improvements to the bike and pedestrian underpass of the Golden Gate Bridge would also enhance bike access to the Marin Headlands. Recent improvements to the H. Dana Bowers Memorial Vista Point included widening and relocating the bike/pedestrian path between Vista Point and the Golden Gate Bridge to provide a more direct northbound connection to the bridge. This action also improved bike access to Fort Baker. Policies established in the *Marin Countywide Plan* support promoting transportation alternatives and increasing bicycle access by connecting to federal parklands. Together these improvements would result in long-term, moderate, beneficial impacts on bike access to the Marin Headlands and Fort Baker.

When combined with Alternative 3, cumulative impacts for bike access would be major and beneficial. The majority of these impacts would result from actions taken under Alternative 3.

Bike Safety. Bike improvements along Alexander Avenue, at the Golden Gate Bridge, and at Vista Point would enhance bicycle safety on major bike access routes to the Marin Headlands and Fort Baker. The improvements would have minor beneficial impacts on bike safety. These improvements, when combined with the safety measures proposed under Alternative 3, would have long-term, major, beneficial cumulative impacts to bike safety. Most

of the perceived change in bike safety conditions would be attributable to Alternative 3.

Impacts on Pedestrians

Pedestrian Access. As described in the cumulative impacts scenario (see sec. 4.1.2), providing sidewalks along Alexander Avenue throughout the U.S. 101 interchange area would substantially enhance access to the park, improve pedestrian connectivity between the Marin Headlands and Fort Baker, and improve access to transit stops. Access between Vista Point and the trailhead lot and between Vista Point and the Golden Gate Bridge would also be enhanced with improvements to the Golden Gate Bridge's northern underpass and the bike/pedestrian path between the bridge and Vista Point. Policies established in the *Marin Countywide Plan* support promoting transportation alternatives and increasing pedestrian access by connecting to federal parklands. These improvements would have long-term, moderate, beneficial impacts to pedestrian access in the Marin Headlands and Fort Baker.

When combined with the improvements proposed under Alternative 3, the cumulative impacts to pedestrian access would be long-term, major, and beneficial.

Pedestrian Safety. As described in the cumulative impacts scenario (see sec. 4.1.2), sidewalks along Alexander Avenue throughout the U.S. 101 interchange area would substantially enhance pedestrian safety around park entrances and transit stops. Improved trail surfaces in Fort Baker (part of the *Fort Baker Plan*) and the delineation of parking lot crossings at Vista Point would also improve pedestrian safety. The resulting impacts to pedestrian safety would be long-term, minor, and beneficial. In combination with the improvements proposed under Alternative 3, these actions would result in long-term, major, beneficial cumulative impacts on pedestrian safety in the Marin Headlands and Fort Baker. Most of the perceived change in pedestrian safety conditions would be attributed to actions taken under Alternative 3.

Impacts on Wayfinding

No other projects would impact wayfinding in the Marin Headlands and Fort Baker, and there would be no cumulative impacts on wayfinding with this alternative.

Impacts of Car-Free Days

Private Vehicle Access. There would be no cumulative impacts on automobile access related to car-free days.

Access by Alternative Modes. The proposed NPS parklands water shuttle study would potentially provide ferry service between San Francisco and Fort Baker. The service could be used as an alternative mode of travel on car-free days, resulting in minor beneficial impacts to park access by means of ferry service. When combined with the expanded transit services and pedestrian and bike enhancements proposed in Alternative 3, cumulative impacts to access by alternative modes on car-free days would be long-term, major, and beneficial.

Mitigation Measures

There would be no mitigation measures for this alternative.

Conclusion

Alternative 3 would have a long-term, major, beneficial impact on bike access and safety from adding bike paths, lanes, and routes, resulting in a more convenient, higher capacity, safer, and more enjoyable bike circulation system. Short-term impacts due to construction would be minor and adverse. Cumulative impacts would be long-term, major, and beneficial.

Alternative 3 would have long-term, major, beneficial impacts on pedestrian access and safety because of extensive changes to the pedestrian trail network that would greatly enhance the viability, safety, and enjoyment of walking in the Marin Headlands and Fort Baker for recreation as well as access to key park destinations. Short-term impacts due to construction would be minor and adverse. Cumulative impacts would be long-term, major, and beneficial.

Alternative 3 would have a long-term, minor, beneficial impact on wayfinding as a result of better directional signs. There would be no cumulative impacts on wayfinding.

Car-free days under Alternative 3 would have a long-term, major, adverse impact on automobile drivers wanting to access study area sites on car-free days. There would be no cumulative impacts

on automobile access related to car-free days. However, car-free days would have a long-term, major, beneficial impact on access to the park by alternative modes. Cumulative impacts would be long-term, major, and beneficial.

Impacts of Alternative 2

Impact Analysis

Impacts on Bicyclists

Bike Access. Installing Class 2 bike lanes on Bunker Road between the western terminus of the Barry-Baker tunnel and McCullough Road would improve bike access to the Capehart housing area. Providing an uphill bike lane on McCullough Road would offer visitors a continuous dedicated bikeway from the intersection of Conzelman Road and McCullough Road to the eastern end of the Barry-Baker tunnel.

Partially closing Mendell Road and providing a Class 1 bike path would enhance bike access between Battery Mendell and Bird Island Overlook. Rehabilitating Julian Road would enhance the bike connection between Conzelman Road's intersection with McCullough Road and the rifle range. Extending the San Francisco Bay Trail along East Road would improve connectivity between Fort Baker and Alexander Avenue. However, bicyclists would continue to share the road with motorists.

The combined effect of these changes would be a higher quality bike circulation system. However, major changes in the patterns of bike use would be unlikely. Alternative 2 would have a long-term, minor, beneficial impact on bike access.

Bike Safety. A few minor bike safety improvements, including closing a parking pullout on Conzelman Road just west of the McCullough Road intersection, would reduce conflicts between vehicles pulling out of parking stalls and fast-moving bicycles on Conzelman Road. Providing a 500-foot Class 1 bike lane on Mendell Road, an uphill Class 2 bike lane on McCullough Road, Class 2 bike lanes on Bunker Road between McCullough Road and the east portal of the Barry-Baker tunnel, and extending the San Francisco Bay Trail on East Road would improve safety by separating bike traffic from vehicular traffic.

The combined effect of these changes would be slightly detectable to users. Consequently, the alternative would have a long-term, minor, beneficial impact on bike safety.

Impacts on Pedestrians

Pedestrian Access. A variety of access improvements would be made to the pedestrian network. As in Alternative 1, extending the San Francisco Bay Trail would improve access to scenic viewing areas along most of East Road. A path would not be provided along the northernmost segment of East Road. New and existing trails would provide a pedestrian route between Battery Alexander and the Point Bonita Lighthouse.

Partially closing Mendell Road would allow a new pedestrian connection between Battery Mendell and Bird Island Overlook. Access from Fort Cronkhite to the Marine Mammal Center would be enhanced with a sidewalk on Old Bunker Road and the center's access road. Rehabilitating Julian Road would enhance its viability as a pedestrian route between Rodeo Valley and Conzelman Road. Rehabilitating a segment of the Coastal Trail on the southwest side of Rodeo Lagoon would enhance connectivity between the lagoon and the Battery Alexander parking area.

Removing the Smith Road loop and the trail bridge crossing just west of Smith Road would not adversely affect pedestrian access. Pedestrians would continue to be able to use the footbridge at the rifle range to access the Rodeo Valley trail.

The overall effect of these changes would be to improve the quality of the pedestrian experience. However, the improvements would be unlikely to generate substantial changes in the way that pedestrians circulate through the study area. Alternative 2 would have a long-term, minor, beneficial impact on pedestrian access.

Pedestrian Safety. Extending the San Francisco Bay Trail along East Road would provide a dedicated pedestrian path and improve pedestrian safety on much of East Road.

Installing bollards at the Hawk Hill parking area would prevent vehicles from driving onto the unpaved walkway designated for pedestrians.

Pedestrian safety would be enhanced at new bus stops near the visitor center. Safety features would include short sidewalks, curb cuts, and crosswalks.

Dedicating an off-road trail connection between Battery Alexander and Point Bonita would preclude the need for pedestrians to share Field Road with vehicles.

Access to the Marine Mammal Center, a destination site popular with young children and school groups, would be made safer by providing a sidewalk along the center's access road.

Closing the western section of Mendell Road to vehicles would allow pedestrians to access Bird Island Overlook without having to share the roadway with vehicles. Additionally, pedestrians would be able to walk around the scenic viewing areas at the overlook without the hazard of cars using the area as a turnaround.

The combined effect of these improvements would have a long-term, minor, beneficial impact on pedestrian safety.

Impacts on Wayfinding

Improving transit stops with benches and signs would increase the visibility of transit services in the park. This improvement would have a long-term, minor, beneficial impact on wayfinding. However, the one-way circulation concept could result in temporary confusion about the best means of entering and exiting the park, resulting in a short-term, minor, adverse impact on wayfinding.

Impacts of Car-Free Days

This alternative would not include car-free days.

Cumulative Impacts

Impacts on Bicyclists

Bike Access. As described in the cumulative impacts scenario (see sec. 4.1.2), providing Class 2 bike lanes on Alexander Avenue would substantially improve bike access between the Golden Gate Bridge and Sausalito, as well as between the Marin Headlands and Fort Baker. Improvements under the Alexander Avenue Planning Study include improving non-motorized access across the Golden Gate Bridge and into Fort Baker via West Bunker Road. Improving the underpass of the Golden Gate Bridge would also enhance bicycle access to the Marin Headlands. Recent improvements to the H. Dana Bowers Memorial Vista Point included widening and relocating the bike/pedestrian path between Vista Point and the bridge to provide a more direct northbound connection to the bridge. This action also improved bike access to Fort Baker. Policies established in the *Marin Countywide Plan* support promoting transportation alternatives and increasing bicycle access by connecting to federal parklands. Together these improvements would result in long-term, moderate, beneficial impacts on bike access in the Marin Headlands and Fort Baker.

When combined with actions under Alternative 2, cumulative impacts to bike access would be long-term, moderate, and beneficial.

Bike Safety. Bike improvements along Alexander Avenue, at the Golden Gate Bridge, and at Vista Point would address existing safety problems on major bike access routes to the Marin Headlands and Fort Baker. Improvements would have long-term, minor, beneficial impacts on bike safety. These improvements, when combined with the safety measures proposed under Alternative 2, would have long-term, minor, beneficial cumulative impacts to bike safety in the Marin Headlands and Fort Baker.

Impacts on Pedestrians

Pedestrian Access. As described in the cumulative impacts scenario (see sec. 4.1.2), providing sidewalks along Alexander Avenue throughout the U.S. 101 interchange area would substantially enhance access to the park, improve pedestrian connectivity between the Marin Headlands and Fort Baker, and improve access to transit stops. Access between Vista Point and the trailhead lot and between Vista Point and the Golden Gate Bridge would also be enhanced by improvements at the bridge's northern underpass and the bike/pedestrian path between the bridge and Vista Point. Policies established in the *Marin Countywide Plan* support promoting transportation alternatives and increasing pedestrian access by connecting to federal parklands. These improvements would have long-term, moderate, beneficial impacts to pedestrian access in the Marin Headlands and Fort Baker.

When combined with the improvements proposed under Alternative 2, these improvements would result in long-term, moderate, beneficial cumulative impacts.

Pedestrian Safety. Sidewalks on Alexander Avenue throughout the U.S. 101 interchange area would substantially enhance pedestrian safety around park entrances and transit stops. Improved trail surfaces in Fort Baker (part of the *Fort Baker Plan*) and the delineation of parking lot crossings at Vista Point would also improve pedestrian safety. The resulting impacts to pedestrian safety would be long-term, minor, and beneficial. When combined with the pedestrian safety improvements proposed under Alternative 2, the resulting cumulative impacts to pedestrian safety would be long-term, minor, and beneficial.

Impacts on Wayfinding

No other projects would impact wayfinding in the Marin Headlands and Fort Baker, and there would be no cumulative impacts.

Impacts of Car-Free Days

There would be no cumulative impacts related to car-free days under Alternative 2.

Mitigation Measures

There would be no mitigation measures for this alternative.

Conclusion

Alternative 2 would have a long-term, minor, beneficial impact on bike access and safety due to bike lanes and limited bike paths, which would provide a higher quality bike circulation system. However, major changes in the patterns of bike use would be unlikely. Cumulative impacts would be long-term, minor to moderate, and beneficial.

Alternative 2 would have a long-term, minor, beneficial impact on pedestrian access and safety from various access improvements. Cumulative impacts would be long-term, minor to moderate, and beneficial.

Alternative 2 would have a long-term, minor, beneficial impact on wayfinding. However, the one-way circulation system could initially cause confusion, resulting in a short-term, minor, adverse impact. There would be no cumulative impacts on wayfinding.

This alternative does not include car-free days, and there would be no related impacts.

Impacts of Alternative 4

Impact Analysis

Impacts on Bicyclists

Bike Access. Providing bi-directional Class 2 bike lanes on Bunker and Mitchell roads would offer a continuous east-west bikeway spanning the Barry-Baker tunnel and Rodeo Beach at the western edge of Fort Cronkhite. Unlike the Rodeo Valley trail concept proposed in Alternative 3, bike lanes would provide direct access to visitor destinations along Bunker Road.

Striping an uphill Class 2 bike lane on Conzelman Road between Lower Conzelman Road and McCullough Road would not introduce a new bike access route. However, the lane would formalize bike access along the most frequently visited road segment in the park. An uphill Class 2 bike lane would also be provided on McCullough Road. Consequently, bicyclists would be able to make a continuous loop from the Lower Conzelman Road entrance to the Marin Headlands to the eastern end of the Barry-Baker tunnel, traveling entirely on dedicated bike lanes.

Uphill Class 2 bike lanes would also be provided along the entire length of Field Road and on Mendell Road from the Point Bonita trailhead to Bird Island Overlook. Rehabilitating Julian Road would enhance the bike connection between the Conzelman Road / McCullough Road intersection and the rifle range.

Connections with Fort Baker would be improved with an uphill Class 2 bike lane on East Bunker Road and Class 2 lanes on East Road.

These changes would provide a more convenient, a higher capacity, and a more enjoyable bike circulation system in the park. Changes in the patterns of bike use are likely to occur, especially in the Bunker Road corridor in the Marin Headlands and the East Bunker Road corridor in Fort Baker. Like Alternative 3, the increased viability of biking as a means of accessing destinations in the study area would encourage more biking as a mode of park access and internal circulation. The alternative would have a long-term, major, beneficial impact on bike access.

Short-term disruptions to bicycle access could occur as a result of construction activities for road

and bike facility improvements. These disruptions would cause minor adverse impacts to bike access.

Bike Safety. Providing bi-directional Class 2 bike lanes on Bunker and Mitchell roads would not separate bike flows and vehicular flows as completely as the separate bikeway infrastructure proposed in Alternative 3. However, the Class 2 lanes would substantially improve bike safety conditions in the Rodeo Valley corridor. These lanes, in combination with the uphill Class 2 lanes on McCullough Road, Field Road, and Conzelman Road from U.S. 101 to Hawk Hill, would have the overall effect of creating a safer bike network in the Marin Headlands. In Fort Baker an uphill Class 2 bike lane on East Bunker Road and Class 2 bike lanes on East Road would also substantially improve safety conditions. Other than the pullout areas, no formal parking would be provided along East Road. Therefore, conflicts between cyclists and parked vehicles would be minimal. During the seven car-free days or special events, cars could be parked along East Road. During those limited occasions, there would be increased activity in general along East Road, which would require visitors to be more alert to potential safety issues.

These bicycle safety improvements would create a much safer biking environment, which would increase the viability of biking as a mode of transportation within the study area. Consequently, Alternative 4 would have a long-term, major, beneficial impact on bike safety.

Impacts on Pedestrians

Pedestrian Access. Extensive changes to the pedestrian network under Alternative 4 would substantially change pedestrian access to park destinations. Extending the San Francisco Bay Trail would improve access to the scenic viewing areas along East Road and improve connectivity between Fort Baker and Alexander Avenue. An access route based on new and existing trails would provide a pedestrian route between Battery Alexander and the Point Bonita Lighthouse. Access from Fort Cronkhite to the Marine Mammal Center would be enhanced with a sidewalk along Old Bunker Road and on the Marine Mammal Center access road.

Rehabilitating Julian Road would enhance its viability as a pedestrian route between Rodeo Valley and Conzelman Road. Unlike Alternative 3, Julian Road would continue to serve as the middle segment of the Coastal Trail. The overall alignment of the Coastal Trail would not change, although a new trail link would enhance connectivity between the rifle range and the riding stables. A separate pedestrian trail would be provided on the road shoulder along Conzelman Road, although this trail would not be as wide as the rerouted Coastal Trail provided in Alternative 3.

Pedestrian access between Battery Alexander and Rodeo Lagoon would be improved by constructing a new switchback. Along the lagoon sand matting would improve mobility for wheelchair and pedestrian users. Installing a stabilized soil sidewalk along the south side of Mitchell Road on the northern edge of the lagoon would improve visitor access to the beach and other destinations in Fort Cronkhite. A new pedestrian bridge abutting the existing road bridge across the lagoon would further enhance pedestrian access to the lagoon and Fort Cronkhite. Pedestrians would continue to share the East Bunker roadway with vehicles in order to access Fort Baker. The Rodeo Valley trail would remain accessible to pedestrians by way of two new bridges, one at Smith Road and the other north of the Capehart housing area. Rehabilitating Dubois Road (trail) as a hiking trail would enhance pedestrian access between the Rodeo Valley trail and Julian Road.

Slacker Road (trail) would be removed and revegetated. The Coastal Trail in this area would be realigned, and it would not serve the Golden Gate Raptor Observatory research sites. Closing Slacker Road (trail) would have an adverse effect on pedestrian access to these sites.

These changes would improve the overall quality of the pedestrian experience in the study area and would likely change the patterns of pedestrian circulation. For example, visitors might be more likely to use the trail network instead of roads to access certain destinations. However, this alternative would not introduce new pedestrian facilities in the Bunker Road corridor or substantially change the alignment of the Coastal Trail. Overall Alternative 4 would have a long-term, moderate, beneficial impact on pedestrian access.

Pedestrian access could be disrupted by construction activities related to road and trail improvements. The resulting impacts would be short term, minor, and adverse.

Pedestrian Safety. Extending the San Francisco Bay Trail on East Road would provide a dedicated pedestrian path and improved pedestrian safety.

New bus stops would be provided on Field Road near the visitor center, at the Nike missile site, and on Bunker Road west of its intersection with McCullough Road. These stops would include a variety of pedestrian safety features, including short sidewalks, curb cuts, and crosswalks. Additionally, sidewalks with curb cut ramps would be installed at all of the intersections along Bunker Road in the Capehart housing area.

The dedication of an off-road trail connection between Battery Alexander and Point Bonita would eliminate the need for pedestrians to share Field Road with vehicles. Unlike Alternatives 2 and 3, Mendell Road would not be closed to vehicles, and Bird Island Overlook would continue to be used as a place for motorized vehicles to turn around. Access to the Marine Mammal Center would be safer with a sidewalk along Old Bunker Road and along the access road, with a crosswalk connecting the two sidewalks.

Providing an enlarged turnaround at Hawk Hill would reduce the number of automobile back-up maneuvers in an area with high pedestrian volumes. A sidewalk east of the turnaround would provide access to the viewing areas so pedestrians would not have to stand in flowing traffic.

Installing a sidewalk along Mitchell Road would provide pedestrians with a safer walking route along the waterfront.

Trail improvements under Alternative 4 would enhance pedestrian safety by encouraging park visitors to use the trails instead of the roadways to access major park destinations. However, this alternative includes less investment in offroad pedestrian infrastructure than Alternative 3. Overall these improvements would result in a long-term, moderate, beneficial impact on pedestrian safety.

Impacts on Wayfinding

Adding benches and signs to transit stops would increase the visibility of transit services in the park. The alternative would have a long-term, minor, beneficial impact on wayfinding.

Impacts of Car-Free Days

Private Vehicle Access. Car-free days would initially be implemented between 6 a.m. and 6 p.m. on one Sunday per month from April to October. On these days private vehicle access to many of the park's popular destinations would be restricted. (Provisions would be made for NPS and park partner staff access.) Visitors would not be able to drive west of McCullough Road on Conzelman Road or west of Smith Road on Bunker Road. Nor would visitors would be able to drive to many popular destinations, including Fort Cronkhite, Rodeo Beach, Battery Alexander, the Nike missile site, the Point Bonita YMCA, the visitor center, the Marin Headlands Center for the Arts, Hawk Hill, or the hostel. Visitor parking on car-free days would be provided at Smith Road and the rifle range, where shuttle bus services would be available. The lot at Smith Road would provide parking for 200 vehicles. On car-free days visitors would not be able to drive on the internal roads within Fort Baker. Private vehicles would be restricted to a one-way loop route using East Road to enter Fort Baker and Bunker Road to exit. Visitors to Fort Baker would not be able to drive to the main post area or the waterfront on car-free days. Most visitors to Fort Baker would park along one lane of East Road.

Car-free days would result in a long-term, major, adverse impact to private vehicle access only on these days.

Access by Alternative Modes. Three shuttle routes would be operated on car-free days to serve destinations within the Marin Headlands and Fort Baker. These shuttle routes would substantially expand transit service convenience for visitors arriving by private vehicle and parking in designated areas and for visitors arriving by public transit. Bicycle and pedestrian travel would be facilitated on portions of the road system that would be closed to private vehicle travel on car-free days.

The combined effect of expanding shuttle service and closing portions of the road system to private vehicles on car-free days would result in a long-term, major, beneficial impact on access to park destinations by alternative modes.

Cumulative Impacts

Impacts on Bicyclists

Bike Access. As described in the cumulative impacts scenario (see sec. 4.1.2), providing Class 2 bike lanes on Alexander Avenue would substantially improve bike access between the Golden Gate Bridge and Sausalito, as well as between the Marin Headlands and Fort Baker. Improvements under the Alexander Avenue Planning Study include improving non-motorized access across the Golden Gate Bridge and into Fort Baker via West Bunker Road. Proposed improvements to the bike and pedestrian underpass of the Golden Gate Bridge would enhance bike access to the Marin Headlands. Recent improvements to the H. Dana Bowers Memorial Vista Point included widening and relocating the bike/pedestrian path between Vista Point and the bridge to provide a more direct northbound connection to the bridge. This action also improved bike access to Fort Baker. Policies established in the *Marin Countywide Plan* support promoting transportation alternatives and increasing bicycle access by connecting to federal parklands. Together these improvements would have long-term, moderate, beneficial impacts on bike access in the Marin Headlands and Fort Baker.

When combined with Alternative 4, cumulative impacts to bike access would be long-term, major, and beneficial. The majority of these impacts would result from actions under Alternative 4.

Bike Safety. Bike improvements along Alexander Avenue, at the Golden Gate Bridge, and at Vista Point would enhance bicycle safety on major bike access routes to the Marin Headlands and Fort Baker. These improvements would have minor, beneficial impacts on bike safety. When combined with the safety measures proposed under Alternative 4, cumulative impacts on bike safety would be long-term, major, and beneficial. Most of the perceived change in bike safety conditions and resulting changes in bike circulation patterns would be attributable to actions proposed by Alternative 4.

Impacts on Pedestrians

Pedestrian Access. As described in the cumulative impacts scenario (see sec. 4.1.2), providing sidewalks along Alexander Avenue throughout the U.S. 101 interchange area would substantially enhance access to the park, improve pedestrian connectivity between the Marin Headlands and Fort Baker, and improve access to transit stops. Access between Vista Point and the trailhead lot and between Vista Point and the Golden Gate Bridge would also be enhanced by improving the Golden Gate Bridge's northern underpass and the bike/pedestrian path between the bridge and Vista Point. Policies established in the *Marin Countywide Plan* support promoting transportation alternatives and increasing pedestrian access by connecting to federal parklands. These improvements would have moderate beneficial impacts to pedestrian access in the Marin Headlands and Fort Baker.

When combined with the improvements proposed under Alternative 4, cumulative impacts to pedestrian access would be long-term, moderate, and beneficial.

Pedestrian Safety. As described in the cumulative impacts scenario (see sec. 4.1.2), providing sidewalks along Alexander Avenue throughout the U.S. 101 interchange area would substantially enhance pedestrian safety around park entrances and transit stops. Improved trail surfaces in Fort Baker (part of the *Fort Baker Plan*) and the delineation of parking lot crossings at Vista Point would also improve pedestrian safety. Resulting impacts to pedestrian safety would be long-term, minor, and beneficial.

In combination with the actions proposed under Alternative 4, these improvements would result in long-term, moderate, beneficial cumulative impacts on pedestrian safety in the Marin Headlands and Fort Baker. Most of the perceived change in pedestrian safety conditions and resulting changes in pedestrian circulation patterns would be attributed to actions proposed in Alternative 4.

Impacts on Wayfinding

No other projects would impact wayfinding in the Marin Headlands and Fort Baker, and there would be no cumulative impacts on wayfinding in the park.

Impacts of Car-Free Days

Private Vehicle Access. There would be no cumulative impacts on automobile access related to car-free days.

Access by Alternative Modes. The proposed NPS parklands water shuttle study would potentially

provide ferry service between San Francisco and Fort Baker. The service could be used as an alternative mode of travel to Fort Baker, resulting in minor beneficial impacts to park access by transit.

When combined with the expanded transit services and pedestrian and bike enhancements included in Alternative 4 during car-free days, cumulative impacts to access by alternative modes would be long-term, major, and beneficial.

Mitigation Measures

There would be no mitigation for this alternative.

Conclusion

Alternative 4 would have a long-term, major, beneficial impact on bike access and safety as a result of adding bike lanes. Short-term impacts due to construction would be minor and adverse. Cumulative impacts would be long-term, major, and beneficial.

Alternative 4 would have a long-term, moderate, beneficial impact on pedestrian access and safety from extensive changes to the pedestrian access system. Pedestrian access could be disrupted by construction activities related to road and trail improvements, resulting in short term, minor, adverse impacts. Cumulative impacts on pedestrian access would be long-term, moderate, and beneficial.

Alternative 4 would have a long-term, minor, beneficial impact on wayfinding. There would be no cumulative impacts on wayfinding.

Designating seven car-free days a year would have a long-term, major, adverse impact on automobile access on those particular days. There would be no cumulative impacts on automobile access related to car-free days. In terms of impacts on alternative modes of access, car-free days would have a long-term, major, beneficial impact, and cumulative impacts would be long-term, major, and beneficial.

4.3 IMPACTS ON NATURAL RESOURCES

4.3.1 GEOLOGY, PALEONTOLOGY, SOILS, AND SEISMICITY

Regulatory Framework

In accordance with its *Management Policies 2006,* the National Park Service will preserve and protect geologic resources as integral components of park natural systems, both geologic features and processes. The National Park Service will "(1) assess the impacts of natural processes and human-related events on geologic resources; (2) maintain and restore the integrity of existing geologic resources; (3) integrate geologic resource management into NPS operations and planning; and (4) interpret geologic resources for park visitors" (NPS 2006b, sec. 4.8).

For paleontological resources, the NPS *Management Policies* require a surface assessment of any areas with suspected paleontological resources prior to disturbance. When sites may yield such resources, the sites will be avoided, or the resources will be collected and properly cared for prior to disturbance. Areas with potential paleontological resources must also be monitored during projects (NPS 2006b, sec. 4.8.2.1).

The California Seismic Hazards Mapping Act was created to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires the state geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. The California Geological Survey has not yet completed a preliminary seismic hazards map for the western portion of the Marin Headlands.

General Methodologies for Analyzing Impacts

Geology and Paleontology

The alternatives are evaluated qualitatively in terms of their effect on geologic and paleontological resources. Because paleontological resources are contained within the local geology, they are analyzed together.

The following impacts thresholds were defined for each level of impact:

Negligible: Geologic or paleontological resources would not be affected, or the effects would be at low levels of detection and would not have a discernible effect on resources or public use of those resources.

Minor: Effects on geologic or paleontological resources would be detectable but would not be appreciable.

Moderate: Effects on geologic or paleontological resources would be readily apparent and long-term, and would result in substantial, noticeable effects on geologic or paleontological resources on a local scale.

Major: Effects on geologic or paleontological resources would be readily apparent and long-term, and would result in substantial, noticeable effects to geologic or paleontological resources on a regional scale.

Short-term impacts are temporary in nature (and often associated with construction), whereas long-term impacts would have a continuing effect on the natural and human environment.

Beneficial impacts would improve the public enjoyment, understanding, and resource protection of geologic and paleontological resources, whereas adverse impacts would reduce the public enjoyment, understanding, and resource protection.

Soils, Seismicity, and Landslide Hazards

The alternatives are evaluated qualitatively in terms of their effect on soils, seismicity, and landslide potential. Seismic safety issues on the road and trail system are also addressed under "Human Health, Safety and the Environment."

The following impact thresholds were defined for soils, seismicity, and landslides:

Negligible: Risks to the public and the environment from soil erosion and seismic or landslide events would remain unchanged, or the change in risk would be at such low levels of detection and would not have a discernible effect on resources or public safety.

Minor: The change in risks to the public and the environment from soil erosion and seismic or landslide events would be detectable but would not be appreciable.

Moderate: The change in risks to the public and the environment from soil erosion and seismic or landslide events would be readily apparent and long-term, with substantial, noticeable changes in risks to the public and the environment at multiple sites within the study area.

Major: The change in risks to the public and the environment from soil erosion and seismic or landslide events would be readily apparent, long-term, and would result in substantial, increased risks to the public and the environment throughout the study area.

The duration of impacts would be the same as for geology and paleontology. Beneficial impacts would reduce soil erosion and reduce risks to the public in seismic and landslide events, whereas adverse impacts would increase soil erosion and increase risks to the public in seismic and landslide events.

Impacts of Alternative 1 — No-Action Alternative

Impact Analysis

Geology and Paleontology

All of the existing exposed rock cut faces and paleontological resources would remain unaltered.

Soils, Seismicity, and Landslide Hazards

All 20 of the currently known major soil erosion sites would continue to erode, degrade local water quality and wetlands, and eventually damage several road or trail segments to the point that closure might need to be considered. The erosional headcut adjacent to West Conzelman Road (approximately 1,320 feet [400 m] west of the Upper Fisherman's trailhead) would eventually result in the loss of part of the roadway lane and would in turn

either require repair or closure of this road at Hawk Hill. Moderate adverse impacts would result from the effects of soil erosion on the road and trail system.

Cumulative Impacts

Because there would be no additional impacts to geologic and paleontological resources, there would be no cumulative impacts on these resources as a result of this alternative. Past actions that resulted in the current erosional areas have contributed to the cumulative impacts on soil resources. Impacts of these past actions, which would continue under Alternative 1, would be long-term, moderate, and adverse.

Mitigation Measures

No mitigation measures would be taken under this alternative.

Conclusion

This alternative would not cause additional impacts to geologic or paleontological resources. However, continued soil erosion on the road and trail system would cause long-term, moderate, adverse impacts. Cumulative impacts for soils would also be long-term, moderate, and adverse.

Because there would be no major adverse impacts to soil, geologic, or paleontological resources, no related park resources or values would be impaired.

Impacts of Alternative 3 — Preferred Alternative

Impact Analysis

Under this alternative nearly all of the roads would be rehabilitated or reconstructed at the same or slightly wider widths. Most of these proposed road widths would be accommodated on the existing road bench, which is defined as the already graded flat area between the inboard ditch and the outboard shoulder edge. In only limited and isolated locations would any grading or retaining walls be required off the road bench. Therefore, the potential impacts to the geologic, paleontological, and soil resources in the study area would be limited to those sites where work would occur off the already disturbed road bench.

Geology and Paleontology

Along the north side of Conzelman Road between the Battery Spencer parking area and the Overlook 2 parking area, two portions of the existing rock cut slope faces would be excavated to improve sight distance and to widen this segment of narrow road for a bike lane, to provide safer parking areas (with backing space), to provide more sight distance, and to provide space for the Coastal Trail. Both new cut slopes would be excavated to an angle similar to the existing slope.

Between Battery Spencer and Overlook 1, approximately 590 linear feet (180 m) of the existing inboard rock cut face would be excavated. The amount of excavation into the bank in this segment would be approximately 30 feet (9 m) as measured horizontally, with the remainder averaging 3 feet (1 m) in horizontal depth. The height of the new cut would be approximately 40 feet (12 m), with an average of approximately 30 feet (9 m). This new cut excavation would have an area of approximately 1,512 square yards (1,383 sq m) and would remove approximately 10,300 cubic yards (7,875 cu m) of rock.

At Overlook 2, approximately 325 linear feet (99 m) of the existing rock cut face would be excavated, involving a height of approximately 30 feet (9 m), with an average height of 25 feet (8 m), and a horizontal excavation into the bank of 12 feet (4 m). This new cut excavation would cubic yards of rock would remove approximately 2,000 cubic yards of rock.

At Overlook 2 along the north side of Conzelman Road, approximately 220 linear feet (75 m) of the existing inboard rock cut face would be excavated. The amount of horizontal excavation into the bank in this segment would be about 16 feet (5 m), with the remainder averaging less than 3 feet (1 m) in horizontal depth. The height of the new cut would be about 40 feet (12 m), with an average of approximately 30 feet (9 m). This new cut excavation would have an area of approximately 440 square yards (402 sq m) and would remove approximately 2,600 cubic yards (1,988 cu m) of rock.

At the one-way West Conzelman Road erosion/slide site (approximately 1,300 feet [400 m] west of the Upper Fisherman's trailhead), approximately 660 feet (200 m) of the road would be shifted a maximum of 16.5 feet (5 m) away from

the head of this scarp. This realignment could extend the life of the road appreciably; anecdotal observations indicate that the scarp is retreating on the order of inches per year or less. During the design of the road rehabilitation project, consideration would be given to further steps to stabilize the road and further extend its life. These steps could include protecting the soft rock in the area of this differing sedimentary and volcanic rock joint with rock bolts. This realignment would result in a long-term, negligible, adverse impact.

The excavation of the two sites along Conzelman Road would alter one of the two most visited sites of geologic interest in the Marin Headlands. However, the geologic feature that is of interest (the thrust fault contact between the chert and greenstone) might still remain visible, although with a different exposure. The other site of primary interest for educational classes is at Battery 129 (Hawk Hill) and would remain unaltered.

Of the 4.75 miles (2.95 km) and 13,640 square yards (11,400 sq m) of existing exposed rock cuts, the proposed action would alter approximately 710 linear feet (215 m) and 1,760 square yards (1,470 sq m) of the exposed faces. This impact would affect approximately 7% of the total length and 13% of the total area of existing exposed rock cuts. The single-cell radiolaria fossils contained in the chert rock are considered very common. They are expected to also be contained in the underlying rock that would be exposed after excavation. Given the percentage of the total exposed rock faces that would be altered and associated geologic resources lost, and that the excavations would alter but not eliminate the faces, impacts on the paleontology and exposed rock faces would be considered long-term, moderate, and adverse.

Soils, Seismicity, and Landslide Hazards

The following types of measures would be prescribed under alternatives to treat soil erosion at the 20 most eroded sites (see Table 4-2 and Figure 3.1 for Map Site locations):

- Reduce parking areas to the smallest possible size through more efficient design and delineation of aisles and stalls.
- Add roadside curbing, other barriers, or regrade the shoulders to prohibit roadside parking on steeper road shoulders.
- Where installing a guardrail is warranted, install it within 2 feet of the pavement edge to prohibit roadside parking on steeper road shoulders.
- Design steeper drainage ditches to resist erosion and vegetate; if required, line with riprap.
- Bench, regrade, or pave very steep parking areas that cannot be eliminated.
- Remove steep unpaved roads, parking areas, and trails by regrading back to natural slopes and revegetating with native vegetation.
- Install additional ditch relief culverts, drop inlets, water bars, and where appropriate outslope unpaved roads, shoulders, and trail tread surfaces.
- Install pedestrian barrier fences to stop pedestrian use of steep shortcuts and direct pedestrians to appropriately graded trails and stairs.
- Confine motor vehicles to areas designed to accommodate them with barriers such as, logs, parking wheel stops, etc.

These prescriptions would address all known sites with substantial soil erosion on the road and trail system within the study area (see Figure 3.1).

TABLE 4-2. ALTERNATIVE PROPOSALS TO REDUCE SOIL EROSION ON ROADS AND TRAILS

Map Site No.	Site Name	Existing Condition	Erosional Rating	Alternative 1 — No-Action Alternative	Alternative 3 — Preferred Alternative	Alternative 2	Alternative 4
1	Lower Conzelman Road Shoulders	Heavy parking pressure has devegetated about 600 feet (180 m) of road shoulders, 12%	Severe	None — continued erosion.	Curb road shoulders to prohibit parking and provide paved, nonerosive ditch; revegetate. Bare	None — continued erosion.	Same as Alt. 3.

Map Site No.	Site Name	Existing Condition	Erosional Rating	Alternative 1 — No-Action Alternative	Alternative 3 — Preferred Alternative	Alternative 2	Alternative 4
		slope, resulting in severe gullying.			ground along remaining road.		
2	Battery Spencer Parking Area	Unpaved 200-foot (60 m) parking area on 4% slope exhibits some gullying.	Moderate	None — continued erosion.	Harden parking area with paving, drain into existing drop inlets and culvert overside drains.	None — continued erosion.	Same as Alt. 3.
3	Conzelman Road (Overlook 1 to Overlook 2)	Guardrail installed 6′–12′ from road edge, over 2,150 (650 m), allowing space for heavy parking pressure to devegetate outboard road shoulder, 3%–5% slope, resulting in some erosion and moderate gullying.	Moderate	None — continued erosion.	Move guardrail to within 2′ of road edge to stop parallel parking along most of road; install curb to harden ditch; provide two paved parallel parking areas; revegetate. Remainder of road shoulder and foot path to drain over outboard slope.	Move guardrail to within 2′ of road edge to stop parallel parking along most of road, retain one unpaved parallel parking area; revegetate. No change to remainder of road shoulder.	Same as Alt. 3.
4	Slacker Road (trail) (Coastal Trail)	Extremely steep, 3,300-foot (1,000 m) unpaved road (>25% grades) with severe gullying.	Severe	None — continued erosion.	Narrow and stabilize lowermost 150′ of road, construct new 1,250′ pedestrian/ equestrian trail (ATV accessible for researchers); close, regrade, and revegetate remaining road (850′); regrade and revegetate existing scar (450′); maintain access to research site #1 (520′); restore existing trail to top of hill/launch site and downgrade from road to trail (1,200′); close and restore 600 linear foot spur road to research site #2; provide access to research site #2 with new foot trail (500 ′); close, regrade, revegetate west side of launch pad (9,500 sq ft).	Attempt to outslope and/or drain road to vegetated ditches; install more cross culverts/drain dips (limited effectiveness).	Relocate Coastal Trail; remove road by regrading back to original slopes; revegetate.
5	McCullough Road Outboard Shoulder	560 feet (170 m) of roadway drainage concentrated on shoulder, with gullying and erosion of outboard road fill slopes.	Moderate	None — continued erosion.	Install two new drop inlets in shoulder, with new overside culverts draining into stable natural channels or onto rock outcrops.	Same as Alt. 3.	Same as Alt. 3.

Map Site No.	Site Name	Existing Condition	Erosional Rating	Alternative 1 — No-Action Alternative	Alternative 3 — Preferred Alternative	Alternative 2	Alternative 4
6	Erosion Scars below Conzelman Road	Roadway drainage has caused gullying and erosion of outboard fill slopes.	Severe	None — continued erosion.	Refill previously eroded gullies with soil from other Headlands project sites. Revegetate slope after refilling. If necessary, obtain soil from alluvial deposits below gullies.	Same as Alt. 3.	Same as Alt. 3.
7	West Conzelman Road (west of Hawk Hill)	Approximately 330 feet (100 m) of inboard ditch, 20% grade, gullying.	Minor	None — continued erosion.	Line ditch bottom with riprap covered with soil, and revegetate.	Same as Alt. 3.	Same as Alt. 3.
8	Upper Fisherman's Parking Area	Steep slopes in unpaved parking area cause some gullying; runoff flows down beach access trail.	Low	None — continued erosion.	Pave parking area, install riprap and rundown draining onto stable vegetated slope.	Divert parking runoff from trail into vegetated area.	Same as Alt. 3.
9	Lower Fisherman's Parking Area	Sheet flow over large unpaved parking area causing minor erosion.	Low	None — continued erosion.	Reduce size of parking area; divert hillside runoff around parking in vegetated ditches; revegetate former parking area.	Same as Alt. 3.	Same as Alt. 3.
10	Shoulders of Field Road at Point Bonita Trailhead	Heavy parking pressure has devegetated 330 feet (100 m) of road shoulders, 6% slope, resulting in some gullying.	Moderate	None — continued erosion.	Curb road shoulders to prohibit parking; provide paved, nonerosive ditch; drain onto stable vegetated area; revegetate remaining bare ground along road.	None — continued erosion.	Same as Alt. 3.
11	Rodeo Lagoon–Battery Alexander Ridge Trail	Steep (25%–30% grades) braided, multiple track trail gullies in sandy soil ridge.	Moderate	None — continued erosion.	Construct new switchback trail on east alignment; fill eroded gullies with soil; install check dams, fencing; revegetate.	Install water bars, soil fill, log steps in gullies; confine traffic to one trail with fencing; revegetate remaining braided trails.	Same as Alt. 3.
12	Slope between Mitchell Road and Rodeo Beach	Multiple foot trails due to foot traffic going straight down slope to beach.	Moderate	None — continued erosion.	Install pedestrian barrier fence along Mitchell Road; construct one central stairway down slope to beach.	Same as Alt. 3.	Same as Alt. 3.
13	Unpaved Rodeo Beach Parking Area	Parking area is in bottom of major drainage basin.	Severe	None — continued erosion.	Remove all parking from unpaved area; revegetate; eliminate "shotgun" culverts draining onto beach.	Reduce parking area size; revegetate primary waterway and remainder of area; eliminate "shotgun" culverts draining onto beach.	Same as Alt. 3.

Map Site No.	Site Name	Existing Condition	Erosional Rating	Alternative 1 — No-Action Alternative	Alternative 3 — Preferred Alternative	Alternative 2	Alternative 4
14	Marin Roads and Trails Maintenance Yard, Marine Mammal Center Access Road	0.6 acre unpaved, steep (10%–15%) sloping area	Moderate	None — continued erosion.	Reduce yard by up to half; move all vehicle parking to paved areas; establish vegetated swales to catch silt from runoff and redirect flow.	Same as Alt. 3.	Same as Alt. 3.
15	Former Quarry and Incinerator Site (north side of Rodeo Lagoon on Bunker Road)	0.3 acre area kept bare of vegetation by compacted soil and occasional vehicle parking, with gentle 2%–3% slopes.	Minor	None — continued erosion.	Block vehicle access with barrier ditch; decompact and revegetate.	Same as Alt. 3.	Same as Alt. 3.
16	Headlands Visitor Center Back Driveway (former Bodsworth Road)	200 feet (60 m) unpaved, steep (15%) drive used by NPS vehicles; devegetated slope.	Low	None — continued erosion.	Block vehicle access with gate; limit use to emergencies; revegetate with grass; park NPS vehicles in visitor center lot.	Same as Alt. 3.	Same as Alt. 3.
17	Rodeo Valley Stables Parking Area	0.2 acre unpaved sloping parking area; upland runoff worsens erosion.	Moderate	None — continued erosion.	Reduce size of parking area; regrade to reduce slope; divert upland runoff around parking in vegetated ditches; revegetate former parking area.	Same as Alt. 3 except do not reduce slope.	Same as Alt. 3.
18	Rifle Range Trailhead Parking	Most heavily used portion is now bare soil; sheet erosion runoff flows directly into Rodeo Creek.	Moderate	None — continued erosion.	Close rifle range (north side of Bunker Road) and bypass road to all cars except during special permitted events or car-free days; revegetate former scars; move trailhead to Smith Road.	None — continued erosion.	Same as Alt. 3, except prohibit parking on bypass and remove road pavement and revegetate.
19	Lower Julian Road/Trail	Steep unpaved road; severe gullying due to lack of recent maintenance grading and insufficient ditch relief culverts.	Severe	None — continued erosion.	Regrade road surface to drain to inboard vegetated ditch; install nine new ditch relief culverts; drain overside culverts onto stable slopes.	Same as Alt. 3.	Same as Alt. 3.
20	North Side of East Road (Fort Baker)	Large unpaved sloping area occasionally used as overflow parking area.	Low	None — continued erosion.	Construct paved parking area at pullouts *(Fort Baker Plan)*.	Same as Alt. 3.	Same as Alt. 3.

Under Alternative 3 up to eight retaining walls would be constructed to slightly widen narrow locations on the existing road benches to accommodate the desired road, parking, and trail facilities. Most of these walls would be fairly small, with the longest being 515 feet (157 m) long and the tallest being about 14 feet (4 m) high. All but two would be located below the roads in less visually prominent locations. Two new trail bridges would also be constructed over Rodeo Creek, and two existing bridges would be removed. The only other structures to be constructed would be transit shelters at the most heavily used stops.

All structures (retaining walls and trail bridges) would be designed to meet all relevant seismic building codes and standards.

Wetland restoration actions associated with the Rodeo Beach unpaved parking lot would create disturbed areas that are susceptible to increased erosion. Erosion control measures would be implemented, including revegetation and standard erosion control measures to reduce detachment and transport (see Section 2.3.5). Work by Colorado State University researchers at upslope wetland reference sites indicates that existing emergent marsh plants have developed over mineral soils with little organic soil development. Fill material would be mainly mineral soils from local sources so that developing plant community can have soil characteristics similar to reference site.

The prevention of vehicle parking on unpaved road shoulders, such as at Hawk Hill, would help address the loss of vegetation that contributes to erosion problems.

Implementing the proposed prescriptions to address known sites of significant soil erosion would have long-term, moderate, beneficial impacts by greatly reducing the amount of soil lost each year to erosion.

Cumulative Impacts

Widening the roadway on Alexander Avenue between U.S. 101 and Danes Drive to provide bicycle lanes would require the excavation of approximately 400 feet (120 m) of rock cuts on the east side of the road. These cuts would remove primarily volcanic basalts of the Franciscan formation. While these rocks are not fossil-bearing, the road cut would destroy a large volume of a common geologic resource. When combined with Alternative 3, cumulative impacts would be long-term, moderate, and adverse for geologic and paleontological resources but moderate and beneficial in terms of reducing soil erosion. Most of the cumulative impacts would result from actions under Alternative 3.

Mitigation Measures

Geology and Paleontology

No mitigation has been identified for the loss of geologic resources.

GEO-1: Geologist Consultation at Battery Spencer. A geologist familiar with the geologic features of the rock cut on Conzelman Road at Battery Spencer would be consulted during the detailed design and construction of the rock cut excavation to see if the cut could be sculpted in a way to expose the most interesting geologic features. Selected portions of the excavated rock would be saved and considered for use in interpreting the geology of the Headlands.

Soils, Seismicity, and Landslide Hazards

There would be no mitigation for this alternative.

Conclusion

Overall impacts on the local geologic and paleontological resources would be primarily long-term, moderate, and adverse as a result of measures to create safer trails and roadways for visitors. However, the impacts on soils of reducing erosion would be long-term, moderate, and beneficial. Cumulative impacts would be long-term, moderate, and adverse for geologic and paleontological resources and moderate and beneficial for soils. Most of the cumulative impacts would result from actions under Alternative 3.

Because there would be no major adverse impacts to soil, geologic, or paleontological resources, there would be no impairment of related park resources or values.

Impacts of Alternative 2

Impact Analysis

Geology and Paleontology

Under Alternative 2 West Conzelman Road would be realigned away from the erosional head cut. How-

ever, no rock cut face excavations would occur. Therefore, the impacts to geologic and paleontological resources would be negligible and adverse.

Soils, Seismicity, and Landslide Hazards

Since the roads would be rehabilitated at the same widths as presently exist, no retaining walls would be constructed. No new trail bridges would be constructed. Of the 20 known sites of significant soil erosion (see Table 4-2 and Figure 3.1), four would not be addressed, and many of the remainder would receive less effective repair and erosion reduction prescriptions than those described under Alternative 3. The beneficial impact of these treatments would be long-term and minor.

Cumulative Impacts

Widening Alexander Avenue between U.S. 101 and Danes Drive to provide bicycle lanes would require the excavation of approximately 400 feet (120 m) of rock cuts on both sides of the road. These cuts would remove primarily volcanic basalts of the Franciscan formation. While these rocks are not fossil-bearing, the road cut would destroy a large volume of a very common geologic resource. When combined with Alternative 2, cumulative impacts on geologic and paleontological resources would be long-term, negligible, and adverse, while cumulative impacts on soils from reducing erosion would be minor and beneficial.

Mitigation Measures

There would be no mitigation for this alternative.

Conclusion

Impacts on geologic and paleontological resources as a result of correcting current erosion and safety problems would be long-term, negligible, and adverse. Impacts on soils would be long-term, minor, and beneficial as a result of reducing erosion at the worst sites. Cumulative impacts would be long-term, negligible, and adverse for geologic and paleontological resources, but minor and beneficial for soils.

Because there would be no major adverse impacts on soil, geologic, or paleontological resources, there would be no impairment of related park resources or values.

Impacts of Alternative 4

Impact Analysis

Under Alternative 4 nearly all roads would be rehabilitated and reconstructed at wider widths. Most of the proposed road widths could be accommodated on the existing road benches; however, the wider proposed widths would require a greater number and larger retaining walls than described under Alternative 3. The potential impacts to geologic, paleontological, and soil resources would be limited to those sites where work would occur off the already disturbed existing road bench.

Geology and Paleontology

Along the north side of Conzelman Road between the Battery Spencer parking area and the Overlook 2 parking area, two portions of the existing rock cut slope faces would be excavated to widen this segment of narrow road. However, the length and depth of the excavation would be slightly greater to provide for more safe parking areas with separate circulation aisles off the travel lanes. The new cut slopes would be excavated to an angle similar to the existing slope.

Between Battery Spencer and Overlook 1 a larger excavation than that proposed in Alternative 3 would be undertaken. Approximately 600 linear feet (180 m) of the existing inboard rock cut face would be excavated. The maximum amount of excavation into the bank in this segment would be approximately 33 feet (10 m) as measured horizontally, with the remainder averaging 6 feet (2 m) in horizontal depth. The maximum height of the new cut would be approximately 43 feet (13 m), with an average of approximately 20 feet (6 m). This new cut excavation would have an area of approximately 1,555 square yards (1,300 sq m) and would remove approximately 4,000 cubic yards (3,060 cu m) of rock.

At Overlook 2 along the north side of Conzelman Road, approximately 230 linear feet (70 m) of the existing inboard rock cut face would be excavated. The maximum amount of excavation into the bank in this segment would be 20 feet (6 m) as measured horizontally, with the remainder averaging less than 3 feet (1 m) in horizontal depth. The maximum height of the new cut would be 33 feet (10 m), with an average of approximately 20 feet (6 m). This new cut excavation would have an area of approximately 400 square yards (335 sq m) and

would remove approximately 600 cubic yards (460 cu m) of rock.

At the West Conzelman Road erosion/slide site (approximately 1,320 feet [400 m] west of the Upper Fisherman's trailhead), the same realignment of the road proposed in Alternatives 2 and 3 would be implemented under Alternative 4.

The excavation of the two sites along Conzelman Road would impact and alter one of the two most visited sites of geologic interest in the study area. However, the geologic feature that is of interest (the thrust fault contact between the chert and greenstone) might remain visible, although with a different exposure. The other site of primary interest for educational classes is at Battery 129 (Hawk Hill), which would remain unaltered.

Of the 4.75 miles (2.95 km) and 13,640 square yards (11,400 sq m) of existing exposed rock cuts, this alternative would affect approximately 9% of the total length and 15% of the total area of existing exposed rock cuts. The single-cell radiolaria fossils contained in the chert rock are considered very common. They are expected to also be contained in the underlying rock that will be exposed after excavation. Given the relatively small percentage of the total exposed rock faces that would be altered and associated geologic resources lost, and the fact that the excavations would alter but not eliminate the faces, impacts on the paleontology and exposed rock faces would be long-term, moderate, and adverse.

Soils, Seismicity, and Landslide Hazards

The 20 sites with known soil erosion problems would be treated as described under Alternative 3 (see Table 4-2). These prescriptions would address all known sites of substantial soil erosion on the road and trail system within the study area.

Under Alternative 4 a larger number of retaining walls would be constructed to widen narrow roads in order to accommodate the desired road widths, as well as parking and trail facilities. Most of these walls would be quite small, with the longest 330 feet long (100 m) and the tallest about 12 feet high (4 m). All but two would be located below the road, in less visually prominent locations. Two new trail bridges would also be constructed over Rodeo Creek, and two existing bridges would be removed. The only other structures to be constructed would be transit shelters at the most heavily used stops.

All structures (retaining walls and trail bridges) would be designed by licensed civil and structural engineers to meet all relevant seismic building codes and standards.

Implementing the proposed prescriptions to address sites with substantial soil erosion would have long-term, moderate, beneficial impacts by greatly reducing the amount of soil lost each year to erosion.

Cumulative Impacts

Widening Alexander Avenue between U.S. 101 and Danes Drive to provide bicycle lanes would require the excavation of an approximately 400 feet (120 m) of rock cuts on both sides of the road. These cuts would remove primarily volcanic basalts of the Franciscan formation. While these rocks are not fossil-bearing, the road cut would destroy a large volume of geologic resource. When combined with Alternative 4, cumulative impacts on geologic and paleontological resources would be long-term, moderate, and adverse, while impacts on soils would be moderate and beneficial because of reduced erosion. Most of the cumulative impacts would result from actions under Alternative 4.

Mitigation Measures

Mitigation measures would be the same as Alternative 3.

Conclusion

Impacts on local geologic and paleontological resources would be long-term, moderate, and adverse as a result of actions to widen roads to improve visitor safety. Impacts on soils from reducing erosion would be long-term, moderate, and beneficial. Cumulative impacts would be long-term, moderate, and adverse for geologic and paleontological resources, but moderate and beneficial for reducing soil erosion.

Because there would be no major adverse impacts to soil, geologic, or paleontological resources, there would be no impairment of related park resources or values.

4.3.2 COASTAL RESOURCES

Regulatory Framework

Federal Laws

Under section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 USC 401 et seq.), the Army Corps of Engineers regulates the building of structures in, over, or under "navigable waters of the United States," as well as the excavation of material from, or the deposition of material into, such waters. Navigable waters are defined as those waters subject to the ebb and flow of the tide shoreward to the mean high water mark or those that are currently used, have been used on the past, or may be susceptible to use to transport interstate or foreign commerce. A letter of permission or permit from the Corps is required prior to any work being completed within navigable waters.

Construction activities required for shoreline modifications would be subject to federal regulation under section 404 of the Clean Water Act.

According to NPS *Management Policies 2006*, natural shoreline processes (such as erosion, deposition, dune formation, overwash, inlet formation, and shoreline migration) will be allowed to continue without interference. Where human activities or structures have altered the nature or rate of natural shoreline processes, the National Park Service, in consultation with appropriate state and federal agencies, will investigate alternatives for mitigating the effects of such activities or structures and for restoring natural conditions.

The National Park Service also complies with the provisions of Executive Order 11988 ("Floodplain Management") and state coastal zone management plans prepared under the Coastal Zone Management Act of 1972 (NPS 2006b, sec. 4.8.1.1).

Any shoreline manipulation measures to protect cultural resources may be approved only after an analysis of the degree to which such measures would impact natural resources and processes, so that an informed decision can be made through an assessment of alternatives.

Where erosion control is required by law, or where present developments must be protected in the short run to achieve park management objectives, including high-density visitor use, the National Park Service will use the most effective method feasible to achieve the natural resource management objectives while minimizing impacts outside the target area.

New developments will not be placed in areas subject to wave erosion or active shoreline processes unless (1) the development is required by law; or (2) the development is essential to meet the park's purposes, as defined by its establishing act or proclamation, and

- no practicable alternative locations are available;
- the development will be reasonably assured of surviving during its planned life span without the need for shoreline control measures; and
- steps will be taken to minimize safety hazards and harm to property and natural resources.

State Laws and Regulations

As discussed in Chapter 1, the California Coastal Commission administers the federal Coastal Zone Management Act in California.

The San Francisco Bay Conservation and Development Commission is charged with regulating all filling and dredging in San Francisco Bay. The commission also regulates new development within the first 100 feet inland from the bay to ensure that maximum feasible public access to the bay is provided. A commission permit must be obtained before any grading or construction can occur within areas under its jurisdiction. The Army Corps of Engineers also requires concurrence from the commission prior to issuing a permit or authorization for work in San Francisco Bay. The commission reviews the project to determine if it is consistent with the amended Coastal Zone Management Program for San Francisco Bay. Also see the discussion of dredging and fill material under "Water Resources" (sec. 4.3.3).

This *Final Environmental Impact Statement* will be submitted to the California Coastal Commission and the San Francisco Bay Conservation and Development Commission for a consistency determination during the public review period.

Methodology for Analyzing Impacts

The alternatives are evaluated qualitatively in terms of their effect on coastal resources, including shorelines in the study area of the Pacific Ocean, Golden Gate Channel, and San Francisco Bay. Consistency with the California Coastal Management Program was also evaluated.

The duration of the impacts would be the same as defined in the introduction (see sec. 4.1). Beneficial impacts would be compatible or consistent with the California Coastal Management Program and coastal resources, and adverse impacts would be incompatible or inconsistent.

The following intensity thresholds were used to assess coastal resource impacts and their likely consistency with the California Coastal Management Program:

Negligible: Impacts on coastal resources would be at low levels of detection and would not have an appreciable effect on resources or public use of those resources.

Minor: Impacts on coastal resources would be detectable but would not be appreciable.

Moderate: Impacts on coastal resources would be readily apparent and long-term, and they would result in substantial, noticeable effects on coastal resources on a local scale.

Major: Impacts on coastal resources would be readily apparent and long-term, and they would result in substantial, noticeable effects to coastal resources on a regional scale.

Impacts of Alternative 1 — No-Action Alternative

Impact Analysis

The *Fort Baker Plan* calls for the existing seawall and fill along Horseshoe Bay to be removed and the beach restored. At Rodeo Beach existing public use and annual cycles of the rising and lowering Rodeo Lagoon would continue. Ongoing erosion of the slope below Mitchell Road by the mouth of Rodeo Creek could eventually wash out Mitchell Road adjacent to the Rodeo Beach parking area. Similarly, sea cliff erosion could undercut the Point Bonita trail, requiring longer and/or additional bridges to maintain pedestrian access.

This alternative would remain consistent with the 1980 *General Management Plan* for Golden Gate National Recreation Area, which in turn was found to be consistent with the California Coastal Management Program. There would be no direct or indirect impacts to coastal resources under this alternative.

Cumulative Impacts

There would be no cumulative impacts to coastal resources or to the consistency or compatibility with the California Coastal Management Program.

Mitigation Measures

No mitigation would be required under this alternative.

Conclusion

There would be no impact to coastal resources, including shorelines of the Pacific Ocean, Golden Gate Channel, and San Francisco Bay in the study area, as a result of implementing Alternative 1, and there would be no impacts to consistency and compatibility with the California Coastal Management Program. There would be no cumulative impacts to coastal resources as a result of implementing this alternative. Alternative 1 would not impair park resources or values relating to coastal resources.

Impacts of Alternative 3 — Preferred Alternative

Impact Analysis

Elements of the preferred alternative that would reduce erosion at specific locations and would directly affect coastal resources are described below:

- removing the unpaved Rodeo Beach parking area and restoring the wetland (see details below)
- replacing the “shotgun” culverts under Mitchell Road at the unpaved Rodeo Beach parking area with a larger culvert set lower to reduce the shotgun effect

- moving the vehicle closure gate on Mitchell Road from the west edge of the unpaved parking area, approximately 260 feet (80 m) east so that vehicle traffic need not rely on this segment of road that is vulnerable to streambank and coastal erosion
- installing a pedestrian fence along Mitchell Road to block the use of eroding shortcut trails down to the beach
- constructing a heavy timber or precast concrete modular pedestrian stairway from Mitchell Road to the beach and designed to be reset after storm and surf events that could damage or dislodge it
- seasonally installing approximately 5- to 6-foot-wide sand matting on a trail between the Rodeo Lagoon trail bridge and the foot of the Rodeo Beach–Battery Alexander trail for improved accessibility
- installing approximately 400 feet (120 m) of pedestrian barrier fence to protect the bird roosting area at the southwest corner of Rodeo Lagoon
- constructing a new, less steep Rodeo Beach–Battery Alexander trail, regrading (filling), and revegetating the former steep eroded gully trail
- removing unneeded fill from the edge of Rodeo Lagoon (northeast and southeast of the Bunker Road bridge) and revegetating the lagoon shore
- restoring the Fort Baker Horseshoe Bay beach as documented in *Fort Baker Plan*

Rodeo Beach unpaved parking lot wetland restoration: Under current conditions, Mitchell Road forms an impervious, static hydrologic barrier between Rodeo Beach and upslope areas. Maps from the 1850's appear to show dunes extending into the lower portion of the unpaved parking lot. It is doubtful that these "dunes" were from wind-derived materials given the coarse materials present on Rodeo Beach. The natural condition of the shoreline would likely have alternated between active scarps in relict washover terrace deposits or alluvial fan deposits, and partially infilled, revegetated scarps (Baye 2006). Proposed restoration actions would restore natural shoreline processes for a short distance. Replacement of existing road fill and culverts with a free-spanning structure or open bottom culvert at Mitchell Road would result in long-term, moderate benefits depending upon the length of the free-spanning structure (greater span length provides better hydrologic connectivity). Beneficial impacts could include the development of dynamic banks cut into temporarily stabilized wash-over terraces formed by storm events.

Elements of the Preferred Alternative that would indirectly affect coastal resources are:

- comprehensive erosion control measures on the road and trail system
- comprehensive water pollution prevention measures on heavily used parking areas

Existing patterns of public recreation access would be maintained and improved. This alternative would be consistent with the 1980 *General Management Plan*, which in turn was found to be consistent with the California Coastal Management Program. It is therefore assumed that Alternative 3 would also be consistent with the California Coastal Management Program.

These plan elements would directly improve the quality of coastal resources within the study area because they would reduce erosion. Therefore, these actions would have long-term, minor, beneficial impacts on coastal resources.

Cumulative Impacts

There would be no cumulative impacts to coastal resources or to consistency or compatibility with the California Coastal Management Program.

Mitigation Measures

No mitigation measures would be required under this alternative.

Conclusion

Impacts on coastal resources, including shorelines of the Pacific Ocean, Golden Gate Channel, and San Francisco Bay in the study area, as a result of actions under Alternative 3 to reduce erosion and restore natural shoreline processes would be long-term, minor, and beneficial. This alternative would have no short-term or cumulative coastal resource impacts. This alternative would not impair the park's resources or values relating to coastal resources.

Impacts of Alternative 2

Impact Analysis

Fewer actions would be taken under Alternative 2 than under Alternative 3 that would directly affect coastal resources. Some situations where existing facilities currently degrade coastal resources would remain unchanged. The following actions would be taken to reduce erosion and would affect coastal resources:

- reducing the unpaved Rodeo Beach parking area and partially restoring the wetland
- replacing the "shotgun" culverts under Mitchell Road at the unpaved Rodeo Beach parking area with a larger culvert level with the beach
- installing a pedestrian fence along Mitchell Road to block the use of eroding shortcut trails down to the beach
- constructing a heavy timber or precast concrete modular pedestrian stairway from Mitchell Road to the beach that would be designed to be reset after storm and surf events that could damage or dislodge it
- constructing a delineated overlook and viewpoint at Rodeo Beach
- stabilizing the existing steep Rodeo Beach–Battery Alexander gully trail (no realignment to a less steep grade)
- road widening, modifying ditches, adding downside culverts
- restoring the Fort Baker Horseshoe Bay beach as documented in *Fort Baker Plan*

Elements of the alternative that would indirectly affect the coastal resources include:

- comprehensive erosion control measures on the road and trail system (less extensive than under Alternative 3 or 4).
- comprehensive water pollution treatment measures at heavily used parking areas

Existing patterns of public recreation access would be maintained and improved. This alternative is consistent with the 1980 *General Management Plan*, which in turn was found to be consistent with the California Coastal Management Program. Therefore, it is assumed that Alternative 2 would also be consistent.

These plan elements would directly improve the quality of coastal resources within the study area because they would reduce erosion and restore natural shoreline processes. Therefore, impacts on coastal resources would be long-term, minor, and beneficial.

Cumulative Impacts

There would be no cumulative impacts to coastal resources or to consistency or compatibility with the California Coastal Management Program.

Mitigation Measures

No mitigation measures would be required under this alternative.

Conclusion

Impacts on coastal resources, including shorelines of the Pacific Ocean, Golden Gate Channel, and San Francisco Bay in the study area, would be long-term, minor, and beneficial as a result of actions to reduce soil erosion. There would be no short-term or cumulative coastal resource impacts related to NPS or local plans and policies as a result of this alternative. Alternative 2 would not impair the park's resources or values relating to coastal resources.

Impacts of Alternative 4

Impact Analysis

The elements of this alternative that would directly affect the coastal resources and reduce erosion would be the same as those listed for Alternative 3, plus the following:

- additional realignment and new trail construction on the south side of the Rodeo Lagoon trail to reduce steep trail sections

In addition, the existing patterns of public recreation access would be maintained and improved. Alternative 4 is consistent with the 1980 *General Management Plan*, which in turn was found to be consistent with the California Coastal Management Program. Therefore, it is assumed that Alternative 4 would also be consistent.

Actions under Alternative 4 would directly improve the quality of coastal resources within the study area because they would reduce erosion.

Therefore these elements would have long-term, minor, beneficial impacts on the coastal resources.

Cumulative Impacts

There would be no cumulative impacts to coastal resources or to consistency or compatibility with the California Coastal Management Program.

Mitigation Measures

No mitigation measures would be required under this alternative.

Conclusion

Impacts on coastal resources, including shorelines in the study area of the Pacific Ocean, Golden Gate Channel, and San Francisco Bay, under Alternative 4 would be long-term, minor, and beneficial as a result of actions to reduce erosion. There would be no short-term coastal resource impacts related to NPS or local plans and policies as a result of this alternative. Alternative 4 would not impair the park's resources or values relating to coastal resources.

4.3.3 WATER RESOURCES

Impacts on water resources are considered in the following categories: groundwater, water quality, and floodplains. Improvements to roadways, parking areas, pedestrian and bicycle routes and trails, and natural resources are evaluated.

Regulatory Framework

The Clean Water Act requires the National Park Service to "comply with all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution." The NPS "Freshwater Resource Management Guidelines" (found in NPS-77, NPS 1991) requires the National Park Service to "maintain, rehabilitate, and perpetuate the inherent integrity of water resources and aquatic ecosystems." In addition, NPS policy is to protect natural floodplain values and functions, minimize potentially hazardous conditions associated with flooding, and comply with the NPS Organic Act and all other federal laws and executive orders related to the management of activities in flood-prone areas.

Groundwater and Surface Water

The San Francisco Regional Water Quality Control Board (SFRWQCB) is the state agency with primary responsibility and authority for ensuring that the beneficial uses of water resources are protected from potential adverse impacts of development at the Marin Headlands and Fort Baker. The basin's plan sets forth water quality standards for surface water and groundwater, as well as actions to control non-point and point sources of pollution to achieve and maintain these standards. Projects that affect wetlands or waters must meet waste discharge requirements of the board, which may be issued in addition to a water quality certification or waiver under section 401 of the Clean Water Act. Applicable water quality objectives for surface water and groundwater are based on the protection of human health and the environment, including aquatic life.

The Water Quality Control Board is also the primary agency for granting, administering, and enforcing a variety of waste discharge permits, including National Pollution Discharge Elimination System (NPDES) permits. Construction projects that disturb an area greater than 1 acre are subject to an NPDES permit for general construction activity. A notice of intent and a stormwater pollution prevention plan would be required to be filed with the Water Quality Control Board before construction for the selected project alternative. This plan would be required to include measures to reduce water quality impacts associated with erosion, waste disposal, spills, and maintenance activities. (The NPDES permit process is described in more detail below.)

NPDES II Program

Pollutants in stormwater discharges continue to remain a substantial source of environmental impacts to the quality of waters of the United States. Common pollutants include oil and grease from roadways, pesticides from lawns, sediment from construction sites, and carelessly discarded trash, such as cigarette butts, paper wrappers, and plastic bottles. When deposited into nearby waterways through storm sewer discharges, these pollutants can impair the waterways, thereby discouraging recreational use of the resource, contaminating drinking water supplies, and interfering with the habitat for fish, other aquatic organisms, and wildlife. Polluted stormwater runoff is often trans-

ported to municipal separate storm sewer systems (MS4s)[1] and ultimately discharged into local rivers and streams without treatment.

The 1972 amendments to the Federal Water Pollution Control Act (also referred to as the Clean Water Act) prohibit the discharge of any pollutant to waters of the United States from a point source unless the discharge is authorized by a NPDES permit.

In 1990 the Environmental Protection Agency promulgated rules establishing Phase I of the NPDES stormwater program. Phase II of the stormwater program extends coverage to certain "small" MS4s, including all of Fort Baker and generally all lands east of the ridgeline running through Battery Spencer. However, the program takes a slightly different approach to how the stormwater management program is developed and implemented. The Phase II Final Rule, published in the *Federal Register* on December 8, 1999, requires NPDES permit coverage of all operators of small MS4s within the boundaries of urbanized areas,[2] as defined by the Bureau of the Census.

Under the small MS4 stormwater program, operators are required to:

- Apply for NPDES permit coverage.
- Develop a stormwater management program that includes the following six minimum control measures:
    1. public education and outreach
    2. public participation/involvement
    3. illicit discharge detection and elimination
    4. construction site runoff control (integrated into project construction documents)
    5. post-construction runoff control
    6. pollution prevention/good housekeeping
- Implement the stormwater management program using appropriate stormwater management controls, or best management practices.
- Develop measurable goals for the program.
- Evaluate the effectiveness of the program.

Of the six minimum control measures, the measures relating to construction site runoff control (measure 4) and post-construction runoff control (measure 5) are applicable to the proposed action. Measure 4 would be addressed in the contract plans and specifications for each of the projects to implement the selected alternative of this environmental impact statement. Measure 5 addresses design issues associated with the proposed action, such as rehabilitation and reconstruction of roadways and parking in the Marin Headlands and Fort Baker. Post-construction stormwater management in areas undergoing new development or redevelopment is necessary because runoff from these areas has been shown to significantly affect receiving waterbodies. Many studies indicate that prior planning and design for the minimization of pollutants in post-construction stormwater discharges is the most cost-effective approach to stormwater quality management. The other control measures (1–4, and 6) would be addressed in a separate stormwater pollution plan and program being developed for Golden Gate National Recreation Area by the National Park Service.

Dredging and Shoreline Modifications

Under the Federal Water Pollution Control Act the U.S. Army Corps of Engineers regulates discharge of dredge or fill material into waters of the United States (pursuant to section 404 of the Clean Water Act, 16 USC 1344). Waters of the United States and their lateral limits are defined in the *Code of Federal Regulations* (33 CFR Part 328.3(a)) and include navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could af-

1. The term MS4 does not solely refer to municipally owned storm sewer systems, but rather has a much broader application that can include, in addition to local jurisdictions, federally owned systems such as park units, military bases, and prisons, as well as state departments of transportation, universities, local sewer districts, and hospitals. An MS4 also is not always just a system of underground pipes — it can include roads with drainage systems, gutters, and ditches (US EPA 2006).

2. An urbanized area is a land area comprising one or more places and the adjacent densely settled surrounding area (urban fringe) that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile. It is a calculation used by the Bureau of the Census to determine the geographic boundaries of the most heavily developed and dense urban areas (US EPA 2006).

fect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Fill is defined as any material that replaces any portion of a U.S. water with dry land or changes the bottom elevation of any portion of a U.S. water. Any activity resulting in the placement of dredge or fill material to waters of the United States requires a permit from the Army Corps of Engineers.

Pursuant to section 401 of the Clean Water Act, agencies that apply for a Corps permit for discharge of dredge or fill material must obtain water quality certification from the Regional Water Quality Control Board indicating that a specific project will uphold state water quality standards.

The Water Quality Control Board and the U.S. Environmental Protection Agency are responsible for determining appropriate dredged material discharge standards and for assuring that dredging and the disposal of dredged materials are consistent with the maintenance of bay water quality. The Environmental Protection Agency and the U.S. Army Corps of Engineers (USACE) have joint federal responsibility for regulating disposal, filling, and dredging in jurisdictional waters of the United States, including oceans, bays, and wetlands. The *Long-Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region* (USACE et al. 1998) provides the basis for uniform federal and state dredged material disposal policies and regulations.

Floodplains

The National Park Service manages floodplains in accordance with Executive Order 11988, "Floodplain Management," and the NPS *Special Director's Order #77-2: Floodplain Management*.

When there is no practicable alternative to placing facilities in a floodplain, NPS policy permits the use of the floodplain when there are compelling reasons for doing so, when the level of impact to natural floodplain processes is acceptable, and when mitigation is provided to protect human life and property. A statement of findings must document a decision to place facilities within a floodplain and must describe the rationale for selecting a floodplain site, disclose the amount of risk associated with the chosen site, and explain flood mitigation plans.

Methodology for Analyzing Impacts

Methodology for Groundwater and Surface Water Quality Impacts

The analysis of water quality impacts focuses on proposed changes that would create any new adverse erosion and sedimentation situations, create a change in existing drainage patterns and subsequent runoff, or potentially violate water quality guidelines of the San Francisco Regional Water Quality Control Board. Particular attention is given to alterations to or restoration of natural water flows.

The impact area generally follows the roads in the study area and includes those areas immediately adjacent to roadbeds where physical changes would occur. Away from existing roadbeds, the impact area includes the proposed expansion and construction of parking lots, as well as the construction or realignment of pedestrian and bicycle trails. Indirect impacts in areas outside the study area are considered only if alterations in drainage patterns and runoff characteristics could occur.

Surface hydrology includes features that are important for impact assessment or mitigation planning, such as watercourses, wetlands, springs, and lagoons. The description and assessment of impacts associated with construction and operations are based on existing data, and short- and long-term impacts to water quality are identified.

Short-term impacts would last no longer than three months after implementation of the alternative. After this three-month period, recovery of the resource would be complete. Long-term impacts would last longer than three months. Since the full implementation of an alternative would take place over a number of years (possibly up to 10 to 20 years), this section frequently assesses the duration of individual actions of the alternative (e.g., removal of structures, site restoration, construction of new structures) instead of full implementation of the alternative.

Adverse impacts would further alter natural hydrologic conditions (e.g., impede or increase flood flows, cause or increase unnatural erosion or deposition) or would degrade water quality (e.g., increase pollution or bacteria levels from recreational use, reduce the clarity of water). Beneficial impacts would restore natural hydrologic conditions (e.g., remove impediments to flood flows,

reduce erosion and sedimentation, remove impervious surfaces, or improve compacted unpaved surfaces that essentially act as impervious surfaces, naturally stabilize riverbanks, and correct improper drainage) or improve water quality (e.g., reduce non-point source pollution).

The primary types of water resources and water quality impacts to be addressed in this environmental impact statement are those short- and long-term impacts associated with the following:

- reconstructing parking facilities that could increase the amount of impervious surface in the area or the number of existing eroding parking areas that remain untreated
- removing and reconstructing sections of Slacker Road (trail), and removing or replacing trails, including any widening of trails
- altering the Rodeo Valley trail
- changing runoff characteristics and drainage as a result of proposed improvements
- restoring sites removed from parking
- outsloping trails for less erosive drainage
- cumulative impacts to water quality associated with potential ferry service at Fort Baker, including expanding parking facilities, bus pullouts, etc.
- post-construction pollution prevention prescriptions developed for each parking area, such as revegetating areas of bare ground, installing non-erosive drainage ditches, lining ditch bottoms with riprap, and regrading road surface to redirect runoff

The level of impact in relation to these types of actions is assessed by considering the following:

- the potential of construction activities (such as earthmoving and grading for parking lots, trails, and the Rodeo Lagoon crossing) to erode soil and generate additional sediment and sediment discharge to surface waters, or cause accidental discharges of materials such as fuels, lubricants, solvents, and cleaners
- the effect that best management practices would have in minimizing runoff from impervious surfaces, pollution sources, and routes of transport to water, as well as monitoring protocols and parameters

The intensity of impacts to water resources and water quality (including areas of sensitive resources such as habitat for any federal or state listed species) are based on the following definitions:

Negligible: Impacts would be imperceptible.

Minor: Impacts would be slightly perceptible and localized, without the potential to expand if left alone. Where water quality data were available, minor impacts (chemical, physical, or biological effects) would be those that would be well below water quality standards or criteria, and would be within the historical or desired water quality conditions.

Moderate: Impacts would be apparent and have the potential to expand. Where water quality data were available, moderate impacts (chemical, physical, or biological effects) would be those that would be at or below water quality standards or criteria; however, for adverse effects, historical baseline or desired water quality conditions would not be met on a short-term basis. Beneficial impacts (chemical, physical, or biological effects) would be those that would be equal to or above water quality standards or criteria, and would be within the historical or desired water quality conditions.

Major: Impacts would be substantial, highly noticeable, have the potential to expand and could be permanent. Where water quality data were available, major impacts (chemical, physical, or biological effects) would be those that would be detectable and would be frequently altered from the historical baseline or desired water quality conditions; or for adverse effects chemical, physical or biological water quality standards or criteria would not be met on a short-term basis. Beneficial impacts (chemical, physical, or biological effects)

would be those that would be above water quality standards or criteria, and would be within the historical or desired water quality conditions on a frequent basis.

Methodology for Floodplain Impacts

Impacts on floodplains are evaluated based on the potential to protect and preserve natural resources and functions; to avoid long- and short-term environmental effects associated with the occupancy and modification of floodplains; and to avoid direct and indirect support of floodplain development and actions that could adversely affect the natural resources and functions of floodplains or increase flood risks.

The methodology includes a preliminary floodplain assessment to determine if the proposed action would have a chance of being within an applicable regulatory floodplain. If there is a chance, then the floodplain type and action class must be determined (e.g., Class I actions are those within a 100-year floodplain, Class II actions are within a 500-year floodplain, and Class III actions within an extreme floodplain.)

The following impact intensities were defined for impacts on floodplains:

Negligible: There would be no change in the ability of a floodplain to convey or store floodwaters, or its values and functions. The project would not contribute to a flood.

Minor: There would be a change in the ability of a floodplain to convey or store floodwaters, or its values and functions. The change would be barely quantifiable and local. The project would not contribute to a flood. No mitigation would be required.

Moderate: There would be changes in the ability of a floodplain to convey or store floodwaters, or its values and functions. The changes would be quantifiable and local. For adverse impacts, the project could contribute to a flood. The adverse impact could be mitigated by modification of proposed facilities in floodplains.

Major: There would be changes in the ability of a floodplain to convey or store floodwaters, or its values and functions. The changes would be quantifiable and widespread. For adverse impacts, the project would contribute to a flood. The adverse impact could not be mitigated by modification of the proposed action.

Short-term impacts would be those that occur over a period of less than one year or occur during construction. Long-term impacts would be those occurring for more than one year.

Adverse impacts would impede flood flows, cause a loss of floodplain values and function (such as stormwater storage), or place structures or buildings within the floodplain. Beneficial impacts would remove structures or buildings from within the floodplain, restore natural hydrologic conditions (e.g., remove impediments to flood flows), improve or install drainage systems, or stormwater treatment methods that are structural or non-structural.

Impacts of Alternative 1 — No-Action Alternative

Impact Analysis

Groundwater

There would be no impacts to groundwater under Alternative 1.

Water Quality

Water resource impacts under Alternative 1 would generally be a consequence of inaction rather than specific project components. No planned actions would be taken under Alternative 1 at parking lots and roadside pullouts. Erosion would continue at various locations throughout the Headlands, including the following areas:

- Julian Road
- Hawk Hill
- Slacker Road (trail)
- Rodeo Lagoon loop trail
- social trails near Battery Alexander

- Rodeo Valley trail
- duplicate trails upslope from the horse stables
- NPS roads and trails maintenance yard
- riparian zone in the Rodeo Beach parking lot
- stables area
- Bird Island Overlook parking lot
- north end of the rifle range
- along steep road sections

In most instances existing erosion on roads, pullouts, trails, and parking lots would be expected to worsen over time because unpaved roads, drainages, and steep road shoulders would not receive erosion control treatment. Erosion from these areas would continue, and the deposition of sediments into downhill and downstream water features would continue to compromise water quality. The main impacts would be long-term, moderate, and adverse.

Failure to address erosion at the wetland fill areas around Rodeo Lagoon, and on untreated steep road shoulders, would result in long-term, minor, adverse impacts. Large storm events can mobilize sediments, while road prisms function as dams, and undersized culverts often become blocked, leading to localized flooding. The National Park Service would still be required to implement NPDES II stormwater pollution prevention permitting process.

Floodplains

There would be no impacts to floodplains under this alternative.

Cumulative Impacts

There would be no cumulative impacts associated with Alternative 1.

Mitigation Measures

No mitigation measures would be required for proposed actions under Alternative 1.

Conclusion

There would be no impacts to groundwater under Alternative 1. Water quality impacts would be long-term, moderate, and adverse. There would be no impacts to floodplains under this alternative, and there would be no cumulative impacts. There would be no impairment of the park's resources or values related to water resources.

Impacts of Alternative 3 — Preferred Alternative

Impact Analysis

Groundwater

Drainage of the wet section along the Rodeo Valley trail could have a long-term, negligible, adverse impact on groundwater. This alternative would raise the trail grade above the saturated ground, and no new parallel ditches to lower the water table would be constructed.

Water Quality

Roadways. Given that all of the roads in the Marin Headlands and Fort Baker have average daily traffic volumes of generally less than 3,000–4,000 vehicles, which is generally considered to be low to moderate in volume, the roads are not a large source of vehicle-generated pollutants.

Long-term, moderate, beneficial impacts to surface water quality would be expected under Alternative 3 because of comprehensive erosion control on unpaved road shoulders and ditches on steep roads in the study area. In addition, shifting or realigning guardrails on Conzelman Road between Overlooks 1 and 2 to narrow the unpaved shoulder, and improving drainage culverts on East Road would be expected to provide long-term, minor, beneficial water quality impacts.

Construction activities such as earthmoving and grading have the potential to erode soil and generate additional sediment and sediment discharge to surface waters and cause accidental discharges of materials such as fuels, lubricants, solvents, and cleaners. Short-term, minor, adverse construction related impacts from road widening and new parking would be expected on Lower Conzelman Road, Conzelman Road (McCullough Road to Hawk Hill turnaround area, Battery Spencer, and the overlooks), Bunker Road (west tunnel portal to McCullough Road , and McCullough Road to Mitchell Road), Field and Mendell roads, the Marine Mammal Center access road, and the roundabout at the Conzelman Road / McCullough Road intersection.

Parking. Parking areas tend to be sites where vehicle-generated pollutants are concentrated. Depending on site slope, levels of use, turnover rate, space requirements, and the proximity of parking areas to sensitive waters, the following best management practices would be undertaken:

1. *Parking rehabilitation at the Conzelman Road Overlook 2 and at Hawk Hill* — Use hardened but unpaved surface with drop inlet filters because of steep grades.
2. *Lower Conzelman Road trailhead parking area* — Rehabilitate to maintain current drainage pattern of sheet flow into vegetated and stable ditches and swales.
3. *New parking on Julian Road at the McCullough Road / Conzelman Road intersection* — Carry runoff into a stable vegetated channel and minimize erosion.
4. *Expanded parking at Smith Road (relocated Rodeo Valley trailhead)* — Use permeable material and pavement for parking stalls; pave roadway.
5. *Rifle range parking (Rodeo Valley trailhead)* — Close northern portion of rifle range to all cars except during special events and car-free days; confine event parking to existing paved bypass road; revegetate all unpaved parking areas.
6. *Riding stables parking lot rehabilitation* — Drain the unpaved parking area into a vegetated swale to catch pollutants before draining into the creek.
7. *Visitor center parking lot rehabilitation* — Install a drop inlet filter and culvert to a vegetated swale.
8. *Bird Island Overlook parking lot rehabilitation* — Close to motor vehicles.
9. *Point Bonita trailhead parking rehabilitation* — Reduce/eliminate shoulder parking; install nonporous paving for parking retained at this site and add curbing.
10. *Rehabilitation of Mitchell Road roadside parking along Rodeo Lagoon* — Harden area (make permeable) and direct sheet flow of surface into vegetated buffer zone.
11. *Rodeo Beach paved parking lot rehabilitation* — Install nonporous pavement and drop inlet filters or a modular treatment system.
12. *Forts Cronkhite and Barry internal parking rehabilitation* — Investigate hardened (permeable) surface for slopes that are steeper than 3%; drain to drop inlets and culverts into vegetated swales.
14. *Battery Alexander and Lower Fisherman's trailhead parking lot rehabilitation* — Install aggregate (permeable, but not hardened) surface with vegetated buffer zones.
15. *Upper Fisherman's Trailhead parking lot rehabilitation* — Install nonporous pavement, drop inlets with riprap apron/ditch draining into vegetated swales.

The proposed wetland restoration project on the unpaved portion of the Rodeo Beach parking lot is expected to have a beneficial effect on the water quality within the wetlands, and on the runoff water that drains underneath Mitchell Road to Rodeo Beach and the lagoon. This benefit would result from the reduction in the amount of sediment from erosion and automobile contaminants that normally are picked up in stormwater and washed into the ditches and drains at this site. There would be fewer parked cars that are sources of contaminants, and a new wetland to trap sediment and toxins and recycle nutrients. The unpaved parking lot at the stables area would be decreased in size and regraded to reduce the slope and runoff. Impacts to water quality would be long-term, minor, and beneficial.

Various post-construction pollution prevention actions would be taken at each of the 20 sites with erosion problems (see Table 4-2), including parking areas, roadside shoulders, trails, and access drives. Examples of the actions include providing curbs along road shoulders on Lower Conzelman Road to prohibit parking that contributes to erosion and severe gullies, paving parking areas with nonporous pavement to provide direct drainage into existing drop inlets at the heavily used Battery Spencer parking area, constructing a new, less steep trail section on Slacker Road (trail) (Coastal Trail) to research sites, reducing the size of the parking area at Lower Fisherman's parking area, and diverting the hillside runoff in vegetated ditches around parking lots. Also, the construction associated with wetland restoration of the Rodeo Beach unpaved parking lot would be done during the dry months of the year to avoid the need for de-watering, an action that would cause water

quality impacts. Impacts would be long-term, minor to moderate, and beneficial.

Pedestrian and Bicycle Routes and Trails. Closing, rerouting, and restoring sections of Slacker Road (trail) under Alternative 3 would result in long-term, minor, beneficial impacts. Other erosion control projects on the Rodeo Lagoon loop trail, replacing social trails with a new trail from Battery Alexander to Rodeo Beach, increasing erosion control on Julian Road, and surfacing the Rodeo Valley trail would result in long-term, minor to moderate, beneficial impacts to water quality. While new trails could cause or contribute to erosion, this analysis assumes that all new trail construction would use appropriate best management practices and would be maintained to avoid any long-term adverse impacts.

Trail construction, road widening to accommodate bicycle routes, and a new bicycle/pedestrian tunnel under Alexander Avenue would result in short-term, moderate, adverse impacts due to potential soil erosion and sedimentation and the accidental discharges of materials like fuels and solvents.

Other Projects. Adherence to appropriate best management practices at the roads and trails maintenance yard, erosion control on steep shoulders, and excavation of excess fill from Rodeo Lagoon would likely provide long-term, moderate, beneficial impacts to water quality.

Floodplains

Roadways. Road widening could slightly increase surface runoff rates and volumes, resulting in long-term, negligible, adverse impacts to flooding. Replacing some roadway culverts with appropriately sized culverts would potentially reduce localized flooding cause by undersized culverts, with long-term, negligible, beneficial impacts.

Parking. No proposed parking changes under this alternative would affect the 100-year floodplain. The best management practices developed to deal with erosion at parking areas would have a long-term, negligible, beneficial impact on localized flooding because of the reduced transport of sediments that can block culverts and cause flooding during large storm events.

Pedestrian and Bicycle Routes and Trails. Widening Bunker Road to accommodate a bicycle route would cause negligible adverse impacts as a result of increasing runoff. Constructing new trails and bridges across the Rodeo Creek floodplain adjacent to the Capehart housing area and adjacent to Smith Road would result in long-term, negligible, adverse impacts on the Rodeo Valley trail.

Trails can act as conduits for surface runoff from upslope areas and can reduce the amount of infiltration in the watershed. Surface runoff volumes and rates may increase as a result of new and realigned trails at the following locations: the Coastal Trail, the bicycle/pedestrian tunnel under Alexander Avenue, the trail between Battery Alexander and the Point Bonita trailhead, and the San Francisco Bay Trail (East Road). Impacts to flooding could be long-term, minor, and adverse.

Cumulative Impacts

No cumulative impacts for groundwater or floodplains were identified as a result of Alternative 3.

Impacts of current and past actions were considered in assessing the impacts on surface water quality for this alternative and were identified as long-term, minor to moderate, and beneficial. Future projects or actions, such as undertaking the Marine Mammal Center improvements and implementing the *Fire Management Plan*, would include best management practices or mitigation measures (e.g., stormwater pollution prevention plan, restoration of disturbed areas) that would prevent long-term adverse impacts. Impacts on water quality of these future actions or projects would be long-term, minor to moderate, and beneficial. Combined with the minor to moderate, beneficial, impacts of this alternative, cumulative impacts would be long-term, moderate, and beneficial.

Mitigation Measures

Water Quality

WQ-1: Project Site Management. Active enforcement of penalties on activities that have direct, adverse effects on water quality would help reduce unplanned impacts. For example, penalties for littering, unleashed pets, and illegal dumping of debris and waste would continue to be enforced. In addition, all NPS and park partner operations that use fuels, solvents, or other potential pollutants would continue to use best management practices, and the National Park Service would continue to

enforce those practices through a system of environmental audits.

WQ-2: Implement Sustainable Trail Design and Construction Standards. To limit short- and long-term impacts resulting from trail construction or realignments, trail routes would be designed to follow natural topography, with minimal grades (generally 10% or less and short sections up to 15%). On steep slopes, poorly designed and constructed trails allow water to accumulate, and erode the trail. Where sloping trails are unavoidable, proper drainage would be provided by using water bars or grade dips to reduce the volume of surface runoff. Where trails cross wetlands or riparian zones, boardwalks or other less disturbing trail construction methods would be used to avoid soil compaction and disturbance.

WQ-3: Implement Turbidity Monitoring and Response Plan. During construction project work immediately adjacent to Rodeo Creek or Rodeo Lagoon (e.g., building new trail bridges or excavating fill from the lagoon) monitoring for turbidity during and shortly after construction would be conducted, and any needed remedial measures would be taken. This would likely be a required action as part of the NPDES permit.

WQ-4: NPDES General Construction Permit and Stormwater Pollution Prevention Plan. All projects with disturbance greater than 1 acre must obtain a NPDES stormwater permit from the San Francisco Regional Water Quality Control Board. If any individual project or contract disturbs 1 acre or more, an NPDES permit must be obtained and a stormwater pollution prevention plan prepared.

WQ-5: Adherence to MS4 Permit. As a small MS4 operator, the National Park Service would develop and implement strategies that include a combination of structural and/or nonstructural best management practices, and it would ensure adequate long-term operation and maintenance of these controls. These measures would specifically focus on parking areas.

Floodplains

None required.

Conclusion

There would be a long-term, negligible or less, adverse impact to groundwater near Rodeo Valley Trail as a result of draining the wet section.

Overall, long-term impacts on water quality would be minor to moderate and beneficial as a result of controlling erosion and replacing the unpaved Rodeo Beach parking with a wetland; short-term impacts to surface water quality due to construction would be moderate and adverse. There would be long-term, negligible adverse impacts to the Rodeo Creek floodplain from new trails and bridges. Long-term impacts on flooding would range from minor adverse as a result of road widening or new trail construction to negligible beneficial as a result of erosion control measures and improved drainage. Cumulative impacts on water quality would be long-term, moderate, and beneficial.

There would be no impairment of the park's resources or values relating to water resources.

Impacts of Alternative 2

Impact Analysis

Groundwater

Draining a wet section near Rodeo Valley Trail would result in a long-term, negligible or less, adverse impact to groundwater, the same as Alternative 3.

Water Quality

More of the existing ongoing erosion problems would continue under Alternative 2 (e.g., severe erosion along the shoulders of Lower Conzelman Road; moderate erosion at the Battery Spencer parking area, on the shoulders of Field Road at the Point Bonita trailhead, and at the rifle range trailhead parking area). Impacts would continue to be long-term, moderate, and adverse.

Roadways. Undertaking limited erosion control on unpaved road shoulders and ditches on steep roads in the study area would result in long-term, minor, beneficial impacts. For example, shifting the guardrails on Conzelman Road between Overlooks 1 and 2 would stop parallel parking and the moderate erosion that is occurring.

Construction activities such as earthmoving and grading could erode soils and generate additional

sediment and sediment discharge to surface waters and cause accidental discharges of materials such as fuels, lubricants, solvents, and cleaners. Resulting impacts would be short term, minor to moderate, and adverse.

Parking. Removing the parking lot at Smith Road would decrease runoff containing pollutants such as oil, grease, and metals, resulting in long-term, minor, beneficial impacts to water quality. Restoring the riparian corridor at the Rodeo Beach parking lot would result in long-term, negligible, beneficial impacts (this section of the parking lot is close to the ocean and does not drain to the main body of Rodeo Lagoon). Closing the Bird Island Overlook lot to vehicles would result in long-term, moderate, benefits to water quality. Impacts at the rifle range would remain, resulting in long-term, moderate, adverse impacts because of continued impacts on water quality.

Pedestrian and Bicycle Routes and Trails. Erosion control projects on four trails: Slacker Road (trail), the Coastal Trail connection, Julian Road, and the Rodeo Lagoon loop trail would result in long-term, minor, beneficial impacts to water quality. Impacts from ongoing erosion on social trails near Battery Alexander, the Rodeo Valley trail, and duplicate trails upslope from the horse stables would be long-term, minor, and adverse.

Short-term impacts from the San Francisco Bay Trail construction and road widening to accommodate a bicycle route on Bunker Road would result in potential soil erosion and sedimentation and accidental discharges of materials like fuels and solvents. Impacts could be moderate and adverse.

Other Projects. Adherence to best management practices at the maintenance yard would likely provide long-term, moderate, beneficial impacts to water quality. Limited erosion control on steep road shoulders throughout the study area would result in long-term, minor, beneficial impacts. Failure to address erosion at the wetland fill areas around Rodeo Lagoon, and on untreated steep road shoulders, would be considered a long-term, minor, adverse impact.

Floodplains

Roadways. There would be no impacts to floodplains or localized flooding as a result of roadway improvements.

Parking. There would be no impacts to floodplains or localized flooding from parking improvements.

Pedestrian and Bicycle Routes and Trails. Additional pavement on Bunker Road to accommodate the bicycle route could result in negligible adverse impacts to flooding.

Cumulative Impacts

No cumulative impacts for groundwater or floodplains were identified.

The impacts of current and past actions on surface water quality for this alternative were identified as long-term, minor to moderate, and beneficial. Future projects or actions, such as the Marine Mammal Center improvements and the *Fire Management Plan*, were considered in assessing cumulative water quality impacts. These types of projects include actions, best management practices or mitigation measures (e.g., stormwater pollution prevention plans, restoration of disturbed areas) that would not result in long-term adverse impacts. Some of these future actions or projects would have long-term, minor to moderate, beneficial impacts on water quality. Combined with the minor beneficial impacts of this alternative, cumulative impacts would be long-term, minor to moderate, and beneficial.

Mitigation Measures

Mitigation measures under this alternative would be the same as Alternative 3.

Conclusions

There would be a long-term, negligible or less, adverse impact to groundwater near Rodeo Valley trail as a result of draining the wet section.

Impacts to surface water quality would be long-term and both beneficial and adverse. At areas where improvements would be undertaken to correct erosion problems, impacts to water quality would be minor and beneficial. At locations where existing erosion conditions would continue, impacts would be moderate and adverse. Construction activities would cause short-term, moderate, adverse impacts to surface water quality. There would be no impacts to floodplains and long-term, negligible adverse impacts to flooding from an increase in impervious surfaces for limited trail

construction and road widening. Cumulative impacts on water quality would be long-term, minor to moderate, and beneficial.

There would be no impairment of the park's resources or values relating to water resources.

Impacts of Alternative 4

Impact Analysis

Groundwater

Draining a wet section near Rodeo Valley Trail would result in long-term, negligible or less, adverse impacts to groundwater, the same as Alternative 3.

Water Quality

Roadways. Proposals for roadways would be similar to Alternative 3 but more extensive. Construction activities such as earthmoving and grading could erode soil and generate additional sediment and sediment discharge to surface waters and cause accidental discharges of materials such as fuels, lubricants, solvents, and cleaners. Impacts from road widening would be expected on Lower Conzelman Road, Conzelman Road (McCullough to Hawk Hill, Battery Spencer, and overlooks), McCullough Road, Bunker Road (tunnel to Murray Circle, west tunnel portal to McCullough Road, and McCullough Road to Mitchell Road), Alexander Avenue, the Marine Mammal Center access road, and the roundabout at McCullough Road / Conzelman Road intersection. These actions would potentially increase erosion or runoff, resulting in short-term, moderate, adverse, construction-related impacts. Realigning a segment of Conzelman Road 20 to 30 feet at Battery Spencer would result in short-term, moderate, adverse impacts due to potential increases in erosion or runoff. Once projects were completed, overall impacts on water quality would be long-term, minor to moderate, and beneficial.

Parking. Restoring the riparian corridor and wetland at the Rodeo Beach parking lot would provide long-term, minor, beneficial impacts to water quality.

Closing the rifle range to all cars, removing the bypass road pavement, and revegetating the area would result in long-term, minor to moderate, beneficial impacts on water quality. Paving the Bird Island Overlook parking lot would prevent further erosion, with long-term, minor, beneficial impacts to water quality. Construction impacts from a slight increase in the size of the Hawk Hill turnaround would be short term, negligible, and adverse. Reducing the size of the unpaved parking area at the stables and regrading to reduce the slope and runoff would result in long-term, minor, beneficial impacts. Construction-related impacts due to construction of a parking lot at Smith Road would be short term, moderate, and adverse.

Various post-construction pollution prevention actions would be taken at each of the 20 sites with erosion problems (see Table 4-2), including parking areas, roadside shoulders, trails, and access drives. Examples of the actions include providing curbs along road shoulders on Lower Conzelman Road to prohibit parking that contributes to erosion and severe gullies, paving parking areas with non-porous pavement to provide direct drainage into existing drop inlets at the heavily used Battery Spencer parking area, reducing the size of the parking area at the Lower Fisherman's parking area, and diverting the hillside runoff in vegetated ditches around parking lots. Impacts would be long-term, minor to moderate, and beneficial.

Pedestrian and Bicycle Routes and Trails. Under Alternative 4 closing and restoring the Slacker Road (trail), replacing social trails with a new trail from Battery Alexander to Rodeo Beach, and removing and revegetating duplicate trails upslope from the horse stable area would result in long-term, moderate, beneficial impacts to water quality because of the reduced erosion potential. Ongoing erosion at sites that would not be addressed, including the Coastal Trail connection, the Rodeo Valley trail, and the Rodeo Lagoon loop trail, would result in long-term, moderate, adverse impacts. Erosion control measures on Julian Road would have long-term, moderate, beneficial impacts on water quality.

Constructing new trail alignments and widening roads to accommodate bicycle routes could cause potential soil erosion and sedimentation and accidental discharges of materials like fuels and solvents. Potential impacts would be short term, moderate, and adverse.

Other Projects. As described for Alternative 3, adherence to appropriate best management practices at the maintenance yard, erosion control on steep shoulders, and excavation of excess fill from

Rodeo Lagoon would likely provide long-term, moderate, beneficial impacts to water quality.

Floodplains

Roadways. As described for Alternative 3, road widening could slightly increase surface runoff rates and volumes, resulting in long-term, negligible, adverse impacts to flooding. Replacing some roadway culverts with appropriately sized culverts would potentially reduce flooding caused by undersized culverts, with long-term, negligible, beneficial impacts.

Parking. As described for Alternative 3, no proposed parking changes under this alternative would affect the 100-year floodplain. The best management practices developed to deal with erosion at parking areas would have a long-term, negligible, beneficial impact on localized flooding.

Pedestrian and Bicycle Routes and Trail. Additional pavement on Bunker Road to accommodate the bicycle lane would cause a long-term, negligible, adverse impact. New trails and the two new footbridges within the 100-year floodplain would result in long-term, negligible, adverse impacts that would not be expected to impede flooding or cause structures to be threatened. However, surface runoff volumes and rates could increase slightly as a result of new trail alignments, with long-term, minor, adverse impacts to flooding.

Cumulative Impacts

Cumulative impacts would be the same as described for Alternative 3. There would be no cumulative impacts for groundwater or floodplains.

Impacts of current and past actions were identified as long-term, minor to moderate, and beneficial. Future projects or actions that include best management practices or mitigation measures (e.g., a stormwater pollution prevention plan, the restoration of disturbed areas) would have long-term, minor to moderate, beneficial impacts on water quality. When combined with the minor to moderate, beneficial, impacts under Alternative 4, cumulative impacts to water quality would be long-term, moderate, and beneficial.

Mitigation Measures

Mitigation measures under this alternative would be the same as Alternative 3.

Conclusion

There would be a long-term, negligible or less, adverse impact to groundwater near Rodeo Valley trail as a result of draining the wet section.

Overall, long-term impacts to water quality would be minor to moderate and beneficial as a result of actions to reduce erosion and replacing the unpaved Rodeo Beach parking with a wetland. Construction activities could cause short-term, moderate, adverse impacts to surface water quality.

There would be long-term, negligible, adverse impacts to the Rodeo Creek floodplain from new trails and bridges. Long-term impacts on flooding would range from minor adverse as a result of road widening or new trail construction to negligible beneficial as a result of erosion control measures and improved drainage. Cumulative impacts on water quality would be long-term, moderate, and beneficial.

There would be no impairment of the park's resources or values relating to water resources.

4.3.4 BIOLOGICAL RESOURCES

Regulatory Framework

Federal Laws and Regulations

Endangered Species Act. The U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration (NOAA) Fisheries division have jurisdiction over species formally listed as threatened or endangered under the Endangered Species Act (16 USC 1531–1544). Section 9 of the act prohibits the "take" of federally listed species, which is broadly defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." The Fish and Wildlife Service has interpreted the definition of harm to include significant habitat modification. An activity is defined as a take even if it is unintentional or accidental.

An endangered species is one that is considered in danger of becoming extinct throughout all, or a significant portion, of its range. A threatened species is one that is likely to become endangered within the foreseeable future. In addition to endangered and threatened species, which are legally protected under the Endangered Species Act, there are lists of candidate species, for which the Fish

and Wildlife Service currently has enough information to support a proposal to list it as a threatened or endangered species.

Section 7 of the Endangered Species Act outlines procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat. Federal agencies are required to consult with the U.S. Fish and Wildlife Service to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species.

Section 10(a) of the Endangered Species Act allows the U.S. Fish and Wildlife Service to permit the incidental take of listed species if such take is accompanied by a habitat conservation plan that includes components to minimize and mitigate impacts associated with the take.

Migratory Bird Treaty Act. The Migratory Bird Treaty Act, which was first enacted in 1918, implements domestically a series of treaties between the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former USSR, which provide for international migratory bird protection and authorize the Secretary of the Interior to regulate the taking of migratory birds. The act makes it unlawful, except as permitted by regulations, "at any time, by any means, or in any manner, to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird, included in the terms of conventions" with certain other countries (16 USC 703). This includes direct and indirect acts, although harassment and habitat modification are not included unless they result in the direct loss of birds, nests, or eggs.

Marine Mammal Protection Act. The Marine Mammal Protection Act, which was most recently reauthorized in 1994 (16 USC 1361 et seq.), establishes a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters. The term "take" is statutorily defined as, "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal." Harassment is defined under the 1994 amendments as any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption to behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

Magnuson-Stevens Fishery Management and Conservation Act. The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires all federal agencies to consult with NOAA Fisheries (formerly the National Marine Fisheries Service) on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect essential fish habitat. Essential fish habitat is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical, and biological properties. Substrate includes sediment underlying the waters. Necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem.

Executive Order 11990: "Protection of Wetlands" (1977). Executive Order 11990 establishes the protection of wetlands and riparian systems as an official federal policy. All federal agencies are required to consider wetland protection as an important part of their policies and to take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.

Federal Noxious and Invasive Weed Laws. Several federal laws pertain to noxious and invasive weeds, including the Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990 as amended (16 USC 4701 et seq.), the Lacey Act as amended (18 USC 42), the Federal Plant Pest Act (7 USC 150aa et seq.), the Federal Noxious Weed Act of 1974, as amended by the Food, Agriculture, Conservation and Trade Act of 1990 ("Management of Undesirable Plants on Federal Lands," 7 USC 2814), and the Carlson-Fogey Act of 1968 (Public Law 90-583). Federal agencies are also concerned about invasive weed infestation and dispersal on private and public lands. The Bureau of Land Management and the U.S. Department of Agriculture maintain lists of pest plants of economic or ecological concern.

Executive Order 13112: "Invasive Species: (1999). Executive Order 13112 directs all federal agencies to prevent and control introductions of invasive nonnative species in a cost-effective and environmentally sound manner to minimize their economic, ecological, and human health impacts.

The order established a national Invasive Species Council that is made up of federal agencies and departments and a supporting Invasive Species Advisory Committee composed of state, local, and private entities. These groups oversee and facilitate implementation of the executive order, including preparation of a national invasive species management plan.

NPS Natural Resource Policies and Guidelines

The National Park Service has developed specific guidelines for the management of natural resources (NPS 1991). The guidelines provide for the management of native and nonnative plant and animal species. They are designed to assist parks in developing resource management plans and action plans for specific park programs in all park management zones: natural, cultural, park development, and special use zones as described in the NPS *Management Policies* and articulated in each park general management plan.

The NPS *Management Policies 2006* direct park managers to preserve natural resources, processes, systems, and values of park units in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them. Natural resources will be managed to preserve fundamental physical and biological processes, as well as individual species, features, and plant and animal communities (NPS 2006b, sec. 4.1). The National Park Service will strive to understand, maintain, restore, and protect the inherent integrity of the natural resources, processes, systems, and values of the parks. These are described generally in the 1916 NPS Organic Act and in the enabling legislation or presidential proclamation establishing each park.

State Laws and Regulations

Although federal agencies are not required to comply with California's Fish and Game Code, the National Park Service makes every reasonable effort to conduct its actions consistent with relevant state laws and regulations.

California Endangered Species Act. Pursuant to the California Endangered Species Act, which is administered by the California Department of Fish and Game, state listed threatened or endangered species are protected from any take (*California Code of Regulations,* title 14, sec. 670.2 and 670.5; California Endangered Species Act, sec. 2080). The take of state listed species incidental to otherwise lawful activities requires an incidental take permit.

The California Endangered Species Act is similar to the Endangered Species Act both in process and substance; it is intended to provide additional protection to threatened and endangered species in California. The California Endangered Species Act does not supersede the Endangered Species Act, but operates in conjunction with it. Species may be listed as threatened or endangered under both acts (in which case the provisions of both state and federal laws apply) or under only one act (Mueller 1994).

California Native Plant Protection Act. In addition to the California Endangered Species Act, the California Native Plant Protection Act provides protection to endangered and "rare" plant species, subspecies, and varieties of wild native plants in California. The definitions of "endangered" and "rare" are closely parallel the definitions of "endangered" and "threatened" plant species in the California Endangered Species Act. The California Native Plant Protection lists are used by both the California Department of Fish and Game and the U.S. Fish and Wildlife Service when considering formal species protection under the Endangered Species Act and the California Endangered Species Act.

California Fish and Game Code. *Protection of Birds* — The California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird (sec. 3503). Specifically, it is unlawful to take, possess, or destroy any raptors (i.e., eagles, hawks, owls, and falcons), including their nests or eggs (sec. 3503.5). The code adopts the provisions of the Migratory Bird Treaty Act and states that it is unlawful to take or possess any designated migratory nongame bird or any part of such migratory nongame bird (sec. 3513). The state code offers no statutory or regulatory mechanism for obtaining an incidental take permit for the loss of nongame, migratory birds. Typical violations include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of the code could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction.

Streambed Alteration — All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by the California Department of Fish and Game (California Fish and Game Code, sec. 1602). It is unlawful for any person, any state or local governmental agency, or any public utility to substantially divert or obstruct the natural flow or to substantially change the bed, channel, or bank of any river, stream, or lake, or deposit or to dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake without first notifying the department of such activity (sec. 1602). The regulatory definition of stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports wildlife, fish, or other aquatic life. This includes watercourses having a surface or subsurface flow that support or have supported riparian vegetation. The Department of Fish and Game jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife.

Fully Protected Species — Laws applying to fully protected species are described in four sections of the Fish and Game Code, which list 37 fully protected species (sec. 3511, 4700, 5050, and 5515). These statutes prohibit take or possession at any time of fully protected species. The California Department of Fish and Game is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species.

California Coastal Commission Wetland Protection. The California Coastal Commission regulates wetlands in accordance with the provisions of the Coastal Act, which broadly defines a wetland as lands within the coastal zone that may be covered periodically or permanently with shallow water (sec. 30121). As a result, areas that do not meet the federal definition of wetlands may receive protection under the Coastal Act. Filling of a wetland protected by the Coastal Act requires prior authorization by the Coastal Commission.

Informal Species Designations

Both the federal and state governments maintain lists of species that are not legally protected but are nevertheless rare or uncommon. Some of these species may be rare enough to qualify for listing under the respective endangered species acts. In addition, the California Native Plant Society maintains a list of species in California that are considered rare or endangered according to their criteria.

U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife Service maintains a list of species of concern, which includes uncommon species for which the agency does not currently have on file sufficient information on threats to their existence that would support listing them as either threatened or endangered.

California Department of Fish and Game. The California Department of Fish and Game maintains an informal list of plant and wildlife species of special concern because of population declines and restricted distributions, and/or because they are associated with habitats that are declining in California. These species are inventoried in the California Natural Diversity Database regardless of their legal status. In some cases, they are also federal species of concern.

California Native Plant Society. The California Native Plant Society has developed lists of plants of special concern in California, including species, subspecies, or varieties that are considered to be extinct (list 1A); species that are rare, threatened, or endangered in California and elsewhere (list 1B); species that are considered rare, threatened, or endangered in California, but are more common elsewhere (list 2); species that are potentially endangered but additional information on rarity and endangerment is needed (list 3); and species that have a limited distribution, but are currently not endangered (list 4). The California Department of Fish and Game considers all plants listed by the California Native Plant Society as “special plants” and recommends that impacts to plants on lists 1 and 2 be considered during project analysis.

Methodology for Analyzing Impacts

For biological resources, environmental impacts potentially resulting from implementation of the proposed project were determined as follows:

- the project description and project plans were reviewed
- agency lists for special status species with potential to occur in the study area were re-

viewed, as well as the California Natural Diversity Database and the California Native Plant Society

- a reconnaissance field survey was conducted to map vegetation communities and habitat types, and project plans were overlaid on vegetation maps
- quantitative impact calculations were provided by NPS staff, the duration and intensity of impacts were determined, and focused studies/biological surveys were reviewed

More specific information on methodology is presented by resource topic.

Short-term impacts, typically those resulting from construction activities, would likely be restricted to one year or a growing season at a given construction site. Long-term impacts could include permanent alteration of habitats and temporary alteration without active restoration to pre-project conditions. Because project implementation would take place over a number of years, duration of the impact could refer to individual project components (e.g., constructing a trail segment, widening a road segment, or reconfiguring a parking area) rather than to duration for implementation of the project as a whole.

Adverse impacts would degrade the size, integrity, or connectivity of biological habitats, including habitat for special status plants and animals. Such impacts could lead to reductions in the abundance, diversity, or distribution of plant and wildlife species. Adverse impacts on vegetation and wildlife habitat could include loss of habitat resulting from actions such as road widening, and degradation of habitat resulting from expansion of invasive weed infestations as a result of project construction. Adverse impacts to wetlands and aquatic life could include loss or degradation of habitat resulting from permanent filling of wetland habitats or habitat degradation due to increased sedimentation. Wildlife could also be adversely affected by disturbance resulting from project construction and subsequent visitor use.

Beneficial impacts would positively affect the size, integrity, and connectivity of biological habitats and associated plant and wildlife populations. Such impacts could include restoration actions, such as revegetation of currently bare road shoulders and pull-outs, correction of drainage problems that result in erosion of downslope vegetation and sedimentation of wetlands, increasing the distance between developed areas (e.g., roads and parking areas) and nearby sensitive habitats, and redirection of visitor use away from areas critical to special status plant and wildlife species.

Impact intensity levels are defined for each resource topic and were defined based on input from NPS staff, experience on other NPS environmental documents, and best professional judgment. All relevant federal and state regulations were also considered during evaluation of impact intensity levels.

Methodology for Analyzing Impacts on Biological Habitats and Vegetation

The analysis of impacts to common vegetation communities included quantification of vegetation loss and discussion of other potential direct and indirect effects, such as the loss of integrity or vulnerability to invasion by nonnative species. The amount of each vegetation community that would be directly affected was determined based on a comparison of vegetation maps produced during reconnaissance field survey, and on project plans. Vegetation types depicted at project feature locations were mapped in the field. Park vegetation maps were used to determine the overall acreages of vegetation types in the study area in order to quantify the magnitude of habitat loss compared to the overall available amount of habitat present. The overall amount of habitat present is provided in Table 3-9 (page 110). The vegetation maps were overlaid with project plans, and impact acreages by common and sensitive vegetation type were determined for each project component by NPS staff. Calculated acreages are the basis for impact quantification.

Impacts to common and sensitive habitats that would occur beyond the limit of direct project disturbance (i.e., beyond the project footprint as depicted in the project plans) were evaluated on a qualitative basis only. The evaluation of vegetation impacts considered potential changes in the geographic extent and continuity of plant communities, changes in the integrity of plant communities, and resilience of affected plant communities. This analysis included an evaluation of the potential for proposed actions to favor the establishment and/or

expansion of exotic species and the ability to contain and reverse exotic plant infestation.

Impacts to native and nonnative trees were quantified by tallying trees by species or by quantifying acreages of patches (using Geographic Information System databases) that occur within a project's footprint.

The following intensity levels were used for the assessment of impact on common and sensitive vegetation communities:

Negligible: No effects would occur, or effects would result in no measurable or perceptible changes in plant community size, continuity, or integrity.

Minor: Effects would be measurable or perceptible, but they would be localized within a relatively small area, and the overall viability of the plant community would not be affected.

Moderate: Effects would be measurable and perceptible over a larger area, and they could affect the overall viability of a plant community. Adverse impacts could be mitigated by restoration or enhancement of previously lost or degraded vegetation within the park.

Major: Effects would be readily apparent over a relatively large area. Adverse impacts would have measurable consequences to the extent and integrity of the plant community that could not be mitigated by methods described above.

Methodology for Analyzing Impacts on Wetlands

All available information regarding wetland resources was reviewed. Proposed activities that would likely impact waters of the U.S., including wetlands, are addressed in the Wetland Statement of Findings (WSOF) which is included in Appendix F of this Final EIS. The impact analysis includes an estimate of area of wetlands that are gained (restored), altered in some way, and lost, due to potential direct and indirect effects of the proposed activities included in the Preferred Alternative. The assessment of impacts to aquatic resources considers potential effect on wetland function, and connectivity to other wetlands and watercourses. The following intensity levels were used for the assessment of impacts to wetlands:

Negligible: No effects would occur or effects would be below or at the lower levels of detection.

Minor: Effects would be detectable, but relatively small in terms of area and the nature of the change and without the potential to expand if left alone.

Moderate: Effects would be readily apparent over a relatively small area and would have the potential to expand in area. Adverse impacts could be mitigated by restoration or enhancement of previously lost or degraded wetland habitats within the park.

Major: Effects would be readily apparent over a relatively large area. Adverse impacts would have measurable consequences that could not be mitigated.

Methodology for Analyzing Impacts on Terrestrial Wildlife and Aquatic Wildlife

The impact analysis to common wildlife species included an assessment of effects to species associated with habitat types that would be lost or restored, plus a discussion of other potential direct and indirect effects. Quantification of habitat loss or restoration was based on an analysis of vegetation changes. Potential impacts that could occur beyond the limit of direct project disturbance, including those that might not be related to habitat loss, are discussed on a qualitative basis. Possible impacts to common wildlife species were assessed in terms of potential changes in the amount and connectivity of habitat, the integrity and distribution of the habitat (including past disturbance) and populations, and the potential for increased/decreased disturbance and the number of individuals affected.

The following thresholds were defined:

Negligible: No measurable or perceptible changes would occur to the amount, distribution, connec-

tivity, or integrity of wildlife habitat or populations.

Minor: Changes to the amount of wildlife habitat would be localized and would not affect the overall connectivity or integrity of habitat in the study area. Disturbance and loss of relatively few individuals of wildlife could occur, but would not affect the overall size or integrity of a local wildlife population.

Moderate: Effects would be measurable and perceptible over a larger area and could affect the overall amount, integrity, and connectivity of habitat in the study area. Habitat changes and disturbance and loss of individuals could affect the overall size of wildlife populations, but reductions in population size would not be permanent and would not threaten the continued existence of a species within the park. Impacts could be mitigated by implementation of impact avoidance/minimization measures and/or restoration or enhancement of previously lost or degraded wildlife habitat within the park.

Major: Effects would be permanent over a relatively large area and would have drastic consequences to the amount, integrity, or connectivity of wildlife habitat. Changes in the size and integrity of wildlife populations could threaten the continued existence of species within the park. Impacts to wildlife habitat and populations could not be mitigated.

Methodology for Analyzing Impacts on Special Status Species

The impact analysis for special status species included quantification of habitat types that would be lost or restored, and discussion of other potential direct and indirect effects. Special status species addressed are based on the USFWS species list and updates obtained for the project, and they include plants and animals that are legally protected or that are otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations. These include species that are state and/or federally listed as endangered, threatened, or rare; those considered as candidates or proposed for listing; species identified by the California Department of Fish and Game and/or the U.S. Fish and Wildlife Service as species of concern; and plants considered by the California Native Plant Society to be rare, threatened, or endangered.

Impacts to designated critical habitat are also evaluated. Quantification of habitat loss or restoration is based on an analysis of vegetation changes. Potential impacts that could occur beyond the limit of direct project disturbance, including those that may not be related to habitat loss, are discussed on a qualitative basis.

Impacts to special status species were assessed in terms of changes in the amount and connectivity of special status species habitat, integrity of the habitat (including past disturbance) and populations, and the potential for increased/decreased disturbance and number of individuals. The project would adhere to any additional measures required by a biological opinion (in accordance with the Endangered Species Act, sec. 7), section 404 permits, and NPDES II permits beyond those described in this document. For all listed species, proposed actions would be conducted under the terms and conditions of the biological opinion issued by the U.S. Fish and Wildlife Service.

Negligible: No measurable or perceptible changes would occur to the amount, distribution, connectivity, or integrity of suitable habitat or individuals of special status species.

Minor: Effects would be barely measurable or barely perceptible, would be localized within a relatively small area, and would affect few individuals of any special status species. There would be no overall effect to the connectivity of habitat or the integrity of habitat or populations. There would be no loss of special status species or critical habitat.

Moderate: Effects would be measurable and perceptible or would occur over a large area. Effects could result in a loss or increase of individuals of a special status species or habitat, but there would be no loss of federally listed species or critical habitat. Changes in connectivity and integrity of suitable habitat would not permanently affect the integrity of a local population. Implementation of impact avoidance/minimization measures and/or restoration or enhancement of previously lost or degraded habitat within the park could be implemented as mitigation.

Major: Effects could result in the loss or gain of a large number of individuals. Potential loss or gain in numbers of federally listed species. Changes in connectivity and integrity of suitable habitat could permanently affect the integrity of a local population, and there could be loss of critical habitat. Impacts could not be mitigated.

Impacts of Alternative 1 — No-Action Alternative

Impact Analysis

Biological Habitats and Vegetation

No additional impacts to common natural communities would occur under Alternative 1 because existing conditions would continue. Present impacts are due to the continued spread of invasive weeds, the deterioration of trails, sediment deposition, and erosion, resulting in long-term, minor, adverse impacts. Without removal or control, existing weed populations can spread even without construction related activity.

There would be no tree removal under of Alternative 1; therefore, there would be no impact.

Wetlands

There would be no additional impacts to wetlands under Alternative 1.

Wildlife and Aquatic Life

There would be no additional impacts to wildlife and aquatic life under Alternative 1.

Special Status Species

There would be no additional impacts to special status plant or wildlife species under Alternative 1.

Cumulative Impacts

No additional cumulative impacts would result under Alternative 1.

Mitigation Measures

No mitigation would be required under Alternative 1 because all impacts on biological resources would be negligible or minor and would primarily result from the spread of invasive weeds. However, it would be recommended that stands of invasive weeds, specifically jubata grass and Scotch broom, be controlled and/or eradicated as part of ongoing natural resource management activities to prevent their further spread. If control efforts were implemented, long-term adverse impacts would be reduced from minor to negligible.

Conclusion

The potential spread of invasive weeds on a limited basis due to lack of control efforts, the continued deterioration of trails, sediment deposition, and erosion would continue to result in long-term, minor, adverse impacts under Alternative 1. If control efforts were implemented, long-term impacts would be reduced to negligible. For all other biological resources, there would be no impacts; therefore, there would be no cumulative impacts. Alternative 1 would not lead to impairment of the park's biological resources or values.

Impacts of Alternative 3 — Preferred Alternative

Impact Analysis

Biological Habitats and Vegetation

Common Natural Communities. Construction activities, including grading, excavation, and backfill compaction, associated with road widening and asphalt/concrete removal and replacement would result in short-term impacts to a total of 15.74 acres (6.37 ha) in the following communities:

coyote brush scrub — 11.02 acres (4.46 ha)

coastal scrub — 0.44 acre (0.18 ha)

coyote brush scrub with heavy ice plant infestation — 0.41 acre (0.17 ha)

mowed grass field — 3.84 acres (1.55 ha)

annual grassland — 0.03 acre (0.01 ha)

In the long term a total of 5.17 acres (2.10 ha) would be permanently lost in the following communities:

coyote brush scrub — 4.41 acres (1.79 ha)

mowed grass field — 0.39 acre (0.16 ha)

coyote brush scrub with heavy ice plant infestation — 0.37 acre (0.15 ha)

Adverse effects to the quality, connectivity, and integrity of common natural communities under Alternative 3 would be relatively small in most cases compared to the overall amount of habitat present in the study area. This alternative would primarily result in the expansion of already disturbed areas, such as roadway corridors and parking areas. The elements of Alternative 3 that would result in new disturbance include the proposed bike path to Fort Baker, several new segments of trails along existing trails, and the construction of a new segment of the Coastal Trail. Overall impacts would be long-term, minor, and adverse.

Alternative 3 would reduce indirect effects on common natural communities from disturbance as a result of closing trails, reducing parking in some areas, and reducing the overall footprint of the Marin roads and trails maintenance yard. Habitat quality, connectivity, and integrity would increase as a result of closing, rerouting, and revegetating portions of the Slacker Road (trail), and revegetating some parking areas and roadsides, particularly at Rodeo Beach, where the width of the riparian corridor would be increased. Removing fill along Rodeo Lagoon and revegetating the adjacent disturbed area would also improve connectivity and integrity of common natural communities. In all a total of 11.09 acres (4.8 ha) would be revegetated, including

coyote brush scrub — 7.14 acres (2.89 ha)

mowed grass field — 3.75 acres (1.51 ha)

annual grassland — 0.20 acre (0.08 ha)

coastal scrub — 0.80 acre (0.32 ha)

This would result in long-term, minor, beneficial impacts.

Alternative 3 would result in a net gain of 7.48 acres (3.03 ha) of common natural communities, with the most important net increase in coastal scrub and annual grassland. Overall impacts to common natural communities under Alternative 3 would be long-term, minor, and beneficial since the loss of common natural communities would be primarily restricted to already disturbed areas and restoration would result in a higher quality community for native plant and wildlife species.

Tree Removal. The overall number of trees that would be removed as part of the project is small (148) compared to the overall number of trees in the study area. Most of the trees to be removed (146) are mature, invasive, nonnative that are scattered throughout the area. Two native trees, one coast live oak tree and one madrone, would be removed. The overall impact of removing invasive trees would be long-term, minor, and beneficial because the spread of nonnative species would be reduced.

Non-native tree removal would also occur as a part of the compensation actions (i.e., tree removal at Hawk Hill, etc.) for mission blue butterfly habitat as directed in the USFWS Biological Opinion (USFWS 2006b). The scale of this tree removal and specific locations are identified in WLD-5. These compensation actions would be phased over the duration of the project, and would result in the removal of less than 12 acres of non-native trees (primarily Monterey pine and cypress and blue gum eucalyptus). This represents approximately 9 percent of the non-native tree cover found within the project study area. Following removal, areas would be revegetated with the diversity of coastal scrub, prairie and woodland species depending upon the location and restoration goals.

Short-term, negligible to minor, adverse impacts to plant communities would likely occur during actual tree removal activities. However, the implementation of best management practices would minimize these impacts. Similar impacts to wildlife (see below) could also occur during tree removal activities; however, the implementation of best management practices (to include timing outside of nesting season, etc.) would minimize these impacts as well. Loss of potential roosting and refueling sites for migratory birds would be mini-

mal as approximately 91 percent of the non-native tree cover (including the majority of trees at Kirby Cove and Fort Barry) found within the project study area would remain. Non-native tree removal within areas directly adjacent to habitat for the federally endangered mission blue butterfly (e.g., the slopes of Hawk Hill, etc.) and within predicted mission blue butterfly habitat (e.g. the southern and western slope below Conzelman Road, etc.), together with other restoration activities, would result in long-term, major, beneficial impacts. Non-native trees would be replaced with a mosaic coastal scrub and prairie habitats.

Invasive Weeds. Construction activities could result in the spread of existing invasive nonnative plants and the potential introduction of new invasive weeds from construction equipment, particularly in areas that have been previously undisturbed. Best management practices would ensure that all equipment would be cleaned before entering sensitive areas or moving between construction sites. All existing infestations within the project area would be mapped before construction began, and to the greatest degree practicable these areas would be controlled prior to construction disturbance. Removing and controlling invasive nonnative plant infestations would have a long-term, moderate, beneficial effect.

Wetlands. Table 4-3 summarizes the areas of wetland impacts that would result from the various actions associated with the implementation of the Preferred Alternative.

Wetlands are considered a sensitive resource because they have limited distribution due to cumulative losses, and because wetlands tend to be highly productive, multi-functional systems. Restoration and enhancement of wetlands would offset losses from construction activities, and result in long-term, moderate, beneficial impacts.

Culvert Replacement. Project activities include the replacement of existing culverts throughout the roads within the project area. Generally, these actions are not included in the assessment, although they do affect waters and wetlands. Culvert replacement activities temporarily upset the road and base substrate around the culvert and under the asphalt. New culverts would have the same diameter or larger as what they replace. A few square feet of wetland vegetation and substrate may be disturbed on either side of the road and culvert for construction equipment to gain access.

Smith Road Parking Lot. The wetland located at the proposed Smith Road parking lot supports a mosaic of hydrophytic and upland vegetation, such as patches of coyote brush. The configuration of the parking lot was reconfigured between Draft EIS and Final EIS, and reduced impacts to wetlands by almost half. The impacts to wetlands would be compensated by restoring wetlands at the Rodeo Lagoon and Rodeo Lake sites, and mitigation measures would be implemented to further reduce wetland and water quality impacts (see mitigation measures WET-1,2, and 4).

Construction of Two New Multi-Use Trails Crossing Rodeo Creek. Two new multi-use trail crossing are proposed, one at the east end of Smith Road, and the other by Capehart Housing. Both of these trail corridors would be 6 feet wide. The portions of the trails that would traverse the active wetland floodplain would be an elevated boardwalk and a bridge structure supported by piers over the low flow channel. Thus, wetland impacts would be reduced to disturbance from the piers and possibly abutments if placed in wetlands and the clearing of vegetation within the right-of-way during construction.

Wetland Restoration Rodeo Beach Unpaved Parking Lot. Specific to the wetland restoration at the Rodeo Beach unpaved parking lot, temporary, adverse impacts would be associated during construction with the unpaved parking lot restoration actions (up to 2.5 acres of palustrine emergent and scrub-shrub wetland). It is likely that only a portion of these existing wetlands would be impacted by construction activities. Adverse impacts would include removal of willow and other shrubs to facilitate removal of rusted culverts, filling of gullies, and compaction of wetland soils associated with construction vehicular access. Restoration activities, however, would be expected to offset these temporary losses, resulting in a long-term, moderate beneficial impact. Project design elements such as control of invasive weeds and removal of natural hydrology in these areas would greatly increase the value and area of emergent wetlands in these areas.

Summary of Area of Wetland Impacts. Construction-related impacts to wetlands would be short-term, minor, and adverse. The estimated area of

TABLE 4-3. SUMMARY OF WETLAND IMPACTS

Site	WSOF Figure	Acres	Description of Activity
Site 1A	Figure 2	no fill	Install a stair pathway from Mitchell Road to Rodeo Beach
Site 1	Figure 2	0.002	Replace two 12-inch culverts with either a span or large arching open-bottom culvert under Mitchell Road
Site 2	Figure 2	0.008	Marine Mammal Center - Center curbing and gutter
Site 3	Figure 3	0.002	Widen pavement along Bunker Road and replace 2 culverts
Site 4	Figure 4	**0.038**	Remove trail crossing Rodeo Creek corridor
Site 5	Figure 4	0.145	Smith Road parking lot
Site 6	Figure 4	0.049	Construct new crossing of Rodeo Creek at Smith Road
Site 7	Figure	**0.053**	Remove crossing of Rodeo Creek corridor at Rifle Range
Site 8	Figure 5	0.004	Drainage ditch along Julian Road by Rifle Range
Site 9	Figure 5	**0.027**	Fisherman's Trail removed and rehabilitated
Site 10	Figure 6	0.038	Trail work affecting wetlands on Dubois Road
Site 11	Figure 6	0.061	Construct new crossing of Rodeo Creek by Capehart
Site 12	Sheet 7	0.011	McCullough Road hairpin curve widening and clearing vegetation to improve line of sight
Site 13	Figure 8	0.018	East Bunker Road Bicycle Path
Site 14	Figure 9	0.000	Trail by Marin YMCA and Field Road turn around
Site 15	Figure 10	0.018	Wetlands on Rodeo Valley Trail – add crushed rock
Site 19	Figure 4	0.004	Clear and reconfigure existing ditches on west side of Rodeo Valley Stables; replace culverts under Bunker Road
Site 20	Figure 11	0.0	Widen Conzelman Road at Hwy 101
Site 16	Figure 2	**3**	Rodeo Beach Parking Lot
Site 17	Figure 3	**0.28**	Rodeo Lagoon compensatory wetland mitigation
Site 18	Figure 3	**0.32**	Rodeo Lake compensatory wetland mitigation

Areas depicted in bold type represent estimates of restored wetlands, a beneficial impact. Other aerial estimates represent wetland losses.

impacts to wetlands/waters are summarized in Table 4-3. The table shows that there would be a total of about 0.36 acre of Corps jurisdictional wetlands that would likely be adversely affected by the implementation of Alternative 3, while about 0.12 acre would be restored through the decommissioning of certain trails and crossings. To offset losses, a mitigation plan has been prepared that proposes up to approximately 0.6 acre of compensatory wetland mitigation to satisfy the requirements of the Clean Water Act (Section 404 and 401) and NPS Directors Order #77-1, resulting in a long-term, moderate, beneficial impact.

Wildlife and Aquatic Life. Adverse effects to wildlife habitat quality, connectivity, and integrity from implementation of Alternative 3 would be relatively limited in most cases. This alternative would primarily result in expansion of previously disturbed areas, such as roadway corridors and parking areas. While this could increase the width of habitat gaps, and result in reduced wildlife use of adjacent habitat, it would be a small increase to an existing situation.

Notable exceptions where adverse effects would be more substantial and connectivity of habitat would be affected include the following:

- a new bicycle/pedestrian tunnel bypass to Fort Baker, which would create a new trail in dense patches of otherwise contiguous habitat.
- new segments along existing trails (e.g., the Battery Alexander trail, Coastal Trail, trail connections to Rodeo Valley, the Slacker Road (trail) to research sites) — Much of the new trail from Battery Alexander to the Point Bonita trailhead would create a new gap in an otherwise contiguous patch of habitat (except the northern end). Although the trail would skirt an existing developed area, the proposed trail corridor is relatively undisturbed. Approximately 2,400 feet (725 m) of new Coastal Trail segments would be near Conzelman Road, although existing social trails would be utilized of practicable. The new approach trails and Rodeo Creek crossings would create gaps in the connectivity of the otherwise contiguous habitat it would pass through. Effects to the creek itself and wetland and riparian habitat would be minimized by using a long bridge to span the habitat near the Capehart housing area, rather than bisect it, and the Smith Road access would be sited to minimize adverse effects to habitat. However, habitat quality, connectivity, and integrity would still be reduced to some extent in these locations. Constructing the new access trail to the Slacker Hill research sites would also create a new gap in otherwise contiguous habitat.

Most of the adverse effects described above, however, would be at least partially offset by rehabilitation of existing trail and road segments.

Compensation actions (i.e., tree removal at Hawk Hill) for mission blue butterfly habitat would result in the following impacts to birds: 1) Although the roost sites are not natural and birds are being attracted to roost in the area that would not normally roost in this area. Corvids attracted to perch in these trees may prey upon other birds' nests. Although there may be refueling sites for migratory birds, other sites are available close by (Kirby Cove, Point Bonita, and Fort Baker). The loss of these trees would not affect the regional populations of migratory birds, but rather reduce opportunities to see them at Hawk Hill. Diminished opportunities for viewing would be most apparent for viewing fall and spring migrants attracted to Hawk Hill; 2) loss of birding opportunities for unusual coniferous migratory birds, or any birds that are looking for trees/cover; 3) change of the viewshed for hawk counters; 4) change of the attractive force of the trees (habitat, cover, and prey birds) for some forest hawks and the long-term monitoring data of the GGRO raptor monitoring program (however these birds would likely fly to adjacent stands of trees); 5) loss of the physical and aesthetic comfort of shade and of a windscreen for hawk counters, recreational birders, and Headlands Institute outdoor education students and instructors; 6) loss of the fog-drip microclimate on the north and west slopes supporting bracken and other ferns, understory plants, and associated fauna, although some fog drip would remain from the restored native flora.

Project construction and large-scale invasive plant control actions could result in direct and indirect adverse effects to individual wildlife species, beyond the more general effects to their habitat. Vegetation (including tree) removal and the use of construction equipment could result in direct loss of individuals that were unable to escape and the destruction of active bird nests. Disturbance associated with project construction, even if limited to an existing disturbed area (e.g., a roadway or parking area), could disturb individual animals. Potential effects include, but are not limited to, disrupting movement patterns, utilization of nearby habitat, and breeding activities. Some animals could die if breeding activities were disrupted to the extent that active nests were abandoned. Project improvements could lead to increased trail use, which could, in turn, result in increased disturbance of wildlife in adjacent areas. Again, the implementation of best management practices and mitigation measures (including the appropriate seasonal timing of work) would minimize both short and long-term impacts.

In the long term, Alternative 3 could have more beneficial effects to wildlife habitat quality, connectivity, and integrity than adverse effects, depending on the design and success of revegetation activities. Overall, revegetation efforts would create more habitat than would be permanently lost. New trail segments in areas with existing erosion, drainage, or grade issues would be coupled with revegetation of the existing trail segments. Therefore, over time the quality, connectivity, and integrity of those areas would be improved. A substantial improvement in these attributes could result

from closing, rerouting, and revegetating sections of the Slacker Road (trail) because new trail construction would be limited to the short access route to the research sites. Revegetation would also occur at some parking areas, along roadsides, and at the Marin roads and trails maintenance yard. The benefit of this to wildlife would be somewhat limited because of the long-term disturbance of the locations. However, the improved quality of adjacent habitat could also provide a buffer, particularly at the Rodeo Beach and Smith Road parking areas, where riparian habitat quality could be greatly improved. Removing fill along Rodeo Lagoon and revegetating the adjacent disturbed area would also improve the wildlife habitat quality, connectivity, and integrity of these areas.

Under Alternative 3 a total of 6.36 acres (2.57 ha) of wildlife habitat would be permanently removed, which could result in long-term, minor, adverse impacts on habitat connectivity in localized areas. However, these adverse effects would be offset by a net increase of 18.9 acres (7.64 ha) of revegetated habitat, with long-term, minor, beneficial impacts. Direct and indirect effects to individual wildlife species could occur but would primarily be restricted to project construction sites. These effects would be perceptible but would be relatively localized and would not be anticipated to affect the overall size or integrity of local wildlife populations. Short-term, minor, adverse impacts would occur during project construction, including direct and indirect effects to individual animals and temporary effects to wildlife habitat. Long-term impacts to wildlife habitat would be minor and beneficial because of habitat revegetation.

Special Status Species

Plants. Potential impacts to special status plant species were largely determined based on increases or decreases of suitable habitat for the species. Any loss of habitat types that could potentially support special status plant species could result in direct effects (loss of populations) or indirect effects (loss of suitable habitat).

Many of the special status plant species identified as having potential to occur in the study area occur in wetland habitats. While restoration and revegetation of wetlands under Alternative 3 would be beneficial and create more habitat, the potential impacts to plant species that occur in these wetlands might be long-term, moderate, and adverse. Impacted wetlands (including temporary and permanent impacts) are quantified in the WSOF. Construction impacts are considered both temporary and permanent because revegetation/restoration under this alternative would be much greater; impacts to special status species would be considered long-term because revegetating or restoring habitat would not guarantee reestablishment of special status species that might be lost.

Some of the special status plant species identified as having potential to occur in the study area occur in upland habitats. Because impacts to common (upland) natural communities under Alternative 3 would be minor, potential impacts to associated special status plant species would also be minor, but long-term and adverse. Common natural communities that could include special status species and that could potentially be temporarily or permanently impacted include 15.83 acres (64.09 ha) of coyote brush scrub, 0.78 acre (0.323 ha) of coyote brush scrub with heavy ice plant infestation, 0.03 acre (0.002 ha) of annual grassland, and 0.44 acre (0.18 ha) of coastal scrub.

The overall effect to special status plant species under Alternative 3 would be long-term, minor and adverse because much of the work would take place along disturbed roadsides that typically provide only marginal habitat. Constructing new trail segments through previously undisturbed habitats would have a much greater potential for impacts to special status plant species.

Wildlife. Short-term impacts for all species would occur during project construction and would include direct and indirect effects to individual animals and habitat. Long-term impacts would include permanent loss or creation of habitat. Impacts related to each species are discussed below. A detailed description of adverse and beneficial effects is provided in the “Biological Assessment” (May & Associates 2007).

Mission Blue Butterfly — Roadway improvements and specific project elements, such as cutting into the bluff opposite the Battery Spencer parking area, constructing roadside pullouts along Conzelman and East Roads, widening East Road shoulders and McCullough Road, constructing new Coastal Trail segments along Conzelman Road, and constructing the new access to the Slacker Hill research sites, could result in short-term, major, adverse impacts to mission blue butterfly habitat.

A summary of affected acreages is provided in Table 4.4. Existing habitat is defined as areas where mission blue butterfly host plants (*Lupinus albifrons* and *L. formosus*) have been mapped. Predicted habitat is defined as areas that support similar characteristics as existing mission blue butterfly (i.e., slope, aspect, soil type, and vegetation associations) and are located within 165 feet (50 m) of mapped existing habitat. Effects would be relatively localized, but are considered major because they could include loss of individual insects. Impacts could constitute a permanent loss of habitat if mission blue butterfly eggs or larvae were present on vegetation that was removed. (For mitigation measures, see "WLD-4: Construction Activity Window," "WLD-5: Mission Blue Butterfly Management Requirements," and "WLD-6: Coastal Trail Restoration.")

TABLE 4-4. SUMMARY OF EFFECTS TO MISSION BLUE BUTTERFLY HABITAT, ALTERNATIVE 3

Project Element	Habitat	Area Affected (acres / hectares)	
		Permanent	Temporary
Roads	Existing	1.4 / 0.57	1.5 / 0.61
	Predicted	13.6 / 5.51	--
Trails	Existing	0.5 / 0.20	0.8 / 0.32
	Predicted	2.3 / 0.93	--
Total	**Existing**	**1.9 / 0.77**	**2.3 / 0.93**
	Predicted	**15.9 / 6.44**	**--**

SOURCE: May & Associates 2007.

Over the long-term, closing and actively restoring the sections of the Slacker Road (trail) (up to 3.1 acres / 1.25 ha), closing and passively restoring a portion of the Coastal Trail (0.1 acre / 0.04 ha), and repairing and revegetating the currently unvegetated erosion gullies along Conzelman Road (1.0 acre / 0.41 ha) would result in long-term, major, beneficial effects to mission blue butterfly habitat.

Tidewater Goby — Removing fill from Rodeo Lagoon could adversely affect the tidewater goby, potentially with major effects because of habitat degradation and potential loss of individuals. (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-7: Tidewater Goby Management Requirements.") After fill removal, impacts would be long-term, major, and beneficial from a potential increase in gobies.

Steelhead — Removing fill from Rodeo Lagoon, constructing new Rodeo Creek crossings, and removing existing crossings could affect steelhead. Major adverse effects could result from habitat degradation and potential loss of individuals during construction activities. (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-8: Steelhead Management Requirements.") A small amount of vegetated riparian floodplain (0.11 acre, <0.01 ha) would be temporarily removed and 0.02 acre (<0.01 ha) might be permanently lost at new trail crossing locations. Long-term impacts would be major and beneficial from lagoon and lake fill removal and the restoration of 0.09 acre (0.036 ha) of willow riparian habitat at the sites of removed crossings.

California Red-legged Frog — The California red-legged frog could be affected by the construction of new Rodeo Creek crossings and the removal of existing crossings. Effects would be localized, but would be considered major and adverse because of potential loss of individual frogs during construction activities. (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-9: Red-legged Frog Management Requirements.") A small amount of habitat (0.11 acre, <0.01 ha) would be temporarily removed, and 0.02 acre (<0.01 ha) would be permanently lost at new crossing locations. Long-term impacts would be major and beneficial from restoring willow riparian habitat where two existing trail crossings will be removed within the Rodeo Creek wetland floodplain (0.09 acres, 0.034 ha) and creating riparian and/or emergent wetland habitat along Rodeo Lake and Lagoon. Creation of emergent wetland habitats (shallowly flooded) in the existing unpaved parking lot at Rodeo Beach would improve the amount and value of non-breeding habitat for the frog. Anecdotal reports by environmental education groups have noted the presence of the red-legged frogs along roads in this area as well as along the lagoon shoreline (Fong, pers. comm.). Potential construction of a free-spanning structure where Mitchell Road crosses the wetland outlet channel to the lagoon would likely improve connectivity between the lagoon shoreline and the restored wetland. It is possible that successful breeding habitat may develop onsite. The presence of standing freshwater for at least a 6 month period in the restored wetland area would enable frog breeding activities.

California Brown Pelican — The California brown pelican could be affected by construction of the fence segment at the southern end of Rodeo Beach

and removing fill in Rodeo Lagoon. Effects could be perceptible, but would be fairly localized and unlikely to result in the loss of individuals. Minor adverse effects include disturbance of individuals roosting or loafing on Rodeo Beach or at the lagoon during construction. (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-10: California Brown Pelican Management Requirements.") Long-term impacts would be minor and beneficial if the fence deterred visitors from walking along the lagoon, thereby reducing disturbance levels.

Western Snowy Plover — The western snowy plover could be affected by the construction of a fence segment at the southern end of Rodeo Beach and removing fill from Rodeo Lagoon. Effects could be perceptible, but would be fairly localized and would be unlikely to result in the loss of individuals, resulting in short-term, minor, adverse impacts. (For mitigation measures see "WLD-4: Construction Activity Window" and "WLD-11: Western Snowy Plover Management Requirements.") Long-term impacts could be minor and beneficial if the fence reduced disturbance levels by concentrating visitors in a smaller area.

Salt Marsh Harvest Mouse — The majority of the effects to salt marsh harvest mouse would result in long-term, negligible, adverse impacts to the species, including harm or harassment, sedimentation and erosion, and toxic materials. However, effects to the species are considered unlikely as habitat is marginal or non-existent throughout the project area. (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-12: Salt Marsh Harvest Mouse Management Requirements.")

Western Pond Turtle — The western pond turtle could be affected by the construction of new Rodeo Creek crossings and the removal of existing crossings. Effects would be localized in a very small area and are not anticipated to include loss of individuals because habitat in that location is marginally suitable for pond turtles. Long-term impacts would be minor and adverse. Short-term habitat disturbance during construction would impact a very a small amount of turtle habitat in the low flow creek channel, and along the edges of Rodeo Lake where fill excavation for wetland compensatory mitigation is proposed. There should be no permanent loss of turtle habitat (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-13: Western Pond Turtle Management Requirements.")

Salt Marsh Common Yellowthroat — Impacts to the salt marsh common yellowthroat could result from fill removal in Rodeo Lagoon, the construction of new Rodeo Creek crossings, and the removal of existing crossings. During construction effects would be perceptible, but localized within relatively small areas. Short-term adverse effects could be moderate as a result of the direct destruction and/or indirect failure of active nests if they were abandoned due to disturbance, but the overall size or integrity of the local population would not be permanently affected. A small amount of habitat (0.11 acre, <0.01 ha) at the new crossing locations would be temporarily removed, and 0.02 acre (<0.01 ha) would be permanently lost. (For mitigation measures, see "WLD-4: Construction Activity Window.") Long-term impacts would be moderate and beneficial as a result of lagoon and/or lake fill removal and the restoration of willow riparian habitat within the Rodeo Creek floodplain with the removal of two trails.

Allen's Hummingbird — Allen's hummingbird. could be affected by construction of the new Rodeo Creek crossings and the removal of existing crossings. Short-term adverse effects could include direct destruction and/or indirect failure of active nests if they were abandoned due to disturbance. The nesting season more closely correlates with the raptor nesting season (January through July) than the landbird nesting season (March through July). While the effects would be perceptible, they would be localized within a relatively small area. Effects would be considered moderate because the overall size or integrity of a local population would not be permanently affected. A small amount of habitat (0.11 acre, <0.01 ha) at the new crossing locations would be temporarily removed, and 0.02 acre (<0.01 ha) would be permanently lost. (For mitigation measures, see "WLD-4: Construction Activity Window.") Long-term impacts would be moderate and beneficial as a result of lagoon and lake fill removal, and the restoration of riparian habitat with the removal of two riparian trail crossings.

Bats — Some bats could be affected by the removal of trees that might provide roosting habitat, primarily at the roads and trails maintenance yard.

However, none of the trees to be removed are believed to support maternity colonies. Relatively small numbers of individuals are anticipated to roost in trees due to the presence of buildings and other structures in the area that provide higher quality roosting habitat. Short-term impacts would be considered moderate because they could result in the loss of individuals, but the overall size or integrity of a local population would not be permanently affected. (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-14: Tree Removal Habitat Assessment.") Long-term impacts would be moderate and adverse impacts because of the permanent loss of potential roosting habitat. There would be no beneficial effects.

Cumulative Impacts

Past actions have resulted in the spread of invasive weed and nonnative plant species, as well as in ongoing erosion, with long-term, minor, adverse effects to biological resources. The implementation of current projects (the Marine Mammal Center renovations and the *Fort Baker Plan*) and future projects (improvements to Alexander Avenue and U.S. 101) would include project-specific mitigation measures to address biological resource impacts. Therefore, these projects would not be likely to contribute to cumulative impacts. Removing fill to "daylight" the riparian corridor as called for under the Headlands Institute Plan would be a beneficial impact to the habitat in that area. Improving habitat for mission blue butterfly in the area of Hawk Hill as noted under the CLR would also be a beneficial impact. Policies described in the *Marin Countywide Plan* support enhancing native habitat and biodiversity; protecting sensitive biological resources; and conserving wetlands, riparian areas, and baylands (Marin County 2007). All of these actions would combine with Alternative 3 and result in a long-term, minor, beneficial impact.

Some of the mitigation measures for planned projects (Fort Baker open space, natural habitats, and trails), as well as other plans such as the *Fire Management Plan*, include restoration or enhancement of mission blue butterfly habitat, which would result in long-term, minor, beneficial impacts for this special status species.

These past, current, and future actions, combined with the overall long-term, minor to moderate, beneficial impacts of Alternative 3, would result in a minor to moderate, beneficial cumulative impact on biological resources.

Mitigation Measures

Biological Habitats and Vegetation

No mitigation would be needed for impacts to common natural communities or tree removal because these resources are common both locally and regionally, they are not protected by state or federal law, and impacts are expected to be minor. Furthermore, restoration and revegetation efforts under Alternative 3 would likely more than offset any temporary or permanent loss of these community types. Although adverse effects potentially resulting from the introduction and spread of invasive weeds would be minor, federal agencies are mandated by Executive Order 13112 ("Invasive Species") and other federal laws to prevent the spread of invasive species, and no additional mitigation would be needed.

Wetlands

NPS will submit a request to San Francisco District Army Corps of Engineers for confirmation that the project is covered under Section 404 Nationwide permits 14 and 42. Nationwide permits (NWPs) are general permits for categories of activities that both individually and cumulatively have minimal adverse impacts to the aquatic environment (72 FR 11093). NWP 14 covers fill discharges associated with linear transportation projects, especially culverts and bridges. NWP 42 applies to development associated with recreational facilities for the non-linear components of the project, such as the parking areas. Neither of these NWPs may be applied if the total permanent loss of jurisdictional waters, including wetlands, exceeds 0.50 acre. The total area of jurisdictional waters (including wetlands) that would be permanently lost is about 0.36, while the two compensatory wetland restoration projects have the potential to restore 0.60 acres, in addition to the rehabilitated wetlands from the decommissioning of certain trails and crossings of about 0.118 acre would be restored. Implementation of the proposed compensatory mitigation would result in a net gain in area and function of wetlands on the Marin Headlands.

To confirm NPS mapping of waters of the U.S. within the project areas, the National Park Service submitted a set of maps along with a report describing each site along with field data sheets to the Corps on November 24, 2006. Staff at the Corps of Engineers visited the site to verify the wetland boundaries in February 2007, and in August 2007. Since then, the mapped wetlands have been revised slightly, along with a few project modifications. The National Park Service will resubmit the revised jurisdictional maps along with the Pre-Construction Notification to the Corps in the near future, pending the completion of more refined project designs for the Smith Road parking lot and the footbridges that cross the riparian floodplain of Rodeo Creek.

The National Park Service will apply to the San Francisco Bay Regional Water Quality Control Board for a water quality certification waiver and waste discharge authorization, concurrently with our Corps NWP submittal request.

Wetland impacts from the implementation of the Marin Headlands Fort Baker Transportation Infrastructure and Management Plan, in addition to wetland impacts associated with other proposed projects in the area, would all be sufficiently offset, project by project, such that there should be no net loss of wetland acreage, functions or values. Wetland resources are protected by state and federal laws and regulations. To ensure this outcome for this project, the following mitigations are recommended to minimize adverse effects

WET-1: Implement Mitigation Plan. A compensatory mitigation plan has been prepared by two wetland researchers from Colorado State University at the request of the National Park Service to offset impacts to wetlands from the implementation of Alternative 3. The proposal is described in Cooper and Wolf, 2008 (Compensatory Wetland Mitigation Plan, Marin Headlands, Fort Baker Transportation Infrastructure Improvement Plan, Golden Gate National Recreation Area). The mitigation project consists of two parts: the removal of fill along the north margin of Rodeo Lagoon by T-1111 (reference Site 15, Figure 3, WSOF) in which 0.28 acre of estuarine emergent wetlands would be restored, and the removal of fill along the south margin of Rodeo Lake north of the Marin Headlands Visitor Center, in which 0.32 acre of palustrine emergent and willow scrub wetland would be recovered.

Temporary impacts to wetland habitat, from culvert and ditch upgrade and maintenance work, and from culvert construction and removal, would be short-term, and native habitat would be encouraged to reestablish after completion of the work.

This mitigation plan would be submitted to the Army Corps of Engineers in support of the Section 404 permitting process.

WET-2: Implement WSOF BMPs at Smith Road.

- The parking area would be configured so that the lowest portion of the site collects and retains stormwater from the parking lot in a grassy bioswale.
- Only drive isles would be paved, the parking areas would be on a pervious substrate.
- Stormwater from the surface of the parking lot would not be able to discharge directly into the Rodeo Creek wetland complex north of the site.
- All features of the site that are designed to capture potential water pollutants and prevent their entry into the Rodeo Creek corridor would be maintained regularly to ensure proper function over the long-term.

WET-3: Culvert Placement. New culverts would be carefully nested in the road base at the same elevation as the water course, carefully aligned to minimize or avoid new erosion of soil substrate on either side of culvert. If needed, the site would be dewatered to minimize adverse impacts to water quality. Upon completion, the site would be restored to preproject conditions.

WET-4: Smith Road Parking Lot. The parking lot would be designed to the extent practicable to minimize impacts to the existing wetland area and will incorporate bioswales to filter runoff.

Wildlife and Aquatic Life

The following measures to avoid and minimize potential effects to nesting birds and amphibians would be implemented.

WLD-1: Conduct Preconstruction Bird Nesting Surveys. Cutting, mowing, or removing shrubs and grasses taller than 8″ would not be conducted during the bird-nesting season, from March 1 through July 31, unless a qualified biologist conducted a pre-project survey for nesting birds and determined that no birds are nesting within the study area. To the greatest extent possible, activities would be planned and conducted outside the bird-nesting season. In intensively managed landscapes, vegetation would be maintained at a height of less than 8″ throughout the nesting season, March 1 through July 31, to discourage the nesting of ground-dwelling bird species.

To protect nesting raptors, trees would not be removed between January 1 and July 31 unless qualified personnel conducted a pre-project survey and determined that no birds are nesting within the study area. If nesting raptors were detected, a qualified biologist would delineate a suitable buffer. Note that this would also benefit any nesting landbirds, which typically nest from March 1—July 31.

WLD-2: Amphibian Management Requirements. Trench drains, directional barriers, or culverts would be installed under Bunker Road to connect Rodeo Lagoon and Rodeo Lake and provide safe migration corridors, minimizing effects to amphibians from vehicle strikes. Crews would avoid conducting ditch work when water is present to the extent possible.

Special Status Plant Species

Although adverse effects to special status plant species would be minor, they could include take of species protected by federal and state laws and regulations. Therefore, it is recommended that the following mitigations be implemented to minimize the potential for these adverse effects.

WLD-3: Special Status Plant Requirements. Prior to any ground-disturbing or vegetation clearing activities, a qualified botanist would conduct surveys for special status plant species (see Appendix D). However, no further mitigation would be required for the Sonoma alopecurus, marsh sandwort, soft bird's beak, yellow larkspur, showy Indian clover, and white-rayed pentachaeta because focused surveys have already determined that these species are not present in the study area (URS Corporation 2005).

A botanist would conduct surveys for special status plant species in all suitable habitats that could be disturbed at the appropriate time of year when the target species would be in flower and therefore clearly identifiable. Surveys would be conducted following U.S. Fish and Wildlife Service, California Department of Fish and Game, or other approved protocols for surveying for special status plant species. If no special status plants were found during focused surveys, the botanist would document the findings and no further mitigation would be required. If special status plants were found, the following measures would be implemented:

- Information on the special status plant populations would be recorded in the field on data forms from the California Natural Diversity Database and submitted to the National Park Service for review. On approval by the National Park Service, these forms would be submitted to the California Natural Diversity Database.
- If the populations could be avoided during project implementation, they would be clearly marked in the field by a qualified botanist.
- If special status plant populations could not be avoided, consultations with the California Department of Fish and Game and/or the U.S. Fish and Wildlife Service might be required, depending on the listing status of the species present. These consultations would determine appropriate mitigation measures for any populations affected by project implementation. Appropriate measures could include the creation of offsite populations through seed collection or transplanting, preservation, and enhancement of existing populations, or restoration or creation of suitable habitat in sufficient quantities to compensate for the impact.
- The project applicant would implement all mitigation measures determined necessary during this consultation.

Special Status Wildlife Species

WLD-4: Construction Activity Window. Ground-disturbing aspects of individual projects or contracts affecting more than 0.3 acre (0.12 ha) would be limited to working primarily between

April 1 and October 31 (the typical dry season), but could occur all year weather permitting.

WLD-5: Mission Blue Butterfly Management Requirements. The following avoidance, minimization, and compensation measures would be implemented to minimize potential effects to mission blue butterfly habitat. Using a habitat compensation ratio of 5:1 for permanent effects and 1.1:1 for temporary effects as discussed with the U.S. Fish and Wildlife Service during consultation, invasive nonnative plant control and habitat restoration actions would be undertaken on 91.5 acres to provide compensation for habitat impacts or losses resulting from the proposed action (May & Associates 2007).

For project actions that would result in the loss of existing or predicted mission blue butterfly habitat, host plants and associated litter could be salvaged and translocated to adjacent suitable habitat pending research results and feasibility. Such actions are intended to salvage any mission blue butterfly larvae and/or eggs that might be present on the host plants or in the litter below the host plants within the construction area or permanent buffer prior to habitat removal and project activities.

Measures to control dust, erosion, and sedimentation would be implemented as described under "Best Management Practices" (sec. 2.3.5).

The National Park Service would enforce measures to avoid accidental habitat degradation during construction phases, including establishment of buffer areas, flagging of *Lupinus albifrons* and other host plants in the vicinity of construction activity, and installation of temporary fencing (see sec. 2.3.5).

Following construction, post-and-cable fencing with signs attached would be installed along the trail where needed to provide a barrier and restrict users to the trail tread and out of butterfly habitat. Signs would be installed at each end of the sections containing habitat to inform users that leaving the trail tread could result in a violation of the Endangered Species Act. At the trailheads signs would be posted to inform users of the presence of habitat and the need to stay on the trail at all times. Trail use on narrow, single-tread trails in mission blue butterfly habitat would be limited to hiking only (no bicycles, dogs, or horses), unless barrier fencing was installed (i.e., in high use areas such as around parking areas) to prevent access into adjacent habitat. Ranger patrols would be used along the trails for enforcement purposes.

Under guidance from a biological monitor, targeted nonnative plants that might become established in and adjacent to mission blue habitat following the implementation of project actions would be removed before setting seed for a period of five years, consistent with the park's best management practices so that these nonnative species would not become established in restoration areas.

Restoration activities, including removal of nonnative vegetation, would not be conducted during the mission blue butterfly flight period within 100-feet of existing patches of *Lupinus albifrons* unless conducted by hand and with small (less than 10 people) trained crews under the guidance of a biological monitor.

Seed collection and outplanting activities could occur during the mission blue flight period, provided that these activities were conducted by small (less than 10 people) trained crews of staff and volunteers under the guidance of a biological monitor.

Restoration activities performed outside the mission blue butterfly flight period would be performed under the following guidelines:

- All host and nectar plant patches within 100 feet of invasive nonnative plant populations would be flagged, and where deemed appropriate by NPS natural resources staff, demarcated with temporary protective flagging or fencing during invasive plant and tree removal activities.
- Access routes to and from invasive plant infestations would be selected and flagged by biological monitors during invasive plant control activities to minimize proximity to host plant patches.
- When invasive plant control and tree removal activities occurred within 100 feet of host plant patches, individual plant locations would be identified and demarcated by the biological monitor with pin flags. Prior to invasive plant control activities, the biological monitor would review all removal actions with contractors, staff, and volunteers to ensure that no vegetation material would be placed on host plants and that no inadvertent trampling would occur.

- All herbicide use would be administered through the park's IPM coordinator, and only licensed personnel would be allowed to apply pesticides, under the oversight of NPS staff or the biological monitor. All herbicide use for project actions would be reported monthly to the IPM coordinator. Any herbicide application to invasive non-native plant species within 100 feet of host plant habitat would be applied using either a low-volume, high-pressure nozzle or through wick application to reduce herbicide use and drift. Additional protective measures such as protective shielding or other practices would also be employed as directed by the IPM coordinator to reduce any potential for drift.
- Nonnative tree material located on steep remote slopes would remain onsite following removal and maceration to reduce inadvertent impacts to butterfly habitat, erosion, and non-designated trail establishment (e.g., many trees are located 600–1,000 feet from roads and trails). Macerated material (macerating would be done with chainsaws and other hand equipment) would be staged such that it would be located within and under higher stature coastal scrub habitat to the greatest degree feasible. All ingress and egress routes to these staging locations would be clearly demarcated by a biological monitor and would be located at least 100 feet from host plant habitat to the greatest degree feasible.
- Maintenance and repair of the trails within 100-feet of predicted or existing habitat would not be undertaken during the flight period (from February 15 through July 4) to ensure that mission blue butterfly adults would not be adversely affected.
- During the flight period of the butterfly (February 15 through July 4) all vehicles would observe a maximum speed limit of 25 mph on all construction roads and roads supporting adjacent or nearby predicted and existing mission blue butterfly habitat (Conzelman Road, McCullough Road, and East Road). The construction contractor(s) would be required to enforce this limit.
- Grading activities along roadsides would be designed to deter visitors from accessing nearby mission blue butterfly habitat areas.
- During trail construction and restoration, and during trailside maintenance activities, only hand tools would be used, which could include hand-held power tools such as chainsaws and weed-eaters.
- Restoration areas would be monitored for five years following implementation and once every five years thereafter. All monitoring actions would be performed by a trained biologist familiar with host and nectar plant identification and locations to reduce any threat of inadvertent trampling during monitoring activities. Written reports on the findings of such monitoring would be sent to the U.S. Fish and Wildlife Service by the end of each monitoring year. Corrective actions would be taken if the invasive plant control and restoration performance measures were not met, as defined in the approved restoration action / site management plan.
- The National Park Service would assess visitor-associated impacts to mission blue butterfly habitat in select areas near new and removed trail segments and habitat restoration areas. Written reports on the findings would be included in the annual report sent to the U.S. Fish and Wildlife Service.

A total of 91.5 acres of invasive nonnative plant control and habitat restoration actions would be provided as compensation for habitat impacts or losses resulting from the proposed action. The following provides a more detailed summary as to what the compensation actions would include and where they would be located:

- Erosion gullies (which are mostly unvegetated) along Conzelman Road would be repaired by placing fill into the gullies using mechanized equipment and revegetating the areas to grassland and/or coastal scrub habitat, resulting in an increase of 1.0 acre of mission blue butterfly habitat.
- Nonnative trees would be removed in or adjacent to existing and predicted mission blue habitat along Conzelman Road (2 eucalyptus, 21 acacia, 4 Monterey cypress), McCullough Road (1 Monterey cypress, 7 acacia), and East Road (21 eucalyptus).

Based on calculated effects to the federally endangered mission blue butterfly habitat and proposed compensation ratios as stated in the USFWS Biological Opinion, 91.5 acres of habitat should be restored to compensate for project effects to mission blue butterfly habitat.

This would include approximately 4.2 acres of grassland and coastal scrub restoration, accomplished as part of the MH/FB TMP Proposed Action, including:

- Closure and active restoration of the majority of the Slacker Road (trail) (up to 3.1 acres);
- Closure and passive restoration of a portion of the Coastal Trail (0.1 acre); and
- Repair and revegetation of the currently unvegetated erosion gullies along Conzelman Road (1.0 acre).

Approximately 45.4 acres of grassland, coastal scrub and coastal bluff habitat restoration has been accomplished through the implementation of a separate project – Coastal Corridor Enhancement Project implemented within the same Project Action Area. Enhancement actions included:

- 59.4 acres of perennial herbaceous non-native plant treatment and control;
- 5.0 acres of pampas and Harding grass treatment and control;
- 0.3 acres of invasive non-native shrub species treatment and control; and
- Approximately 1.8 acres of invasive non-native tree removal.

The remaining compensation projects were identified by the park's natural resource staff as habitat compensation areas for effects from the Proposed Action, as they would provide the most promising and beneficial restoration opportunities for existing and predicted mission blue butterfly habitats within the proposed action area. These projects total an additional 41.7 acres of mission blue butterfly habitat compensation:

- Projects 23 and 31 (removal of dense Pampas grass south of the Coastal Trail and east of Hawk Hill, totaling 7.2 acres of mission blue butterfly habitat restoration)[3];
- Project 27 (removal of coniferous trees and other herbaceous non-native plants at Battery Construction, totaling 7.4 acres of mission blue butterfly habitat restoration)[4];
- Project 36 (removal of eucalyptus and other weeds near Fort Barry, totaling 2.2 acres of mission blue butterfly habitat restoration);
- Project 37 (removal of coniferous trees near Fort Barry, totaling 2.0 acres of mission blue butterfly habitat restoration);
- Project 26 (removal of eucalyptus trees and other weeds in the Kirby Cove area, totaling 22.9 acres of mission blue butterfly habitat restoration)[5].

However, some or all of these areas could be replaced by alternate sites before project implementation if other equally or more

3. The portion of Projects 23 and 31 that are considered as habitat compensation for effects under the MH/FB TMP only consist of the removal of Pampas grass within predicted habitat (based on the GIS predictive model) polygon; removal of remaining invasive, non-native species (including additional Pampas grass) in Projects 23 and 31 are covered under the CCEP Proposed Action. Restoration of this portion of Projects 23 and 31 involving Pampas grass removal and control would be required to be completed either before or concurretly with the restoration and removal of other weed species as planned under the CCEP Proposed Action (before Septermber 2007) so as to prevent the potential for the re-introduction of Pampas grass into these project areas.

4. Project 27 is mapped as occupying 36.7 acres under the initial CCEP study; however, only 7.4 acres will be restored under the MH/FB TMP as mission blue butterfly habitat compensation. The remaining 29.3 acres will be enhanced under the CCEP proejct. Restoration of this 7.4-acre portion of Project 27 would be required to be completed either before or concurretly with the restoration and removal of other weed species as planned under the CCEP Proposed Action (before Septermber 2007) so as to prevent the potential for the re-introduction of weeds into these project areas.

5. If restoration of all of the 22.9 acres proposed within Project 26 is not feasible (either due to physical or historic constraints), Project 28 (mission blue habitat restoration from thoroughwort removal, near the eastern end of Conzelman Road) may be incorporated as an additional 5.4 acres of habitat compensation. Project 26A under the CCEP consists of an area separate from the Project 26 habitat compenation area under the MH/FB TMP; Project 26A, under the CCEP, only consists of thoroughwort removal.

suitable areas (resulting in a total of at least 41.7 acres) were identified by the natural resource staff for mission blue butterfly habitat restoration within the proposed action area. These alternative sites would be presented to the U.S. Fish and Wildlife Service for review and concurrence prior to implementation as a part of a pre-season report. Restoration activities within these areas could include (but would not be limited to) some or all of the following actions:

- removing and controlling nonnative tree species (Monterey cypress, Monterey pine, eucalyptus, acacia, mirror bush, and other targeted species) by mechanical, helicopter removal, or equally sensitive methods and possibly involving herbicide "stump-painting"
- removing and controlling other nonnative weed species (thoroughwort, pampas grass, French broom), possibly by using approved herbicides under park guidance and in accordance with NPS integrated pest management policies
- rerouting or closing nondesignated "social" trails
- removing nonnatural sources of erosion
- undertaking other protective measures to minimize habitat disturbance
- planting native plant communities (coastal scrub, grassland)

All areas within mission blue butterfly habitat that are temporarily disturbed by the proposed action would be restored following project completion to prevent the colonization of invasive weed species.

Prior to all removal of non-native trees in areas supporting public programs and in areas where there is high visitation, the park would prepare a public engagement strategy to identify and notify all internal and external stakeholders (including park partners, visitors, user groups, etc.). Notification would include any of the following depending upon the relationship of the stakeholder to the site: sending project information, scope and timelines; holding meetings and site walks; and giving presentations. Additionally, materials would be developed and distributed to interested stakeholders.

Project signage would be erected at least two months prior to the project start date and an on-site Project Information Coordinator would likely be stationed at the project location at least two to four weeks prior to the project start date to notify visitors and park partners. Staff would also remain on site for the duration of the project and a phone number would be established to field/address any public inquiries and concerns.

WLD-6: Coastal Trail Restoration for Mission Blue Butterfly Habitat Enhancement. The majority of the Coastal Trail that currently follows the old Slacker Road (trail) would be removed, and the road would be regraded back to natural topography in conjunction with revegetating disturbed areas. This closure and restoration would result in an increase of up to 3.1 acres (1.25 ha) of predicted mission blue butterfly habitat as grassland and/or coastal scrub habitat. Restoration would consist of regrading and revegetating the closed portions of the Slacker Road (trail), and possibly importing fill material, to create a natural topography contiguous with the surrounding natural landscape, and planting native plant species, including mission blue butterfly habitat-associated plants.

Several small segments of the Coastal Trail south of and uphill from the rifle range would be closed by fencing at both ends of the trail, resulting in restoration of 0.1 acre (0.04 ha) of predicted mission blue butterfly habitat as coastal scrub through natural revegetation and community successional processes.

WLD-7: Tidewater Goby Management Requirements. Erosion and sediment control measures would be implemented along Mitchell Road as described under "Best Management Practices" (sec. 2.3.5), including biofilters for Mitchell Road parking areas proposed under the project description.

Silt fencing would be installed during construction to exclude individual gobies from entering the work area. Before any capture and relocation of tidewater gobies from the lagoon excavation site, a fish excluder screen would be put in place to isolate the northern fill removal site from the main body of the lagoon. This exclusion device would prevent fish from entering the work area from elsewhere in the lagoon. Prior to construction activities, a qualified or permitted biologist would use a beach seine (0.125-inch mesh diameter) to sample the enclosed work area within the lagoon for fish. If individual gobies were located within

this area, they would be collected and relocated to nearby suitable habitat within Rodeo Lagoon.

For this mitigation, a qualified biologist means any person who has completed at least four years of university training in wildlife or fisheries biology or a related science, has demonstrated experience with handling fish, and has demonstrated field experience in the identification and life history of the tidewater goby. Resumes of all qualified biologists proposed to capture or handle tidewater gobies would be submitted to the U.S. Fish and Wildlife Service no later than 30 days prior to the start of construction for approval. A permitted biologist is one who is authorized under an existing permit for the tidewater goby in accordance with the Endangered Species Act, section 10(a)(1)(A).

WLD-8: Central California Coast Steelhead Management Requirements. To minimize impacts to steelhead, free-spanning structures would be used to negate the need to perform in-channel construction activities in Rodeo Creek. There would be no need to enter the channel, dewater the stream, or capture and relocate steelhead. Compensation actions to remove fill would avoid having to place equipment in the water, which would also avoid impacts to steelhead. Any construction activities that may affect steelhead (removing fill from Rodeo Lagoon, constructing new Rodeo Creek crossings, and removing existing crossings), would be performed only from June 15 to October 15.

Mulch or erosion control fabric would be placed on any bare riparian ground resulting from the proposed project.

A 100-foot (33 m) buffer would be maintained around riparian areas. Staging and vehicle use would occur outside the buffer area, and any activities within the buffer area would occur under supervision of the biological monitor.

Erosion and sediment control measures would be undertaken along Mitchell and Bunker roads, as described under “Best Management Practices” (sec. 2.3.5).

Rehabilitation in riparian areas would be accomplished by hand treatment techniques, using erosion control materials if treatment areas were bare prior to rains, revegetating where needed, and where possible, returning native woody material (large woody debris) to streambanks.

Roadside maintenance work on Bunker and Mitchell roads and trail maintenance work along the Rodeo Valley trail in the vicinity of Rodeo Creek, Lake, or Lagoon would occur in the dry season as practicable.

Two existing bridges across Rodeo Creek are proposed for removal and the restoration of riparian habitat, resulting in an increase of 0.09 acre (0.036 ha) of willow scrub habitat. Permanent impacts from two new bridges over Rodeo Creek would affect 0.02 acre (<0.01 ha) of riparian habitat.

Following removal of fill from the area south of Rodeo Lake along Bunker Road, 0.32 acre (0.13 ha) of willow scrub and emergent wetland would be restored along the lake shore.

Following removal of fill from the area at the northeast corner of Rodeo Lagoon along Bunker Road, this area would be restored to willow scrub habitat, resulting in an increase of 0.28 acre (0.11 ha) of riparian habitat.

All areas along Rodeo Lake and Rodeo Creek temporarily disturbed by the proposed action would be restored to the pre-project habitat type (or better) following project completion.

Following removal of fill from the area south of Rodeo Lake (along Bunker Road), this area would be restored to the former extent of the lake/lagoon as willow scrub and/or emergent wetland habitat along the existing lake shore, resulting in an increase of 0.38 acre of riparian or emergent wetland habitat. (See the “Biological Assessment” for this project for more detail [May & Associates 2007].)

Following removal of fill from the area at the northeast corner of Rodeo Lagoon (along Bunker Road), this area would be restored to willow scrub habitat, resulting in an increase of 0.59 acre (0.24 ha) of riparian habitat. (See the “Biological Assessment” for this project for more detail [May & Associates 2007].)

All areas along Rodeo Lake and Rodeo Creek temporarily disturbed by the proposed action would be restored to the pre-project habitat type (or better) following project completion.

WLD-9: Red-legged Frog Management Requirements. Project activities in the vicinity of Rodeo Creek and Lake would occur during the non-breeding season for red-legged frogs (May through October).

Roadside maintenance work on the shoulders of Bunker and Mitchell roads, as well as trail maintenance work along the Rodeo Valley trail in the vicinity of Rodeo Creek, Lake, or Lagoon, would only occur in the non-breeding season (except as required for emergency situations such as clogged culverts causing flooding).

Before and during construction activities along Rodeo Lake, Lagoon, and Creek, a biological monitor would search a 50-foot radius around all work localities for the presence of red-legged frogs. Vegetation that would be disturbed within the project area would be removed during these surveys to aid in observations of the species. To prevent direct injury to California red-legged frogs, vegetation removal within suitable frog habitat would be accomplished by a progressive cutting of vegetation from the overstory level to ground level to allow frogs to move out of the work area. If any frogs were observed, activities would cease until the animal was removed and relocated by a qualified or permitted biologist. Captured frogs would be relocated to suitable habitat outside the construction zone, either upstream or downstream.

The biological effectiveness of structural measures, including underpasses and fencing, to reduce red-legged frog injury and mortality would be examined, and such measures would be implemented if feasible and with concurrence from the U.S. Fish and Wildlife Service.

For this mitigation a qualified biologist means any person who has completed at least four years of university training in wildlife biology or a related science, has demonstrated experience handling amphibians, and has demonstrated field experience in the identification and life history of the red-legged frog. Resumes of all biologists proposed to capture or handle red-legged frogs would be submitted to the U.S. Fish and Wildlife Service for approval no later than 30 days before the start of construction. A permitted biologist is one who is authorized under an existing permit for the red-legged frog in accordance with the Endangered Species Act, section 10(a)(1)(A).

Nets or bare hands would be used to capture red-legged frogs. Biologists would not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they were capturing and relocating red-legged frogs. To avoid transferring disease or pathogens between aquatic habitats during the course of surveys or handling of red-legged frogs, biologists would follow the Declining Amphibian Populations Task Force's "Code of Practice." Biologists would limit the duration of handling and captivity of red-legged frogs. While in captivity, individuals of these species would be kept in a cool, moist, aerated environment, such as a bucket containing a damp sponge. Containers used for holding or transporting adults of these species would not contain any standing water.

Silt fencing would be installed between Rodeo Lake and the work area during construction and restoration activities to exclude red-legged frog individuals from the work area and to protect existing lakeside riparian and emergent wetland habitat; if individuals were located within the work area or between the silt fencing and work area, a qualified and permitted biologist would collect and relocate any individuals to nearby suitable habitat.

To minimize downslope erosion and sedimentation in the vicinity of Rodeo Creek, Lake, or Lagoon, erosion control devices would be maintained during ground-disturbing activities and until all disturbed soils had been stabilized. Tightly woven fiber netting or non-binded materials (e.g., rice straw) would be used for erosion control or other purposes at the project site to ensure that no red-legged frog was trapped. This limitation would be communicated to the contractor through special provisions included in the bid solicitation package. No plastic mono-filament matting would be used for erosion control.

Erosion and sediment control measures would be used along Bunker Road, as specified under "Best Management Practices" (sec. 2.3.5).

Roadside maintenance work on Bunker and Mitchell roads and trail maintenance work along the Rodeo Valley trail in the vicinity of Rodeo Creek, Lake, or Lagoon would only occur in the dry season (except as required for emergency situations, such as clogged culverts causing flooding).

Posted speed limits would be enforced along Bunker Road in the vicinity of Rodeo Lake and Lagoon to minimize impacts from cars striking frogs that may cross the road between habitats, especially at night and during rain events.

An educational campaign would be undertaken for people working at Fort Cronkhite (NPS employees and partners) and residents to drive slower on rainy nights so as to avoid red-legged frogs and other amphibians.

Two existing bridges across Rodeo Creek are proposed for removal and the restoration of riparian habitat, resulting in an increase of 0.09 acre (0.036 ha) of willow scrub habitat. Permanent impacts would result from the abutment of each new bridges over Rodeo Creek and would not exceed 0.02 acre (<0.01 ha) of riparian habitat.

Following removal of fill from the area south of Rodeo Lake along Bunker Road, 0.32 acre (0.13 ha) of willow scrub and emergent wetland would be restored along the lake shore.

Following removal of fill from the area at the northeast corner of Rodeo Lagoon along Bunker Road, this area would be restored to willow scrub habitat, resulting in an increase of 0.28 acre (0.11 ha) of riparian habitat

All areas along Rodeo Lake and Rodeo Creek that were temporarily disturbed by construction would be restored to the pre-project habitat type (or better) following project completion.

Following removal of fill from the area south of Rodeo Lake (along Bunker Road), this area would be restored to the former extent of the lake/lagoon as willow scrub and/or emergent wetland habitat along the existing lakeshore, resulting in an increase of 0.38 acre of riparian or emergent wetland habitat. (See the "Biological Assessment" for this project for more detail [May & Associates 2007].)

Following removal of fill from the northeast corner of Rodeo Lagoon (along Bunker Road), this area would be restored to willow scrub habitat, resulting in an increase of 0.59 acre (0.24 ha) of riparian habitat. (See the "Biological Assessment" for this project for more detail [May & Associates 2007].)

Smith Road would be shifted away from its current alignment adjacent to Rodeo Creek; the decommissioned portion of Smith Road would be restored to willow scrub along the creek, resulting in an increase of 1.35 acres (0.55 ha) of riparian habitat. (See the "Biological Assessment" for this project for more detail [May & Associates 2007].)

All areas along Rodeo Lake and Rodeo Creek that were temporarily disturbed by construction would be restored to the pre-project habitat type (or better) following project completion.

WLD-10: California Brown Pelican Management Requirements. Work on the Rodeo Beach trail and associated fencing from the southwestern corner of Rodeo Lagoon to the northwest corner where the footbridge crosses the mouth of the lagoon (near the brown pelican roosting site at the western edge of the lagoon) would be conducted between December and April, when pelicans tend to be sporadically present and in low numbers.

Protective fencing and educational signs would be installed along the new Rodeo Beach trail segment on the southwest side of Rodeo Lagoon, and along the western edge of the lagoon, to discourage visitor access to roosting sites. Interpretive materials with information on pelicans and other birds would be provided to the public.

WLD-11: Western Snowy Plover Management Requirements. To avoid any potential impacts to snowy plovers, pre-construction surveys would be done during the non-breeding season (July through April) when plovers may be present before any construction activities were undertaken on Rodeo Beach, including the installation of post-and-cable fence along the beach side of Rodeo Lagoon to keep people and pets from the lagoon. If plovers were present, no construction actions would be taken in those areas.

WLD-12: Salt Marsh Harvest Mouse Management Requirements. Silt fencing would be installed along the southernmost edge of construction and staging areas along Mitchell Road (along the northern edge of Rodeo Lagoon) during project activities.

Only hand-clearing of vegetation would be permitted during roadside maintenance activities along Mitchell Road. Such vegetation clearing would occur prior to any maintenance grading and/or earthmoving activities.

WLD-13: Western Pond Turtle Management Requirements. A qualified biologist would conduct pre-construction surveys to determine if western pond turtles were present in the construction area before starting construction. If any pond turtles were found, the biologist would move them to the nearest area of suitable aquatic habitat that would not be affected by project activities.

WLD-14: Tree Removal Bat Habitat Assessment. An assessment of trees to be removed should include the potential to provide bat roosting habitat. If it was determined that such trees provide roosting habitat, measures would be developed to avoid and/or minimize adverse effects to roosting bats to the greatest extent feasible. Such measures might include allowing activities only at certain times or in certain seasons.

Conclusion

Construction-related impacts to wetlands would be short-term, minor, and adverse. Restoration and enhancement of wetlands would offset losses from these construction activities. After implementation of the mitigation measures, short-term construction-related impacts on other biological resources under Alternative 3 would be negligible to minor and adverse, and the overall composition of vegetation or wildlife communities in the study area would not be altered. For certain special status species (plants, salt marsh harvest mouse, western pond turtle, and bats), impacts would be long-term, negligible to moderate, and adverse. Long-term impacts to the California brown pelican and western snowy plover would be long-term, minor, and beneficial. Long-term impacts to all other special status species would be moderate to major and beneficial. Overall long-term cumulative impacts on biological resources would be minor to moderate and beneficial. No impacts related to biological resources would impair any park resources or values.

IMPACTS OF ALTERNATIVE 2

Impact Analysis

Biological Habitats and Vegetation

Common Natural Communities. Construction activities associated with road widening and asphalt/concrete removal and replacement (including grading, excavation, and backfill compaction) would adversely affect a total of 6.8 acres (2.7 ha) of the following communities over the short term:

- coyote brush scrub — 3.5 acres (1.4 ha)
- coyote brush scrub with heavy ice plant infestation — 0.09 acre (<0.01 ha)
- mowed grass field — 3.14 acres (1.27 ha)
- annual grassland — 0.03 acre (0.01 ha)

Long-term impacts would affect a total of 1.7 acres (0.7 ha) include the following communities:

- coyote brush scrub — 1.18 acres (0.48 ha)
- mowed grass field — 0.2 acre (0.09 ha)
- coyote brush scrub with heavy ice plant infestation — 0.3 acre (0.01 ha)

Adverse impacts to the quality, connectivity, and integrity of natural communities would be limited to expansion of already disturbed areas, resulting in a small overall increase of disturbed habitat.

In the long term Alternative 2 could have more beneficial effects to the quality, connectivity, and integrity of natural communities than adverse effects, depending on the design and success of revegetation efforts. A larger acreage of natural communities would be replaced than would be lost under Alternative 2, particularly with revegetation efforts at the roads and trails maintenance yard and the Rodeo Beach parking area. There could also be beneficial impacts at the Bird Island overlook if that parking area was revegetated. In all a total of 4.8 acres (1.9 ha) of the following communities would be revegetated:

- coyote brush scrub — 3.11 acres (1.27 ha)
- mowed grass field — 1.09 acres (0.44 ha)
- coastal scrub — 0.57 acre (0.02 ha)

Components of this alternative that would direct and focus visitor use in particular areas could reduce disturbance to vegetation. Closing some existing facilities, such as social trails and the Bird Island Overlook parking area, would also reduce the level of visitor disturbance in those areas.

Alternative 2 would result in a net gain of 3.1 acres (1.2 ha) of common natural communities. Long-term impacts on common natural communities under Alternative 2 would be minor and beneficial because only small acreages of common natural communities would be lost and restoration would result in higher quality communities for native plant and wildlife species.

Tree Removal. A small number of trees (132) compared to the total number of trees present in the study area would be removed. Of these, 131 are mature invasive and nonnative species that are scattered throughout the area. One native madrone tree would be removed. The overall impact of tree removal would be minor and beneficial because the spread of these nonnative species would be halted in the area.

Invasive Weeds. Removing and controlling invasive nonnative plant infestations would have a long-term, moderate, beneficial effect, the same as Alternative 3.

Wetlands. Short-term construction-related impacts include temporary disturbance to 0.06 acre (0.02 ha) of willow scrub, 0.45 acre (0.02 ha) of wet meadow, and 0.03 acre (0.01 ha) of drainage channel, resulting in moderate adverse impacts. Long-term impacts include permanent loss of 0.01 acre (<0.01 ha) of drainage channel and 0.6 acre (0.2 ha) of wet meadow.

Overall, there would be a net increase in wetland acreage under Alternative 2. Removing and revegetating Smith Road and the former driveways associated with that road would result in a 0.16 acre (0.07 ha) increase in willow scrub habitat. Reducing the size of the Rodeo Beach parking area and revegetating it would result in a 1.03 acre (0.4 ha) increase in wet meadow habitat. A total increase of 1.1 acres (0.47 ha) of wetland habitat would represent a long-term, moderate, beneficial impact.

Wildlife and Aquatic Life. Roadways would generally be rehabilitated at existing widths, and there would be fewer parking and trail improvements under Alternative 2. Short-term, minor, adverse impacts would occur during construction and would include direct and indirect effects to individuals and temporary effects to wildlife habitat, but impacts would be localized and would not affect the overall size or integrity of local wildlife populations. Adverse effects to wildlife habitat quality, connectivity, and integrity would be limited to the expansion of already disturbed areas. While this could increase the width of habitat gaps and result in reduced wildlife use of habitat adjacent to these disturbed areas, it would be a small increase to an existing situation. A relatively small area of habitat, 2.3 acres (0.9 ha), would be permanently lost, resulting in a long-term, minor, adverse impact.

In the long term Alternative 2 could have more beneficial effects to wildlife habitat quality, connectivity, and integrity than adverse effects, depending on the design and success of revegetation efforts. Revegetation efforts would create an additional 5.98 acres (2.4 ha) of wildlife habitat. Areas with the greatest potential for beneficial effects from revegetation include Smith Road and its associated parking, the Bird Island Overlook parking area, and the roads and trails maintenance yard. The overall intensity of impacts on common wildlife resulting under Alternative 2 would be long-term, minor, and beneficial.

Special Status Species

Plants. Potential impacts to special status plant species were determined based on increases or decreases of suitable habitat for the species. Any loss of habitat types that could potentially support special status plant species could result in direct effects (loss of populations) or indirect effects (loss of suitable habitat). Overall impacts to sensitive natural communities under Alternative 2 would be negligible because restoration efforts would offset adverse impacts. However, revegetation/restoration of habitat would not guarantee reestablishment of special status species. Temporary and permanent impacts to wetlands could affect special status plant species in the following communities: 0.06 acre (0.02 ha) of willow scrub, 1.04 acre (0.4 ha) of wet meadow, and 0.04 acre (0.0. ha) of drainage channel.

Based on area, adverse impacts to common natural communities under Alternative 2 would be minor, and resulting impacts to special status plant species that potentially occur in these communities would also be minor, but long-term. Temporary and permanent impacts to common natural communities that could affect special status plant species include the following: 4.7 acres (1.9 ha) of coyote brush scrub, and 0.4 acre (0.15 ha) of coyote brush scrub with heavy ice plant infestation. Impacts to special status species would be considered long-term because revegetation/restoration of habitat would not guarantee reestablishment of special status species that might be lost

Overall adverse effects on special status plant species under Alternative 2 would be minor since much of the work would take place along disturbed roadsides, which typically provide only marginal habitat. Constructing trail segments through previ-

ously undisturbed habitats would have a much greater potential for impacts to special status plant species.

Wildlife. Except for the mission blue butterfly and bats, there would be no long-term impacts to special status wildlife species under Alternative 2 because project components under this alternative are not located within suitable habitat for any of the other species.

Mission Blue Butterfly — The mission blue butterfly could be affected in the short term by roadway improvements and the establishment of maintenance corridors along existing roads and trails. Affected acreages are summarized in Table 4-5. Effects would be relatively localized, but are considered major because they could include loss of individual butterflies. Adverse effects would be permanent if habitat was lost, particularly if mission blue butterfly eggs or larvae were present on vegetation that was removed. Closing and restoring a portion of the Coastal Trail, as described for Alternative 3, would result in long-term impacts would be minor and beneficial. (For mitigation measures, see "WLD-4: Construction Activity Window," "WLD-5: Mission Blue Butterfly Management Requirements," and "WLD-6: Coastal Trail Restoration.")

TABLE 4-5. SUMMARY OF EFFECTS TO MISSION BLUE BUTTERFLY HABITAT, ALTERNATIVE 2

Project Element	Habitat	Area Affected (acres / hectares)	
		Permanent	Temporary
Roads	Existing	1.1 / 0.45	1.2 / 0.49
	Predicted	12.8 / 5.18	--
Trails	Existing	0.7 / 0.28	0.6 / 0.24
	Predicted	4.1 / 1.66	--
Total	**Existing**	**1.8 / 0.73**	**1.8 / 0.73**
	Predicted	**16.9 / 6.84**	**--**

SOURCE: May & Associates 2007.

Bats — As described for Alternative 3, some bats could be affected by the removal of trees that might provide roosting habitat, primarily at the roads and trails maintenance yard. Short-term impacts would be considered moderate and adverse because they could result in loss of individuals, but the overall size or integrity of a local population would not be permanently affected. (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-14: Tree Removal Habitat Assessment.") Long-term impacts would be moderate and adverse because of the permanent loss of potential roosting habitat. There would be no beneficial effects.

Cumulative Impacts

As described for Alternative 3, past, current, and future actions, combined with the overall long-term, minor to moderate, beneficial impacts of Alternative 2, would result in a minor to moderate, beneficial cumulative impact on biological resources.

Mitigation Measures

Biological Habitats and Vegetation

Mitigation measures would be the same as Alternative 3.

Wetlands

Alternative 2 would have fewer wetland impacts compared to Alternative 3 because the parking area at Smith road would not be developed. These resources are protected by state and federal laws and regulations. The following mitigation measures are recommended to minimize any adverse effects:

WET-2 and WET-3 mitigation measures described for Alternative 3 would apply under this alternative.

Wildlife and Aquatic Life

Mitigation measures would be the same as Alternative 3.

Special Status Plant Species

Mitigation measures would be the same as Alternative 3.

Special Status Wildlife Species

Mitigation measures for the construction activity window (WLD-4), mission blue butterfly management requirements (WLD-5), and assessment of tree removal in bat habitat (WLD-14) would be the same as Alternative 3. No mitigation measure would be required for Coastal Trail restoration (WLD-6).

Conclusion

After implementation of the mitigation measures, short-term effects on wetlands would be offset.

Short-term impacts on other biological resources under Alternative 2 would be negligible to minor and adverse. Impacts would not alter the overall composition of vegetation or wildlife communities in the study area. For biological resources such as biological habitats and vegetation, wetlands, and wildlife and aquatic life, Alternative 2 would result in overall long-term, minor to moderate, beneficial impacts. With the exception of the mission blue butterfly and some bats, no short- or long-term impacts would apply to most special status species because project components under this alternative are not located in suitable habitat. Long-term impacts to the butterfly would be minor and beneficial; long-term impacts to bats would be moderate and adverse. Overall, long-term cumulative impacts on biological resources would be minor to moderate and beneficial. Alternative 2 would not impair any park biological resources or values.

IMPACTS OF ALTERNATIVE 4

Impact Analysis

Biological Habitats and Vegetation

Common Natural Communities. Short-term adverse impacts related to construction activities would primarily be associated with road widening and asphalt/concrete removal and replacement (include grading, excavation, and backfill compaction). A total of 21.99 acres (8.9 ha) would be affected in the following communities:

- coyote brush scrub — 16.48 acres (6.67 ha)
- coyote brush scrub with heavy ice plant infestation — 1.49 acres (0.60 ha)
- mowed grass field — 3.80 acres (1.54 ha)
- annual grassland — 0.22 acre (0.09 ha)

Long-term impacts would permanently affect a total of 7.66 acres (3.10 ha) in the following communities:

- coyote brush scrub — 5.88 acres (2.38 ha)
- mowed grass field — 0.57 acre (0.22 ha)
- annual grassland — 0.12 acre (0.04 ha)
- coyote brush scrub with heavy ice plant infestation — 1.09 ac (0.44 ha)
- rocky outcrop — <0.1 acre (<0.01 ha)

Alternative 4 would have the most extensive adverse effects to the quality, connectivity, and integrity of common natural communities. This alternative would primarily result in expansion of already disturbed areas.

The increase in acreage, connectivity, and integrity of common natural communities from revegetation efforts would also be more extensive in a few circumstances than the other alternatives. At Rodeo Beach a sand matting trail would be constructed west of the fence to further discourage visitors from wandering along the edge of the lagoon. This alternative would also include revegetation of the roads and trails maintenance yard and the entire unpaved Rodeo Beach parking area. These efforts would substantially improve the habitat quality of the stream corridor and adjacent habitats. In all 12.93 acres (5.23 ha) would be revegetated in the following communities:

- coyote brush scrub — 8.97 acres (3.63 ha)
- mowed grass field — 3.59 acres (1.45 ha)
- annual grassland — 0.37 acre (0.15 ha)

Alternative 4 would result in a net gain of 4.09 acres (1.65 ha) of common natural communities. Impacts to common natural communities under Alternative 4 would be long-term, minor, and beneficial since the loss of vegetation would be restricted to already disturbed areas and restoration would result in a higher quality community for native plant and wildlife species.

Tree Removal. A total of 192 trees would be lost, which is small compared to the total number of trees present in the study area. The majority of trees that would be removed (165) are mature, invasive, and nonnative, and they are scattered throughout the area. A total of 21 native coast live oak trees, 1 toyon, and 5 madrone trees would be removed. The overall impact would be long-term, minor, and beneficial because primarily invasive tree species would be removed, reducing the spread of these species in the area.

Invasive Weeds. Removing and controlling invasive nonnative plant infestations would have a long-term, moderate, beneficial effect, the same as Alternative 3.

Wetlands

Wetland impacts from Alternative 4 would be very similar to Alternative 3. Minor additional wetland loss would occur at some culvert replacements and at the hairpin curve of McCullough Road. Incre-

mental additional wetland losses would occur from road widening where culverts are replaced.The overall impact to wetlands would be long-term, moderate, and beneficial.

Wildlife and Aquatic Life

A total of 8.70 acres (3.52 ha) of wildlife habitat would be permanently lost under Alternative 4. Affected habitat associated with road widening would be greater, and impacts would occur at some locations not affected under the other alternatives (e.g., a new Coastal Trail segment). Direct and indirect effects to individual animals of common species would have the greatest potential of occurring due to the larger footprint. Vegetation loss could result in localized effects on habitat connectivity. However, beneficial effects of habitat revegetation would largely offset these adverse effects, and the overall connectivity and integrity of wildlife habitat within the study area is not anticipated to be diminished. Direct and indirect, short-term, negligible to minor, adverse effects would occur to individual animals, primarily during construction. Impacts would occur over a larger area than under the other alternatives, but no effects to the overall size or integrity of local wildlife populations would be expected.

In the long term Alternative 4 could have more beneficial effects to wildlife habitat quality, connectivity, and integrity than adverse effects, depending on the design and success of revegetation efforts. Revegetation would add 1,701 acres (6.88 ha) of wildlife habitat. Even though there would be more disturbance in some areas than other alternatives, there would be less in others, such as at Rodeo Beach, where a sand matting trail would be constructed west of the fence to further discourage visitors from wandering along the edge of the lagoon. There would also be beneficial effects from revegetation efforts at the Marin roads and trails maintenance yard.

The overall intensity of impacts on common wildlife under Alternative 4 would be long-term, minor, and beneficial.

Special Status Species

Plants. Any loss of habitat types that could potentially support special status plant species could result in direct effects (loss of populations) or indirect effects (loss of suitable habitat) for special status plant species. A total of 1.04 acre (0.42 ha) of potential wetland habitat for special status plant species would be permanently lost, including 0.44 acre (0.18 ha) of willow scrub, 0.57 acre (0.23 ha) of wet meadow, and 0.03 acre (0.01 ha) of drainage channel. This would be a long-term, moderate, adverse impact. Impacts to special status species would be considered long-term because revegetation/restoration of habitat would not guarantee reestablishment of special status species that might be lost.

Impacts to common natural communities under Alternative 4 would be minor, and potential impacts to special status plant species that occur in these communities would also be long-term, minor, and adverse. A total of 25.30 acres (10.24 ha) of common natural communities (where special status plant species could occur) could be affected, including 22.36 acres (9.05 ha) of coyote brush scrub, 2.58 acres (1.04 ha) of coyote brush scrub with heavy ice plant infestation, 0.35 acre (0.14 ha) of annual grassland, and 0.01 acre (0.005 ha) of rocky outcrop. Impacts to special status species would be considered long-term because revegetation/restoration of habitat would not guarantee reestablishment of special status species that might be lost.

The overall effect to special status plant species under Alternative 4 would be long-term, moderate, and adverse. While much of the work would take place along disturbed roadsides that typically provide only marginal habitat, the construction of new trail segments through previously undisturbed habitats would have a much greater potential for adverse impacts to special status plant species.

Wildlife. For all species short-term impacts during construction would include direct and indirect effects to individuals and/or habitat. Long-term impacts would include permanent loss or creation of habitat. Impacts on the salt marsh harvest mouse, Allen's hummingbird, and bats would be the same as Alternative 3. Impacts specific to Alternative 4 are discussed below.

Mission Blue Butterfly — The mission blue butterfly could be affected by roadway improvements and specific project elements, such as cutting into the bluff opposite the Battery Spencer parking area, constructing new Coastal Trail segments along Conzelman Road, and constructing new access to the Slacker Hill research sites. Affected

TABLE 4-6. SUMMARY OF EFFECTS TO MISSION BLUE BUTTERFLY HABITAT, ALTERNATIVE 4

Project Element	Habitat	Area Affected (acres / hectares)	
		Permanent	Temporary
Roads	Existing	1.6 / 0.65	1.7 / 0.69
	Predicted	14.2 / 5.75	--
Trails	Existing	0.2 / 0.08	0.7 / 0.28
	Predicted	1.6 / 0.65	--
Total	**Existing**	**1.8 / 0.73**	**2.4 / 0.97**
	Predicted	**15.8 / 6.40**	**--**

SOURCE: May & Associates 2007.

acreages are summarized in Table 4-6. Effects would result from construction activities and permanent loss of habitat, particularly if mission blue butterfly eggs or larvae were present on vegetation that was removed. Effects would be relatively localized, but would be considered major because they could include loss of individual butterflies. (For mitigation measures, see "WLD-4: Construction Activity Window," "WLD-5: Mission Blue Butterfly Management Requirements," and "WLD-6: Coastal Trail Restoration.") Long-term, major, beneficial effects would result from revegetation of existing trails, including the Slacker Road (trail).

Tidewater Goby — The tidewater goby could be affected by removing fill from Rodeo Lagoon and widening the Rodeo Lagoon bridge. Effects during fill removal would include habitat degradation and potential loss of individuals. Effects would be considered major and adverse because individual fish could be lost. (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-7: Tidewater Goby Management Requirements.") Long-term, major, beneficial effects would result from lagoon fill removal.

Steelhead — Impacts on the steelhead would be the same as Alternative 3. Long-term impacts would be major and beneficial from lagoon and lake fill removal and the restoration of 0.09 acre (0.036 ha) of willow riparian habitat at the sites of removed crossings. (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-8: Steelhead Management Requirements.")

California Red-legged Frog — Impacts on the California red-legged frog would be the same as Alternative 3 with potential additional minor adverse impacts from widening the Rodeo Lagoon bridge. Long-term impacts would be moderate and beneficial. (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-9: Red-legged Frog Management Requirements.")

California Brown Pelican — Impacts on the California brown pelican would be the same as Alternative 3, with potential additional short-term, minor, adverse impacts from installing sand matting along Rodeo Beach. (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-10: California Brown Pelican Management Requirements.")

Western Snowy Plover — The western snowy plover could be affected by fence construction at the southern end of Rodeo Beach and sand matting installation along Rodeo Beach. Effects could be perceptible but would be fairly localized and would be unlikely to result in any loss of individuals. Effects would be short term, minor, and adverse and would include disturbance of individual plovers. (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-11: Western Snowy Plover Management Requirements.") Long-term impacts would be minor and beneficial because visitors would be concentrated in a smaller area by the fence and matting, thus reducing disturbance levels.

Western Pond Turtle — The western pond turtle could be affected by widening the Rodeo Creek bridge, constructing the new Rodeo Creek crossings, and removing the existing crossings. Adverse effects, including habitat degradation, could occur during construction, and a small amount of habitat would be temporarily removed (0.04 acre, 0.02 ha) at the new crossing locations; 0.02 acre (<0.01 ha)) would be permanently lost. Effects would be minor and adverse but localized in a very small area, and individual turtles could be lost. (For mitigation measures, see "WLD-4: Construction Activity Window" and "WLD-13: Western Pond Turtle Management Requirements.") No beneficial effects are anticipated.

Salt Marsh Common Yellowthroat — Impacts on the salt marsh common yellowthroat would be the same as Alternative 3, with potential additional moderate adverse impacts from widening the Rodeo Lagoon bridge. (For mitigation measures, see "WLD-4: Construction Activity Window.")

Cumulative Impacts

As described for Alternative 3, past, current, and future actions, combined with the overall long-term, minor to moderate, beneficial impacts of Alternative 4, would result in a minor to moderate, beneficial cumulative impact on biological resources.

Mitigation Measures

All mitigation measures would be the same as those described for Alternative 3.

Conclusion

After implementation of the mitigation measures, short-term construction-related impacts on wetlands would be offset. Short-term impacts on other biological resources under Alternative 4 would be negligible to minor and adverse, and the overall composition of vegetation or wildlife communities in the study area would not be altered. For certain special status species (western pond turtle, bats, salt marsh harvest mouse, and plants), long-term impacts would be negligible to moderate and adverse. For all other biological resources (biological habitat and vegetation, wetlands, wildlife and aquatic species and special status species), Alternative 4 would result in overall long-term, minor to major, beneficial impacts. Overall long-term cumulative impacts on biological resources would be minor to moderate and beneficial. No impacts related to biological resources would impair any park resources or values.

4.3.5 AIR QUALITY

Regulatory Framework

Air quality within Marin County is regulated by the U.S. Environmental Protection Agency, the California Air Resources Board (CARB), and the Bay Area Air Quality Management District (BAAQMD). Each of these agencies develops rules, regulations, policies, and/or goals to attain the directives imposed through legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

Federal Laws and Regulations

The U.S. Environmental Protection Agency is charged with implementing national air quality programs. The EPA air quality mandates are drawn primarily from the federal Clean Air Act, enacted in 1970 (42 USC 7401–767q). The most recent major amendments were in 1990.

In accordance with the Clean Air Act, the Environmental Protection Agency established primary and secondary national ambient air quality standards (Table 3-10). The Clean Air Act also required each state to prepare an air quality control plan, referred to as a state implementation plan. The federal Clean Air Act Amendments of 1990 added requirements for states with non-attainment areas to revise their state implementation plans to incorporate additional control measures to reduce air pollution. The state implementation plan is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The Environmental Protection Agency has responsibility to review all state implementation plans to determine if they conform to the mandates of the Clean Air Act, as amended, and if implementation of the plans will achieve air quality goals. If the Environmental Protection Agency determines a state implementation plan is inadequate, a federal implementation plan may be prepared for the non-attainment area that imposes additional control measures. Failure to submit an approvable state implementation plan or to implement the plan within the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

State Laws and Regulations

The California Air Resources Board is the agency responsible for coordination and oversight of state and local air pollution control programs and for implementing the California Clean Air Act. The act, which was adopted in 1988, requires the California Air Resources Board to establish state ambient air quality standards (see Table 3-10). The act also requires that all local air districts endeavor to achieve and maintain the California ambient air quality standards by the earliest practical date. The act specifies that local air districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and it provides districts with the authority to regulate indirect sources.

Other California Air Resources Board responsibilities include, but are not limited to, overseeing local air district compliance with state and federal laws, approving local air quality plans, submitting state implementation plans to the Environmental Protection Agency, monitoring air quality, determining and updating area designations and maps, and setting emission standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

Local Laws and Regulations

The Bay Area Air Quality Management District is responsible for air quality conditions in Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, western Solano, and southern Sonoma counties. The district seeks to attain and maintain air quality through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The district has adopted several air quality plans to achieve state and federal air quality standards in compliance with the requirements of the Clean Air Act as amended and the California Clean Air Act. These plans, the most recent of which are the 2001 *Ozone Attainment Plan* and 2000 *Clean Air Plan*, present comprehensive strategies to reduce air pollutant emissions (e.g., ozone precursors) from stationary, area, mobile, and indirect sources. Such strategies include the adoption of rules and regulations; enhanced participation in California Environmental Quality Act (CEQA) programs; implementation of a new and modified indirect source review program; adoption of local air quality plans; and stationary, mobile, and indirect-source control measures.

Methodology for Analyzing Impacts

The air quality analysis includes a general discussion of potential short-term impacts on air quality resulting from construction. Short-term construction-generated criteria air pollutant and precursor emissions (e.g., ROG, NO_X, and PM_{10}) are qualitatively assessed as recommended by the Bay Area Air Quality Management District. An analysis of potential long-term, operational (e.g., mobile source) air pollutant impacts is also provided. None of the alternatives would result in the operation of any major stationary emission sources of criteria, odorous, or toxic air pollutants. Consequently, the analysis of potential long-term impacts focuses on mobile source emissions.

Regional mobile source criteria air pollutant and precursor emissions (ROG, NO_x, and PM_{10}) are qualitatively assessed based on a comparison of the predicted change in daily traffic volumes from existing conditions to the BAAQMD-recommended screening trigger levels.

In addition to long-term regional mobile source impacts, potential long-term local mobile source CO impacts are qualitatively assessed based on a comparison of the predicted change in the level of service at individual locations (i.e., roadway segments and intersections) from existing conditions, to the BAAQMD-recommended screening trigger levels.

For this analysis, short-term impacts would be associated with construction and demolition activities, while long-term impacts would be based on changes in mobile source emissions on a regional (i.e., daily traffic volumes) and local (i.e., traffic level of service at individual locations) scale.

For this analysis, air quality impacts are analyzed based on the degree of predicted change in short-term construction activities, daily traffic volumes, and level of service at individual locations from existing conditions.

Beneficial air quality impacts would reduce emissions or lower pollutant concentrations, while adverse impacts would increase emissions or raise pollutant concentrations.

Impact intensities are defined separately for short-term construction-generated emissions; and long-term regional and local mobile source emissions. The intensity levels were selected based on BAAQMD-recommended cut-off values for determining whether basic, enhanced, or optional control measures would be implemented during construction and screening trigger levels for long-term operational emissions (i.e., regional mobile source ROG, NO_x, and PM_{10} emissions; and local mobile source CO emissions).

Impact Intensities for Short-Term Construction-Generated Emissions

These intensity levels were selected based on BAAQMD-recommended values for determining whether basic, enhanced, or optional control meas-

ures would be implemented during project construction.

Negligible: The area of construction activity would not change from the area disturbed under the No-Action Alternative.

Minor: The construction area would be equal to 4 acres or less.

Moderate: The construction area would be more than 4 acres.

Major: The construction area would be 15 or more acres and located near sensitive areas.

Impact Intensities for Long-Term Regional and Local Mobile Source Emissions

These intensity levels were selected based on BAAQMD-recommended screening trigger levels for long-term operational emissions (e.g., regional mobile source ROG, NO_x, and PM_{10} emissions; and local mobile source CO emissions). More specifically, according to the *BAAQMD CEQA Guidelines* (BAAQMD 1999), the implementation of projects that generate less than 2,000 trips per day would not result in long-term mobile source emissions that exceed the BAAQMD's thresholds of significance (i.e., 15 ton/year or 80 lb/day of ROG, NO_x, or PM_{10}) or violate applicable ambient air quality standards.

Negligible: The daily traffic volume or the level of service for individual locations would not change.

Minor: The change in daily traffic volume from existing conditions would be less than 1,000 trips. The level of service for individual locations would change by one category and would remain at an acceptable level (LOS A, B, C, or D).

Moderate: The change in daily traffic volume from existing conditions would be 1,001 to 2,000 trips. The level of service for individual locations would change by more than one category but would remain at an acceptable level (LOS A, B, C, or D).

Major: The change in daily traffic volume from existing conditions would be more than 2,000 trips. The level of service for individual locations would change from acceptable (LOS A, B, C, or D) to unacceptable (LOS E or F), or vice versa.

The following information from the traffic analysis was used to determine the intensity levels for air quality impacts:

Reduction in Automobile Trips

Possible reductions in the number of automobile trips were assessed for both coming to the park and circulation within the park (Nelson\Nygaard 2005).

- *Accessing the Park* — The percentage of the park vehicle trips that could potentially shift to transit was estimated for each alternative.
- *Inside the Park* — The action alternatives feature automobile trip reduction strategies, such as expanded transit service, new shuttle programs, parking fees, and pedestrian/bicycle facility improvements that could encourage travelers within the park to switch to alternative modes. For each alternative an estimate of the percentage of automobile trips that could be potentially shifted to non-auto modes was estimated.

Traffic Volumes

Daily traffic volumes were calculated for the following roadway segments under summer weekend conditions, which represent the highest volume of traffic. These locations were selected based on the segments' importance to the roadway network, their relevance to the park's main entrances and exits, and their importance in serving park destinations.

- Conzelman Road/Lower Conzelman Road:
  - Alexander Avenue to Battery Spencer
  - Battery Spencer to McCullough Road
  - McCullough Road to Hawk Hill
  - Hawk Hill to Field Road
- McCullough Road – Conzelman Road to Bunker Road
- Danes Drive – Barry-Baker tunnel to Alexander Avenue
- Barry-Baker tunnel

- Bunker Road:
  - West Tunnel to McCullough Road
  - McCullough Road to Field Road
  - West of Field Road
- Field Road/Mendell Road – Bunker Road to Bird Island Overlook
- Bunker Road East – East Tunnel to Fort Baker
- East Road – Fort Baker to Alexander Avenue
- Alexander Avenue
  - U.S. 101 to Danes Drive
  - Danes Drive to East Road

The estimated traffic volumes under each alternative are summarized in Figure 4.2.

Level of Service

To evaluate the impacts of the alternatives on the study area roadway system, seven locations were selected for analysis, including five intersections and two roadway segments, as discussed under "Transportation Impacts" (sec. 4.2).

The level of service was analyzed for the following intersections and roadway segments for each alternative:

- Intersections:
  - Alexander Avenue / Danes Drive
  - McCullough Road / Bunker Road
  - McCullough Road / Conzelman Road
  - Danes Drive / Bunker Road (east end of the Barry-Baker tunnel)
  - U.S. 101 / Alexander Avenue interchange (ramp intersections)
- Roadway Segments:
  - Conzelman Road — between McCullough Road and U.S. 101
  - Alexander Avenue — between Conzelman Road and Danes Drive (vicinity of U.S. 101 interchange)

The Alexander Avenue intersections and roadway segment were chosen for analysis because of existing congestion experienced in those areas, especially in the vicinity of the U.S. 101 interchange. The Bunker Road intersections and Conzelman Road intersection and roadway segment were chosen because these areas will be most affected by the changes in the roadway network proposed by the alternatives.

Impacts of Alternative 1 — No-Action Alternative

Impact Analysis

Short-term Construction-Generated Impacts

Alternative 1 only includes those measures already analyzed as part of the *Fort Baker Plan.* No new local, short-term, construction-related impacts would occur.

Long-term Mobile Source Emission Impacts

Automobile Trip Reduction. *Accessing the Park* — With the exception of the Fort Baker conference center shuttle, new transit services would not be introduced in this alternative. Consequently, the alternative would not have an impact on auto reduction to the Marin Headlands or Fort Baker and no impact on air quality.

Inside the Park — New transit services inside the park would not be introduced under this alternative. Parking fees would not be charged. Consequently, this alternative would not affect the number of automobile trips within the Marin Headlands and Fort Baker, and there would be no change to air quality.

Traffic Volume. Year 2023 traffic forecasts were calculated using an annual growth rate of 0.7%, which was applied to the roadway segment traffic volumes calculated from existing counts. The expected traffic volumes from the *Fort Baker Plan* were added to the traffic forecasts for 2023 along Alexander Avenue, Bunker Road, and East Road. Because the roadway network, parking supply, and transit service would remain the same as existing, no other factors were applied to the traffic volumes on each roadway segment. There would be no traffic volume changes in the Marin Headlands or Fort Baker as a result of this alternative. Therefore, there would be no traffic-related air quality impacts.

Level of Service. There would be no changes to the level of service at intersections within the Marin Headlands or Fort Baker as a result of this alternative. Therefore, there would be no related air quality impacts.

Cumulative Impacts

Since there would be no additional impacts under this alternative, there would be no cumulative impacts.

Mitigation Measures

No mitigation measures would be taken under this alternative.

Conclusion

Because Alternative 1 would not propose any other measures beyond those already analyzed in the *Fort Baker Plan*, no new short- or long-term air quality impacts would occur as the result of construction activities or increased traffic levels. There would be no short-term or long-term cumulative air quality impacts associated with this alternative. There would be no impairment of the park's resources or values related to air quality.

Impacts of Alternative 3 — Preferred Alternative

Impact Analysis

Short-Term Construction-Related Impacts

The purpose of construction under Alternative 3 would generally be to rehabilitate or reconstruct roadway infrastructure. Parking, transit, and bicycle/pedestrian facilities would be improved.

Construction emissions would be short term or temporary and would have the potential to represent adverse impacts to air quality, especially in the case of PM_{10}. Fugitive dust emissions are associated primarily with site preparation and vary as a function of soil silt content, soil moisture, wind speed, acreage of disturbed area, and vehicle miles traveled on- and offsite. ROG and NO_X emissions are associated primarily with gas and diesel equipment exhaust and the application of architectural coatings.

Best Management Practices. The following measures, among others, would be taken to limit construction-related impacts: all existing suitable pavement would be pulverized in place and reused as base aggregate; soil would be reused to the greatest extent possible; and work would be primarily limited to Monday through Saturday during daylight hours and without any night or holiday work unless noted. Despite these precautions, construction would temporarily generate emissions of ROG, NO_X, and PM_{10} from site grading and excavation, paving, demolition, motor vehicle exhaust associated with construction equipment, employee commute trips, and material transport (especially on unpaved surfaces), and other construction operations.

The Bay Area Air Quality Management District emphasizes effective and comprehensive control measures rather than requiring a detailed quantification of construction emissions. The district requires that all feasible control measures, which depend on the size of the construction area and the nature of activities, be implemented.

With the implementation of best management practices to control construction-generated emissions, short-term air quality impacts would be moderate and adverse because these projects would affect more than 4 acres.

Traffic Level of Service during Construction. Construction activities within the park to modify roadways, intersections, and parking areas would cause short-term impacts to traffic levels of service at specific intersections and roadway segments. Lane closures and detours would decrease traffic volumes and traffic capacity on roadway segments under construction and possibly increase traffic volumes on segments along alternate routes, which could affect the level of service experienced by drivers. However, best management practices would be followed during construction, and overall impacts would be short term, minor to moderate, and adverse.

Long-Term Mobile Source Emission Impacts.

Automobile Trip Reduction. *Accessing the Park* — The introduction of parking fees at selected sites in the study area, in combination with increased service on MUNI Route 76 that would be encouraged, would be expected to shift 0.44% of current vehicular trips to the Marin Headlands to transit. The parking fees in tandem with providing transit access would be expected to shift 0.71% of current vehicular trips to Fort Baker to transit. These shifts would constitute a long-term, minor, beneficial impact on traffic-related air quality impacts.

Inside the Park — MUNI Route 76 as well as the internal shuttle would provide an alternative mode of transportation for trips within the Marin Head-

lands. Within Fort Baker, park users would have the option of using the internal shuttle. These transit options, in tandem with parking fees, could result in a 2.5% reduction of internal auto-trips in both parts of the park. This estimated shift of automobile trips would constitute a long-term, minor, beneficial impact on air quality.

Traffic Volume. The automobile reduction impacts of Alternative 3 were applied to the traffic volumes accessing the park and circulating within the park. Almost 15% of the existing parking spaces within Marin Headlands would be eliminated under this alternative. Some of the parking shifts would occur within the same study roadway segment, such as along Field Road and Mitchell Road. The parking occupancies recorded in the "Existing Conditions Report" (Nelson\Nygaard 2000) show that almost all locations were operating under capacity during a peak season weekend. Therefore, it is assumed that the proposed parking reductions would have little effect on overall travel patterns and vehicular volumes. With the closure of Mendell Road to Bird Island Overlook, a shuttle route serving Rodeo Beach and Field Road, and more parking proposed in the Bunker Road area (i.e., Smith Road), reduced traffic volumes were assumed along Mitchell Road and Field Road. The parking reduction proposed at Battery Spencer was assumed to have little effect on traffic volumes along Conzelman Road since the alternative does not include an active parking management system to inform drivers of a full parking lot.

This alternative would result in negligible, beneficial impacts to the traffic volumes and air quality within Marin Headlands and Fort Baker (see Figure 4.2).

Level of Service. This alternative would have a minor, beneficial impact to the level of service experienced at the Conzelman Road / McCullough Road intersection. The LOS impacts at all other intersections and roadway segments analyzed would be negligible and beneficial under this alternative. Thus, impacts on air quality would be negligible to minor and beneficial.

Cumulative Impacts

Cumulative effects to air quality are based on an analysis of past, present, and reasonably foreseeable future actions in the study area in combination with potential effects of Alternative 3. Due to the size of the study area and climatic conditions, there would be no cumulative short-term air quality impacts associated with construction activities. Furthermore, none of the projects listed in the cumulative impacts scenario (sec. 4.1.2) would be expected to change the average daily traffic volumes or level of service within the study area. Therefore, there would be no cumulative, long-term air quality impacts.

Mitigation Measures

AQ-1: Dust Control. All active construction areas would be watered where soil was exposed in order to control dust frequency, depending on type of operation and wind exposure.

One or more persons would be designated to oversee the implementation of a comprehensive dust control program and to increase watering, as necessary.

All trucks hauling weed-free soil, sand, and other loose materials would be covered, or all trucks would be required to maintain at least 2 feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer), in accordance with the California Vehicle Code (sec. 23114 of) during transit to and from the site.

Inactive storage piles would be covered.

Conclusion

Short-term adverse air quality impacts would result from construction on a daily basis. With implementation of BAAQMD best management practices for the control of construction-generated emissions, short-term air quality impacts would be minor to moderate and adverse.

Long-term, local air quality impacts would be primarily associated with potential increases in mobile-source CO concentrations near roadway intersections. Based on the traffic analysis prepared for this project, Alternative 3 would result in a negligible, beneficial impact on traffic volumes in the park, and minor, beneficial impacts to the level of service at the Conzelman Road / McCullough Road intersection. All other intersections and roadway segments analyzed would operate at acceptable levels of service. Therefore, this alternative would result in negligible to minor beneficial

impacts to localized mobile source CO concentrations.

Long-term regional air quality impacts would be primarily associated with potential increases in mobile source emissions. Based on the traffic analysis prepared for this project, Alternative 3 would result in a negligible decrease in vehicle trips. Therefore, there would be no increase in mobile source emissions, and no adverse regional air quality impacts. There would be no short- or long-term cumulative air quality impacts associated with this alternative.

There would be no impairment of the park's resources or values related to air quality.

Impacts of Alternative 2

Impact Analysis

Short-Term Construction-Related Impacts

As described for Alternative 3, construction emissions would be short term or temporary and would have the potential to represent adverse impacts to air quality, especially in the case of PM_{10}.

Construction activities within the park to modify roadways, intersections, and parking areas would have short-term impacts to levels of service at specific intersections and roadway segments. However, best management practices would be followed during construction, and overall impacts would be short term, negligible to minor, and adverse.

Long-Term Mobile Source Emission Impacts

Automobile Trip Reduction. *Accessing the Park* — No reduction in automobile trips to the Marin Headlands or Fort Baker is expected under Alternative 2. Transit services such as the MUNI Route 76 from San Francisco or the existing GGT Route 10 on Alexander Avenue would not be competitive with driving in terms of travel times, travel costs, and transfers. The alternative would have no impact on automobile trips to the park or an additional impact on air quality.

Inside the Park — With the exception of MUNI Route 76 service on Saturdays that would be encouraged, new transit services would not be introduced under this alternative. Consequently, the alternative would not have an impact on automobile trips within the Marin Headlands or Fort Baker, and no additional impact on air quality.

Traffic Volume. Two major changes to the roadway network under this alternative would affect traffic flows within the park. The Barry-Baker tunnel would operate with one-way eastbound traffic in contrast to the existing two-way, reversible traffic with signalized control. Therefore, all existing westbound tunnel traffic would be expected to divert to westbound Conzelman Road and northbound McCullough Road. McCullough Road would be converted to one-way operation in the northbound direction. All of the existing southbound McCullough Road traffic would be expected to divert to Bunker Road through the Barry-Baker tunnel and through the Danes Drive / Alexander Avenue intersection. The traffic flow changes for this alternative were limited to the Conzelman Road–Bunker Road–Alexander Avenue loop. No changes were made to the roadway network west of McCullough Road.

A general reduction in parking supply would occur in Alternative 2. Parking at Battery Spencer would be reduced substantially below the existing occupancy. Although this reduction would most likely degrade traffic operations and safety in the area as a result of drivers trying to get to fewer available spaces, it is not expected to lower the amount of traffic trying to access the area, and traffic volumes along Conzelman Road would not be reduced. There would be no additional effect on air quality.

Changes to the entering and exiting traffic circulation within Marin Headlands from two-way operation to one-way operation would have a major adverse impact on traffic volumes along McCullough Road between Conzelman Road and Bunker Road. One-way operation would have a minor adverse impact along Conzelman Road by increasing traffic volumes from Battery Spencer to McCullough Road, and a minor beneficial impact along Danes Drive and Bunker Road from Alexander Avenue to McCullough Road by decreasing traffic volumes. All other roadway segments would have a negligible impact to traffic volumes with this alternative. Impacts to air quality would correspond to the traffic level impacts.

Level of Service. Alternative 2 would have a minor beneficial impact to the level of service at the Conzelman Road / McCullough Road intersection.

If the Alexander Avenue / Danes Drive intersection remained unsignalized, this alternative would have a minor adverse impact on the level of service; however, if this intersection was improved to a T configuration and signalized, this alternative would have a minor beneficial impact on the level of service. The LOS impacts at all other intersections and roadway segments analyzed would be negligible and beneficial with this alternative, and impacts on air quality would be negligible and beneficial.

Cumulative Impacts

Cumulative effects to air quality would be the same as Alternative 3. Due to the size of the study area and climatic conditions, there would be no cumulative short-term air quality impacts associated with construction activities. Furthermore, none of the projects listed in the cumulative impacts scenario (sec. 4.1.2) would be expected to change the average daily traffic volumes or level of service within the study area. Therefore, there would be no cumulative, long-term air quality impacts.

Mitigation Measures

The same mitigation measures described for Alternative 3 would be applicable to Alternative 2.

Conclusion

Short-term adverse air quality impacts would result from construction of the proposed improvements on a daily basis. With the implementation of BAAQMD best management practices for the control of construction-generated emissions, short-term adverse air quality impacts would be negligible to moderate.

Long-term, local air quality impacts would be primarily associated with potential increases in mobile-source CO concentrations near roadway intersections. Based on the traffic analysis prepared for this project, Alternative 2 would result in an increase in traffic volume on McCullough Road due to one-way eastbound-only traffic operation through the Barry-Baker tunnel. However, the impact on level of service at the Conzelman Road / McCullough Road intersection would be minor and beneficial, and all other intersections and roadway segments analyzed would operate at an acceptable level of service. This alternative would likewise result in negligible to minor beneficial impacts to localized mobile source CO concentrations.

Long-term regional air quality impacts would be primarily associated with potential increases in mobile source emissions. Based on the traffic analysis prepared for this project, Alternative 2 would result in a minor increase in vehicle trips on some roadways; however, all roadways would continue to operate at acceptable levels of service. Therefore, the increase in mobile source emissions would be negligible adverse. There would be no short-term air quality impacts associated with this alternative.

There would be no impairment of the park's resources or values related to air quality.

Impacts of Alternative 4

Impact Analysis

Short-Term Construction-Related Impacts

As described for Alternative 3, construction emissions would be short term or temporary and would have the potential to represent adverse impacts to air quality, especially in the case of PM_{10}.

Construction activities within the park to modify roadways, intersections, and parking areas would have short-term impacts to levels of service at specific intersections and roadway segments. However, best management practices would be followed during construction, and overall impacts would be short term, negligible to minor, and adverse.

Long-Term Mobile Source Emission Impacts

Automobile Trip Reduction. *Accessing the Park* — Higher parking fees would be implemented under Alternative 4. The higher fees, combined with increased service frequencies on MUNI Route 76 that would be encouraged, would be expected to shift 0.88% of current vehicular trips to the Marin Headlands to transit. Parking fees, in combination with direct transit access to Fort Baker, would be expected to shift 1.42% of current vehicular trips to Fort Baker to transit. Both of these shifts would result in a long-term, minor, beneficial impact on automobile reduction and related air quality.

Inside the Park — The MUNI Route 76 and the internal shuttle would enhance alternative modes

of transportation for trips within the Marin Headlands. Within Fort Baker park users would have the option of using the internal shuttle. These transit options, combined with higher parking fees, would result in a 5.0% reduction in internal auto-trips in both parts of the study area. This shift of automobile trips to transit would constitute a long-term, minor, beneficial impact on air quality.

Traffic Volume. The auto-reduction impacts of Alternative 4 were applied to the traffic volumes accessing and circulating within the park. Overall parking reductions under this alternative would be similar to Alternative 3. No changes were made to vehicular volumes as a result of parking reductions. However, with a shuttle route serving Rodeo Beach and Bird Island Overlook and more parking in the Bunker Road area (i.e., Smith Road) under this alternative, reduced traffic volumes were assumed along Mitchell Road and Field Road.

The transit initiatives and changes to the parking supply under this alternative would have negligible impacts on the average daily traffic volumes along the roadway segments within the park and negligible impacts on air quality.

Level of Service. Alternative 4 would have a minor, beneficial impact to the level of service at the Conzelman Road / McCullough Road and the Bunker Road / Danes Drive intersections. If the Alexander Avenue / Danes Drive intersection remained unsignalized, this alternative would have a negligible impact on the level of service; however, if this intersection was signalized, this alternative would have a minor beneficial impact on the level of service. The LOS impacts at all other intersections and roadway segments analyzed would be negligible and beneficial, as would impacts on air quality.

Cumulative Impacts

Cumulative effects to air quality would be the same as Alternative 3. Due to the size of the study area and climatic conditions, there would be no cumulative short-term air quality impacts associated with construction activities. Furthermore, none of the projects listed in the cumulative impacts scenario (sec. 4.1.2) would be expected to change the average daily traffic volumes or level of service within the study area. Therefore, there would be no cumulative, long-term air quality impacts.

Mitigation Measures

The same mitigation measures described for Alternative 3 would be applicable to Alternative 4.

Conclusion

Short-term, adverse air quality impacts would result from the construction of the proposed improvements on a daily basis. With the implementation of BAAQMD best management practices for the control of construction-generated emissions, short-term air quality impacts would be considered minor to moderate and adverse.

Long-term local air quality impacts would be primarily associated with potential increases in mobile-source CO concentrations near roadway intersections. Based on the traffic analysis prepared for this project, Alternative 4 would result in a negligible beneficial impact on the traffic volumes in the park, and a minor beneficial impact to the level of service at the Conzelman Road / McCullough Road and the Bunker Road / Danes Drive intersections. Furthermore, all other intersections and roadway segments analyzed would operate at acceptable levels of service. Therefore, this alternative would result in negligible to minor, beneficial contributions to localized mobile source CO concentrations.

Long-term regional air quality impacts would be primarily associated with potential increases in mobile-source emissions. Based on the traffic analysis prepared for this project, Alternative 4 would have a negligible, beneficial effect on traffic volumes within the park. Given that the project would not result in the operation of any new stationary sources of emissions, increases in mobile source emissions would likewise be considered negligible and beneficial. There would be no short- or long-term cumulative air quality impacts associated with this alternative.

There would be no impairment of the park's resources or values related to air quality.

4.4 IMPACTS TO CULTURAL RESOURCES

4.4.1 REGULATORY FRAMEWORK

National Historic Preservation Act

Section 106 of the National Historic Preservation Act requires federal agencies to consider the potential effects of proposed undertakings on cultural resources listed on or determined eligible for listing on the National Register of Historic Places, and to allow the Advisory Council on Historic Preservation the opportunity to comment on the proposed undertaking (36 CFR Part 800). The Forts Baker, Barry, and Cronkhite Historic District was listed on the National Register of Historic Places in 1973, with a period of significance covering 1866–1972.

Section 106 requirements apply to properties not formally determined eligible, but which are considered to meet eligibility requirements. Determining the National Register eligibility of a site or district is guided by the specific legal context of the site's significance, as set out in 36 CFR 800.4. Section 36 CFR 800.5 of the act establishes the criteria for assessing effects of activities related to cultural and historic resources and landscapes.

In addition to analyzing impacts in accordance with the National Environmental Policy Act, the impact analysis must also comply with the requirements of section 106 of the National Historic Preservation Act. The Advisory Council on Historic Preservation's regulations that implement section 106 require that impacts to historic resources be identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that were either listed on or eligible for listing on the National Register of Historic Places; (3) applying the criteria of adverse effect to affected cultural resources either listed on or eligible for listing on the National Register; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

Under the regulations of the Advisory Council, a determination of either *adverse effect* or *no adverse effect* must be made for affected National Register eligible cultural resources.

- An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion on the National Register (e.g., diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the action alternatives that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5, "Assessment of Adverse Effects").
- A determination of *no adverse effect* means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion on the National Register. If there are no impacts to cultural resources, the determination is *no effect* on cultural resources.

CEQ regulations and NPS *Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision-making* also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g. reducing the intensity of an impact from major to moderate or minor (NPS 2001a). Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation only under the National Environmental Policy Act. It does not suggest that the level of effect as defined by section 106 would be similarly reduced. Although adverse effects under section 106 could be mitigated, the effect would remain adverse.

A section 106 summary is included in the impact analysis section for cultural resources. The summary is an assessment of the effect of the undertaking on cultural resources, based on the criteria of effect and adverse effect found in the Advisory Council's regulations.

National Environmental Policy Act

In addition to the criteria of the National Historic Preservation Act, the National Park Service carries out its responsibilities under the National Environmental Policy Act by assessing resource impacts according to the policies and procedures in *Director's Order #12*.

NPS Management Policies

NPS *Management Policies* provide for the long-term preservation of, public access to, and appreciation of the features, materials, and qualities contributing to the significance of cultural resources. With some differences by type, cultural resources are subject to several basic treatments, including (1) preservation in their existing states; (2) rehabilitation to serve contemporary uses, consistent with their integrity and character; and (3) restoration to earlier appearances by the removal of later additions and replacement of missing elements. Cultural landscape values can be attributed to roads, viewsheds, clusters of structures, circulation networks, and other elements. This plan utilizes the rehabilitation approach. It is the National Park Service's intention to retain the historical character of the transportation system in the context of ongoing maintenance and public safety concerns.

4.4.2 METHODOLOGY FOR ANALYZING IMPACTS

The methodology for assessing impacts to cultural and historic resources and landscapes included:

- establishing the area of potential effect
- assessing the level of resource information available and conducting appropriate inventories and evaluations necessary to obtain information about resources eligible for listing on the National Register
- comparing the location of the impact area with that of resources listed, eligible, or potentially eligible for listing on the National Register
- identifying the extent and type of effects
- assessing these effects according to procedures established by regulations implementing the National Historic Preservation Act and the National Environmental Policy Act
- considering ways to avoid, reduce, or mitigate adverse effects

This section considers potential impacts on the cultural and historic resources from proposed widening of roads, realignment of intersections, paving of roads or parking areas, and removal or replacement of historic features such as swales or guardrails, trail improvements, and natural resource mitigations/enhancements. It integrates existing research and analysis from the following sources: *Historic Roads Characterization Study* and supplements (Pacific Legacy 2003; Feierabend 2004), the National Register nomination form for the Forts Baker, Barry, and Cronkhite Historic District; the *Fort Baker Final Environmental Impact Statement* (NPS 1999a); the "Fort Baker Cultural Landscape Report" (NPS 2005f); the "Point Bonita Cultural Landscape Inventory" (NPS 2005g); "A Supplemental Archaeological Survey of the Marin Headlands-Fort Baker Transportation Infrastructure and Management Plan EIS" (Barker and Barnaal 2005); and the list of archeological properties in the Forts Baker, Barry, and Cronkhite Historic District from the NPS Archeological Sites Management Information System. Guidance was also provided by the *Secretary of the Interior's Standards for the Treatment of Historic Properties, with Guidelines for the Treatment of Cultural Landscapes* (1996), *NPS-28: Cultural Resource Management Guideline* (NPS 1998), *Guide to Sustainable Earthworks Management* (NPS and Georgia Trust for Historic Preservation 1998), and NPS *Management Polices 2006* (NPS 2006b).

As previously described, the area of potential effect includes an indirect area of potential effect, which consists of the entire historic district that is listed on the National Register of Historic Places, and a direct area of potential effect, which includes roadways, trails, and natural resource mitigation / enhancement sites. For the roadways, the area of potential effect is defined as the roadway to shoulder and parking areas plus 20 feet on either side. In areas where resources begin within the 20-foot zone and extend beyond that, the area of potential effect encompasses the entire resource; for trails, as a 20-foot corridor on either side of the trail where work may occur, and for the natural resources mitigations/enhancements as the focused site (polygon). The area of potential effect for roadways includes features such as gutters, culverts, sidewalks, and utilities, as well as occasional features beyond this boundary, plus the historic circulation patterns represented by the alignment of the roads themselves.

In December 2005 NPS staff conducted an intensive pedestrian archeological survey to supplement existing cultural resource inventories for the Marin Headlands road corridors (Barker and Barnaal 2005). That survey mapped small-scale features and remnants of this landscape's historic fabric

within the area of potential effect (except for trails, natural resource polygons, and wetland sites). While many of these features will not be directly impacted by the alternatives being considered, avoidance is key to their long-term management, and should be taken into consideration as mitigation measures as the project moves forward into design and development.

Duration of Impact

Short-term impacts are generally a year or less in duration, including those that occur during construction, restoration, or demolition activities. These could include temporary road closures, or construction equipment briefly blocking a historic view from the roadside while an erosion area is being stabilized. Long-term impacts would last longer than one year and would include both permanent and non-permanent impacts. Non-permanent impacts would be reversible changes to a historic landscape or structure, such as the alteration of contributing resources; for example, the conversion of a historic road to a trail would change its function but retain the overall historic circulation pattern. Permanent impacts would cause irreversible changes to cultural and historic resources, such as the removal of roads or other contributing features from the historic fabric of the landscape.

Type of Impact

Under the National Environmental Policy Act impacts to cultural resources are considered to be either adverse or beneficial, while under section 106 of the National Historic Preservation Act, effects are considered either adverse or not adverse. Effects under both laws are considered adverse when they diminish the significant characteristics of a historic property.

Impacts to cultural landscape resources and historic sites and structures result from physical changes to significant characteristics of a resource or its setting. Beneficial impacts can occur as a result of the restoration or rehabilitation of resources, or the removal of incompatible or non-contributing features. Adverse impacts generally occur as a result of modifying a significant characteristic of a historic structure or landscape resource; removing a significant structure or landscape resource; or adding new, incompatible facilities in proximity to a historic site or structure.

Indirect adverse impacts can also occur following project completion, resulting from increased visitor use or changes in management of resources fostered by the completed action. These impacts are generally associated with changes to historic vegetation, continued deterioration of historic structures, or shifts away from historic circulation patterns. Impacts involving only noncontributing elements of a cultural landscape are likely to have no effect, although the possibility of indirect impacts such as visual intrusions on other elements must be considered.

Intensity of Impact

The following impact intensities have been defined under the National Environmental Policy Act:

Negligible: The impact would be at the lowest levels of detection: barely perceptible and not measurable.

Minor: For adverse impacts, the impact would not affect the character-defining features of a structure or building listed on or eligible for listing on the National Register of Historic Places. Minor beneficial effects would involve the stabilization/preservation of character-defining features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties.*

Moderate: For adverse impacts, the impact would alter a character-defining feature(s) of the structure or building but would not diminish the integrity of the resource to the extent that its listing on or eligibility for listing on the National Register of Historic Places would be jeopardized. Moderate beneficial impacts would involve the rehabilitation of a structure or building in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.

Major: Major adverse impacts would alter a character-defining feature(s) of the structure or building, diminishing the integrity of the re-

source to the extent that it was no longer eligible for listing on the National Register of Historic Places. Major beneficial impacts would involve restoration of a structure or building in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties.*

Overall, impacts could stem from changes to accommodate increased use by visitors such as tourists and recreationists. Actions such as widening roadways and adding curbs, while improving public safety, could affect a road's historical character associated with the military, which tended to create narrow, utilitarian roads rather than consider amenities such as access to views. Because of the way the alternatives have been developed, ranging between accommodating use by mean of existing infrastructure to expanding modes of access through modifications of infrastructure, the potential for impacts similarly increases from Alternatives 2 through 4.

4.4.3 IMPACTS OF ALTERNATIVE 1 — NO-ACTION ALTERNATIVE

Impact Analysis

The No-Action Alternative would not change the management or treatment of historic roads or associated resources in the Marin Headlands, and the existing appearance and character of these resources would remain the same.

Cumulative Effects

No cumulative impacts would result from implementation of the No-Action Alternative.

Mitigation Measures

No mitigation measures would be required under the No-Action Alternative.

Conclusion

There would be no substantial change in the treatment of historic roads and associated resources under Alternative 1. Therefore, no measurable impacts to historic resources would occur. This alternative would not lead to impairment of park cultural resources or values.

4.4.4 IMPACTS OF ALTERNATIVE 3 — PREFERRED ALTERNATIVE

Impact Analysis

Lower Conzelman Road (from Fort Baker to the Trailhead Parking Area to Conzelman Road)

Under the Preferred Alternative Lower Conzelman Road would be repaved, and the segment from the trailhead lot to Conzelman Road would be widened without changing the alignment to accommodate a new 5-foot-wide, Class 2 uphill bicycle lane, and curbed shoulder. This widening would change the existing unpaved grass and aggregate shoulders along the roadway, representing a permanent, moderate, adverse impact to the road's historical character in localized, specific sections of the roadway.

Conzelman Road (U.S. 101 to McCullough Road)

Alternative 3 would widen/realign segments of Conzelman Road in order to provide an uphill Class 2 bike lane, and additional widening on the tightest radius corners so that tour and transit buses could navigate the road within their respective lanes. Parking areas at Battery Spencer and Overlooks 1 and 2 would be organized and delineated to improve safety and reduce parking area impacts, and the guardrail on the south side of the road would be reset closer to the pavement edge to eliminate parking at unsafe locations along the road. The Coastal Trail would be rerouted to be on or parallel to Conzelman Road.

The proposed widening could be accommodated within the existing road bench except for three locations: Intersection of Alexander and Conzelman Roads; a 600-foot section between Battery Spencer and Overlook 1; and Overlook 2. In the 600-foot segment between Battery Spencer and Overlook 1, wider road and parking area improvements require cutting into the inboard rock cut bank. Within this segment, the proposed 30-foot-deep cut into the existing rock cut at Battery Spencer would improve sight distance around the curve and provide adequate backing space for vehicles exiting the parking spaces. These changes would require new excavation along the inboard rock cut bank, but these changes would be designed to maintain the same angle and appearance as the existing road cuts. However, a vertical strip of masonry rock work runs up the rock face and

was originally built by the Army to cover communication and power lines. This cultural resource would be lost if the cliff was cut back, representing a moderate adverse impact.

An approximately 16-foot-wide flat shoulder bench would be provided at the base of the cut slope to gain additional sight distance for travel safety and to catch the occasional falling rock debris so it does not land in the roadway. A similar but shorter length excavation would occur at Overlooks 1 and 2.

In addition, parking at the Battery Spencer parking stalls and Overlooks 1 and 2 would be paved to improve visibility for drivers and reduce erosion. The road would be shifted to gain better sight distance. As one of the most visited areas of the Marin Headlands, particularly by school groups interested in the rock formations along the road cut, Battery Spencer is particularly sensitive to changes in its historical character. The treatment of Overlooks 1 and 2 and of the Battery Spencer parking area would be addressed through design guidelines so that improvements would maintain compatibility with the historical character of the area. While the proposed changes would have moderate adverse impacts in localized segments on the historical character of the road, these impacts do not rise to the level of affecting the road's broader integrity, as the overall appearance and function of the road would remain the same.

Depending on the method of parking fee collection selected, fee collection vending machines, meters, or deposit boxes could be installed. These would be small machines approximately 3 feet by 3 feet by 5 feet high and would be integrated with trailhead bulletin boards and exhibit panels such that they would not have an adverse effect on the historical character of the road. The selected method of collecting parking fees would be addressed by design guidelines.

The rerouted Coastal Trail would be a new feature along Conzelman Road, resulting in a long-term, minor, adverse impact.

Conzelman Road / McCullough Road Intersection

The current Y intersection of Conzelman and McCullough roads would be changed to a roundabout to allow safer turning of vehicles, including large buses, but this action would alter the intersection's historical character. Y intersections are distinctive of 1930s road design (these are not unique to the military but were standard intersections everywhere in the 1920–30s). Design treatment of the intersection island would be developed with respect to cultural and natural resource management concerns. This action would represent a long-term, moderate, adverse impact to this segment of the roadway because of the loss of historical integrity.

Western Conzelman Road (McCullough Road to Field Road)

The segment of Conzelman Road between the McCullough intersection and Hawk Hill would be slightly widened to provide standard 11-foot-wide lanes and a 1-foot-wide paved shoulder on each side. Improved organization of the parking area at Hawk Hill would alter the character of the site in this short section from its present condition, as the widening of the road with retaining walls in this section would be perceptible. Additionally, a compatibly designed restroom will be located in this area. Overall, these actions would have a long-term, minor, adverse impact. Efforts to control erosion along the western, one-lane portion of Conzelman Road would not change the road's appearance or historical character, and they should help prevent further erosion and damage to the roadbed, representing a long-term, moderate, beneficial impact. The rerouted Coastal Trail would include a new segment from McCullough Road to the Lower Fisherman's parking area. The rerouted Coastal Trail would be a new feature along or parallel to western Conzelman Road, resulting in a long-term, minor, adverse impact. Also, the additon of a compatibly designed restroom along Conzelman Road near Battery Wallace would be a long-term, minor, adverse impact.

Bunker Road

Bunker Road would be widened slightly (from 24 feet to 26 feet) and blind corners would be further widened to improve safety, but this change should not be noticeable enough to draw attention, and it would not alter the grass ditches and shoulders of this historic roadway. Bicycle traffic would be offered the choice of a new off-road, Class 1 bicycle path and bridge, so the road would not have to be further widened to accommodate bike lanes. To

accommodate road widening, the entry alcove of structure FA-909, Electrical Substation, would be removed, resulting in a long-term, minor, adverse effect on this simple concrete structure. Widening Bunker Road would have a long-term, minor, beneficial impact to the resource because the character-defining features of this road would be preserved. Providing parking, shifting Smith Road (a non-contributing road), gating the Bunker Road bypass to limit use to only special event parking, and adding a compatibly designed restroom would result in a long-term, minor, adverse impact. The rifle and pistol ranges would be closed to all future parking under this alternative, representing a long-term moderate, beneficial impact to this historic resource, which has been damaged by parking in the past.

Bunker Road / Old Bunker Road / Mitchell Road Intersection

A three-way stop would be established at the Y intersection of Old Bunker Road, Bunker Road, and Mitchell Road for the near term. This alteration would be revaluated for effectiveness (safety), and if it was not effective, it would be replaced with a T configuration, which would require excavation and fill, and realigned roughly 120 feet west of its current location. While this change would improve traffic safety, it would require a substantial amount of fill, and a number of cypress trees would be removed. The former leg of Old Bunker Road would be regraded and revegetated to a more natural appearing slope. These changes would alter the historical integrity of this road segment, resulting in a long-term, moderate, adverse impact.

Old Bunker Road

Old Bunker Road would be widened slightly from its current configuration to accommodate two 10-foot-wide lanes and two 1-foot-wide paved shoulders with curbs, as well as a variable width sidewalk (2 - 4 feet wide)for pedestrians and school groups visiting the Marine Mammal Center. These changes would alter the road's character-defining features of road width with soft shoulder treatment of grass on the western side of the road and a paved gutter on the eastern side. This would be a long-term, moderate, adverse impact to this road.

McCullough Road

McCullough Road would be widened from 22 feet to 24 feet, which could be accommodated on the existing road bench; thus the soft aggregate shoulders and grass ditches would be reduced slightly but would remain. On the switchback corner, which is the tightest radius curve on the road, the pavement would be further widened to accommodate large vehicles such as buses in their respective lanes. The eight drainage inlet boxes along the road would be modified with metal grate covers to allow improved inspection and maintenance, but these actions would not affect the historical character of the World War II-era culverts, gutters, and inlet systems. These changes would result in a long-term, moderate, adverse impact on these historic resources.

McCullough Road / Bunker Road Intersection

The proposed realignment of the road's Y intersection at Bunker Road to a T intersection would alter its historical character. The new intersection would include a realigned roadway with a vegetated drainage ditch, resulting in a long-term, moderate, adverse impact.

Field Road / Mendell Road

Field Road would be widened to 24 feet to improve bicycle safety, but it would retain its historic configuration as a two-lane road with grass shoulders and ditches, so this change would be a negligible impact.

Realigning the driveway entries and parking along Field Road at Battery Alexander to improve traffic safety would alter the historical character of this segment of the road. Impacts would include a graded cutslope. These alterations, together with the addition of a compatibly designed restroom at Battery Alexander parking lot, would result in a long-term, moderate, adverse impact to this historic resource.

Field Road would be terminated at the Point Bonita trailhead under Alternative 3, and a compatibly designed restroom and new road terminus loop would be constructed so that vehicles could safely turn around. West of this new loop, Mendell Road would be closed to vehicular traffic; its modern pavement would be removed and the historic aggregate roadway, as well as the historic curbs,

would be restored as a stabilized aggregate pedestrian and bicycle path. At the former Bird Island Overlook, historic anti-aircraft gun emplacements would be restored and interpreted with exhibit panels. While the new terminus loop would be a change from the historic configuration of the road, the restoration of other historic features would mitigate the overall impact, resulting in a long-term, moderate, adverse impact to the character-defining features of this roadway.

Field Road / Bunker Road Intersection

The Bunker Road / Field Road intersection is a historic Y intersection on level grade and frames the approach to Fort Barry. The intersection would be converted to a T configuration, which would alter its historical character, resulting in a long-term, moderate, adverse impact.

East Road

East Road would be rehabilitated to a consistent width of 28 feet, retaining the pullouts that indicate the former roadbed alignment, but making them narrower. Shoulders would be widened where possible for cyclists: Northbound would be 4 feet wide from Fort Baker to the curve before the Sausalito-Marin-City Sanitary District entrance, changing to 3 feet wide to the Alexander Avenue intersection; southbound would be 3 feet wide until the top of the steep section, changing to 2 feet wide going downhill towards Fort Baker. An unpaved trail would be added along East Road. The road's drainage culverts would also be replaced and improved, and the concrete waterway swales would be reconstructed to match historic conditions in most locations. Changes to curb and gutter may be required to resolve drainage issues. These alterations would result in a minor adverse impact, and improving the road's drainage and overall safety to users would be a long-term, minor, beneficial impact by rehabilitating this historic entrance to Fort Baker. Attention should be given to the details of treatment for the roadway as the rehabilitation work was designed and implemented.

Dubois Road (trail)

This historic connector would be reduced by regrading and revegetating it to the dimensions of a trail. (Bicycle use of this trail would be allowed.) This change would result in a long-term, minor, adverse impact to the historic resource.

Slacker Road (trail)

Sections of Slacker Road (trail) would be rerouted and removed by regrading and revegetating it. This is a non-contributing road in terms of historical character, so this change would not represent an adverse impact to historic resources.

Julian Road

A parking lot and an ADA-compatible restroom (located at the trailhead parking) would also be added to Julian Road near the intersection of McCullough and Conzelman, roads resulting in a long-term, moderate, adverse impact.

Drainage culverts and ditches along Julian Road would be rehabilitated, resulting in a long-term, minor, beneficial impact to the character-defining features of this roadway.

Mitchell Road / Fort Cronkhite

Mitchell Road would be widened to 24 feet to improve bicycle safety, but its historic configuration would be retained, so this change would be a minor, beneficial impact.

The unpaved lot at Rodeo Beach would be closed and revegetated. A ranch road bisects the valley floor and poses a hydrologic impediment. The road would be removed and/or modified to allow for unconstrained movement of water and sediments.

Other unpaved areas would be paved. Infill parking would be implemented in Fort Cronkhite. The exact design and configuration of proposed new infill parking within Fort Cronkhite will be determined following the completion of a Cultural Landscape Study of the Fort. Parking will be managed to be compatible with already made commitments to enhance the Historic District. The flow route of the seeps through this area would be defined. These actions would result in a long-term, minor, adverse impact to the resource.

Service Road Associated with Bicycle/Pedestrian Tunnel Bypass to Fort Baker

In conjunction with the new bicycle/pedestrian trail connecting Fort Baker and the bike lanes at the Barry-Baker tunnel, a historic service road would be revegetated, as shown in Appendix A. This would result in a long-term, minor, adverse impact.

Roads and Trails Maintenance Yard

A new parking area and motor vehicle road would be added within the footprint of the historic Fort Cronkhite parade ground, as well as a new maintenance garage. These actions would result in a long-term, moderate, adverse impact.

Establishing parking at the maintenance yard and Fort Cronkhite would be consistent with the Headlands Institute proposed campus improvements, when finalized, and the Fort Cronkhite CLR.

Fort Barry Cantonment Area

The existing roads and trails would be stabilized and rehabilitated, resulting in a long-term, minor, beneficial impact in the area.

Trails

Most of the trails below are described in the "Appendix C: Supplemental Trail Assessment" (Feierabend and Kruse 2006) to the *Historic Road Characterization Study*. Several actions of this plan would affect these historic resources, and so the potential impacts are considered here.

Battery Rathbone – McIndoe Trails. The proposed realignment of the Coastal Trail would include a trail segment routed across the battery component landscape. The existing heavily eroded social trail in this area would be removed and revegetated because the path is not maintainable in its current steep alignment. This would be a long-term, minor, beneficial impact.

Battery Alexander to Rodeo Beach Trail (Battery Smith – Guthrie). The path from Battery Alexander to the Rodeo Beach trail would be realigned to a more manageable, less steep alignment; the existing alignment would be regraded and revegetated. Gully repair would cause a minor adverse effect, but other actions would represent a long-term, minor, beneficial impact.

Coastal Trail — Rifle Range to Conzelman Segment and Conzelman to Riding Stables Segment. These segments of the existing Coastal Trail route remain as a landscape feature. They would be passively closed through signage and no longer maintained, but no other action would be taken. The impact would be long-term and negligible.

Rodeo Valley Trail. A bike route would be developed, the surface hardened (made permeable), and signage for safety added, resulting in a long-term, minor, adverse impact.

Battery Alexander Parking Area to Point Bonita Trailhead. The establishment of this trail would add a new feature to a historic district, resulting in a long-term, minor, adverse impact.

Rodeo Lagoon (South Shore) Trail. A switchback would be added to the trail to lessen the grade of an eroding section. This action would expand the footprint of the trail, resulting in a long-term, minor, beneficial impact.

A prehistoric site area south of Rodeo Lagoon is within the area of potential effect. Measures would be taken to avoid this site. Therefore, the long-term impact would be negligible and adverse.

Cumulative Effects

Implementing changes as described for Hawk Hill in its associated CLR would have minor beneficial impacts on cultural resources in that area. These actions would result in long-term, minor, beneficial impacts to historic resources as a result of stabilization/preservation of character-defining features.

Future improvements to Alexander Avenue and U.S. 101 could affect the historic integrity of the road system. Proposed improvements being considered for Alexander Avenue that could change the character-defining features of the road include the following:

- Class 2 bicycle lanes between U.S. 101 and Danes Drive, which could require excavation and construction of cut retaining walls in the 500-foot-long rock cut along Alexander Avenue
- sidewalks, transit stops, ADA ramps, and underpass improvements (under U.S. 101), which could affect the alignment and paved shoulders of the road
- replacement of existing timber guardrails with FHWA crash-tested, steel-backed timber guardrails to improve safety (the proposed replacement guardrail should be similar in appearance to the existing timber guardrail in order to maintain the historic integrity of the roadway)

These actions would result in long-term, moderate, adverse impacts to historic resources.

The minor beneficial impacts of the Hawk Hill CLR, and moderate adverse impacts of Alexander Avenue combined with the elements proposed under Alternative 3, would result in cumulative long-term, moderate, adverse impacts to historic resources.

Mitigation Measures

CR-1: Conzelman Road Cultural Landscape Management Requirements. A specific design guideline must be carried out for the Battery Spencer pullout because of the high sensitivity of the historic battery entrance adjacent to head-in parking stalls. These design guidelines would also apply to Overlooks 1 and 2. Treatment would include retaining the opening to the entrance free of parked cars, and surface treatment to distinguish it from asphalt paving.

CR-2: Conzelman Road / McCullough Road Intersection Cultural Landscape Management Requirements. The design of the roundabout for the Conzelman Road / McCullough Road intersection cannot be mitigated, and the intersection would lose its historical integrity. To provide some linkage to the past intersection alignment, design treatment of the intersection island would be developed with respect to cultural and natural resource management concerns.

CR-3: Western Conzelman Road Cultural Landscape Management Requirements. Along the one-way segment of western Conzelman Road, design guidelines would be undertaken to ensure that the erosion repair strategy would be compatible with the historical road character (improvements would be within the road prism, drainage and the inboard ditch would be preserved), and the design for the retaining wall along the Lower Conzelman Road segment should be compatible with the historic district.

CR-4: Bunker Road and Rifle Range Cultural Landscape Management Requirements. The rifle and pistol ranges, as components of the cultural landscape, need their own archeological study and cultural landscape assessment, even for the work of removing the effects of existing informal parking. Minor widening of the western portion of Bunker Road (from the tunnel to Mitchell Road) would preserve the character-defining features of the resource.

CR-5: Bunker Road / Old Bunker Road / Mitchell Road Intersection Cultural Landscape Management Requirements. Administrative remedies, such as a three-way stop, would be tested at the Bunker Road / Old Bunker Road / Mitchell Road intersection for a minimum period of three years to determine whether the accident rate at the intersection could be reduced effectively without extensive alterations. If this measure was not effective, the historic Y configuration would be converted to a T intersection, and all adjacent grades would be erased, including the former leg of Old Bunker Road; this feature would cause a loss of integrity.

CR-6: McCullough Road Cultural Landscape Management Requirements. Widened areas of McCullough Road would be treated in a manner that would be compatible with the surrounding landscape and would avoid changing the scale of the built feature.

CR-7: Field Road / Mendell Road Cultural Landscape Management Requirements. Design guidelines would ensure the compatibility of restored character of Mendell Road and the features at AA Position 81. Specifically, the features at AA Position 81 would need to be carefully mapped as a basis for guiding design work, and a cultural landscape assessment of the entire site would be required. For Mendell Road design guidelines for the surfacing material of the bike path would be needed to reflect the historical character of the roadway and compatibility with the historic setting.

CR-8: East Road Cultural Landscape Management Requirements. Attention must be given to the historic dump on the bay, with no fill into the dumpsite, protection of downslope and upslope drainage features, and protection of the large eucalyptus tree allée on the southernmost segment approaching the cantonment. Project work should be designed to protect, as practical, the eucalyptus windrow from root damage; to provide design guidelines/design details for roadside pullouts and walkways (San Francisco Bay Trail); to prevent stormwater runoff from road drainage from impacting the downslope archeological feature (dump site); and to retain water drainage features along the road. Specifically, mitigations should include

archeological testing at each drainage location that extended into the dump.

CR-9: Dubois Road Cultural Landscape Management Requirements. Actions affecting Dubois Road could not be mitigated and would be a permanent change to the resource. However, due to retention of the alignment and its function as a circulation feature, it would not lose its integrity to a degree that would require removal from the National Register of Historic Places.

CR-10: Julian Road Cultural Landscape Management Requirements. The McCullough Road / Conzelman Road intersection would be designed to avoid impacting Julian Road. The new parking lot and restroom would be modestly scaled and compatibly designed to minimize impact to the unpaved Julian Road.

CR-11: Mitchell Road / Fort Cronkhite Cultural Landscape Management Requirements. As mitigation for the effects of transportation improvements and following on the Presidio *General Management Plan Amendment*, existing mitigation for removing barracks at the Crissy Field / Fort Cronkhite cantonment level of integrity for the World War II era should be enhanced. Mitigations include maintaining the historic edge of the cantonment, including two curves on the end of Kirkpatrick and Edison streets. A cultural landscape report should be completed to inform infill parking design. This report would also inform the extent of wetland restoration in a manner that would not adversely impact the component landscape. Design guidelines would be developed to ensure compatibility of road shoulder parking details and other restoration efforts. There could be some unknown archeological issues in the parking areas west and north of the Fort Cronkhite WWII cantonment area; therefore, subsurface archeological investigation would have to be undertaken before restoration design.

CR-12: Fort Barry Cantonment Cultural Landscape Management Requirements. A cultural landscape report would be completed before site-specific designs were developed.

CR-13: Trails Cultural Landscape Management Requirements. *Battery Rathbone – McIndoe Trails* — The route of the relocated Coastal Trail across the battery would need additional design consideration by the park's cultural resource specialists. A separate archeological survey would be required for this area, as well as a cultural landscape inventory and assessment, to guide detailed development of the trail alignment.

Battery Alexander to Rodeo Beach Trail (Battery Smith–Guthrie) — This project would repair nearby Nike revetments. To mitigate the visual impact of an added feature, rehabilitation of the red rock road from Battery Smith–Guthrie to Battery Alexander would be undertaken. A separate archeological survey would be required for this area, as well as a cultural landscape inventory and assessment, to guide detailed development of a trail alignment.

Rodeo Valley Trail — To minimize impacts, the width and unpaved character of trail would be retained, as well as most of the current alignment (approximately 900 feet would be realigned).

Battery Alexander Parking Area to Point Bonita Trailhead — The earthworks at the southern end of the trail (mine casemate) would be repaired. Design guidelines would be required to ensure that a sense of scale and character was retained.

Rodeo Lagoon (South Shore) Trail — Prehistoric resources could exist in this area. To avoid such resources, an archeological subsurface survey would be required before design.

New Coastal Trail Segments — A new trail would be constructed for access to Hill 129. The trail should use historic circulation routes where feasible and otherwise be compatible with them.

CR-14: Roads and Trails Maintenance Yard: Designs for parking and circulation would be developed to retain the footprint of the Fort Cronkhite parade ground. New features, including the maintenance garage, would be compatible with the World War II scene and consistent with the enhancement of the World War II cantonment area.

CR-15: Photo-documentation: Certain historic resources that would be damaged as a result of actions proposed under this plan would be recorded through photo-documentation using 35 mm black-and-white and color photography. At a minimum, those features that would be recorded include the masonry conduit to be removed as a result of the Battery Spencer hillside removal; area where the Mendell roundabout would be constructed; Bun-

ker/McCullough Roads intersection; McCullough /Conzelman intersection; Bunker/Field Roads intersection; and Bunker/Old Bunker/Mitchell Roads intersection; and structure FA-909, Electrical Substation on Bunker Road.The photo-documentation, along with the plans for changes to these areas, would be deposited in the Park Archive and Record Center of Golden Gate National Recreation Area.

Conclusion

The changes proposed in Alternative 3, as a whole, would represent a long-term, moderate, adverse impact to historic resources. Particularly, the proposed modifications at Battery Spencer and the realignment of a number of historic Y intersections to T or roundabout alignments would represent alterations of these sensitive, character-defining features of Marin Headlands roadways. This alternative would not impair any park cultural resources or values.

Section 106 Summary

The park's Division of Cultural Resources has determined that Alternative 3 would have an *adverse effect* on the Forts Baker, Barry, and Cronkhite Historic District. A memorandum of agreement with the California State Historic Preservation Office would be developed as required in section 106 of the National Historic Preservation Act. Even though it would have an adverse effect, Alternative 3 would not result in impairment of the park's cultural resources.

The assessment of the impacts above for Alternative 3 shows an even mix of beneficial and adverse effects to historic features related to specific actions proposed in this alternative. Alternative 3 would include a number of minor and moderate adverse effects to specific historic features, most notably the construction of a roundabout at the intersection of Conzelman and McCullough roads and the excavation of a portion of the bluff on Conzelman Road adjacent to Battery Spencer. Further, Alternative 3 would include a consistent program of road widening and pull-out improvements. Overall, these actions would lessen the vernacular quality of the military circulation network and replace it with a standardized sense of design to the point that this alternative would indeed diminish the integrity of design, setting, and feeling of the historic district. As a result, Alternative 3 would have an adverse effect on the district.

4.4.5 IMPACTS OF ALTERNATIVE 2

Impact Analysis

Lower Conzelman Road

No major changes are proposed to Lower Conzelman Road under Alternative 2 that would have impacts on the roadway's character-defining features. Soil erosion on the unpaved shoulders between the trailhead parking lot and the U.S. 101 connector would continue because of ongoing parallel parking; this would represent a long-term, minor, adverse impact to the physical condition of the road as a historic resource.

Conzelman Road (U.S. 101 to McCullough Road)

Alternative 2 would rehabilitate Conzelman Road at close to its existing width, only providing better consistency in width, without changing the roadway's alignment. Parking spaces would be more clearly delineated at Battery Spencer and at Overlooks 1 and 2 to allow for safer parking; this would reduce the amount of parking available. The guardrail would be reset closer to the pavement edge to eliminate parallel parking in unsafe locations along the road. These changes would have a long-term, moderate, beneficial impact on historic resources for this roadway.

Conzelman Road / McCullough Road Intersection

The current Y intersection of Conzelman and McCullough roads would be changed to a T configuration to improve safety. This would result in a long-term, moderate, adverse impact.

Western Conzelman Road (McCullough Road to Field Road)

Along the one-way segment of western Conzelman Road, design guidelines would be needed to ensure that the repair of erosion feature would be compatible with the historical road character (improvements would be within the road prism, drainage and the inboard ditch would be preserved), and the design for the retaining wall along the Lower Conzelman Road segment should be compatible with the historic district.

Improved organization of the parking area at Hawk Hill would not substantially alter the character of the site from its present condition, as the slight

widening of the road would likely not be perceptible. Erosion control efforts along western Conzelman Road would not change the road's appearance or historical character, but would help prevent further erosion and damage to the roadbed, resulting in a long-term, moderate, beneficial impact.

Bunker Road

Under Alternative 2 Bunker Road would be rehabilitated at its existing width; its alignment, grass ditches, and shoulders would not be altered. The Barry-Baker tunnel would be converted to an eastbound one-way operation for motor vehicle traffic, but it would not be physically altered. Parking would continue to be allowed at the rifle range, resulting in a long-term, minor, adverse impact to this historic resource, which has been damaged by parking in the past.

Bunker Road / Old Bunker Road / Mitchell Road Intersection

As described for Alternative 3, a three-way stop would be established at the Y-shaped intersection of Old Bunker Road, Bunker Road, and Mitchell Road for the near term. If this configuration was not effective, a T intersection would be established and realigned roughly 120 feet west of its current location. This change would require a substantial amount of fill, and a number of cypress trees would be removed. The former leg of Old Bunker Road would be regraded and revegetated to a more natural appearing slope. These changes would alter the historical integrity of this road segment, resulting in a long-term, moderate, adverse impact.

Old Bunker Road

Alternative 2 would rehabilitate Old Bunker Road in its current footprint. This would result in a long-term, moderate, beneficial impact to this road.

McCullough Road

Alternative 2 would rehabilitate McCullough Road in its current footprint, with a long-term, minor, beneficial impact.

McCullough Road / Bunker Road Intersection

As described for Alternative 3, the intersection at McCullough Road and Bunker Road would be realigned to a T intersection, altering its historical character, resulting in a long-term, moderate, adverse impact.

Field Road / Mendell Road

Alternative 2 would close Mendell Road at Battery Mendell to all vehicular traffic and make it pedestrian only. The short segment of contemporary pavement would be removed, and the historic aggregate roadway would be restored, along with the historic curbs, as a stabilized aggregate pedestrian and bicycle path. At the former Bird Island Overlook historic anti-aircraft gun emplacements would be restored and interpreted with exhibit panels. Removing traffic and restoring historic features would result in a long-term, moderate, beneficial impact to the character-defining features of this roadway and overlook area.

Field Road / Bunker Road Intersection

As described for Alternative 3, the Bunker Road / Field Road Y intersection would be converted to a T configuration, which would alter its historical character, resulting in a long-term, moderate, adverse impact.

East Road

Alternative 2 would rehabilitate East Road at its existing width, retaining the pullouts that indicate the former roadbed alignment but making them narrower, resulting in a long-term, moderate, beneficial impact. The road's drainage culverts would also be replaced, improving the road's drainage and overall safety to users and resulting in a long-term, minor, beneficial impact by rehabilitating this historic entrance to Fort Baker.

Dubois Road

Alternative 2 would not change this unpaved road.

Slacker Road (trail)

Additional cross drains would be added to Slacker Road (trail) under Alternative 2, but otherwise the road would be retained for research vehicle access. It is a non-contributing road in terms of historical character, so this would not represent an adverse impact to historic resources.

Julian Road

Alternative 2 would rehabilitate drainage culverts and ditches along Julian Road, resulting in a long-term, minor, beneficial impact to the character-defining features of this roadway.

Mitchell Road / Fort Cronkhite

Mitchell Road would be rehabilitated under Alternative 2 at its existing width and would retain its historic configuration, so this change would result in a long-term, moderate, beneficial impact. The contemporary parking area at Rodeo Beach, west of the cantonment, includes paved and unpaved areas. The area that is currently unpaved would be reduced in size. The flow route of the seeps through this area would be defined. This would result in a long-term, minor, beneficial impact to the resource.

Roads and Trails Maintenance Yard

A new parking area and motor vehicle road would be added within the footprint of historic Fort Cronkhite parade ground, as well as a new maintenance garage. These actions would result in a long-term, moderate, adverse impact.

Trails

Battery Rathbone – McIndoe Trails. No change for these trails would be proposed in Alternative 2.

Battery Alexander to Rodeo Beach Trail (Battery Smith – Guthrie). The trail's current steep alignment down the ridge would remain, and a stairway would be constructed to traverse the gradient. This would result in a long-term, minor, beneficial impact.

Coastal Trail — Rifle Range to Conzelman Road Segment and Conzelman Road to Riding Stables Segment. These segments of the Coastal Trail route would remain in service and would be maintained, resulting in a long-term, minor, beneficial impact.

Rodeo Valley Trail. The trail route would be maintained along its historic alignment, and drainage improvements would be undertaken, resulting in a long-term, minor, beneficial impact.

Battery Alexander Parking Area to Point Bonita Trailhead. No new trail is proposed for this area in Alternative 2.

Rodeo Lagoon (South Shore) Trail. The existing route would remain unchanged.

No known prehistoric archeological sites are within the area of potential effect for this alternative.

Cumulative Effects

Implementing changes as described for Hawk Hill in its associated CLR would have a minor beneficial impact on cultural resources in that area as a result of stabilization/preservation of character-defining features.

Proposed improvements being considered for Alexander Avenue that could change the character-defining features of the road include the following:

- Class 2 bicycle lanes between U.S. 101 and Danes Drive, which would require excavation and construction of cut retaining walls in the 500-foot-long rock cut along Alexander Avenue
- sidewalks, transit stops, ADA ramps, and underpass improvements (under U.S. 101), which could affect the alignment and paved shoulders of the road
- replacement of existing timber guardrails with FHWA crash tested steel-backed timber guardrails to improve safety (the proposed replacement guardrail would be similar in appearance to the existing timber guardrail in order to maintain the historic integrity of the roadway).

These actions would result in long-term, moderate, adverse impacts to historic resources.

The minor beneficial impacts of the Hawk Hill CLR, and moderate adverse impacts of Alexander Avenue, combined with the elements proposed under Alternative 2 would result in cumulative long-term, minor, adverse impacts to historic resources.

Mitigation Measures

Except as noted below, mitigation measures would be the same as Alternative 3.

CR-15: Bunker Road and Rifle Range Cultural Landscape Management Requirements. The rifle and pistol ranges, as components of the cultural landscape, need their own archeological study and cultural landscape inventory.

Conclusion

The changes proposed in Alternative 2, as a whole, would result in long-term minor impacts to historic resources that would be both beneficial and adverse, with only localized adverse effects. This alternative would not lead to impairment of any park cultural resources or values.

Section 106 Summary

The park's Division of Cultural Resources has determined that Alternative 2 would have *no adverse effect* on the Forts Baker, Barry, and Cronkhite Historic District. A memorandum of agreement with the California State Historic Preservation Office would be developed as required in section 106 of the National Historic Preservation Act. Alternative 2 would not result in impairment of the park's cultural resources.

The assessment of impacts above reveals that most of the modifications to the historic features of the district under Alternative 2 would have negligible or beneficial effects. As a result, Alternative 2 would help preserve and enhance the integrity of the historic district.

The assessment for this alternative shows there would be a few minor to moderate adverse effects in connection with alterations to specific historic features of the district. These modifications include changing four intersections from a Y configuration to a T configuration to enhance safety (Bunker Road at Old Bunker and Mitchell roads, Conzelman Road at McCullough Road, McCullough Road at Bunker Road, and Bunker Road at Field Road) and two locations where informal parking areas would be formalized or paved (the rifle range and the new roads and trails maintenance yard in Fort Cronkhite). While these modifications would replace a measure of the vernacular character of the historic district's circulation system with an uncharacteristic level of modern roadway standardization, the district's integrity of design, setting, and feeling, while affected, would not be diminished to the point where this alternative would cause an adverse effect.

4.4.6 IMPACTS OF ALTERNATIVE 4

Impact Analysis

Lower Conzelman Road

Alternative 4 would repave Lower Conzelman Road, and the segment from the trailhead lot to Conzelman Road would be widened, without changing the alignment, to accommodate a new 5-foot-wide, Class 2 uphill bicycle lane, with a curbed shoulder and sidewalk. This would change the existing unpaved grass and aggregate shoulders along the roadway, resulting in a permanent, moderate, adverse impact to the road's historical character in localized, specific sections.

Conzelman Road

Alternative 4 would be similar to Alternative 3, but Conzelman Road at Battery Spencer would be modified more extensively by moving the roadway even farther north at the battery to allow for a median between travel lanes and a separate parking circulation aisle. These changes would require 25 feet of excavation along the inboard rock cut bank, still to be designed to maintain the same angle and appearance as the existing road cuts. A similar excavation would occur at Overlook 2. These changes would result in a long-term, moderate, adverse impact on the historical character of the road, which in the past was quite narrow and rather primitive.

Conzelman Road / McCullough Road Intersection

As described for Alternative 3, the intersection of Conzelman and McCullough roads would be changed from a Y configuration to a roundabout to allow safer turning of vehicles. This action would alter the intersection's historical character. Design treatment of the intersection island would be developed with respect to cultural and natural resource management concerns. This action would result in a long-term, moderate, adverse impact to this segment of the roadway because of the loss of historical integrity.

Western Conzelman Road (McCullough Road to Field Road)

The segment of Conzelman Road between the McCullough intersection and Hawk Hill would be widened to provide a Class 2 bicycle lane on the

uphill side. This widening would take up the entire existing roadbed, including the space currently used for informal parking, as well as the ditches. Curbs would be installed to provide adequate drainage. Head-in parking and a sidewalk viewing area would be added at Hawk Hill, requiring the addition of a 450-foot-long by 20-foot-high fill wall. These changes would result in a long-term, moderate to major, adverse impact to the road's historical character. Efforts to control erosion along western Conzelman would not change the road's appearance or character, and should help prevent further erosion and damage to the roadbed, with a long-term, moderate, beneficial impact.

Bunker Road

Under Alternative 4 Bunker Road would be widened to 30 feet in order to provide Class 2 bicycle lanes, which would mostly be accommodated within the existing road bench. This change would result in a long-term, moderate, adverse impact to the road's character-defining features, except at the eastern end, where the wider profile would require replacement of the Alexander Avenue underpass with two associated retaining walls. These actions would alter the historic view through the underpass, a long-term, major, adverse impact to historic resources.

Realigning Smith Road (a non-contributing road) and using the triangular grass field northeast of the rifle range for special event parking would impact the pistol range, which is a historic resource. Continued use of the pistol range would result in a long-term, minor, adverse impact to this historic resource.

Bunker Road / Old Bunker Road / Mitchell Road Intersection

As described for Alternative 3, a three-way stop would be established at the Y intersection of Old Bunker Road, Bunker Road, and Mitchell Road for the near term. If this three-way stop was not effective, it would be replaced with a T configuration and realigned roughly 120 feet west of its current location. While this change would improve traffic safety, it would require a substantial amount of fill, and a number of cypress trees would be removed. The former leg of Old Bunker Road would be regraded and revegetated to a more natural appearing slope. These changes would alter the historical integrity of this road segment, resulting in a long-term, moderate, adverse impact.

Old Bunker Road

As with Alternative 3, Alternative 4 proposes to widen Old Bunker Road slightly from its current configuration to accommodate two 10-foot-wide lanes and two 1-foot-wide paved shoulders with curbs, as well as a variable width sidewalk (2 - 4 feet wide) for pedestrians and school groups visiting the Marine Mammal Center. These changes would alter the road's character-defining features with soft shoulder treatment of grass on the western side of the road and a paved gutter on the eastern side. This would result in a long-term, moderate, adverse impact to this road historical character.

McCullough Road

Alternative 4 would be similar to Alternative 3, but McCullough Road overall would be widened to 28 feet, adding an uphill Class 2 bicycle lane. Additional widening would be required at the switchback corner. The existing ditch would be paved over, and most of the road would require curbing to accommodate drainage. A parking area would be added near the Conzelman Road/McCullough Road intersection. These changes would result in a long-term, major, adverse impact on historic resources.

McCullough Road / Bunker Road Intersection

As described for Alternative 3, changing the Y intersection at Bunker Road to a T intersection would alter its historical character. The new intersection would include a realigned roadway with a vegetated drainage ditch, resulting in a long-term, moderate, adverse impact.

Field Road / Mendell Road

Alternative 4 would rehabilitate Mendell Road to a width of 28 feet, allowing two lanes and an uphill 5-foot-wide bicycle lane along the entire length of the road to Bird Island Overlook. This wider road would fill nearly the entire road bench, including the ditch, with pavement, thus necessitating the addition of curbs for drainage. The unpaved parking lot at the Point Bonita Lighthouse trailhead would be paved, curbed edges installed, and parallel stalls demarcated. At Bird Island Overlook a

turnaround loop for vehicles would be paved around one of the former anti-aircraft gun placements. These changes would result in a permanent, moderate, adverse impact to the historical character of this roadway.

Realigning the driveway entries and parking along Field Road at Battery Alexander so that parking spaces could be reorganized to improve traffic safety would alter the historical character of this road segment. Similarly, adding a bus stop with a new retaining wall at the Nike missile site entrance would change the soft grassy edge of this road. These alterations would result in a long-term, major, adverse impact to this historic resource.

Field Road / Bunker Road Intersection

As described for Alternative 3, the Y intersection at Bunker and Field roads, which frames the approach to Fort Barry, would be converted to a T configuration, which would alter its historical character, resulting in a long-term, moderate, adverse impact.

East Road

Alternative 4 would rehabilitate East Road to a consistent width of 30 feet in order to provide Class 2 bicycle lanes. The pullouts that indicate the former roadbed alignment would be retained. The impacts of this work would be similar to Alternative 3, except for the northernmost 1,300-foot segment, where the road bench is not wide enough to accommodate the new width. This segment would require two fill retaining walls. An unpaved trail would also be added along East Road to the Alexander Avenue intersection. These alterations would result in a long-term, minor, adverse impact to the character-defining features of this historic roadway.

Dubois Road

Alternative 4 would reduce the road width of this unpaved historic connector to a trail, a long-term, minor, adverse impact to the resource.

Slacker Road (trail)

Slacker Road (trail) would be closed, removed, and revegetated under Alternative 4. It is a non-contributing road for the historic district, so this change would not represent an adverse impact to historic resources.

Julian Road

Alternative 4 would be the same as Alternatives 2 and 3, proposing to rehabilitate drainage culverts and ditches along Julian Road. This would result in a long-term, minor, beneficial impact to the character-defining features of this roadway.

Mitchell Road / Fort Cronkhite

Mitchell Road would be widened on its southern edge under Alternative 4 to 30 feet to allow Class 2 bicycle lanes in both directions. This would reduce available parking and alter the road's historic configuration, resulting in a long-term, moderate, adverse impact. The modern parking area at Rodeo Beach, west of the cantonment, would be subject to additional development and definition in order to formalize and manage parking. The unpaved lot at Rodeo Beach would be closed and revegetated. Other unpaved areas would be paved. The flow route of the seeps through this area would be defined. These changes would result in a long-term, minor, beneficial impact to the resource.

Roads and Trails Maintenance Yard

A new parking area and motor vehicle road would be added within the footprint of historic Fort Cronkhite parade ground, as well as a new maintenance garage. These actions would result in a long-term, moderate, adverse impact.

Trails

Battery Rathbone – McIndoe Trails. Under Alternative 4 the Coastal Trail would remain on its alignment in Rodeo Valley, thus no trail work would occur here.

Battery Alexander to Rodeo Beach Trail (Battery Smith – Guthrie). The introduction of an accessible route would result in a more extensive new trail footprint, with a long-term, minor, adverse impact.

Coastal Trail — Rifle Range to Conzelman Road Segment and Conzelman Road to the Riding Stables Segment. The rifle range to Conzelman Road segment would remain open and would be maintained, while the Conzelman Road to the riding stables segment would be passively closed.

The overall impact would be long-term, minor, and adverse.

Rodeo Valley Trail. The route of the Rodeo Valley trail would be maintained, and drainage improvements would be undertaken, resulting in a long-term, minor, beneficial impact.

Battery Alexander Parking Area to Point Bonita Trailhead. The establishment of this trail would add a new feature to a historic district, representing a long-term, minor, adverse impact.

Rodeo Lagoon (South Shore) Trail. To establish an ADA route, multiple switchbacks would be added to the trail, extensively altering its alignment and resulting in a long-term, minor, adverse impact.

As described for Alternative 3, measures would be taken to avoid a prehistoric site area south of the Rodeo Lagoon area of potential effect. The long-term impact would be negligible and adverse.

Cumulative Effects

Implementing changes as described for Hawk Hill in its associated CLR would have minor beneficial impacts on cultural resources in that area as a result of stabilization/preservation of character-defining features.

Future improvements to Alexander Avenue and U.S. 101 that could change the character-defining features of the road include the following:

- Class 2 bicycle lanes between U.S. 101 and Danes Drive, which would require excavation and construction of cut retaining walls in the 500-foot-long rock cut along Alexander Avenue
- sidewalks, transit stops, ADA ramps, and underpass improvements (under U.S. 101), which could affect the alignment and paved shoulders of the road
- replacement of existing timber guardrails with FHWA crash tested steel-backed timber guardrails to improve safety (the proposed replacement guardrail would be similar in appearance to the existing timber guardrail in order to maintain the historic integrity of the roadway)

These actions would result in long-term, moderate, adverse impacts to historic resources.

The minor beneficial impacts of the Hawk Hill CLR, and moderate adverse impacts of Alexander Avenue, combined with the elements proposed under Alternative 2 would result in cumulative long-term, major, adverse impacts to historic resources.

Mitigation Measures

The mitigation measures for Alternative 4 would be the same as Alternative 3, except no mitigation would be needed for the Rodeo Valley trail (see "CR-13: Trails Cultural Management Landscape Requirements") because there would be no adverse impact.

Conclusion

Alternative 4 would cause long-term, major, adverse effects to historic resources in the Marin Headlands due to widespread changes to the scale of the district's circulation system, which cannot be mitigated through alteration of the project's design. Even though impacts would be long-term, major, and adverse, the park's Division of Cultural Resources has determined that the park's cultural resources would not be impaired.

Section 106 Summary

The park's Division of Cultural Resources has determined that Alternative 4 would have an *adverse effect* on the Forts Baker, Barry, and Cronkhite Historic District. A memorandum of agreement with the California State Historic Preservation Office would be developed as required in section 106 of the National Historic Preservation Act. Even though there would be an adverse effect, Alternative 4 would not result in impairment of the park's cultural resources.

As described in the finding of effect for Alternative 3, it was determined that a consistent program of roadway alterations would lessen the vernacular quality of the military circulation network and replace it with a standardized sense of design to the point that the alternative would diminish the integrity of design, setting, and feeling of the historic district and result in an adverse effect. Alternative 4 would include most of the alterations described for Alternative 3, intensifying and expanding the overall transformation of the circulation network from vernacular to standardized by including additional alterations. The most noteworthy of these

alterations would be a consistent, districtwide widening of roads to accommodate bicycle lanes. In addition to altering the character of the roads by significantly widening them, effects would consistently spill over to the features comprising the entire road corridor: vegetated shoulders would be paved, concrete curbs would be added where they currently do not exist, and roadside features would be altered or destroyed. With Alternative 4, the district's circulation network would retain integrity of location. However, integrity of design, setting, materials, workmanship, feeling, and association would all be diminished to the degree that this alternative, of the four alternatives, would have the most severe adverse effect on the historic district.

4.4.7 ADDITIONAL CULTURAL RESOURCE MITIGATION FOR NATURAL RESOURCE ENHANCEMENT

This plan's alternatives for other resources areas, specifically restoration efforts included as enhancement and mitigation for impacts on wetlands or habitat for the mission blue butterfly, could cause additional impacts on historic and archeological resources. This section briefly summarizes those actions and includes mitigation measures to address any effects, listed by geographic area.

The proposed mitigation measures for mission blue butterfly habitat would apply to Alternatives 2, 3, and 4, as the mitigation needs are nearly identical. Appendix D identifies the geographic areas listed below as polygons, which represent the proposed enhancement areas for mission blue butterfly habitat. Appendix F identifies the geographic areas listed below as sites for additional wetland enhancement. Sites 2, 7, and 8 of the wetland enhancement measures would be included in Alternative 3. Sites 2 and 8 would be included in Alternative 4.

Actions and Mitigations

Polygon 23, Southwest of Battery 129 (Alternatives 2, 3, and 4)

Action: Remove pampas grass from coastal bluff edges to allow for expansion of mission blue butterfly habitat. The impact would be negligible.

Mitigation CR-16: Undertake an archeological survey in advance to identify resources in the area of removal and to guide the vegetation management effort away from adverse effects on cultural resources. Modify the project to explicitly include access routes through the habitat area to the cultural resources to ensure ongoing access for maintenance and monitoring purposes.

Polygon 24, Slopes below Conzelman Road Southeast of Hawk Hill (Alternatives 2, 3, and 4)

Action: Remove thoroughwart shrub to allow for expansion of mission blue butterfly habitat. The impact would be negligible.

Mitigation CR-17: Undertake an archeological survey in advance to identify resources in the area of removal and to guide the vegetation management effort away from any adverse effects on cultural resources. (This work should be done concurrent with survey work in adjacent Polygon 26.) Develop a component cultural landscape for Battery Orlando Wagner, sufficient to guide the project in selecting an appropriate vegetation treatment. Provide cultural resource monitoring of the vegetation management work while underway.

Polygon 26, Kirby Cove Bowl below Conzelman Road (Alternatives 2, 3, and 4)

Action: Conduct limited tree removal; remove thoroughwart, cape ivy, and pampas grass to allow for expansion of mission blue butterfly habitat. Impacts would be minor to moderate and beneficial.

Mitigation CR-18: Undertake an archeological survey in advance to identify resources in the area of removal and to guide the vegetation management effort away from adversely affecting the resources. This work should be done concurrent with survey work in adjacent Polygon 24. Develop a component cultural landscape for Batteries Gravelly and Kirby, sufficient to guide the project in selecting an appropriate vegetation treatment. Provide a forest management plan for the Kirby Cove historic windbreak, and implement treatment recommendations for managing the biological health of the tree stand in the context of impacts from the vegetation management effort. Provide cultural resource monitoring of the vegetation management work while underway.

Polygon 27, Top of Battery 129 / Hawk Hill (Alternatives 2, 3, and 4)

Action: Remove trees, thoroughwart, and pampas grass to allow for expansion of mission blue butterfly habitat. The impact would be negligible.

Mitigation CR-19: Ensure that all trees are flush cut for removal, and develop a yarding strategy for the trees that would not impact cultural resources at Hill 129 or elsewhere. Develop a component cultural landscape for Battery Hill 129, sufficient to guide the project in selecting an appropriate vegetation treatment. Modify the project to explicitly include access routes through the habitat area to the cultural resources, so as to ensure ongoing access for maintenance and monitoring purposes.

Polygon 28a, Lower Conzelman Road between Battery Spencer and U.S. 101 (Alternatives 2, 3, and 4)

Action: Remove thoroughwart to allow for expansion of mission blue butterfly habitat. The impact would be negligible.

Mitigation CR-20: Provide cultural resource monitoring during project implementation to avoid impacts on the historic military era water catchment and delivery system.

Polygon 31, below West Conzelman Road, Upper to Lower Fisherman's (Alternatives 2, 3, and 4)

Action: Remove pampas grass from coastal bluff edges. The impact would be negligible.

Mitigation CR-21: Provide for cultural resource monitoring during project implementation in case remote fortification components were found.

Polygon 36, Fort Barry Eucalyptus Grove (north of Battery Rathbone-McIndoe) (Alternatives 2, 3, and 4)

Action: Remove trees to allow for expansion of mission blue butterfly habitat. The impact would be negligible.

Mitigation CR-22: Modify the project to explicitly include access routes through the habitat area to the cultural resources to ensure ongoing access for maintenance and monitoring purposes. Provide for cultural resource monitoring during project implementation in the event that remote fortification components are found. Use the forthcoming Fort Barry and Fort Cronkhite cultural landscape reports to guide vegetation treatment.

Polygon 37, Fort Barry Scattered Pines (north of Polygon 36) (Alternatives 2, 3, and 4)

Action: Remove scattered trees and shrubs to allow for expansion of mission blue butterfly habitat. The impact would be negligible.

Mitigation CR-23: Provide an advance archeological survey to identify resources in the area of removal and to guide the vegetation management effort away from adverse effect on the resources. Modify the project to explicitly include access routes through the habitat area to the cultural resources to ensure ongoing access for maintenance and monitoring purposes. The vegetation treatment would be guided by the forthcoming Fort Barry and Fort Cronkhite cultural landscape reports.

Site 2, Vicinity of T-1111 and Edge of Rodeo Lagoon (Alternatives 3 and 4)

Action: Remove fill in two locations. The impacts would be negligible.

Mitigation CR-24: Protect historic military era drainage features in the project area. Fully prepare for the potential for pre-contact remains to exist below fill, provide for extensive monitoring of fill removal effort once close to native soil level. The vegetation treatment would be guided by the forthcoming Fort Barry and Fort Cronkhite cultural landscape reports.

Site 7, New Bike Path and Underpass under Alexander Avenue, above Fort Baker Cantonment (Alternative 3)

Action: Provide stabilization treatment for areas where a natural seep crosses the new bicycle path. The impact would be negligible.

Mitigation CR-25: Undertake an archeological survey for the treatment area in advance to determine whether cultural features exist within the project area and guide treatment away from adverse effects on features.

Site 8, Gully Refilling and Revegetation below Conzelman Road (Alternatives 3 and 4)

Action: Remove fill in segment of draw. The impact would be minor and adverse.

Mitigation CR-26: In conjunction with development of a forest management plan for the Kirby Cove historic windbreak, develop treatment methods to allow for fill removal without adversely affecting the historic tree stand. Vegetation treatment would be guided by the forthcoming Forts Barry and Cronkhite cultural landscape reports.

Section 106 Summary

The park's Division of Cultural Resources has determined that these natural resource mitigations/enhancements, if implemented with the cultural resource mitigations described, would not alter the overall effects findings for the three action alternatives.

4.5 IMPACTS ON VISITOR USE AND EXPERIENCE

4.5.1 VISUAL AND AESTHETIC RESOURCES

Regulatory Framework

The protection of aesthetic values is addressed in *NPS-77: Natural Resource Management Guidelines* (NPS 1991). These NPS guidelines state:

> Protection of aesthetic values is not a program in itself but is an element of most natural resource management programs. It may be argued that aesthetics is the over-arching principle that unites the various management strategies discussed in this Guideline. Our current visitors and the future generations for which we are managing parks "unimpaired" should be able to perceive the same objects (or the same types of objects) — whether animate or inanimate — and processes in the same contexts that existed when the park was established.

The NPS *Management Policies 2006* identify park resources and values as

> the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals (NPS 2006b, sec. 1.4.6).

Methodology for Analyzing Impacts

The analysis of visual resources for the study area is based on three priority sites: Battery Spencer, Hawk Hill, and Fort Cronkhite, as described in the "Affected Environment" (see sec. 3.4.1). Each of these priority sites is evaluated from the two to three key observation points. Viewpoints chosen reflect the most visible locations and locale of sensitive sight lines in each of the key areas. The effect of the proposed alternatives (e.g., a new parking lot, a road realignment, bus stop design, parking fee kiosks, new signage) from each key observation point is described, including a determination of the overall visual change.

The assessment of impacts considers whether the resulting visual change would have an adverse or beneficial effect on a scenic vista, would substantially damage or improve scenic resources, or substantially degrade or improve the existing visual character of the site. The assessment also evaluates each alternative's consistency with applicable NPS design goals and policies, and with standard visual impact criteria. Vegetation to be potentially removed on the site and public views is also discussed. Specifically, impacts to scenic resources will be determined by analyzing:

- the ability of the alternatives to preserve the scenic qualities of the study area, including scenic vistas, vegetation, and landforms
- the consistency of the alternatives with the *General Management Plan's* goals and objectives regarding visual and aesthetic issues

A short-term impact would be temporary due to construction, restoration, or demolition activities. A long-term impact would be permanent and continual.

Beneficial impacts would enhance the existing landscape character, access to historically important viewpoints or a sequence of viewpoints, or the visibility of a viewpoint or sequence of viewpoints.

Adverse impacts include effects that would reduce the existing landscape character, access to historically important viewpoints or a sequence of viewpoints, or the visibility of a viewpoint or sequence of viewpoints.

The level of impact was determined by assessing the following:

- the potential of proposed elements to alter immediately surrounding views
- the potential of proposed elements to affect distance views
- for adverse impacts, the effectiveness of mitigation measures to avoid or reduce impacts associated with the proposed improvements

The following impact intensities were defined for impacts on visual and aesthetic resources:

Negligible: The impact would be imperceptible or not detectable.

Minor: The impact would be slightly detectable or localized within a relatively small area.

Moderate: The impact would be readily apparent (i.e., the landscape character would change).

Major: The impact would be substantial, highly noticeable, and/or result in changing the character of the landscape in a way that would cause substantial degradation or improvement (e.g., adding light structures to an area where no light exists, or placing a new building in an existing pristine area).

Impacts for each alternative are described based on the analysis performed at the key observation points, as well as an overall assessment of the alternative's ability to preserve the scenic qualities of the planning area, including scenic vistas, vegetation, and landforms. A major adverse impact at one key observation point would not necessarily result in an overall adverse impact to the park. The overall visual impact rating of the study area, under each alternative, is determined based on the analysis from all of the key observation points. Visual simulations prepared from select key observation points are contained in Appendix E.

Impacts of Alternative 1 — No-Action Alternative

Impact Analysis

Alternative 1 establishes the baseline for comparing other action alternatives since it represents no change from the existing management direction or level of management intensity. Actions and mitigation commitments in the *Fort Baker Plan* and the *Marine Mammal Center Site and Facilities Improvement Environmental Assessment* would be a part of the No-Action Alternative because the NEPA process has been completed and the plans represent NPS management direction. The actions and mitigation commitments for these two projects are described in "Elements Common to All Alternatives" (sec. 2.2). The No-Action Alternative would not remedy traffic and parking problems in the planning area beyond those measures identified in plans referenced above; would not provide for the restoration of natural and historic resource areas; and would not include measures to reduce/prevent erosion caused by improper parking along the roadways.

Priority Site 1: Battery Spencer Parking Area

No changes are proposed at Battery Spencer under the No-Action Alternative; therefore the existing visual character of Battery Spencer from all three key observation points would remain the same.

Priority Site 2: Hawk Hill

No changes are proposed at this site under the No-Action Alternative; therefore, the existing visual character of Hawk Hill from all three key observation points would remain the same.

Priority Site 3: Fort Cronkhite

No changes are proposed at this site under the No-Action Alternative; therefore, the existing visual character of Fort Cronkhite from all key observation points would remain the same.

Cumulative Impacts

Alternative 1 would have no direct or indirect impacts on visual resources. As a result, there would be no cumulative impacts under this alternative.

Mitigation Measures

No mitigation measures would be required for the No-Action Alternative.

Conclusion

Alternative 1 would not result in any direct, indirect, or cumulative impacts to visual resources. There would be no impairment of the park's resources or values related to visual and aesthetic resources.

Impacts of Alternative 3 — Preferred Alternative

Impact Analysis

Under Alternative 3 roadway infrastructure on most of the roads in the study area would be rehabilitated or reconstructed without altering the basic character of the roadways (e.g., adding 1 to 2 feet on each side of a road), and parking facilities would be improved and generally reduced in size. Pedestrian and bicycle facilities would also be improved, and additional transit options would be provided. Elements of this alternative would preserve the overall scenic qualities of the study area and would be consistent with *General Management Plan* objectives by limiting roadway rehabilitation/reconstruction efforts to areas that have been previously disturbed whenever possible, and by removing, restoring, and/or revegetating areas in order to restore the character of the natural environment and control erosion when feasible.

Because there are substantial numbers of visitors both to the study area and on the Golden Gate Bridge, it is assumed that all proposed changes at the three priority sites would be viewed by large numbers of people. The overall long-term impact of Alternative 3 on visual resources would be minor and beneficial.

Construction efforts would result in short-term, minor, adverse impacts on visual conditions at all three priority sites, even though short-term construction impacts would not be visible from all of the key observation points.

In addition, as discussed under "Biological Resources," the removal of nonnative trees would occur in selected areas designated as habitat compensation areas for the mission blue butterfly. However, the overall number of trees that would be removed is relatively small (less than 10 percent) compared to the overall number of trees in the study area. The majority of trees that would be removed are mature, invasive, and nonnative and are scattered throughout the area. Tree cutting would be done by hand crews, helicopter support, or with mechanical equipment, and logs and limbs would be removed from the area by helicopter and/or highline cable to avoid dragging logs over the ground and scarring slopes, soils, and surrounding desirable native vegetation. All stumps would be either cut flush with the ground and rubbed with dirt to avoid leaving bright, highly visible fresh cut stumps of stump ground. Tree removal associated with mission blue butterfly habitat compensation efforts would result in a short-term, moderate to major, adverse impact on visual conditions at the Battery Spencer and Hawk Hill priority sites; however, these short-term impacts would not be visible from all of the key observation points. It is anticipated that the long-term visual effects would be moderate and beneficial as the removal of trees would expand the panoramic views in the area.

Priority Site 1: Battery Spencer Parking Area

Alternative 3 proposes to widen and realign segments of Conzelman Road in order to provide an uphill Class 2 bike lane, with additional widening on the tightest radius corners so that tour and transit buses would be able to stay within their respective lanes. Parking areas at Battery Spencer and Overlooks 1 and 2 would be organized and delineated to improve safety and reduce parking area impacts, and the guardrail on the south side of the road would be reset closer to the pavement edge to eliminate parking at unsafe locations along the road. Transit improvements include a westbound bus stop, sidewalk, crosswalk, and path along the road leading up to Battery Spencer. A new eastbound transit stop would also be provided at the west end of the parking area and would be within the transit lane. In select areas benches, recycling, and trash containers would be installed. Depending on the method of parking fee collection selected, fee collection vending machines, meters, or deposit boxes could be installed; however, these would be small machines approximately 3 feet by 3 feet by 5 feet high and would be integrated with trailhead bulletin boards and exhibit panels.

Between Battery Spencer and Overlooks 1 and 2, the shifting of the guardrail inward to block some of the current parallel parking would in turn, result in fewer views being blocked by parked cars for users on the road. Elements of Alternative 3 would require cuts into the existing hillside along the north side of Conzelman Road. The proposed widening could be accommodated within the existing road bench except for a 590-foot-long segment between Battery Spencer and Overlook 1, where both a wider road and parking improvements would require excavation into the inboard rock cut bank. A 30-foot cut into the existing rock cut at Battery Spencer is proposed to improve sight distance around the curve and provide adequate backing space for vehicles. The rock bank would be excavated to the same angle and slope as exists now. An approximately 3-foot-wide flat shoulder bench would be provided at the base of the cut slope to catch the occasional falling rock debris before it rolled into the travel or bike lanes. There is already a very noticeable cut in the hillside at this location; therefore, the changes proposed under Alternative 3 would not be substantial enough to attract visual attention beyond the foreground viewing distance. Once construction was completed, the area would return to approximately the same visual condition as before, resulting in a long-term, negligible, adverse impact.

Overall, the main impact at Battery Spencer would be short term, minor, and adverse. The proposed pedestrian/hiking trail changes (re-routing of the Coastal Trail to the shoulder of Conzelman Road) would result in a negligible visual impact to the Battery Spencer priority site.

Key Observation Point 1 — Golden Gate Bridge. Changes proposed under Alternative 3 that could be seen from the Golden Gate Bridge within this priority site would be long-term and negligible. (See Photo 3.1 and Appendix E.)

Key Observation Point 2 — Golden Gate Bridge Vista Point. From Vista Point the cut in the hillside to the north of Battery Spencer would be apparent due to the angle of view of the excavation. However, once excavation of the hillside was complete, the area would return to approximately the same visual condition as before the cut. Therefore, the resulting impact would be short term, minor, and adverse. (See Photo 3.2 and Appendix E.)

Key Observation Point 3 — Battery Spencer Parking Area. The cut required on the south-facing hillside would be most noticeable at the base of the hill, near the roadway. Motorists, pedestrians, and bicyclists visiting the Battery Spencer site would have a clear, unobstructed foreground view of the proposed roadway/hillside changes. However, once excavation of the hillside was complete, the area would return to approximately the same visual condition as before the cut. Therefore, the resulting impact would be short term, minor, and adverse (see Photo 3.3).

Priority Site 2: Hawk Hill

Alternative 3 proposes a 2-foot widening of Conzelman Road between the McCullough Road intersection and Hawk Hill to provide slightly more space for both bicycles and automobiles. The proposed widening would fit within the existing road bench except for two short segments (100 to 150 feet) where small fill retaining walls (less than 10 feet tall) might be required below the road to have adequate width for both the wider paved roadway and the Coastal Trail. The guardrail along Conzelman Road would be reinstalled within 2 to 3 feet of the lane edge to eliminate unsafe parking on the shoulder. In addition, the existing turnaround at the start of the one-way road would be enlarged. A fill wall approximately 515 feet long by 14 feet high (maximum), would be constructed below the road. At the Hawk Hill parking area the current angle parking would be reconfigured to head-in parking, and space for a sidewalk would be provided. New parallel parking spaces would be provided on the inboard side of the road. On the east end of the parking area where more space is available, the existing perpendicular/head-in parking would be retained. Additional parking farther to the east would require another longer fill wall. Where there was sufficient width on the walk, benches and trash / recycling containers would be provided. Curb cuts and accessible crosswalks would connect to the coast fortification tunnels on the north side of the road.

A vault toilet and a parking fee vending machine would also be installed at Hawk Hill. No cutting or excavation would occur in the visually prominent rock cut slopes above (north of) the road between the McCullough intersection and Hawk Hill. Overall, the changes proposed under Alternative 3

would result in a long-term, moderate adverse visual impact to the Hawk Hill priority site.

It is anticipated that it will take one to two years for the shrubs to fully establish. In the long term, visitors would experience greater panoramic views and a greater sense of openness.

Between the McCullough Road intersection and Hawk Hill, the three large gullies eroded into the slopes below Conzelman Road would be filled and revegetated with native plant communities. During this project, grading and scarring would be highly visible from along Conzelman Road, the Golden Gate Bridge, San Francisco Bay, and even from the Presidio in San Francisco, but within one year or less there should be substantial regrowth and the visual scars would rapidly recede.

The first phase of tree removal associated with mission blue butterfly habitat compensation would take approximately five to six weeks and would likely occur during the road closure to limit impacts to the public, resulting in a short-term adverse impact. However, if the timing for the closures cannot be coordinated, the tree removal would likely occur in late fall following the migratory season, so as to reduce potential impacts to programs engaged in hawk watching. Following removal, all stumps would be flush cut or ground and the slash/duff would be raked from the site to remove debris. Erosion control (wattles and rice straw) would be installed following removal to protect the soil and suppress weeds. The site would support limited vegetation and appear disturbed until replanted the following winter.

The tree removal associated with mission blue butterfly habitat compensation efforts would be highly noticeable from key observation points 1 and 3; however, after tree removal was complete, the area would be filled in by native plant communities within three to five years. Therefore, the visual impact would be short term, moderate, and adverse.

Key Observation Point 1 — Golden Gate Bridge. The overall visual character of the Hawk Hill site from key observation point 1 would not be degraded by the proposed changes. The fill wall (which would be up to 515 feet long and up to 14 feet high) that would be constructed below the road at the existing turnaround (at the start of the one-way road) and at the east parallel parking, and the smaller wall that might be required for widening Conzelman Road and the Coastal Trail would be only slightly visible from this observation point. Pedestrian/hiking trail improvements under Alternative 3 would not be visible. The changes proposed under Alternative 3 within this priority site would be long-term and minor and adverse. (See Photo 3.4 and Appendix E.)

Key Observation Point 2 — Overlook 2. The fill walls that would be constructed below the road at the existing turnaround (at the start of the one-way road) and at the east parallel parking would be readily apparent from this key observation point. Pedestrian/hiking trail improvements under Alternative 3 would not be visible. Changes under Alternative 3 within this priority site would have a long-term, moderate, adverse impact (see Photo 3.5).

Key Observation Point 3 — Hawk Hill. The retaining walls from this key observation point would be readily apparent. Benches, trash, and recycling containers would not alter the visual character of the area because of the prior alterations and existing structures (tunnel, benches, trash cans, roadways, etc.). The visual effect of changes under Alternative 3 would be long-term, moderate, and adverse. (See Photo 3.6 and Appendix E.)

Priority Site 3: Fort Cronkhite

Alternative 3 would realign the Bunker Road / Old Bunker Road / Mitchell Road intersection with a new T intersection approximately 120 feet west of the current location, which would require excavation and fill. This realignment would require a substantial amount of fill and removal of several existing large cypress trees. The former leg of Old Bunker Road would be regraded to restore a somewhat natural slope and revegetated with native plants. This alternative would also widen Mitchell Road to 26 feet to improve bike safety. The widening would occur primarily on the lagoon (south) side of the road, since the north side of the road is limited by existing buildings. All widening would be accomplished on existing shoulders, which would reduce the amount of current parking. Parking along Mitchell Road would be reorganized with a combination of parallel and head-in spaces. A transit stop with shelters would be installed on Mitchell Road where the footbridge path crosses Rodeo Lagoon, and a parking fee vending machine would be added near the footbridge trailhead. The

transit stop near the existing paved Rodeo Beach parking area would be improved with a shelter, benches, signs, and a parking fee vending machine. The gate closing Mitchell Road to motor vehicles would be replaced with locking fold-down bollards with 5-foot-wide openings for bicycles and pedestrians. The new closure would be installed east of the present gate, at the west edge of the paved Rodeo Beach parking area.

In addition to the proposed roadway changes, the existing unpaved lot portion of the Rodeo Beach lot would be closed, the area revegetated, and natural resources within the riparian zone restored. Aesthetic improvements would result from the removal of road fill in this shoreline area, affording visitors a visual connection with the Pacific Ocean, beach, and upslope wetlands. A new transit stop/shelter would be provided, and a stairs and fence would be constructed on the south side of Mitchell Road near the Rodeo Beach lot in order to "funnel" pedestrian movements to a dedicated path, preventing shortcuts down the slope to the beach, and thereby reducing erosion. The proposed bicycle improvements under this alternative would not alter the existing visual condition at the site, resulting in a negligible visual impact. Construction would result in a short-term, minor, adverse impact. Overall, the long-term benefit of restoring the unpaved Rodeo Beach parking area would effectively balance the adverse visual effect of the other changes. A long-term, moderate, beneficial visual impact would result from the changes proposed under Alternative 3.

Key Observation Point 1 — Coastal Trail. From this key observation point, the foreground view of the unpaved parking area would be substantially enhanced by replanting and restoration, and the area would appear more natural and less chaotic to a large number of foreground viewers. Replacing the gate at the end of Mitchell Road with bollards would further enhance the view. The impact during construction would be short term, minor, and adverse. When weighing the moderate adverse visual impact of the roadway widening and other improvements with the long-term, major, beneficial visual impact of revegetation of the unpaved parking area, Alternative 3 would have a long-term, moderate, beneficial impact. (See Photo 3.7 and Appendix E).

Key Observation Point 2 — Mitchell Road. The visual change from this key observation point would be limited to the widening of Mitchell Road, which would be accomplished on existing shoulders, and other improvements along the road, including drainage swales, better organized roadside parking, a new transit stop and shelter near the foot bridge across the lagoon, and a walkway (Rodeo Lagoon trail). During construction these changes would result in a short-term, minor, adverse impact. After construction there would be a minor, beneficial impact from this observation point since the roadway would be more defined, and parking would appear more organized (see Photo 3.8).

Other Visual Resource Changes

In addition to the visible changes described at the three priority sites, Alternative 3 would visibly alter the visual resources of the Marin Headlands and Fort Baker at the following locations:

- The currently wide undefined pullouts along East Road would be reduced in size and revegetated, providing more space for the pedestrian overlooks and the San Francisco Bay Trail.
- Other parking areas, such as those at the Lower Fisherman's trailhead, the riding stables, and the Point Bonita trailhead, would be reduced in size and the excess space revegetated. The result would be less intrusive parking areas that would better blend into the natural landscape.
- Mendell Road would be closed to motor vehicles. The existing parking area at Bird Island Overlook would no longer be accessible by automobile, nor would parked automobiles be visible on this prominent ridgetop location.
- The new short section of Slacker Road (trail) foot trail would likely result in some scarring of the hillside and may be visible from Julian and McCullough Roads.
- The visually prominent scar on the ridgeline above Rodeo Beach caused by the Battery Alexander to Rodeo Beach trail would be replaced by a new trail in a less prominent location and the scar revegetated.
- The two new bicycle and pedestrian bridges over Rodeo Creek (at Smith Road and near

the Capehart housing area) would add large new visual elements, but would be sited at locations where the surrounding willow trees would screen the new structures from adjacent areas.

- Shifting the trailhead parking area from the rifle range to Smith Road would move parked cars from a site where they can be plainly seen from Bunker Road and many of the trails around the valley to the much less visible Smith Road site. The Smith Road parking area would be further screened by shifting it closer to Bunker Road so that viewers on the road would look out and over the parked cars.
- The new bicycle /pedestrian path and tunnel underpass at Alexander Avenue connecting Fort Baker to Bunker Road would be a visible new facility. However its location below Alexander Avenue (it would only be visible to southbound traffic) and Bunker Road (only visible to westbound traffic) would reduce its visual prominence. After a year or so of revegetation, the visual prominence of the path's cut-and-fill slopes would be greatly reduced.
- Approximately 14 parking fee vending machines would be installed in heavily used and medium to large parking areas (including the sites already described), if the pay and display method of fee collection was selected. In most sites the machines (about the same size as a small phone booth) would be integrated into trailhead exhibit panels and bulletin boards. At other parking areas signs would be installed to inform users that proof of fee payment is required and the location of the nearest vending machine.
- As previously described under impacts to biological resources, trees would be removed at the Marin roads and trails maintenance yard to accommodate a new garage and vehicle apron. This new structure would be more visible than what currently exists, especially for visitors going to the Marine Mammal Center and hikers on Old Bunker Road. However, the garage would be designed and constructed with materials to minimize reflectivity and blend in with the natural surrounding. Overall, constructing a compatible new garage to house equipment, reducing the roads and trails maintenance yard by up to half, and revegetating the area would visually improve the site.

All areas disturbed by plan implementation would be revegetated to reduce scarring and blend the changes into the park landscape. These additional plan elements would constitute short-term, minor, adverse impacts due to construction, but long-term, minor, beneficial impacts.

The study area provides a striking and rugged backdrop against the surrounding urbanized Bay Area. The visual prominence and importance of this area to the regional landscape is substantial. While Alternative 3 proposes to rehabilitate and reconstruct roadway infrastructure so as not to alter the character-defining elements, some changes to the visual landscape would occur, including cuts into hillsides and rock faces, plus construction of retaining and fill walls. In contrast, some elements of this alternative would restore natural and cultural features to portions of the study area, thereby improving visual conditions. The overall impacts of Alternative 3 would be minor and adverse in the short term due to construction and minor and beneficial in the long term.

Cumulative Impacts

Other projects in the study area, including implementation of the *Fort Baker Plan,* would provide for long-term protection and enhancement of Fort Baker's character by preserving and restoring historic buildings and the cultural landscape. Restoring portions of the Fort Baker waterfront to beach and grassy areas would improve views from off site. Future improvements proposed along Alexander Avenue include bike lanes, sidewalks, guardrails, and ADA ramps. Between U.S. 101 and Danes Drive, excavation and construction of retaining walls in the 500-foot-long rock cut would be required to provide the recommended width for bike lanes. Future *Fire Management Plan* implementation projects that would include prescribed burning and mechanical treatments could result in short-term, minor to moderate, adverse impacts on visual resources and the visitor experience. However, when combined with actions under this alternative there would be no long-term incremental effect. These actions, combined with elements proposed under Alternative 3, would result in long-term, minor, beneficial impacts to visual resources.

Mitigation Measures

No mitigation measures beyond those already incorporated into the project would be needed.

Conclusion

Alternative 3, as a whole, would have a long-term, minor, beneficial impact on visual resources. Visual changes at Battery Spencer would result in a long-term, negligible, adverse impact; those at Hawk Hill, a long-term, moderate, adverse impact; and those at Fort Cronkhite, a long-term, moderate, beneficial impact. Construction efforts at all sites would result in short-term, minor, adverse impacts. Cumulative impacts would be minor and beneficial. There would be no impairment of the park's resources or values related to visual and aesthetic resources.

Impacts of Alternative 2

Impact Analysis

Under Alternative 2 roadway infrastructure would be rehabilitated within the existing roadway width, parking facilities would be improved, and additional transit options would be provided. Some pedestrian and bicycle facilities would be improved for safety and circulation within the study area. This alternative would not appreciably alter physical infrastructure; instead uses would be limited or reduced to fit within available space. Elements of this alternative would preserve the overall scenic qualities of the study area and would be consistent with *General Management Plan* objectives by limiting rehabilitation or reconstruction efforts whenever possible to areas that have been previously disturbed. Included would be some basic restoration and rehabilitation efforts that would restore the character of the natural environment and control erosion. The overall long-term impact of Alternative 2 on visual resources would be minor and beneficial.

Construction efforts would result in short-term, minor, adverse impacts at all priority sites, although short-term construction impacts would not be visible from all key observation points.

As discussed under "Biological Resources" and under Alternative 3, nonnative trees would be removed in selected areas designated as habitat compensation areas for the mission blue butterfly. However, the overall number of trees that would be removed is small compared to the overall number of trees in the study area. The majority of trees that would be removed are mature, invasive, and nonnative and are scattered throughout the area. Tree cutting would be done by hand crews, and logs and limbs would be removed by helicopter and/or highline cable to avoid dragging logs over the ground and scarring slopes, soils, and surrounding desirable native vegetation. All stumps would be cut flush with the ground and rubbed with dirt to avoid leaving bright, highly visible fresh cut stumps. Tree removal associated with mission blue butterfly habitat compensation efforts would result in a short-term, moderate to major, adverse visual impact at the Battery Spencer and Hawk Hill priority sites; however, these short-term impacts would not be visible from all key observation points.

Priority Site 1: Battery Spencer Parking Area

Parking improvements proposed for Battery Spencer and Overlook 1 would not involve widening Conzelman Road; therefore, no cutting on the south-facing hillside would be necessary. Installing a safety guardrail would not be noticeable to anyone outside the foreground viewing distance and would not alter the existing visual character of the Battery Spencer site. Proposed transit changes would visually affect the Battery Spencer site. Overall, proposed changes the Battery Spencer site would be minor and would not degrade the site's existing visual character. Overall, visual impacts at Battery Spencer would be long-term and negligible under Alternative 2.

Key Observation Point 1: Golden Gate Bridge. Physical barriers that could be installed under this alternative to reconfigure and delineate parking at Battery Spencer would not be visible from the Golden Gate Bridge. Similarly, moving the guardrail closer to the pavement edge would not be noticeable from the bridge. Changes proposed under Alternative 2 would have a long-term, negligible, adverse impact. (See Photo 3.1 and Appendix E.)

Key Observation Point 2: Golden Gate Bridge Vista Point. Changes proposed under Alternative 2 would not be detectable from Vista Point. Impacts on visual resources under Alternative 2 would be long-term and negligible. (See Photo 3.2 and Appendix E.)

Key Observation Point 3: Battery Spencer Parking Area. Physical barriers that could be installed to reconfigure and delineate parking at Battery Spencer would draw the visual attention of visitors to this area, yet would not substantially degrade the visual character of the Battery Spencer site. The resulting impact would be long-term, minor, and adverse. Moving the guardrail closer to the pavement edge would cause a long-term, negligible, adverse visual impact (see Photo 3.3).

Priority Site 2: Hawk Hill

Under Alternative 2 the existing 11 unpaved head-in parking stalls at the east edge of the Hawk Hill parking area would be retained. In the middle and western portions of the parking area, the existing haphazard and undefined parking area along the road would be designated as parallel parking. This would be accomplished by delineating the unpaved parallel parking lane with signage, and installing bollards or a log curb to keep cars off of the unpaved sidewalk. On the outboard side of the walk, a combination guardrail and handrail would be installed to prevent visitors from running or falling down the steep slope below the road. No cutting of the south-facing hillside at Hawk Hill would be necessary to accommodate the proposed improvements.

The parking changes proposed for Hawk Hill would be noticeable to those in the foreground and near the middleground (key observation point 2). A long-term, minor, beneficial visual effect would result from proposed parking changes at Hawk Hill since the area would appear more organized. Bicycle and pedestrian/hiking trail changes would be inconsequential and would not visually affect the Hawk Hill priority site.

Tree removal associated with mission blue butterfly habitat compensation efforts would be highly noticeable; however, after tree removal was complete, the area would be filled in by native plant communities.

Overall, the visual impact would be long-term, minor, and beneficial under Alternative 2.

Key Observation Point 1: Golden Gate Bridge. The physical changes proposed under Alternative 2 at this priority site would be limited to reconfiguring the parking area, which would not be detectable from observation point 1. Therefore, the impact would be negligible. (See Photo 3.4 and Appendix E.)

Key Observation Point 2: Overlook 2. No actions under Alternative 2 would be visible from Overlook 2, so there would be no impact (see Photo 3.5).

Key Observation Point 3: Hawk Hill. At the Hawk Hill observation point the parking area changes would present a more organized appearance. Bicycle and pedestrian/hiking trail changes would be imperceptible and would not visually affect the Hawk Hill priority site. The visual effect of changes would be long-term, minor, and beneficial. (See Photo 3.6 and Appendix E.)

Priority Site 3: Fort Cronkhite

Under Alternative 2 Mitchell Road would be rehabilitated, but would remain at its existing 22-foot width, and all existing parking would remain as is. The unpaved Rodeo Beach parking area would be reduced to accommodate 55 cars, and it would be reorganized and delineated with timber and/or concrete wheel stops. The drainage channel between the unpaved and paved parking areas would be excavated and partially restored with wetland vegetation. In addition, the construction of stairs and a fence on the south side of Mitchell Road near the Rodeo Beach parking area would channel pedestrian movements to a dedicated path, preventing shortcuts down the slope to the beach, and thereby reducing erosion. The Mitchell Road / Bunker Road / Old Bunker Road intersection would also be realigned.

The rehabilitated areas at the Fort Cronkhite priority site would be visible to those in the foreground and middleground. The changes proposed under Alternative 2 would result in a long-term, minor, beneficial impact on visual resources at the Fort Cronkhite priority site because a portion of the unpaved parking area at Rodeo Beach would be removed (west of the paved area), allowing the partial restoration of the riparian corridor in that area. Organizing the existing parking area would improve the visual character of the Fort Cronkhite priority site. Improvements along Mitchell Road, the stabilization of the Coastal Trail connection, and the improvement of the Rodeo Lagoon loop trail would be minor in scale and would only be noticeable to those in the immediate foreground. The parking and roadway changes proposed by

Alternative 2 would result in an overall long-term, minor, beneficial visual impact for the Fort Cronkhite priority site.

Key Observation Point 1: Coastal Trail. Visual changes under Alternative 2 would have a long-term, minor, beneficial impact because the unpaved parking area would be restored to a more natural riparian area. (See Photo 3.7 and Appendix E.)

Key Observation Point 2: Mitchell Road. The visual change from Mitchell Road would be imperceptible; therefore, the impact would be negligible (see Photo 3.8).

Other Visual Resource Changes

In addition to the changes described for the three priority sites, Alternative 2 would visibly alter the visual resources of the Marin Headlands and Fort Baker in the following locations:

- The currently wide undefined pullouts along East Road would be reduced in size and the remainder of the space converted to planting areas, with more space for the pedestrian overlooks and the San Francisco Bay Trail.
- Other parking areas such as the Lower Fisherman's and rifle range trailheads would be reduced in size and the excess space revegetated. The result would be less intrusive parking areas that would better blend into the natural landscapes of the area. Several other parking areas that would be reduced in size under Alternative 3 (the riding stables and the Point Bonita trailhead) would not be changed in Alternative 2.
- The westernmost portion of Mendell Road would be closed to motor vehicles, and the nonhistoric pavement would be removed. The existing parking area at Bird Island Overlook would no longer be accessible by automobile, nor would parked automobiles be visible on this prominent ridgetop location.
- The scars on the hillsides caused by Slacker Road (trail) would remain.
- The visually prominent scar on the ridgeline above Rodeo Beach caused by the Battery Alexander to Rodeo Beach trail would be reduced in size by narrowing the trail into a stairway alignment on the ridge and revegetating the remaining wide portions of the scar.
- The existing Smith Road loop would be removed and revegetated.
- No parking fee vending machines would be installed under this alternative.
- As previously described under impacts to biological resources, trees would be removed at the Marin roads and trails maintenance yard to accommodate a new garage and vehicle apron. This new structure would be more visible than what currently exists, especially for visitors going to the Marine Mammal Center and hikers on Old Bunker Road. However, the garage would be designed and constructed with materials to minimize reflectivity and blend in with the natural surrounding. Overall, constructing a compatible new garage to house equipment, reducing the roads and trails maintenance yard by half, and revegetating the area would visually improve the site.

All areas disturbed during plan implementation would be revegetated to reduce scarring and blend the changes into the park landscape. These additional plan elements would constitute short-term, minor, adverse impacts during the construction period, but long-term, minor, beneficial impacts afterward.

Under Alternative 2 the physical infrastructure would not be appreciably altered, but instead the uses would be limited or reduced to fit within available space. This alternative would limit rehabilitation/reconstruction efforts to areas that have been previously disturbed whenever possible, and some basic restoration and rehabilitation efforts would restore the character of the natural environment. The overall impact of Alternative 2 would be minor and adverse in the short term due to construction and minor and beneficial in the long term.

Cumulative Impacts

Other projects in the study area, including the *Fort Baker Plan*, would provide for the long-term protection and enhancement of Fort Baker's character by preserving and restoring historic buildings and the cultural landscape. Restoring portions of the Fort Baker waterfront to beach and grassy areas would improve views from off site. Future im-

provements proposed along Alexander Avenue include installing bike lanes, sidewalks, guardrails, and ADA ramps. Between U.S. 101 and Danes Drive, excavation and construction of cut retaining walls in the 500-foot-long rock cut would be required to provide the recommended width for bike lanes. Future *Fire Management Plan* implementation projects that would include prescribed burning and mechanical treatments could result in short-term, minor to moderate, adverse impacts on visual resources and the visitor experience. However, when combined with actions under this alternative there would be no long-term incremental effect. These actions, combined with elements proposed under Alternative 2, would result in long-term, minor, beneficial impacts to visual resources.

Mitigation Measures

No mitigation measures would be required under Alternative 2.

Conclusion

The changes presented under Alternative 2, as a whole, would have a long-term, minor, beneficial impact on visual resources. The impact on Battery Spencer would be long-term, negligible, and adverse; the impacts at Hawk Hill and Fort Cronkhite would be long-term, minor, and beneficial. Construction efforts would result in short-term, minor, adverse impacts. Cumulative impacts would be minor and beneficial. There would be no impairment of the park's resources or values related to visual and aesthetic resources.

Impacts of Alternative 4

Impact Analysis

Under Alternative 4 roadway and trail infrastructure would be reconstructed and expanded to accommodate multi-modal access throughout the study area. Reconstruction would involve widening roadways, which would occasionally extend beyond the existing road bench and would more frequently require excavation of adjacent hillsides and the use of retaining walls. Parking facilities would be improved, and extensive pedestrian and bicycle facility enhancements would be undertaken, including rerouting existing trails, constructing new trails, and providing bicycle lanes on nearly all major roads.

Elements of this alternative would have an adverse effect on some of the scenic qualities of the study area, and they would not be entirely consistent with *General Management Plan* objectives because rehabilitation/reconstruction efforts would in some instances extend beyond areas previously disturbed. However, like the other alternatives, Alternative 4 would also rehabilitate and/or revegetate areas in order to restore the character of the natural environment and control erosion.

Construction efforts would result in short-term, minor, adverse impacts at all priority sites, even though the impacts would not be visible from all of the key observation points.

As discussed under "Biological Resources" and under Alternative 3, nonnative trees would be removed in selected areas designated as habitat compensation areas for the mission blue butterfly. However, the overall number of trees that would be removed is small compared to the overall number of trees in the study area. The majority of trees that would be removed are mature, invasive, and nonnative and are scattered throughout the area. Tree cutting would be done by hand crews, and logs and limbs would be removed by helicopter and/or highline cable to avoid dragging logs over the ground and scarring slopes, soils, and surrounding desirable native vegetation. All stumps would be cut flush with the ground and rubbed with dirt to avoid leaving bright, highly visible fresh cut stumps. Tree removal associated with mission blue butterfly habitat compensation efforts would result in a short-term, moderate to major, adverse visual condition at the Battery Spencer and Hawk Hill priority sites; however, these short-term impacts would not be visible from all key observation points.

Priority Site 1: Battery Spencer Parking Area

Alternative 4 would widen and realign segments of Conzelman Road in order to provide an uphill Class 2 bike lane. Additional widening on the tightest radius corners is proposed so that tour and transit buses would be able to stay within their respective lanes. Alternative 4 proposes more alterations to further reduce the risk of accidents. The roadway would be moved farther north (a maximum of approximately 25 feet into the existing slope) in order to provide a median between the travel lanes and a separate parking circulation aisle off the roadway. Left turns for westbound traffic would be limited to

marked driveways through the medians with adequate sight distance. These improvements would require cuts into the existing hillside along the north side of Conzelman Road. The combination of the proposed road widening, hill cut, and paving of the existing gravel parking area would represent a long-term foreground change to the existing visual character of Battery Spencer, resulting in a moderate, adverse visual impact. The proposed Class 2 bicycle lane along Conzelman Road would not be visible to anyone outside the immediate foreground viewing distance; therefore, it would not adversely affect the Battery Spencer site.

Key Observation Point 1 — Golden Gate Bridge. The improvements proposed by Alternative 4 would require cuts into the existing hillside along the north side of Conzelman Road. The view from the Golden Gate Bridge currently shows a visible cut in the hillside to the north of Battery Spencer. However, because of the direct view from the bridge, this change would be slightly detectable. The fill wall that would be required below Conzelman Road (west of Battery Spencer) would also be visible from this key observation point. Overall, changes proposed by Alternative 4 would have negligible effect on the visual character of this viewshed from Golden Gate Bridge. (See Photo 3.1 and Appendix E.)

Key Observation Point 2 — Golden Gate Bridge Vista Point. From Vista Point the cut in the hillside to the north of Battery Spencer would be apparent due to the angle of view into the existing hillside cut. However, once excavation of the hillside was complete, the area would return to approximately the same visual condition as before the cut. Therefore, the resulting impact would be short term, minor, and adverse. (See Photo 3.2 and Appendix E.)

Key Observation Point 3 — Battery Spencer Parking Area. The cut required on the south-facing hillside would be most noticeable at the base of the hill, near the roadway. Motorists, pedestrians, and bicyclists visiting Battery Spencer would have a clear, unobstructed, foreground view of the proposed roadway/hillside changes. However, once excavation of the hillside was complete, the area would return to approximately the same visual condition as before the cut. Therefore, the resulting impact would be short term, minor, and adverse (see Photo 3.3).

Priority Site 2: Hawk Hill

Alternative 4 proposes a 4- to 6-foot widening of Conzelman Road (to 28 feet) to accommodate an uphill Class 2 bike lane between McCullough Road and Hawk Hill, and a wider, more organized parking and turnaround area at Hawk Hill. A retaining wall would be needed along the south side of Conzelman Road to accommodate the proposed 28-foot road width. In addition, the guardrail along Conzelman Road would be moved to within 1 foot of the lane edge to eliminate unsafe parking on the shoulder. No pedestrian or hiking trail improvements or transit shuttle changes would visually affect the Hawk Hill site. As described in Alternative 3, the tree removal associated with mission blue butterfly habitat compensation efforts would be highly noticeable from observation points 1 and 3; however, after tree removal was complete, the area would be filled in by native plant communities.

The changes proposed under Alternative 4 would result in a long-term, moderate, adverse visual impact to the Hawk Hill priority site.

Key Observation Point 1: Golden Gate Bridge. The fill retaining wall that would be constructed below Conzelman Road would be slightly detectable from the bridge and would result in a long-term, minor, adverse visual impact. Pedestrian or hiking trail improvements or transit shuttle changes under Alternative 4 would not be detectable from the Golden Gate Bridge. (See Photo 3.4 and Appendix E.)

Key Observation Point 2 — Overlook 2. The fill retaining wall that would be constructed below Conzelman Road would be readily apparent from Overlook 2, resulting in a long-term, moderate, adverse visual impact (see Photo 3.5).

Key Observation Point 3 — Hawk Hill. The fill retaining wall that would be constructed below Conzelman Road would be readily apparent from Hawk Hill, resulting in a long-term, moderate, adverse visual impact. (See Photo 3.6 and Appendix E.)

Priority Site 3: Fort Cronkhite

Alternative 4 proposes the same improvements in this area as Alternative 3, except that Mitchell Road would be widened to 30 feet to accommodate Class 2 bike lanes in each direction. To accommodate the proposed widening, gravel shoulder and

grass cover would be converted to a paved road and/or parking area. The existing unpaved portion of the Rodeo Beach parking area would be closed, the area would be revegetated, and natural resources within the riparian zone restored. Stairs and a fence would be constructed on the south side of Mitchell Road near the Rodeo Beach parking lot to channel pedestrian movements to a dedicated path, preventing shortcuts down the slope to the beach and thereby reducing erosion. The Mitchell Road / Bunker Road / Old Bunker Road intersection would be realigned in Alternative 4. Overall, restoring the unpaved Rodeo Beach parking area would reduce the adverse visual effect of widening Bunker Road. As a result, the impact would be long-term, minor, and beneficial.

Key Observation Point 1: Coastal Trail

From the Coastal Trail the foreground view of the unpaved parking area would be substantially improved by revegetation and restoration. The area would appear more natural and less chaotic to a large number of foreground viewers. A short-term, minor, adverse impact would result until construction was completed and new vegetation became reestablished. When weighing the long-term, moderate, adverse visual impact of the roadway widening and other improvements with the long-term, major, beneficial visual impact of revegetation of the unpaved parking area, Alternative 4 would have a long-term, moderate, beneficial impact from the Coastal Trail. (See Photo 3.7 and Appendix E.)

Key Observation Point 2 — Mitchell Road. The visual change from Mitchell Road would be limited to the widening of the roadway, improvements to the Rodeo Lagoon trail, improvements to the Bunker Road / Mitchell Road intersection, drainage swales, reorganization of roadside parking, a new transit stop and shelter near the foot bridge across lagoon, and a walkway (Rodeo Lagoon trail). These changes would result in a short-term, minor, adverse impact until new vegetation was established. After construction, there would be a long-term, minor, beneficial impact from Mitchell Road since the roadway would be more defined, and parking would appear more organized (see Photo 3.8).

Other Visual Resources Changes

In addition to the changes described above, Alternative 4 would visibly alter the visual resources of the Marin Headlands and Fort Baker in the following locations:

- The currently wide undefined pullouts along East Road would be reduced in size and the remainder of the space converted to planting areas and more space for the pedestrian overlooks and the San Francisco Bay Trail.
- Other parking areas such as the Lower Fisherman's trailhead, the ridging stables, and the Point Bonita trailhead would be reduced in size, and the excess space would be revegetated. The result would be less intrusive parking areas that would better blend into the natural landscape of the area.
- Mendell Road would be widened to 28 feet for two-way traffic and uphill Class 2 bike lanes. The existing parking area at Bird Island Overlook would remain in this prominent ridgetop location.
- The scars on the hillsides caused by Slacker Road (trail) would be regraded and revegetated. The new foot trail constructed around the north side of the ridge would likely result in some scarring of the hillsides and be visible from Julian, Bunker, and McCullough roads, as well as the Rodeo Valley trail.
- The visually prominent scar on the ridgeline above Rodeo Beach caused by the trail from Battery Alexander to Rodeo Beach would be replaced by a new trail in a less prominent location, and the scar would be revegetated.
- The new bicycle and pedestrian bridge over Rodeo Creek at Smith Road and the new pedestrian-only bridge near the Capehart housing area would add large new visual elements, but they would be sited in locations where the surrounding willow trees would screen the new structures, making them minimally visible from surrounding areas.
- Shifting the trailhead parking area from the rifle range would move the parked cars from a site where they can be plainly seen from Bunker Road and many of the trails around the valley to the much less visible

Smith Road site. The Smith Road parking area would be further screened by realigning it closer to Bunker Road, so that viewers on the road would look out and over the parked cars.

- The new retaining wall on Conzelman Road just west of the U.S. 101 intersection to accommodate a sidewalk, and also opposite the entrance to the Nike missile site to allow for a bus stop and sidewalk, would be constructed with concrete colored to blend into surrounding landscape and formed and shaped to be compatible with architectural patterns used locally on the many coastal fortifications.
- Approximately 14 parking fee vending machines would be installed at heavily used and medium to large parking areas (including the sites already described), if the pay and display method of fee collection was selected. In most sites the machines (about the same size as a small phone booth) would be integrated into trailhead exhibit panels and bulletin boards. At other parking areas signs would be installed to inform users that proof of fee payment is required and the location of the nearest payment vending machine.
- As previously described under impacts to biological resources, trees would be removed at the Marin roads and trails maintenance yard to accommodate a new garage and vehicle apron. This new structure would be more visible than what currently exists, especially for visitors going to the Marine Mammal Center and hikers on Old Bunker Road. However, the garage would be designed and constructed with materials to minimize reflectivity and blend in with the natural surrounding. Overall, constructing a compatible new garage to house equipment, reducing the roads and trails maintenance yard by half, and revegetating the area would visually improve the site.

All areas disturbed by plan implementation would be revegetated to reduce scarring and blend the changes into the park landscape. These additional plan elements would constitute short-term, minor, adverse impacts due to construction, but long-term, minor, beneficial impacts.

Alternative 4 proposes to rehabilitate and reconstruct roadway infrastructure so as not to alter the character-defining features; however, some changes to the visual landscape would occur, including cuts into hillsides and rock faces, plus construction of retaining and fill walls. In contrast, some elements of this alternative would restore natural and cultural features to portions of the study area, thereby improving the visual conditions in the study area. The overall impact of Alternative 4 would be minor and adverse in the short term due to construction, but minor and beneficial in the long term.

Cumulative Impacts

Other projects in the study area, including the *Fort Baker Plan*, would provide for the long-term protection and enhancement of Fort Baker's character by preserving and restoring historic buildings and the cultural landscape. Restoring portions of the Fort Baker waterfront to beach and grassy areas would improve views from off site. Future improvements proposed along Alexander Avenue include installing bike lanes, sidewalks, guardrails, and ADA ramps. Between U.S. 101 and Danes Drive, excavation and construction of cut retaining walls in the 500-foot-long rock cut would be required to provide the recommended width for bike lanes. Future *Fire Management Plan* implementation projects that would include prescribed burning and mechanical treatments could result in short-term, minor to moderate, adverse impacts on visual resources and the visitor experience. However, when combined with actions under this alternative, there would be no long-term incremental effect. These actions, combined with elements proposed under Alternative 4, would result in long-term, minor, beneficial impacts to visual resources.

Mitigation Measures

No mitigation measures would be required under Alternative 4.

Conclusion

Construction efforts would result in short-term, minor, adverse impacts at all priority sites, even though the impacts would not be visible from all key observation points. The changes under Alternative 4, as a whole, would have a long-term, minor, beneficial impact on visual resources. Impacts at Battery Spencer and Hawk Hill would be long-term, moderate, and adverse, while impacts at Fort Cronkhite would be long-term, minor, and benefi-

cial. Cumulative impacts would be minor and beneficial. There would be no impairment of the park's resources or values related to visual and aesthetic resources.

4.5.2 RECREATION AND VISITOR EXPERIENCE

Methodology for Analyzing Impacts

Impacts on recreation and visitor experience were determined through an assessment of changes in access to park uses, the variety of uses available, and the character of visitors' experiences while undertaking activities that have been identified by visitors as important.

Short-term impacts would be related to construction activities. Long-term impacts would result from permanent changes in access to recreation activities and the types of activities available.

Beneficial impacts would result from improvements in access to activities, the range of available activities, or the enjoyment associated with visitor activities. Adverse impacts would result from reductions in access to visitor activities, reductions in the range of activities, or changes that would reduce visitor enjoyment.

Specific methodologies and impact intensities were used to analyze access to park partner activities, the variety of park experiences, scenic viewing, aquatic recreation, and access to interpretive services, as described below.

Access to Park Partner Activities

Impacts to access to park partner activities were assessed by determining what access changes would occur for each park partner. The intensity of impact was determined using the following thresholds, which were selected based on the typical numbers of visitors reported by park partners in a 2000 survey (Nelson\Nygaard 2000).

Negligible: Access to park partner activities would not change by a perceptible amount.

Minor: Access to park partner activities would change by less than 200 typical peak-day visitors.

Moderate: Access to park partner activities would change by 200–500 typical peak-day visitors.

Major: Access to park partner activities would change by more than 500 typical peak-day visitors.

Variety of Park Experiences

Impacts on the variety of park experiences were determined by assessing the change in types of experiences that would occur under the alternatives. An example of a change in park experiences would be an increased ability to experience the "accessible wilderness" (NPS 1980) in Rodeo Valley without disruptions from vehicular traffic associated with car-free days in some alternatives. The following thresholds were developed to describe the intensity of impacts. The ranges were based on the percentages of visitors reporting participation in various activities as part of a 2000 visitor survey (Nelson\Nygaard 2000).

Negligible: The range of park experiences would not change by a perceptible amount.

Minor: The range of park experiences would change by a perceptible amount for less than 15% of current park visitors.

Moderate: The range of park experiences would change a perceptible amount for l5% to 30% of current park visitors.

Major: The range of park experiences would change a perceptible amount for more than 30% of current park visitors.

Scenic Viewing

Impacts to scenic viewing were determined by estimating the number of visitors whose access or quality of viewing experiences would be affected under each alternative. The following thresholds were developed to describe the intensity of impacts, based on reported visitation to selected viewing sites by respondents to a 2000 visitor survey (Nelson\Nygaard 2000).

Negligible: Access to and quality of scenic viewing opportunities would not change by a perceptible amount.

Minor: Access to or quality of scenic views currently visited by less than 10% of visitors would change.

Moderate: Access to or quality of scenic views currently visited by 10% to 30% of visitors would change.

Major: Access to or quality of scenic views currently visited by more than 30% percent of visitors would change.

Impacts to walking/hiking and to biking experiences would be similar to the impacts reported under "Nonmotorized Use and Access" (sec. 4.2.3)

Aquatic Recreation

Impacts to aquatic recreation were determined by assessing changes in access to aquatic recreation sites. The following thresholds were used to define the intensity of aquatic recreation impacts.

Negligible: Access to aquatic recreation sites would not change by a perceptible amount.

Minor: Changes in access to aquatic recreation sites would be perceptible to a few users.

Moderate: Changes in access to aquatic recreation sites would be perceptible to most users.

Major: Changes in access to aquatic recreation sites would involve a change in travel mode for most visitors.

Access to Interpretive Services

Impacts to access to interpretive services were determined by assessing changes to existing interpretive services (primarily the visitor center) and the potential for new or revised interpretive services associated with each alternative.

Negligible: Access to interpretive services would not change by a perceptible amount.

Minor: Perceptible changes in access to interpretive information would occur.

Moderate: Changes in access to interpretive information would be perceptible to most visitors.

Major: Access to interpretive information and changes in the locations and types of available information would change for the majority of park visitors.

Impacts of Alternative 1 — No-Action Alternative

Impact Analysis

Alternative 1 would not change access to park partner activities, variety of park experiences, access to viewing sites and the views from sites, or access to aquatic recreation or interpretive services. Therefore, there would be no impacts.

Cumulative Impacts

Alternative 1 would have no direct impacts on recreation and visitor enjoyment. As a result, there would be no cumulative impacts associated with this alternative.

Mitigation Measures

No mitigation of impacts to recreation and visitor enjoyment would be required under Alternative 1.

Conclusion

Alternative 1 would not result in any direct or cumulative impacts to recreation and visitor enjoyment.

Impacts of Alternative 3 — Preferred Alternative

Impact Analysis

Access to Park Partner Activities

Alternative 3 would increase access to park partner activities in the Marin Headlands by encouraging transit service from San Francisco on MUNI Route 76 on Saturdays and providing the internal park shuttle service. Park partners in the Fort Baker area would be more accessible as a result of changes in transit access to Fort Baker as well as the internal park shuttle. Alternative 3 would include a parking fee program to provide enhanced transit service operations. Although there would be temporary adverse effects to visitors who had to pay for park-

ing, the implementation of a fee program would create incentives for visitors to use the transit service rather than drive.

Alternative 3 would not change access to park partner activities by private vehicle, except on car-free days. On car-free days visitors could not directly access many park partner activities in the Marin Headlands by private vehicle. The shuttle services within Marin Headlands and Fort Baker would be expanded on car-free days. Visitors would need to ride shuttle buses to reach park partners in Fort Barry and Fort Cronkhite. Bicycle and pedestrian travel would be facilitated on portions of the road systems closed to private vehicles on car-free days. Access to the Bay Area Discovery Museum on car-free days would be similar to that available on other days, resulting in negligible impacts.

Road, parking, and trail improvements could also disrupt access to park partner activities during the construction period. The resulting impact would be short term, minor, and adverse. The long-term impact of Alternative 3 on access to park partner activities would be minor and beneficial on most days, since expanded transit access to park partner activities would likely be used by a small proportion of visitors to park partners. On car-free days the impact would be moderate and adverse, since visitors to nearly all park partners in the Marin Headlands would have to park at a remote location and travel by shuttle bus. The park would consult with park partners in developing the car-free days plan.

Variety of Park Experiences

Alternative 3 would expand the range of park experiences available to visitors by providing more opportunities to enjoy recreational activities in settings that would not be affected by vehicle traffic, noise, or emissions. Universal design concepts that maximize accessibility for all visitors (including those with disabilities) would be applied to all facility designs to the greatest extent possible. All new or reconstructed trails would meet outdoor accessibility guidelines as outlined in the *Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas: Final Report* (United States Access Board 1999).

Bicycle use away from vehicle traffic would be possible on the Rodeo Valley trail, Julian Road, Dubois Road (trail), the trail from Conzelman to Rodeo Valley (Rodeo Valley Connector Trail), and the trail from Mendell Road to Bird Island Overlook. Visitors to Bird Island Overlook and Battery Mendell would be able to enjoy the views and historic features without interference from private vehicles. New walking routes away from vehicle traffic would be available in several locations. Hiking access to the popular views along Conzelman Road would be expanded by relocating the Coastal Trail.

Allowing cyclists on the Rodeo Valley Connector Trail would provide a north-south multi-use connection from Conzelman to Rodeo Valley and would increase the variety of park experiences for cyclists. Although permitting cyclists on this trail with pedestrians and equestrians may result in some use conflicts, they should be minimal because the trail is wide and has excellent sight distance throughout most of its length. Equestrians would benefit because they would have access to a loop trail that does not currently exist. Cyclists would also be able to connect to a section of Rodeo Valley Trail, which currently prohibits bikes but would be open to cyclists under this alternative, using Dubois Road (trail). The route would connect to McCullough Road, where cyclists would ride on the road to a new trailhead and new pedestrian/bicycle bridge over Rodeo Creek. From this new bridge, bikes, bikes would be allowed on the Rodeo Valley Trail to the west, where the trail meets the Bobcat Trail, which currently permits cyclists. Cyclists would benefit from expanded recreational opportunities, although more conflicts between cyclists and equestrians could occur on that section of Rodeo Valley Trail that would allow bikes. Hardening, but not paving, the surface of the trail for bikes would balance equestrian safety concerns with the need to maintain better trail conditions.

The Coastal Trail would be rerouted closer to Conzelman Road to provide scenic viewing and more direct connections to some facilities such as the hostel. In some sections that are rerouted, the existing trail would be closed and revegetated. Some of these sections that would be closed are used currently by equestrians and the rerouted sections would not be open to equestrians. Conditions for equestrians would be improved on the Slacker Road (trail) because bicyclists, who can currently use this route, would not be allowed.

Expanded public transit and park shuttle services would create an opportunity for visitors to travel within the park and view roadside features without having to drive.

The overall visitor experience would be enhanced by the provision of amenities, such as information kiosks, benches, and vault toilets at major parking areas, which could include Hawk Hill, Smith Road, Battery Alexander, and Julian Road at McCullough Road. These amenities would be designed to be compatible with the historic district.

Based on current reported hiking, biking, and transit ridership, and considering the potential changes in visitor participation in these types of activities, Alternative 3 would have a long-term, moderate, beneficial impact on visitor experience. Impacts to equestrians would be long-term, minor, and adverse. During car-free days more than 30% of visitors would be able to experience the park without the intrusion of vehicles (assuming that they would ride shuttle buses to various park sites), resulting in a long-term, moderate, beneficial impact on car-free days.

During the construction phase of the wetland restoration action at the Rodeo Beach unpaved parking lot, no public access would be provided in order to protect public safety. Hiking access along the ranch road may be restricted depending on the final restoration design as informed by the cultural landscape report. In order to minimize this inconvenience, public notification would be done ahead of project construction (See VE-1)

During construction short-term impacts on visitor experience would be negligible and adverse.

Scenic Viewing

Alternative 3 would retain existing access to most of the popular scenic viewing areas within the park. Private vehicle access to the Battery Spencer overlook would be reduced somewhat because of fewer parking spaces. However, signage would be provided at Battery Spencer to help manage parking, such as directing visitors to other locations when the parking lot is full. The Hawk Hill viewing areas would be enhanced by parking and pedestrian improvements. Rerouting the Coastal Trail along Conzelman Road provides improved scenic viewing opportunities for hikers along the route and more direct access to these specific popular locations. Tree removal at Hawk Hill associated for mission blue butterfly habitat compensation would affect wind patterns felt by visitors and partners (including GGRO volunteers). Tree removal would expose visitors to increased westerly and southerly winds on the western edge of the top of Hawk Hill. Typically the trees lift the wind above the canopy and then it drops back down, usually at a distance one to two times the height of the tree. Hawk Hill without tree removal experiences high levels of wind during foggy/windy events. With tree removal, visitors may feel more wind and have fewer shaded areas to congregate without the shelter of the trees. There would be fewer places to find “shelter” compared with the current tree cover. However shelter and shade would still be present within the tunnel structures.

Additionally, non-native tree removal at Hawk Hill would result in a loss of birding opportunities for unusual coniferous migratory birds that may be attracted to that area in the spring and fall seasons. Tree removal would also change the character of the GGRO Observatory’s long-term raptor monitoring program site. Coordination between the NPS natural resources staff and the GGRO program would occur to address these impacts through the possible installation of other design features consistent with the historic character of the Hawk Hill or through determining possible alternate viewing areas.

Bird Island Overlook would be accessible by walking from the Battery Alexander parking lot, as well as from the Point Bonita Lighthouse parking area and the Mendell Road trail. Access to the Point Bonita Lighthouse would be improved with a new pedestrian trail from Battery Alexander. Access to the views from the launch site on Slacker Hill would be retained for equestrians and hikers. To address erosion issues, bicyclists would no longer be able to use Slacker Road (trail) to this site and therefore would lose this viewing opportunity, resulting in a long-term minor, adverse affect. As discussed under “Visual and Aesthetic Resources,” the impact to visual resources would be long-term, minor, and beneficial.

The overall impact of Alternative 3 would be long-term, minor, and adverse, and result primarily from changes in access to viewing sites. Access changes would result in moderate adverse impacts at Bird Island Overlook and Battery Spencer. Minor, bene-

ficial impacts would occur at Hawk Hill and minor, adverse impacts would occur at Slacker Hill. Negligible beneficial impacts would occur at other viewing areas.

As described above under access to park partner activities, access to some important viewing areas would be more difficult on car-free days. Access to Hawk Hill would be available by means of relatively long and strenuous walking or bicycle routes. Access to Bird Island Overlook would be available only by shuttle bus or long walking and biking routes. Views from Bird Island Overlook to Fort Cronkhite would be improved by removing visitor vehicles from the area. The overall impact of car-free days on scenic viewing would be long-term, moderate, and adverse. Short-term access disruptions associated with construction activities would result in minor adverse impacts at specific viewing areas.

Aquatic Recreation

Private vehicle access to Rodeo Beach would change under Alternative 3 with removal of the unpaved Rodeo Beach parking area (to provide wetland restoration), resulting in a loss of 80 parking spaces. Additional infill parking would be provided to help compensate for this loss, with 70 additional spaces provided within Fort Cronkhite, possibly at the maintenance yard, which is located east of Fort Cronkhite. Parking at this location would have an adverse impact on visitors using Rodeo Beach as the new parking area would be located about 1/3 mile from the beach. The loss of 88 parking spaces along Mitchell Road (62 compared to 150 under the No Action Alternative) would produce an overall loss of 98 parking spaces in the Fort Cronkhite area, resulting in a long-term, minor adverse impact.

Private vehicular access to aquatic recreation sites would change under Alternative 3 on car-free days. On car-free days access to the Fort Baker waterfront and Rodeo Beach would not be available by private vehicle; however, access would be available by shuttle. Visitors engaging in surfing or boating activities would find access more difficult. Prior to implementing the program to test car-free days, NPS would work with affected stakeholders, including park user group representatives, residents, and park partners to refine the details of the car-free area and operation to be tested in consultation with these groups. Other scenarios and strategies, including coordination with special events, may be tested. Detailed planning would address essential vehicle access and/or equipment drop-off, and park partners' concerns regarding operations, delivery vehicles, and other related issues. The resulting impacts on car-free days would be long-term, moderate, and adverse.

Access to Interpretive Services

Alternative 3 would retain existing access to the Marin Headlands visitor center and to park partners who provide interpretive services in the park. The internal park shuttle would offer the opportunity to expand interpretive services by using on-board narration and other concepts. Because a small percentage of the total visitor population would be expected to use the internal shuttle, the resulting impacts would be long-term, minor, and beneficial.

On car-free days visitors would not be able to drive to the visitor center, making access to this primary interpretive facility more difficult. The adverse impact of car-free days on access to the visitor center could be partially offset through interpretive services on the expanded internal shuttle bus system. The resulting overall impact of car-free days would be long-term, minor, and adverse.

Cumulative Impacts

Access to Park Partner Activities

The proposed NPS parklands water shuttle study could result in future water shuttle access to Fort Baker as proposed in the 1980 GGNRA GMP and the 2000 Fort Baker Plan FEIS cumulative analysis. Future improvements would also provide pedestrian, bicycle, and transit improvements along Alexander Avenue in the vicinity of the U.S. 101 interchange, as well as additional safety, transit, and non-motorized access improvements that may be identified in the Alexander Avenue Planning Study. The new 50-car parking lot at the Fort Baker waterfront provides additional parking for visitors to Fort Baker. The new parking lot at the Bay Area Discovery Museum better meets parking demand at this park partner facility. Improving the viewing area/Hawk Migration observation point at Hawk Hill and creating a group gathering area would improve the experience at Hawk Hill for visitors and GGRO. These improvements would facilitate access to park partner activities; however, visitation numbers would be unlikely to change

substantially, and impacts would be minor and beneficial.

These actions, combined with transit improvements proposed under Alternative 3, would result in long-term, minor, beneficial impacts to access to park partners. The majority of the impact would be attributed to Alternative 3.

Provision of a Variety of Park Experiences

A number of other projects would improve the variety of park experiences available to visitors to the Marin Headlands and Fort Baker, including facility improvements at Fort Baker and the Bay Area Discovery Museum. Proposed facility improvements at the Marine Mammal Center would result in better opportunities for public education. Implementation of a recreational water shuttle system would not only provide flexibility in accessing park sites, but would also offer a new recreational experience, as survey respondents noted that time spent on the water is part of the experience (NPS 2006d). These projects would have long-term, minor to moderate, beneficial impacts on the variety of park experiences.

When combined with actions proposed by Alternative 3, which would have moderate beneficial impacts on park experiences, cumulative impacts would be long-term, moderate, and beneficial.

Scenic Viewing

Restoring the beach at the Fort Baker waterfront would enhance views of the bay from Fort Baker. Other actions proposed in the *Fort Baker Plan* would preserve and restore historic buildings and the cultural landscape in Fort Baker. These actions would improve the quality of scenic viewing experiences for visitors and would have major beneficial impacts to scenic viewing, as these areas are visited by more than 30% of visitors to the Marin Headlands and Fort Baker.

Private vehicular access to Battery Spencer would be reduced under Alternative 3, resulting in a moderate adverse impact at this popular site. Because the primary function of this site is scenic viewing, impacts would weigh more heavily on the cumulative impacts analysis than the impacts in other areas where scenic viewing was of less importance. Actions proposed by the Hawk Hill planning team to improve the site for public visitation, improve the viewing area/Hawk Migration observation point, upgrade amenities and accessibility — particularly the new accessible loop trail — would be a moderate, beneficial effect. The moderate adverse impact at Battery Spencer, combined with the moderate to major beneficial impacts of other projects, would result in long-term, minor, adverse cumulative impacts on scenic viewing.

Aquatic Recreation

There would be no cumulative impacts to aquatic recreation sites under Alternative 3.

Access to Interpretive Services

The *Fort Baker Plan* would provide interpretive signs on trails and in other appropriate locations in Fort Baker for hikers and visitors. These actions would have minor beneficial impacts on the availability of interpretive services in the Marin Headlands and Fort Baker. When combined with Alternative 3, cumulative impacts would be long-term, minor, and beneficial.

Mitigation Measures

VE-1: Prior to wetland restoration construction the park would prepare a public engagement strategy to identify and notify all internal and external stakeholders (to include park partners, visitors, user groups, etc.). Notification would include any of the following depending upon the relationship of the stakeholder to the site: sending project information, scope and timelines; holding meetings and site walks; and giving presentations. Additionally, materials shall be developed and distributed to interested stakeholders. Project signage would be erected at least 2 months prior to the project start date and an on site Project Information Coordinator would likely be stationed at the project location at least 2-4 weeks prior to the project start date to notify visitors and park partners. Staff would also remain on site for the duration of the project and a phone number would be established to field/address any public inquiries and concerns.

Conclusion

Short-term, construction-related impacts under Alternative 3 would be negligible to minor and adverse for access to park partner activities, scenic viewing, and aquatic recreation.

The impact on access to park partner activities would be long-term, minor, and beneficial on most days. On car-free days the impact would be moderate and adverse because access would only be available by transit or by walking or biking. Cumulative impacts would be minor and beneficial.

Alternative 3 would have a long-term, moderate, beneficial impact on the variety of park experiences on most days. There would be a long-term, moderate, beneficial impact on car-free days. Cumulative impacts would be moderate and beneficial.

The overall impact of Alternative 3 on scenic viewing would be long-term, minor and adverse based on combined impacts that would be moderate and adverse at Bird Island Overlook and Battery Spencer; long-term minor and adverse at Slacker Hill; long-term, minor and beneficial at Hawk Hill, and long-term, negligible, and beneficial at other viewing areas. The overall impact of car-free days on scenic viewing would be long-term, moderate, and adverse. Cumulative impacts would be minor and adverse.

The impact on aquatic recreation at Rodeo Beach would be long-term, minor, and adverse. During car-free days, visitors would have to take transit, walk, or bike to beach areas. The resulting impact for car-free days would be long-term, moderate, and adverse. There would be no cumulative impacts.

The impact on access to interpretive services would be long-term, minor, and beneficial. The overall impact of car-free days would be long-term, minor, and adverse. Cumulative impacts would be minor and beneficial.

Impacts of Alternative 2

Impact Analysis

Access to Park Partner Activities

Alternative 2 would increase access to activities at park partners in the Marin Headlands by encouraging transit service from San Francisco on MUNI Route 76 on Saturdays. Alternative 2 would not change access to park partner activities by private vehicle. The long-term impacts of Alternative 2 would be minor and beneficial because expanded transit access would likely be used by only a small portion of visitors. Construction of road, parking, and trail improvements could disrupt access to park partner activities, with short-term, minor, adverse impacts.

Variety of Park Experiences

Alternative 2 would introduce bike lanes and improved walking routes, but these improvements would not introduce new types of park experiences since the improvements are along roadways with vehicle traffic. Vehicles would be removed from Bird Island Overlook, but relatively few vehicles park in this area. Universal design concepts that maximize accessibility for all visitors (including those with disabilities) would be applied to all facility designs to the greatest extent possible. All new or reconstructed trails would meet outdoor accessibility guidelines as outlined in the *Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas: Final Report* (United States Access Board 1999). Equestrian routes would not change. The overall impact of Alternative 2 would be long-term, negligible, and beneficial. Short-term impacts on visitor experience during construction would be negligible and adverse.

Scenic Viewing

Alternative 2 would retain the existing access to most of the popular scenic viewing areas within the study area except Bird Island Overlook, which could be reached on foot from parking along Mendell Road or at Battery Alexander. Access to the Battery Spencer and Hawk Hill overlooks would be greatly reduced because of fewer parking spaces (by more than 50%). As discussed under "Visual and Aesthetic Resources," the impact to visual resources would be minor and beneficial. The overall impact of Alternative 2 would be long-term, moderate, and adverse at Battery Spencer, Hawk Hill, and Bird Island Overlook. Short-term access disruptions would result during construction, with minor adverse impacts at specific viewing areas.

Aquatic Recreation

Access to aquatic recreation sites would not change under Alternative 2. As a result there would be no impacts to aquatic recreation.

Access to Interpretive Services

Alternative 2 would retain existing access to interpretive services. As a result there would be no impacts on access to interpretive services.

Cumulative Impacts

Access to Park Partner Activities

The proposed NPS parklands water shuttle study would potentially provide ferry service to Fort Baker. Future improvements would also provide pedestrian, bicycle, and transit improvements along Alexander Avenue in the vicinity of the U.S. 101 interchange, as well as additional safety, transit, and non-motorized access improvements under the Alexander Avenue Planning Study. The new 50-car parking lot at the Fort Baker waterfront would provide additional parking for visitors to Fort Baker. The new parking lot at the Bay Area Discovery Museum better meets parking demand at this park partner facility. Implementation of a recreational water shuttle system would not only provide flexibility in accessing park sites, but would also offer a new recreational experience, as survey respondents noted that time spent on the water is part of the experience (NPS 2006d). Providing the viewing area/Hawk Migration observation point at Hawk Hill and creating a large-group gathering area would improve the experience at Hawk Hill for visitors and GGRO. These projects would result in better access to park partner activities; however, visitation numbers would be unlikely to change substantially, and impacts would be minor and beneficial. These actions, combined with the transit improvements proposed under Alternative 2, would result in long-term, minor, beneficial impacts.

Variety of Park Experiences

A number of other projects would improve the variety of park experiences available to visitors to the Marin Headlands and Fort Baker. Facility improvements at the Bay Area Discovery Museum have provided new exhibitions and new outdoor education areas for children. Proposed improvements at the Marine Mammal Center would provide better opportunities for public education. The *Fort Baker Plan* proposes changes at the Fort Baker waterfront that would restore the beach for visitor use and would convert the marina and historic boat shop to public use for meetings, programs, and food service. Trail, bicycle path, and habitat improvements proposed in the *Fort Baker Plan* would provide new experiences for hikers and bicyclists in Fort Baker. All of these projects would have long-term, minor to moderate, beneficial impacts on the variety of park experiences available to visitors.

When combined with Alternative 2, cumulative impacts would be minor and beneficial, with the majority of impacts resulting from other projects.

Scenic Viewing

Restoring the beach at the Fort Baker waterfront would enhance views of the bay. Other actions proposed in the *Fort Baker Plan* would preserve and restore historic buildings and the cultural landscape in Fort Baker. These actions would improve the quality of scenic viewing experiences for visitors and would have major beneficial impacts to scenic viewing, as these areas are visited by more than 30% of visitors to the Marin Headlands and Fort Baker.

Access to Hawk Hill and Battery Spencer would be reduced under Alternative 2, resulting in moderate adverse impacts at these popular sites. These sites are used primarily for scenic viewing, so impacts to these sites would weigh more heavily on the cumulative impacts analysis than the impacts in other areas where scenic viewing is of lesser importance. However, actions proposed by the Hawk Hill planning team to improve the site for public visitation, improve the viewing area/Hawk Migration observation point, upgrade amenities and accessibility—particularly the new accessible loop trail—would be a beneficial effect. The moderate adverse impacts at these two sites, combined with the major beneficial impacts of other projects, would result in long-term, minor, adverse cumulative impacts on scenic viewing.

Aquatic Recreation

There would be no impacts on access to aquatic recreation sites under Alternative 2, and there would be no cumulative impacts.

Access to Interpretive Services

The *Fort Baker Plan* would provide interpretive signs on trails and in other appropriate locations in Fort Baker for hikers and visitors interested in nature study. These actions would have minor beneficial impacts on the availability of interpretive

services in the Marin Headlands and Fort Baker. There would be no other impacts on access to interpretive services under Alternative 2. Impacts would be long-term, minor, and beneficial.

Mitigation Measures

Alternative 2 would not require mitigation of impacts to recreation and visitor enjoyment.

Conclusion

Impacts on recreation and visitor experience during construction would be short term, negligible to minor, and adverse. Cumulative impacts would be minor and beneficial.

The long-term impact under Alternative 2 on access to park partner activities would be minor and beneficial.

Alternative 2 would have a long-term, negligible, beneficial impact on the variety of park experiences. Cumulative impacts would be minor and beneficial.

The overall impact of Alternative 2 on scenic viewing would be long-term, moderate, and adverse at Battery Spencer, Hawk Hill, and Bird Island Overlook. Cumulative impacts would be minor and adverse.

There would be no impact on aquatic recreation or access to interpretive services under Alternative 2.

Impacts of Alternative 4

Impact Analysis

Access to Park Partner Activities

Alternative 4 would increase access to park partner activities at the Marin Headlands by encouraging transit service from San Francisco on MUNI Route 76 on Saturdays, increasing MUNI Route 76 service frequency on Sundays, and offering internal park shuttle service. Park partner activities in the Fort Baker area would be made more accessible as a result of transit access to Fort Baker, as well as the internal park shuttle. Similar to Alternative 3, this alternative would include a parking fee program to provide enhanced transit service operations. Although there would be temporary adverse effects to visitors who had to pay for parking, a fee program would create incentives for visitors to use the transit service rather than drive.

Alternative 4 would not change access to park partner activities by private vehicle, except on car-free days, when direct access would not be available. Shuttle services within the Marin Headlands and Fort Baker would be expanded on these days, and visitors would need to ride shuttle buses to reach park partners in Fort Barry and Fort Cronkhite. Bicycle and pedestrian travel would be facilitated on portions of the road system that would be closed to private vehicles on car-free days. Visitors to the Bay Area Discovery Museum would have parking access on car-free days similar to what is available on other days, resulting in negligible impacts.

The long-term impacts of Alternative 4 on access to park partner activities would be minor and beneficial on most days, since expanded transit access to park partner activities would likely be used by a small proportion of visitors to park partners. On car-free days impacts on access would be moderate and adverse since visitors to nearly all park partners in the Marin Headlands would have to park at a remote location and travel by shuttle bus. Construction of road, parking, and trail improvements could disrupt access to park partner activities, with a short-term, minor, adverse impact.

Variety of Park Experiences

Alternative 4 would expand the range of park experiences available to visitors by improving pedestrian and biking conditions. However, most of the improvements would be along roadsides, so that visitors using the facilities would still be affected by vehicle traffic sounds and visual disruptions. For equestrians, the main changes are on Slacker Road (trail) and the Coastal Trail. Bicyclists would not be allowed on the rerouted Slacker Road (trail), so only hikers and equestrians would use the trail. The rerouted sections of the Coastal Trail would continue to allow equestrians. Universal design concepts that maximize accessibility for all visitors (including those with disabilities) would be applied to all facility designs to the greatest extent possible. All new or reconstructed trails would meet outdoor accessibility guidelines as outlined in the *Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas: Final Report* (United States Access Board 1999). Expanded public transit and park shuttle services would create an opportunity for visitors to travel

within the park and view roadside features without the need to drive.

The overall visitor experience would be enhanced by the provision of amenities, such as information kiosks, benches, and vault toilets at major parking areas, which could include Hawk Hill, Smith Road, Battery Alexander, and the McCullough Road/Conzelman Road intersection. These amenities would be designed to be compatible with the historic district.

Based on the current reported hiking, biking, and transit ridership, and considering the potential changes in visitor participation in these types of activities, Alternative 4 would have long-term, minor, beneficial impacts on visitor experience. During car-free days many more areas of the park could be experienced without interference from vehicular traffic. More than 30% of visitors would be able to experience the park without the intrusion of vehicles (assuming that they would ride shuttle buses or walk to recreation sites within the park), resulting in long-term, major, beneficial impacts on car-free days. During the construction phase of the wetland restoration action at the Rodeo Beach unpaved parking lot, no public access would be provided in order to protect public safety. Hiking access along the ranch road may be restricted depending on the final restoration design as informed by the cultural landscape report. In order to minimize this inconvenience, public notification would be done ahead of project construction (See VE-1) Short-term impacts to visitor experience caused by construction activities would be negligible and adverse.

Scenic Viewing

Alternative 4 would retain existing access to most of the popular scenic viewing areas within the study area. Private vehicular access to the Battery Spencer overlook would be reduced because of fewer parking spaces. Access to the Point Bonita Lighthouse would be improved with a new trail from Battery Alexander. Tree removal at Hawk Hill associated for mission blue butterfly habitat compensation would be similar to Alternative 3. The opportunity to access the views from the launch site on Slacker Hill would be eliminated for all users because the Slacker Road (trail) would be rerouted. As discussed under “Visual and Aesthetic Resources,” the impact to visual resources would be long-term, moderate, and beneficial.

The overall impact of Alternative 4 would be long-term, minor, and adverse, and result primarily from changes in access to viewing sites. The impact at Battery Spencer would be long-term, moderate, and adverse; the impact at Slacker Hill would be long-term, moderate, and adverse; and at other viewing areas, long-term, negligible, and beneficial.

As described under access to park partner activities, access to some important viewing areas would be more difficult on car-free days. Access to Hawk Hill would be available by way of relatively long and strenuous walking or bicycle routes. Access to Bird Island Overlook would be available only by mean of shuttle bus or long walking and biking routes. Views from Bird Island Overlook to Fort Cronkhite would be improved by removing vehicles from the area. The overall impact of car-free days on scenic viewing would be long-term, moderate, and adverse. Short-term access disruptions associated with construction activities would result in minor, adverse impacts at specific viewing areas.

Aquatic Recreation

Aquatic recreation impacts would be the same as Alternative 3, except there would be greater reduction of parking spaces in Fort Cronkhite.

Access to Interpretive Services

Alternative 4 would retain existing access to the Marin Headlands visitor center and to park partners who offer interpretive services in the study area. The internal park shuttle would offer opportunities to expand interpretive services by using on-board narration and other concepts. Because a small percentage of the total visitor population would be expected to use the internal shuttle, the resulting impacts would be long-term, minor, and beneficial.

On car-free days visitors would not be able to drive to the visitor center and would have to take a shuttle, walk, or bike. This adverse impact could be partially offset by providing interpretation on the expanded internal shuttle bus system. The resulting overall impact of car-free days on access to interpretive services would be long-term, minor, and adverse.

Cumulative Impacts

Access to Activities at Park Partners

The proposed NPS parklands water shuttle study would potentially provide ferry service to Fort Baker. Future improvements would also provide pedestrian, bicycle, and transit improvements along Alexander Avenue in the vicinity of the U.S. 101 interchange, as well as additional safety, transit, and non-motorized access improvements under the Alexander Avenue Planning Study. The new 50-car parking lot at the Fort Baker waterfront provides additional visitor parking. The new parking lot at the Bay Area Discovery Museum better meets parking demand. Implementation of a recreational water shuttle system would not only provide flexibility in accessing park sites, but would also offer a new recreational experience, as survey respondents noted that time spent on the water is part of the experience (NPS 2006d). Improving the viewing area/Hawk Migration observation point at Hawk Hill and creating a large-group gathering area would improve the experience at Hawk Hill for visitors and GGRO. These improvements would result in improved access to park partner activities; however, visitation numbers would be unlikely to change substantially, and impacts would be minor and beneficial.

These actions, combined with the transit improvements proposed under Alternative 4, would result in long-term, minor, beneficial impacts on access to park partner activities. The majority of impacts would be attributed to Alternative 4.

Variety of Park Experiences

A number of other projects would improve the variety of park experiences available to visitors to the Marin Headlands and Fort Baker. Facility improvements at the Bay Area Discovery Museum have provided new exhibitions and new outdoor education areas for children. Proposed facility improvements at the Marine Mammal Center would provide better opportunities for public education. The *Fort Baker Plan* proposes changes at the Fort Baker waterfront that would restore the beach for visitor use. The plan also proposes to convert the marina and historic boat shop to public use for meetings, programs, and food service. Trail, bicycle path, and habitat improvements proposed in the *Fort Baker Plan* would provide new experiences for hikers and bicyclists in Fort Baker. All of these projects would have long-term, minor to moderate, beneficial impacts on the variety of park experiences available to visitors.

When combined with actions of Alternative 4, which would have minor beneficial impacts on park experiences, cumulative impacts would be minor and beneficial.

Scenic Viewing

Restoring the beach at the Fort Baker waterfront would enhance views of the bay. Other actions proposed in the *Fort Baker Plan* would preserve and restore historic buildings and the cultural landscape in Fort Baker. These actions would improve the quality of scenic viewing experiences for visitors and would have major beneficial impacts to scenic viewing because these areas are visited by more than 30% of visitors to the Marin Headlands and Fort Baker.

Private vehicular access to Battery Spencer, a heavily visited overlook, would be reduced under Alternative 4, resulting in a moderate, adverse impact at this site. Because the primary function of this site is scenic viewing, the impact would weigh more heavily on the cumulative impact analysis than would impacts in other areas where scenic viewing is of lesser importance. Actions proposed by the Hawk Hill planning team to improve the site for public visitation, improve the viewing area/Hawk Migration observation point, upgrade amenities and accessibility — particularly the new accessible loop trail — would be a long-term, moderate, beneficial effect. The moderate adverse impact at Battery Spencer, which is a key site, combined with the moderate to major beneficial impacts of other projects, would result in long-term, minor, adverse cumulative impacts on scenic viewing.

Aquatic Recreation

There would be no cumulative impacts to aquatic recreation sites under Alternative 4.

Access to Interpretive Services

The *Fort Baker Plan* would provide interpretive signs on trails and in other appropriate locations in Fort Baker for hikers and visitors interested in nature study. These actions would have minor beneficial impacts on the availability of interpretive services in the Marin Headlands and Fort Baker. When combined with the actions of Alternative 4,

cumulative impacts would be long-term, minor, and beneficial.

Mitigation Measures

Mitigation measures are the same as Alternative 3.

Conclusion

Short-term construction-related impacts under Alternative 4 would be negligible to minor and adverse for access to park partner activities, scenic viewing, and aquatic recreation.

The long-term impact of Alternative 4 on access to park partner activities would be minor and beneficial on most days. On car-free days the impact would be moderate and adverse because no direct private vehicle access would be allowed. Cumulative impacts would be minor beneficial.

Alternative 4 would have a long-term, minor, beneficial impact on the diversity of visitor experiences on most days. There would be long-term, major, beneficial impacts during car-free days. Cumulative impacts would be minor and beneficial.

The overall impact of Alternative 4 on scenic viewing would be long-term, minor, and adverse. This overall scenic viewing impact is based on a combination of access changes that would result in a long-term, moderate, adverse impact on scenic viewing at Battery Spencer and Slacker Hill; and a long-term, negligible, beneficial impact at other viewing areas. The overall impact of car-free days on scenic viewing would be long-term, moderate, and adverse. Cumulative impacts would be minor and adverse.

Impacts to aquatic recreation would be the same as Alternative 3.

The impact on access to interpretive services would be long-term, minor, and beneficial. The overall impact of car-free days on access to interpretive services would be long-term, minor, and adverse under Alternative 4. Cumulative impacts would be minor and beneficial.

4.5.3 NOISE

Regulatory Framework

Federal Laws and Regulations

The Federal Highway Administration has adopted procedures for the abatement of highway traffic noise (23 CFR 772). These procedures, which are followed by transportation agencies performing noise studies for actions involving federal-aid funding, contain noise abatement criteria with respect to specific land uses. For parks and residences, traffic noise impacts are identified when the predicted noise level approaches or exceeds 67 dBA.

State Laws and Regulations

The *State of California General Plan Guidelines* (California Governor's Office of Planning and Research 2003) provides guidance for exterior noise levels. Generally, residential uses are considered to be acceptable in areas where exterior noise levels do not exceed 60 dBA; residential uses are normally unacceptable in areas exceeding 70 dBA. Schools are normally acceptable in areas up to 70 dBA and normally unacceptable in areas exceeding 70 dBA. Commercial uses are normally acceptable in areas up to 70 dBA and are conditionally acceptable between 67.5 and 77.5 dBA, depending on the noise insulation features and the noise reduction requirements. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

Local Laws and Regulations

The *Marin Countywide Plan* and the county code contain policies that address noise-sensitive land uses, along with standards and programs to avoid noise-related impacts from existing uses and new developments. The plan contains the following applicable regulations (Marin County 2004):

- *Goal NO-1. Protection from Excessive Noise.* Ensure that new land uses, transportation activities, and construction do not create noise levels that impair human health or quality of life.

- *Policy NO-1.1. Limit Noise from New Development.* Direct the siting, design, and insulation of new development to ensure that acceptable noise levels are not exceeded.
- *Policy NO-1.2. Minimize Transportation Noise.* Ensure that transportation activities do not generate noise beyond acceptable levels, including in open space, wilderness, wildlife habitat, and wetland areas.
- *Policy NO-1.3. Regulate Noise Generating Activity.* Require measures to minimize noise exposure to neighboring properties, open space, and wildlife habitat from construction-related activities, yard maintenance equipment, and other noise sources, such as amplified music.

The Marin County Board of Supervisors recently adopted a code related to construction activities and related noise that states that hours for construction activities are to be limited to the hours between 7 a.m. and 6 p.m. Monday through Friday and between 9 a.m. and 5 p.m. on Saturday. Construction activities are prohibited on Sundays and holidays.

The National Park Service would determine the hours of construction based on this local jurisdiction requirement, the type of construction, site location, and noise-sensitivity of nearby land uses. The conditions of approval (or in the case of federal actions, environmental commitments or mitigation measures) shall specify hours for staging and type of construction activities.

TABLE 4-7. SUMMARY OF TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVELS

Equipment	Typical Noise Level (dBA) 50 feet from the Source
Air compressor	81
Bulldozer (D5 or D6) with rippers for parking removal	85
Concrete delivery mixer truck	85
Drill rig (for rock bolts at erosion site on West Conzelman Road)	98
Dump truck (10 cubic yard, semi-end dump, and belly trailers)	88
Fuel, lubricant and service truck	88
Jack hammer	88
Misc. pickups and parts trucks	88
Motor grader	85
Self-propelled compactor	82
Steel-wheeled and pneumatic (rubber-tire) rollers	74
Truck crane	83
Water truck	88
Wheeled backhoe/loader (includes 'ram hoe' attachments)	80

SOURCE: U.S. Environmental Protection Agency 1971; California Department of Transportation 1995.

Methodology for Analyzing Impacts

To assess potential short-term construction noise impacts, sensitive receptors and their relative exposure (considering topographic barriers and distance) were identified. Combined intermittent noise levels from the simultaneous operation of onsite equipment expected to be used in project construction were determined based on typical construction equipment noise levels, as indicated in Table 4-7. Based on these noise levels and a typical noise attenuation rate of 6 dBA per doubling of distance, resultant noise levels at noise-sensitive receptors were calculated.

Long-term noise impacts would be associated with changes in traffic noise levels. Traffic noise modeling was conducted based on average daily traffic volumes obtained from the traffic analysis prepared for this environmental impact statement. The FHWA *Traffic Noise Model* (FHWA 1988) was used to predict traffic noise levels along affected roadways based on trip distribution estimates obtained from the traffic analysis. The change to traffic noise levels along area roadways was determined by comparing the predicted noise levels at 50 feet from the centerline of the near travel lane for each alternative.

Table 4-8 summarizes the noise level at 50 feet from the centerline of the near travel lane for the roadway segments in the plan area. The roadway noise levels presented in the table represent worst-case potential noise exposure, which assume no natural or artificial shielding between the roadway and the receptor. This table also shows the net difference in traffic noise levels compared to Alternative 1, which is the baseline for measuring changes. Based on this information, it is likely that the noise levels at noise-sensitive sites (e.g., the Capehart housing area, youth hostel, and Marine Mammal Center) would not exceed the noise levels used by the Federal Highway Administration as guidelines for considering noise abatement.

Noise impacts from sources other than transportation vehicles were assessed based on existing documentation and site reconnaissance data. This analy-

sis includes an evaluation of noise-generating uses (e.g., trails) that could affect sensitive receptors.

Short-term impacts would be associated with construction and demolition activities, while long-term impacts would be based on permanent changes to the natural soundscape.

Beneficial noise impacts would reduce decibel levels, while adverse impacts would increase levels.

For this analysis the intensity of noise impacts is based on the degree of predicted change in sound levels from the No-Action Alternative. The following thresholds are associated with each level of impact:

Negligible: The change in sound levels would not be perceptible (i.e., less than 3 dBA).

Minor: Sound levels would change by 3–5 dBA. The short- or long-term changes would result in noise levels that would shift between the "normally acceptable" and "conditionally acceptable" ranges of the "California Land Use Noise Compatibility Guidelines" (California Governor's Office of Planning and Research 2003).

Moderate: Sound levels would change by 6–9 dBA. The short-term or long-term changes would result in noise levels that would shift between the "conditionally acceptable" and "normally unacceptable" ranges of the "California Land Use Noise Compatibility Guidelines."

Major: Sound levels would change by more than 9 dBA. The short-term or long-term changes would result in noise levels that would shift between the "clearly unacceptable" and "normally unacceptable" ranges of the "California Land Use Noise Compatibility Guidelines."

TABLE 4-8. SUMMARY OF MODELED TRAFFIC NOISE LEVELS

Roadway Segment and Location	Noise Level (dBA) 50 feet from Centerline of near Travel Lane				Net Difference in Traffic Noise Level Compared to Baseline Conditions		
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 2	Alt. 3	Alt. 4
Conzelman Road — U.S. 101 to Battery Spencer	61.85	62.42	61.83	61.82	+0.57	-0.02	-0.03
Conzelman Road — Battery Spencer to McCullough Road	58.72	59.81	58.62	58.49	+1.09	-0.1	-0.23
Conzelman Road — McCullough Road to Hawk Hill	57.90	57.91	57.89	57.86	+0.01	-0.01	-0.04
Conzelman Road — East of Hawk Hill	55.83	55.83	55.81	55.79	0	-0.02	-0.04
McCullough Road — Conzelman Road to Bunker Road	54.43	56.90	54.32	54.20	+2.47	-0.11	-0.23
Danes Drive — Barry Bunker Tunnel to Alexander Ave	60.93	60.11	60.90	60.86	-0.82	-0.03	-0.07
Bunker Road — East of Alexander Ave	57.78	57.78	57.76	57.72	0	-0.02	-0.06
Bunker Road — Barry Bunker Tunnel to McCullough Road	58.05	56.29	57.94	57.82	-1.76	-0.11	-0.23
Bunker Road — McCullough Road to Field Road	58.34	58.34	58.23	58.11	0	-0.11	-0.23
Bunker Road —– West of Field Road	57.59	57.59	57.34	57.13	0	-0.25	-0.46
Field Road — West of Bunker Road	56.90	56.90	56.48	56.65	0	-0.42	-0.25
East Road — Fort Baker to Alexander Ave	55.76	55.76	55.74	55.70	0	-0.02	-0.06
Alexander Ave — U.S. 101 to Danes Drive	64.51	64.17	64.50	64.50	-0.34	-0.01	-0.01
Alexander Ave — East of Bunker Road	63.88	63.88	63.87	63.86	0	-0.01	-0.02

SOURCE: Data modeled by EDAW 2005.

These intensity levels were selected based on commonly applied criteria recommended by federal and state transportation agencies for the evaluation of traffic noise impacts.

Alternative 1 — No-Action Alternative

Impact Analysis

There would be no changes in ambient noise levels within the study area as a result of traffic or other stationary/operational sources.

Because Alternative 1 would only include those measures already adopted, including those previously evaluated as part of the *Fort Baker Plan*, no new construction-related impacts would occur.

Cumulative Impacts

There would be no noise impacts associated with Alternative 1; therefore, there would be no cumulative impacts.

Mitigation Measures

No mitigation measures would be required under the No-Action Alternative.

Conclusion

Because the No-Action Alternative would only include those measures already adopted, including actions previously evaluated as part of the *Fort Baker Plan*, no new short- or long-term noise impacts would occur as the result of construction activities or increased traffic levels. There would be no short- or long-term cumulative noise impacts associated with this alternative. There would be no impairment of the park's resources or values related to noise or soundscapes.

Impacts of Alternative 3 — Preferred Alternative

Impact Analysis

Traffic Noise

Alternative 3 would not result in a net increase in noise along any of the affected roadways. In fact, because of the expected impact of transit service, Alternative 3 would result in slight reductions in traffic noise. This alternative would not be anticipated to result in a noticeable (3 dBA or greater) change in traffic noise levels, as perceived at nearby sensitive land uses. Therefore, the reduction in traffic noise would be a negligible beneficial impact.

Other Noise Sources

Alternative 3 would not result in the construction or long-term operation of any major stationary noise sources. However, operational noise associated with the proposed transit facilities, parking lots, and recreational facilities (e.g., trails) could result in small increases in ambient noise levels, as perceived at nearby noise-sensitive sites, with short-term, minor, adverse impacts. Noise associated with these facilities would include the opening and closing of doors, people talking, and occasional music and car alarms. Overall, long-term noise impacts would range from negligible and beneficial to minor and adverse.

Construction Noise

Table 4-7 lists the typical noise levels for some of the equipment that would be used for the proposed construction projects.

Some areas of natural soundscapes would be affected in the short term by loud construction noise during the daytime. The simultaneous operation of onsite construction equipment could result in combined intermittent noise levels up to 98 dBA at 50 feet from the proposed construction sites. Based on this noise level and a typical noise attenuation rate of 6 dBA per doubling of distance, exterior noise levels at noise-sensitive receptors located within 4,000 feet from construction activities (e.g., the Capehart housing area and the hostel) could exceed 60 dBA.

Individuals near construction areas could experience temporary increases in ambient noise levels. Overall, short-term, construction-related noise impacts would be moderate and adverse.

Cumulative Impacts

Cumulative effects to noise are based on an analysis of past, present, and reasonably foreseeable actions in the study area in combination with potential effects of Alternative 3. Long-term impacts under Alternative 3 would range from negligible and beneficial to minor and adverse; no other long-term noise impacts from the projects listed in the cumulative impact scenario (see sec. 4.1.2) are expected. Furthermore, none of the past, present, or reasonably foreseeable projects, when combined with actions under Alternative 3, would be expected to result in cumulative short-term construction noise impacts. No cumulative impacts would result.

Mitigation Measures

NOI-1: Noise Restrictions. Mitigation measures providing hourly restrictions for noise-generating construction activities would be developed by NPS staff in consultation with Marin County representatives.

NOI-2: Employ Noise Reducing Construction Practices. To reduce daytime noise and potential disturbance to wildlife species due to construction, contractors would muffle or control noise from construction equipment by using the following measures:

- Equipment and trucks used for construction would utilize noise control techniques (e.g., improved mufflers, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds, and installation of sound blankets around the project site, wherever feasible). All vehicles would meet federal standards for the year they were built. Construction vehicles would be properly maintained and equipped with exhaust mufflers that meet state standards. To reduce noise and emissions, construction equipment would not be permitted to idle for long periods of time;
- Impact tools (e.g., jackhammers and pavement breakers) used for construction would be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneu-

matically powered tools. Where use of pneumatic tools was unavoidable, an exhaust muffler on the compressed air exhaust would be used. External jackets on the tools themselves would be used where feasible. Quieter procedures would be used, such as drilling rather than impact equipment whenever feasible.

Conclusion

Alternative 3 would result in slight reductions in traffic noise; therefore, long-term impacts would be negligible and beneficial. Operational noise associated with the proposed transit facilities, parking lots, and recreational facilities (e.g., use of trails) could result in long-term, minor adverse impacts to ambient noise levels, as perceived at nearby noise-sensitive sites. Construction activities would result in a local, short-term, moderate, adverse impact to the noise environment. There would be no short-term or long-term cumulative noise impacts associated with this alternative. There would be no impairment of the park's resources or values related to noise or soundscapes.

Impacts of Alternative 2

Impact Analysis

Traffic Noise

As indicated in Table 4-8, increases in traffic noise levels under Alternative 2 would be less than 3 dBA and would not be noticeable, as perceived at nearby sensitive sites. Depending on the roadway segment, Alternative 2 would result in no change, a slight increase, or a slight reduction in traffic noise. Therefore, changes in traffic noise would be negligible.

Other Noise Sources

Alternative 2 would not result in the long term operation of any major stationary noise sources. Operational noise associated with the proposed transit facilities, parking lots, and recreational facilities (e.g., trails) could result in increases in ambient noise levels that would be minor and adverse, as perceived at nearby noise-sensitive sites. Overall long-term noise impacts attributable to this alternative would be negligible to minor and adverse.

Construction Noise

As described under Alternative 3, construction would affect some areas of natural soundscapes in the short term by loud construction noise during the daytime. The simultaneous operation of onsite construction equipment could result in combined intermittent noise levels up to 98 dBA at 50 feet from the proposed construction sites. Based on this noise level and a typical noise attenuation rate of 6 dBA per doubling of distance, exterior noise levels at noise-sensitive receptors within 4,000 feet of construction activities (e.g., the Capehart housing area and the hostel) could exceed 60 dBA. Individuals near construction areas could experience temporary increases in ambient noise levels. Overall, short-term, construction-related noise impacts would be moderate and adverse.

Cumulative Impacts

Implementation of Alternative 2 would result in negligible to minor increases in ambient noise levels as perceived from nearby noise-sensitive areas. None of the projects listed in the cumulative impacts scenario (see sec. 4.1.2), when combined with actions under Alternative 2, would be expected to result in cumulative short- or long-term noise impacts. No cumulative impacts would result.

Mitigation Measures

Mitigation measures would be the same as those described for Alternative 3.

Conclusion

Alternative 2 would result in slight changes (less than 3 dBA) in traffic noise; therefore, long-term impacts would be negligible and adverse. Operational noise associated with the proposed transit facilities, parking lots, and recreational facilities (e.g., use of trails) could result in long-term, minor adverse impacts on ambient noise levels, as perceived at nearby noise-sensitive sites. Construction activities would result in a local, short-term, moderate, adverse impact to the noise environment. There would be no short- or long-term cumulative noise impacts associated with this alternative. There would be no impairment of the park's resources or values related to noise or soundscapes.

Impacts of Alternative 4

Impact Analysis

Traffic Noise

As indicated in Table 4-8, Alternative 4 would not result in a net increase in noise along any of the affected roadways. In fact, due to the expected impact of transit service, Alternative 4 would result in slight reductions in traffic noise. Alternative 4 would not result in a noticeable change in traffic noise levels (3 dBA or greater), as perceived at nearby noise-sensitive sites. A reduction in traffic noise would be a negligible beneficial impact.

Other Noise Sources

Implementation of Alternative 4 would not result in the long term operation of any major stationary noise sources. Operational noise associated with the proposed transit facilities, parking lots, and recreational facilities (e.g., trails) could result in increases in ambient noise levels that would be minor and adverse, as perceived at nearby noise-sensitive sites. Overall long-term noise impacts attributable to Alternative 4 would range from negligible and beneficial to minor and adverse.

Construction Noise

As described under Alternative 3, construction would affect some areas of natural soundscapes in the short term by loud construction noise during the daytime. The simultaneous operation of onsite construction equipment could result in combined intermittent noise levels up to 98 dBA at 50 feet from the proposed construction sites. Based on this noise level and a typical noise attenuation rate of 6 dBA per doubling of distance, exterior noise levels at noise-sensitive receptors within 4,000 feet of construction activities (e.g., the Capehart housing area and the hostel) could exceed 60 dBA. Individuals near construction areas could experience temporary increases in ambient noise levels. Overall, short-term, construction-related noise impacts would be moderate and adverse.

Cumulative Impacts

Implementation of Alternative 4 would result in negligible to minor increases in ambient noise levels as perceived from nearby noise-sensitive areas. None of the projects listed in the cumulative impacts scenario (see sec. 4.1.2), when combined with actions under Alternative 4, would be expected to result in cumulative short- or long-term noise impacts. No cumulative impacts would result.

Mitigation Measures

Mitigation measures would be the same as those described for Alternative 3.

Conclusion

Alternative 4 would result in slight reductions in traffic noise, and impacts would be considered long-term, negligible, and beneficial. Operational noise associated with the proposed transit facilities, parking lots, and recreational facilities (e.g., use of trails) could result in long-term, minor adverse impacts to ambient noise levels, as perceived at nearby noise-sensitive sites. Construction activities would result in a local, short-term, moderate, adverse impact to the noise environment. There would be no short- or long-term cumulative noise impacts associated with this alternative. There would be no impairment of the park's resources or values related to noise or soundscapes.

4.5.4 HUMAN HEALTH, SAFETY, AND THE ENVIRONMENT

Regulatory Framework

The U.S. Army Corps of Engineers is required to clean up contaminated areas to a level protective of human health and the environment. The Corps is conducting investigation and remediation actions in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the Resource Conservation and Recovery Act, the Base Realignment and Closure Act (BRAC), the California Health and Safety Code, the California Water Code, and other relevant authorities. The California Department of Toxic Substances Control is the lead agency for oversight of Army cleanup activities, and the San Francisco Regional Water Quality Control Board works in conjunction with the Department of Toxic Substances Control on issues of water quality and hydrocarbon releases.

As part of the remediation process, the Corps has conducted a limited site investigation of Fort Barry and will proceed with a remedial investigation and feasibility study for several chemically impacted areas at Fort Barry. The investigation and study

will be followed by the development of a remedial action plan and a record of decision for the preferred remedial alternative. Interim remedial actions may be taken at several impacted areas to accelerate remediation efforts.

The National Park Service is reviewing investigations and remedial measures being conducted by the Army at Fort Baker under both the Formerly Used Defense Site (FUDS) and BRAC programs. Issues include fuel distribution lines, lead-based paint, asbestos, waste oil tanks, and other issues related to work being conducted within the FUDS program. The FUDS area consists of 264 acres surrounding the central area of Fort Baker (i.e., the area that was transferred to the National Park Service under the BRAC Act in 1985). The Army is independently addressing environmental issues within the FUDS area. These issues primarily consist of petroleum releases associated with former aboveground and underground tanks.

A "Draft Records Research Report for Fort Baker" has been completed by the Corps of Engineers (USACE 2004). Field investigations were conducted at six petroleum sites, and the National Park Service has requested action at several other sites. A work plan for field investigations at three CERCLA sites was scheduled during 2006, and the National Park Service has requested actions at several other sites. A preliminary assessment and a site inspection for multiple sites at Fort Barry have been completed. The National Park Service has requested further action at several sites; however, the Park Service is unaware of any further work planned by the Corps of Engineers.

Methodology for Analyzing Impacts

The alternatives are evaluated qualitatively in terms of their effect on the following public health and safety issues that were identified by the public and agencies during the scoping phase: exposure to contaminated sites / hazardous substances; personal safety (for visitors and non-visitors); security of personal property; emergency vehicle access; and seismic safety. Traffic-related safety concerns, including bicycles, are addressed under the transportation sections of this document.

Short-term impacts would be temporary in nature (and often associated with construction), whereas long-term impacts would have a continuing effect on human health and safety.

Beneficial impacts would improve human health and safety, whereas adverse impacts would reduce human health and safety.

The following intensity levels were defined:

Negligible: Public health and safety would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on public health or safety.

Minor: Effects on public health and safety would be detectable but would not be appreciable.

Moderate: Effects would be readily apparent and long-term, and they would result in substantial, noticeable effects to public health and safety on a local scale.

Major: Effects would be readily apparent and long-term, and they would result in substantial, noticeable effects to public health and safety on a regional scale.

Impacts of Alternative 1 — No-Action Alternative

Impact Analysis

Hazardous Substances

Survey, analysis, and eventual cleanup of hazardous substances would occur as part of the implementation of the *Fort Baker Plan.* The Department of Defense has responsibility for cleaning up all contaminated sites in Forts Barry and Cronkhite that resulted from their past military use. Since there would be no ground-disturbing activities under this alternative, there would be no impact relating to hazardous substances.

Public Safety Services

Fire and Emergency Services. No changes would affect fire and emergency service access within the Marin Headlands and Fort Baker. The one-lane Barry-Baker tunnel would continue to create a bottleneck for emergency vehicles on Bunker Road. This continuing delay in emergency response adversely affects public safety in the study area.

Security and Police Protection. Personal safety related to vehicle, bicycle, and pedestrian encoun-

ters in the Marin Headlands and Fort Baker is discussed under the transportation sections of this document. This alternative would have no additional impacts on personal safety within the study area. No improvements to security of personal property would be made, and this alternative would have no impact to security of personal property.

Similar to the impacts discussed above for fire services, impacts to police service access within the Marin Headlands and Fort Baker would continue to be affected by one-way traffic in the Barry-Baker tunnel.

Seismic Conditions

There would be no additional impact on the public health and safety relating to seismic or tsunami events.

Cumulative Impacts

The park's *Fire Management Plan* would improve personal safety in the study area by reducing fuel hazards near historic structures and heavily developed areas that receive high visitation. This action would result in a long-term, minor, beneficial impact to human health and safety in the study area by reducing risks from fire. Overall cumulative impacts would result largely from the continuation of the one-lane, one-way operation of the Barry-Baker tunnel.

Mitigation Measures

No additional mitigation measures would be required under this alternative.

Conclusion

There would be no impact to hazardous substances, security of personal property, or personal safety in addition to those already addressed in the transportation sections. Adverse effects on fire, police, and emergency vehicle access would remain as a result of one-way traffic in the Barry-Baker tunnel, resulting in long-term, moderate, adverse impacts. There would be no additional short- or long-term impact on the public health and safety related to seismic or tsunami events. There would be no additional cumulative impacts under this alternative.

Impacts of Alternative 3 — Preferred Alternative

Impact Analysis

Hazardous Substances

Proposed road, parking, trail, and resource restoration work under Alternative 3 could disturb contaminated sites, soils, substances, or unexploded ordinances. If unintentional or inadvertent disturbances occurred, workers could be exposed to health hazards, the contamination could be spread farther, and ultimately the public could be exposed to hazards.

Since the majority of the proposed road, trail, and parking work would involve only shallow ground-disturbing activities (i.e., less than 12 inches deep), there would be a much lower likelihood of disturbing unknown contaminated sites or substances. Deeper excavation work could occur at sites where there are indications of potential contamination as a result of past U.S. Army use. Such sites would include the fill removal and wetland restoration proposed for the unpaved parking area at Rodeo Beach, areas between Bunker Road and Rodeo Lagoon (northwest and southeast of the Lagoon Road bridge), and the eastern end of the Smith Road loop. All of these areas contain fill that was placed by the Army and thus may also contain contaminants. Little of the road, parking, or other work proposed in this alternative should occur within the areas close to buildings where lead-contaminated soils would exist. With the mitigation measures discussed below, the long-term impact on public health and safety from hazardous materials and contaminated sites would be negligible and adverse.

Public Safety Services

Fire and Emergency Services. On-street parking would be regulated and enforced in Fort Baker, as proposed in the *Fort Baker Plan,* to allow for adequate access and egress for emergency and service vehicles. Proposed roadway improvements, such as intersection safety improvements and roadway widening, would also improve conditions for emergency service access in the park. These actions, along with the mitigation measures discussed below, would result in a moderate beneficial impact on fire and emergency service access within the Marin Headlands and Fort Baker.

Security and Police Protection. Specific safety improvements related to vehicle, bicycle, and pedestrian encounters in the Marin Headlands and Fort Baker are discussed under the transportation sections of this document. Alternative 3 would have no additional impacts on personal safety. No improvements to security of personal property would be made, and there would be no impact to security of personal property under Alternative 3.

Short-term, minor, adverse impacts could occur if construction activities, such as lane closures, movement of construction equipment, or rerouting, caused an increase in vehicle and bicycle accidents requiring public safety response. It is possible that personal safety could be at greater risk during construction activities because of the movement of large construction equipment, earthmoving activities, and other construction activities. However, best management practices would be followed during construction and would minimize possible risks to personal safety.

Similar to the impacts discussed above for fire services, impacts to police service access within the Marin Headlands and Fort Baker would be moderate and beneficial.

Seismic Conditions

Structures can be a potential risk during seismic events. Although this alternative includes the construction of retaining walls and trail bridges, all such structures that would have any risk potential during an earthquake would be designed by licensed civil and structural engineers to meet all relevant seismic building codes and standards. There would be no additional impacts on the public health and safety relating to seismic or tsunami events.

Cumulative Impacts

The park's *Fire Management Plan* would improve personal safety in the study area by reducing fuel hazards near historic structures and heavily developed areas that receive high visitation. This action would result in a long-term, minor, beneficial impact to human health and safety in the study area by reducing risks from fire. When this impact is combined with the long-term, moderate, beneficial impacts of Alternative 3, the cumulative impacts would be moderate and beneficial.

Mitigation Measures

Hazardous Substances

CON-1: Underground Storage Tank Management. If construction was likely to occur before hazardous substance cleanup by the U.S. Army Corps of Engineers in areas where there are known or suspected underground storage tanks, soil contamination, or hazardous materials, then the National Park Service would take steps to address the portions of these sites that would be disturbed before construction began. Such steps would include further exploration to confirm the existence of underground storage tanks, soil contamination, or hazardous materials. If such substances were confirmed, cleanup options would be determined before construction.

CON-2: Prepare Materials Management Plan. For each project phase, a materials management plan that addresses handling of potentially contaminated soils or materials would be prepared as a part of the project plans.

CON-3: Contamination Surveys. In areas where deeper excavation work was proposed, and where there were indications that the military's past use of an area may have resulted in some potential for contamination, additional survey work would be undertaken during the design phase of each project. Surveys using electromagnetic subsurface diagnostic tools, ground-penetrating radar, seismic refraction, or resistivity tools would be conducted in the areas to be excavated to determine potential for buried objects (such as storage tanks, vaults, pipelines, and buried drums). If any such objects were found, then steps would be taken to appropriately confirm and, if necessary, remove the objects and any contamination.

CON-4: Bunker Road at Rifle Range Contaminant Testing. Soil samples would be taken where Bunker Road crosses the rifle range to determine if soils that would be disturbed by the rehabilitation of Bunker Road are contaminated with the metals found elsewhere on the rifle range. If soil contamination was confirmed, then the contaminated soils that would be affected by the road project would be removed and properly disposed. The proposed drainage ditch, culvert repair, and replacement project on the rifle range would likely be scheduled to occur after the Corps cleanup of the contaminated rifle range soils.

CON-5: Stables Area Contaminants Testing. If the proposed parking area improvement work at the riding stables was determined to be on the site of the former Army fuel station, additional testing would be undertaken to confirm that the recent removal of underground storage tanks has fully cleaned up the site before construction.

CON-6: Lead-Contaminated Soils. If work occurred in areas close to buildings where lead-contaminated soils exist, then appropriate measures to handle contaminated soils would need to be followed, in accordance with the materials management plan developed for such purposes.

CON-7: Spill Prevention and Control Plan. A spill prevention and control plan would be prepared and would include the following elements:

- Proper storage, use, and disposal of chemicals, fuels, and other toxic materials would be required.
- Construction equipment would be required to be refueled only in upland areas and in conformance with the avoidance zones to prevent fuel spills near sensitive habitats. Equipment would be inspected for hydraulic and oil leaks regularly, as well as prior to use in the park.
- All heavy equipment in the park would be required to carry emergency spill-containment materials. For example, pans would be placed under equipment that was stored on site to reduce the potential for leaks of oil and other substances onto park lands. Absorbent materials would be on hand at all times to absorb any minor leaks and spills.
- An emergency response plan would be prepared by the contractor(s), approved by the National Park Service, and implemented during project implementation.
- The asphalt batch plant would not be permitted in the park.

CON-8: Potential Unexploded Ordnance (UXO). In areas where there is a potential for unexploded ordnances, further investigation using aerial photos or other historical data would be utilized to flag potential sites for a site investigation. Should no pictorial or physical evidence of UXOs be discovered, the park would define uncertainty risk and probability by utilizing outside expertise, such as that available through the Army Corps of Engineers or private researchers. Remediation actions would depend on the findings and may range from having trained UXO observers work with construction operators to prohibiting construction activities in certain sites.

Public Safety Services

PSS-1: Barry-Baker Tunnel Traffic Signals. The Barry-Baker tunnel alternating one-way traffic signal system would be modified with a “hard” telephone wire connection to the park dispatch center so that the tunnel traffic signals could be switched to green for the direction of approaching emergency vehicles prior to actually arriving at the tunnel portals. This would give emergency vehicles the option of responding to or from the Marin Headlands over either Bunker Road or Conzelman Road.

Seismic Conditions

No mitigation measures would be required under this alternative.

Conclusion

Alternative 3 would result in a long-term, negligible, adverse impact from hazardous materials and contaminated sites within the study area. There would be no impact on security of personal property or personal safety in addition to those already discussed in the transportation sections. Fire, police, and emergency service providers would experience a long-term, moderate, beneficial impact as a result of remote control of traffic direction through the Barry-Baker tunnel. There would be no additional impact on the public health and safety related to seismic or tsunami events. Short-term, minor, adverse impacts to personal safety could occur as a result of construction activities. Cumulative impacts would be long-term, moderate, and beneficial.

Impacts of Alternative 2

Impact Analysis

Hazardous Substances

Impacts would be the same as described for Alternative 3, except no excavation of fill areas along Rodeo Lagoon would occur in Alternative 2. All other areas with suspected contamination would be the same. With the mitigation measures discussed

for Alternative 3, the long-term impact on the public health and safety from the hazardous materials and contaminated sites would be negligible and adverse.

Public Safety Services

Fire and Emergency Services. On-street parking would be regulated and enforced in Fort Baker, as proposed in the *Fort Baker Plan*, to allow for adequate access and egress for emergency and service vehicles. This action would improve fire service access in Fort Baker. However, the one-way road system proposed on McCullough Road and the Barry-Baker tunnel could result in moderate, adverse impacts to fire and emergency service access to and within the study area due to increased response times. The City of Sausalito was consulted and officials indicated their concern about this increased response time. Overall impacts to fire and emergency service would be considered moderate and adverse as a result of the proposed one-way road system.

Security and Police Protection. Specific safety improvements related to vehicle, bicycle, and pedestrian encounters in the Marin Headlands and Fort Baker are discussed in the transportation sections of this document. This alternative would have no additional impacts on personal safety. No improvements to security of personal property would be made, and there would be no impacts to security of personal property under Alternative 2.

Short-term, minor, adverse impacts could occur if construction activities, such as lane closures, movement of construction equipment, and rerouting, caused an increase in vehicle and bicycle accidents. Personal safety could be at greater risk during construction activities because of the movement of large construction equipment, earthmoving activities, and other construction activities. However, best management practices would be followed during construction and would minimize the possibility of risks to traffic and personal safety.

Similar to the impacts discussed above for fire services, impacts to police service access within the study area would be moderate and adverse because of the one-way traffic circulation.

Seismic Conditions

As described under Alternative 3, any construction of retaining walls and trail bridges would be designed by licensed civil and structural engineers to meet all relevant seismic building codes and standards. There would be no additional impacts on the public health and safety relating to seismic or tsunami events.

Cumulative Impacts

The park's *Fire Management Plan* would improve personal safety in the study area by reducing fuel hazards near historic structures and heavily developed areas that receive high visitation. The cleanup of the area by the U.S. Army Corps of Engineers would decrease exposure to contaminated sites and hazardous materials. These actions would result in long-term, minor, beneficial cumulative impacts to human health and safety by reducing risks from fire and exposure to hazardous substances. When these impacts are combined with the impacts under Alternative 2 for increased fire, police, and emergency response time, the long-term cumulative impacts would be minor and adverse.

Mitigation Measures

Mitigation measures for hazardous substances would be the same as Alternative 3.

No mitigation would be required for public safety service or seismic conditions under this alternative.

Conclusion

Alternative 2 would have a long-term, negligible, adverse impact from hazardous materials and contaminated sites within the study area. This alternative would have no impact on security of personal property or personal safety within the study area in addition to those discussed under the transportation sections. Fire, police, and emergency service providers would experience a long-term, moderate, adverse impact when accessing the study area. There would be no additional impact on public health and safety related to seismic or tsunami events. Short-term, minor, adverse impacts to personal safety could occur as a result of construction activities. Cumulative impacts would be long-term, minor, and adverse.

Impacts of Alternative 4

Impact Analysis

Hazardous Substances

As described under Alternative 3, proposed road, parking, trail, and resource restoration work could disturb contaminated sites, soils, or substances. Since the majority of the proposed road, trail, and parking work would involve only shallow ground disturbing activities (i.e., less than 12 inches deep), there would be a much lower likelihood of disturbing unknown contaminated sites or substances. Deeper excavation work could occur at sites where there are indications of potential contamination as a result of past U.S. Army use. Such sites would include the fill removal and wetland restoration proposed for the unpaved parking area at Rodeo Beach, areas between Bunker Road and Rodeo Lagoon (northwest and southeast of the Lagoon Road bridge), and the eastern end of the Smith Road loop. Little of the road, parking, or other work proposed in this alternative should occur within the areas close to buildings where lead-contaminated soils would exist. With the mitigation measures discussed under Alternative 3, the long-term impact on public health and safety from hazardous materials and contaminated sites would be negligible and adverse.

Public Safety Services

Fire and Emergency Services. On-street parking would be regulated and enforced in Fort Baker, as proposed in the *Fort Baker Plan,* to allow for adequate access and egress for emergency and service vehicles. Proposed roadway improvements such as intersection safety improvements, roadway widening, and reconstruction, would also improve conditions for emergency service access in the study area. These actions, along with the mitigation measures discussed below, would result in a moderate beneficial impact on fire and emergency service access.

Security and Police Protection. Specific safety improvements related to vehicle, bicycle, and pedestrian encounters in the Marin Headlands and Fort Baker are discussed under the transportation sections of this document. This alternative would have no additional impacts on personal safety. No improvements to security of personal property would be made, and there would be no impact to security of personal property under Alternative 4. Short-term, minor, adverse impacts could occur if construction activities, such as lane closures, movement of construction equipment, and rerouting, caused an increase in vehicle and bicycle accidents. It is possible that personal safety could be at greater risk during construction activities because of the movement of large construction equipment, earth-moving activities, and other construction activities. However, best management practices would be followed during construction and would minimize the possibility of risks to traffic and personal safety.

Similar to the impacts discussed above for fire services, the impact to police service access within the Marin Headlands and Fort Baker would be moderate and beneficial.

Seismic Conditions

As described under Alternative 3, any construction of retaining walls and trail bridges would be designed by licensed civil and structural engineers to meet all relevant seismic building codes and standards. There would be no additional impacts on the public health and safety relating to seismic or tsunami events.

Cumulative Impacts

The park's *Fire Management Plan* would improve personal safety in the study area by reducing fuel hazards near historic structures and heavily developed areas that receive high visitation. This action would result in long-term, minor, beneficial impacts to human health and safety in the study area by reducing risks from fire and exposure to hazardous materials. When these impacts are combined with the moderate beneficial impacts of Alternative 4, the cumulative impacts would be long-term, moderate, and beneficial.

Mitigation Measures

Mitigation measures for hazardous substance and public safety services would be the same as Alternative 3.

There would be no mitigation for seismic conditions.

Conclusion

Alternative 4 would have a long-term, negligible, adverse impact on hazardous materials and contaminated sites within the study area. This alternative

would have no impact on the security of personal property or personal safety in addition to those discussed under the transportation sections. Fire, police, and emergency service providers would experience a long-term, moderate, beneficial impact to access within the park from proposed roadway improvements and reconstruction. There would be no additional impact on public health and safety related to seismic or tsunami events. Short-term, minor, adverse impacts could occur to personal safety as a result of construction activities. Cumulative impacts would be long-term, moderate, and beneficial.

4.6 SOCIAL AND ECONOMIC IMPACTS

4.6.1 METHODOLOGY FOR ANALYZING IMPACTS

Socioeconomic conditions that may be affected by the actions in the alternatives include economic impacts on local and regional employment and social impacts, such as traffic congestion in the study area, quality of life impacts for surrounding communities, and impacts on transit-dependent visitors. Socioeconomic impacts to park partners are addressed under the "Recreation and Visitor Experience" (see sec. 4.5.2), and economic impacts associated with parking fees and transit, and economic impacts on employment in the Golden Gate National Recreational Area, are addressed under "Impacts on Park Operations and Management."

The analysis of economic and social impacts is qualitative and is based on readily available existing socioeconomic data and reports. Visitor and travel data gathered to assess other impacts were used for the analysis. The impacts on local economies are evaluated based on employment information provided by NPS and Marin County staff. Specific impacts analyzed include visitor demographics from changes in park access; potential economic impacts resulting from changes in employment; and quality of life impacts resulting from changes in traffic or access to the Marin Headlands and Fort Baker.

The baseline conditions for this analysis assume that the improvements identified in the *Fort Baker Plan* have been implemented.

Short-term impacts would be temporary and associated with the implementation of an action (e.g., related to construction activities). Long-term impacts would have a permanent effect on the social and economic environment and would last longer than one year.

Impacts would be beneficial if they would improve the characteristics of the existing social and economic environment (i.e., employment, quality of life), as it relates to visitors and surrounding local communities. Conversely, impacts would be adverse if they would degrade or otherwise negatively alter the characteristics of the existing environment for these two groups.

The basis for the intensity levels is presented below:

Negligible: Impacts to socioeconomic conditions would not be detectable.

Minor: Either beneficial or adverse impacts would be slightly detectable but would not be expected to have an overall effect on the long-term character of the social and economic environment.

Moderate: Either beneficial or adverse impacts would be detectable and would likely be long-term. Effects would result in changes on the social and economic environment on a local scale.

Major: Either beneficial or adverse impacts would be considered to have a substantial, highly noticeable influence on the social and economic conditions in the region, and could be expected to alter those environments permanently.

4.6.2 IMPACTS OF ALTERNATIVE 1 — NO-ACTION ALTERNATIVE

Impact Analysis

Park Visitation Patterns

Under this alternative the National Park Service would continue conversations with local public transportation providers, such as Golden Gate Transit, the San Francisco Municipal Transit System, and Marin County Transit District (MCTD), to provide direct transit services to Fort Baker. This alternative would also provide incentives such

as reduced or free fares for public transit to promote alternative modes of travel.

As identified in the *Fort Baker Plan,* this alternative would include the Fort Baker conference center shuttle for airport connections and access from the conference center to parking, sites in Fort Baker and Sausalito, and possibly local attractions for conference center patrons. This shuttle service would be operated by the conference center.

Although the conference center shuttle would benefit conference center patrons, this alternative may not specifically implement any transit improvements to serve the general public. This alternative would therefore have no impact on the makeup of the general visitor population or on visitor access to the Marin Headlands and Fort Baker.

There would be no impacts on visitors as a result of this alternative.

Local Communities

No change would be expected under this alternative in how visitors from local communities access the Marin Headlands and Fort Baker (see "Transit," sec. 4.2.1). The quality of life in surrounding communities, as it relates to traffic congestion and access to the study area by means of bicycling, walking, and transit would be similar to today. The median pedestrian refuges on East Road near the Bay Area Discovery Museum, identified in the *Fort Baker Plan Record of Decision*, are considered to be in place for this alternative. There would be no additional visitor or park improvements beyond those identified in the *Fort Baker Plan*; therefore, there would be no direct impacts to quality of life related to traffic congestion and access.

This alternative would not generate employment opportunities beyond those identified in the *Fort Baker Plan;* therefore, there would be no additional direct impact on employment in local communities.

Indirect impacts to employment and the quality of life in surrounding communities might be expected to occur if visitation to the study area changed substantially over time as a result of improvements proposed in the *Fort Baker Plan*. For example, increased visitation over time could lead to increased visitor spending within the park and in adjacent local communities and could indirectly lead to the creation of jobs in the park and Marin County. Increased visitation could also lead to increased congestion within the park and surrounding communities, indirectly creating adverse impacts to the quality of life in the area. Visitation projections are not expected to change as a result of this alternative, however, and therefore no indirect impacts to the economy or quality of life in surrounding communities would be anticipated.

No new construction (beyond that identified in the *Fort Baker Plan*) would be undertaken in this alternative, and no resulting short-term impacts to local communities.

Cumulative Impacts

There would be no additional impacts to the social or economic environment as a result of Alternative 1; therefore, there would be no cumulative impacts.

Mitigation Measures

No mitigation measures would be required under this alternative.

Conclusion

There would be no short- or long-term impacts to the socioeconomic environment as a result of this alternative.

4.6.3 Impacts of Alternative 3 — Preferred Alternative

Impact Analysis

Park Visitation Patterns

Alternative 3 would provide improvements to transit stops within the Marin Headlands and Fort Baker, with a transit transfer point on Alexander Avenue near U.S. 101 for the Fort Baker conference center shuttle and local public transportation providers. This alternative would encourage MUNI service within the Marin Headlands on Saturdays, increased MUNI service frequency on both Saturday and Sunday, and an extended MUNI route to the Alexander Avenue/U.S. 101 transfer point. Transit service would be provided to Fort Baker. The alternative would provide internal weekday shuttle service within the study area. The Fort

Baker conference center shuttle service would be the same as described in Alternative 1.

Alternative 3 would include a parking fee program to provide enhanced transit service operations. Although there would be temporary adverse effects to visitors who had to pay for parking, a fee program would create incentives for visitors to use the transit service rather than drive.

Transit improvements would result in an increase in the percentage of visitors accessing the Marin Headlands and Fort Baker (see "Transit," sec. 4.2.1). Although the accessibility of the park by means of transit would improve both in terms of market potential and transit capacity, the number of visitors using transit would be small relative to the average daily number of visitors. Therefore, changes to visitor demographics resulting from improved transit access would be negligible and beneficial.

Improvements to meet ADA standards at parking areas would make these areas of the park more accessible for users with disabilities, resulting in a minor, beneficial impact.

There would be no short-term impacts on visitor use as a result of this alternative.

Local Communities

Less than 0.5% of vehicle trips accessing the Marin Headlands and 0.71% of vehicle trips accessing Fort Baker would be expected to shift to transit as a result of transit improvements under this alternative (see "Transit," sec. 4.2.1). This shift would be negligible and beneficial, and impacts to quality of life in surrounding communities as it relates to traffic congestion would also be negligible and beneficial. Improved transit service and pedestrian and bicycle access would increase options for access to the park from surrounding communities, creating long-term, moderate, beneficial impacts to the quality of life in these communities.

In addition to the Fort Baker conference center shuttle, proposed new Saturday MUNI service to the Marin Headlands and greater MUNI service frequency that would be encouraged, along with the addition of internal weekday shuttle service and transit access to Fort Baker, would result in increased transit operation hours within the study area. This would create the potential for a few new jobs, assuming that the increase in service on these routes would not be offset by a decrease on other routes in the system. Workers from local communities would fill any new transit service jobs; however, the number of jobs created would be negligible in relation to the overall number of jobs in surrounding communities. The number of park staff would not be affected.

Similar to Alternative 1, indirect impacts to employment and quality of life might be expected to occur if visitation to the park changed substantially as a result of proposed improvements. However, visitation projections are not expected to change as a result of this alternative, and no indirect impacts to the economy or quality of life would be anticipated.

Construction activities would have short-term, minor, beneficial impacts on local businesses and employment. The physical improvements to implement the plan would primarily be accomplished by means of a series of individual contracts awarded through a competitive procurement process with construction firms. The numbers and sizes of contracts would vary in any given year, depending on availability of NPS construction funding. Some retail businesses could have increased sales because of construction activities. Construction expenditures would total approximately $26.9 million (2007 dollars) over a 15–20 year implementation period, and would provide jobs for a maximum of 20 to 30 people at any one time. These jobs would be primarily with construction contracting firms and would be located in the study area only for the duration of the contract. Most of the contracts would be accomplished within one year or less. It is unknown what portion of the construction labor would consist of local workers, but typically construction workers commute from all over the Bay Area. Because these impacts would be short term, the beneficial impact would be minor.

Cumulative Impacts

Future projects such as the proposed NPS parklands water shuttle study would potentially provide ferry service to Fort Baker. Future improvements would provide pedestrian, bicycle, and transit improvements along Alexander Avenue in the vicinity of the U.S. 101 interchange, as well as additional transit, and non-motorized access

improvements under the Alexander Avenue Planning Study. The ongoing Marin Headland and Fort Baker transportation demand management program (see sec. 2.2.3) provides formal and informal rideshare programs to help park partner employees and volunteers carpool with one another to reduce the number of single-occupancy vehicle trips in the study area.

While these actions would improve public transit access to the Marin Headlands and Fort Baker and would be beneficial, the improvements would not be great enough to be detectable, so impacts would be negligible. These actions, combined with the transit improvements proposed under Alternative 3, would result in negligible beneficial impacts. Access conditions would continue to support the same visitation patterns at the Marin Headlands and Fort Baker as now.

The projects discussed above, along with the expansion of the Manzanita park-and-ride facility on U.S. 101 north of the study area, bicycle and pedestrian improvements at Vista Point, and *Fort Baker Plan* improvements to the shuttle, waterfront, and trails system, would improve pedestrian, bicycle, and transit service to and within the Marin Headlands and Fort Baker. These actions could potentially result in minor beneficial impacts to the quality of life in surrounding communities, as residents would have more choices for access to the study area. These actions would result in negligible beneficial impacts on traffic congestion in local communities.

In terms of impacts on the quality of life in surrounding communities, Alternative 3 would have moderate beneficial impacts related to access to the study area and negligible beneficial impacts related to traffic congestion. The projects above, when combined with Alternative 3, would result in long-term, moderate, beneficial, cumulative impacts to the quality of life related to park access and negligible, beneficial, cumulative impacts on local traffic congestion.

New jobs would be created if ferry service was established and by the Fort Baker conference center. These jobs would be negligible compared to the overall number of jobs in the park and in local communities. When combined with Alternative 3, long-term cumulative impacts to park and local employment would be negligible and beneficial.

Nearly all of the projects listed in the cumulative impacts scenario (see sec. 4.1.2) would create some short-term construction-related impacts, such as increased sales of supplies and services, as well as increased demand for workers. Together all of these projects could result in short-term, minor, beneficial impacts to the local economy as these projects were implemented. When combined with Alternative 3, which would have short-term, minor, beneficial impacts on the economy, cumulative impacts would be short term, minor, and beneficial.

Mitigation Measures

There would be no mitigation measures under this alternative.

Conclusion

Changes to park visitation patterns resulting from improved transit access, impacts on employment in local communities, and impacts on the quality of life in local communities as it relates to traffic congestion would be negligible and beneficial. Improved access to the study area would enhance the quality of life in local communities, with long-term, moderate, beneficial impacts. Construction activities would have short-term, minor, beneficial impacts on the local economy. Overall social and economic impacts from this alternative would be minor and beneficial.

Cumulative impacts to park visitation patterns would be negligible and beneficial. Cumulative impacts on quality of life from improved access could be moderate and beneficial, while cumulative impacts to local traffic congestion would be negligible and beneficial. Short-term, minor, beneficial cumulative impacts to the local economy could result from the construction of multiple projects over the life of the plan, but long-term impacts would be negligible.

4.6.4 Impacts of Alternative 2

Impact Analysis

Park Visitation Patterns

This alternative would improve transit stops within the Marin Headlands and Fort Baker and a transit transfer/interface location on Alexander Avenue near U.S. 101 for local public transportation providers and the Fort Baker conference center shut-

tle. This alternative would encourage MUNI service within the Marin Headlands on Saturdays and extend the route to the transfer/interface location at the Alexander Avenue/U.S. 101 interchange. The Fort Baker conference center shuttle service and routes would be the same as in Alternative 1.

These transit improvements would increase the percentage of the visitor population with access to the Marin Headlands and Fort Baker. Although the accessibility of the park by transit would improve, the number of visitors actually using transit to come to the park would be small compared to the average daily number of visitors to the Marin Headlands and Fort Baker. Changes to visitor use patterns resulting from improved transit access would be negligible and beneficial.

Improvements at parking areas to meet ADA standards would make these areas more accessible for users with disabilities, resulting in a long-term, minor, beneficial impact.

There would be no short-term impacts on visitor population as a result of this alternative.

Local Communities

The number of vehicle trips accessing the Marin Headlands and Fort Baker would be expected to change slightly as more visitors used transit as a result of improvements in this alternative (see "Transit," sec. 4.2.1). The impacts to the quality of life in surrounding communities as it relates to traffic congestion would be negligible and beneficial. Improved transit service and pedestrian and bicycle access would result in minor, beneficial impacts to the quality of life as it relates to park access.

In addition to the Fort Baker conference center shuttle, proposed new Saturday MUNI service in the Marin Headlands that would be encouraged would increase transit operation hours within the study area. This would create the potential for a few new jobs, assuming that the increase in service on this route would not be offset by a decrease on other routes in the system. Workers from local communities would fill any new jobs created by expanded transit service; however, the number of jobs created would be negligible and beneficial in relation to the overall number of jobs in surrounding communities. The number of park staff would not be affected.

Similar to Alternative 3, indirect impacts to employment and quality of life might be expected to occur if visitation to the study area changed substantially as a result of proposed improvements. However, visitation projections are not expected to change as a result of this alternative, and no indirect impacts to the economy or quality of life would be anticipated.

Construction activities would have short-term, minor, beneficial impacts on local businesses and employment, similar to Alternative 3. Contracts would be awarded through a competitive procurement process, the numbers and sizes of contracts would vary in any given year, and some retail businesses could have increased sales because of construction activities. Construction expenditures of approximately $19.5 million (2007 dollars) over a 15–20 year implementation period would provide jobs for a maximum of 20–30 people at any one time. These jobs would be primarily with construction contracting firms and would be located in the study area only for the duration of the contracts, most of which would be accomplished within one year or less. It is unknown what portion of construction labor would consist of local workers, but typically construction workers commute from all over the Bay Area. Impacts of construction would be short term, minor, and beneficial.

Cumulative Impacts

As described for Alternative 3, future projects such as the proposed NPS parklands water shuttle study would potentially provide ferry service to Fort Baker. Future improvements would provide pedestrian, bicycle, and transit improvements along Alexander Avenue in the vicinity of the U.S. 101 interchange, as well as additional transit, and nonmotorized access improvements under the Alexander Avenue Planning Study. Cumulative impacts of improving public transit access to the study area would be negligible and beneficial.

Other projects that would be undertaken include expansion of the Manzanita park-and-ride facility, bicycle and pedestrian improvements at Vista Point, and improvements to the shuttle, waterfront, and trails system under the *Fort Baker Plan*. These actions could result in minor beneficial impacts to the quality of life in surrounding communities, as residents would have more choices for access to the study area, but impacts on local traffic conges-

tion would be negligible and beneficial. Cumulative actions, when combined with actions under Alternative 2, would result in long-term, moderate, beneficial impacts to the quality of life related to park access and negligible beneficial impacts on local traffic congestion.

Jobs created by a potential ferry service and the Fort Baker conference center would be negligible in comparison to the overall number of jobs in the park and in local communities. When combined with Alternative 2, long-term cumulative impacts to park and local employment would be negligible and beneficial.

Construction projects could result in short-term, minor, beneficial impacts to the local economy as these projects were implemented. When combined with Alternative 2, cumulative impacts would be short term, minor, and beneficial.

Mitigation Measures

There would be no mitigation for this alternative.

Conclusion

Impacts from changes to park visitation patterns resulting from improved transit access would be negligible and beneficial. Impacts on the quality of life in local communities would be negligible and beneficial as it relates to traffic congestion and minor and beneficial as it relates to access to the study area. Construction activities would result in short-term, minor, beneficial impacts to the local economy. Overall social and economic impacts from this alternative would be minor and beneficial.

Cumulative impacts to park visitation patterns would be negligible and beneficial. Quality of life impacts in surrounding communities could be minor and beneficial related to access to the study area, and negligible and beneficial related to traffic congestion. Short-term, minor, beneficial, cumulative impacts to the local economy could result from construction of multiple projects over the life of the plan, but long-term impacts would be negligible.

4.6.5 IMPACTS OF ALTERNATIVE 4

Impact Analysis

Park Visitation Patterns

Like the other alternatives, Alternative 4 would also improve transit stops within the Marin Headlands and Fort Baker, as well as a transit transfer/interface location on Alexander Avenue near U.S. 101 for local public transportation providers and the Fort Baker conference center shuttle. Similar to Alternative 3, increased MUNI service frequency would be encouraged on Saturdays and Sundays within the Marin Headlands, the MUNI route would be extended to the transfer/interface location at the Alexander Avenue/U.S. 101 interchange, internal weekday shuttle service would be provided within the Marin Headlands and Fort Baker, and transit service within Fort Baker. This alternative would also provide transit connections between the internal weekday shuttle and regional transit and parking facilities outside the park. The Fort Baker conference center shuttle service and routes would be the same as described for Alternative 1.

Similar to Alternative 3, this alternative would include a parking fee program to provide enhanced transit service operations. Although there would be temporary adverse effects to visitors who had to pay for parking, a fee program would create incentives for visitors to use the transit service rather than drive.

Transit improvements would increase the percentage of the visitor population with access to the Marin Headlands and Fort Baker (see “Transit,” sec. 4.2.1). Although access to the park by transit would improve, the number of visitors actually using transit to come to the park would be small compared to the average daily number of visitors. Changes to visitation patterns would be negligible and beneficial.

Improvements at parking areas to meet ADA standards would improve accessibility for users with disabilities, resulting in a minor beneficial impact.

There would be no short-term impacts on visitation patterns as a result of this alternative.

Local Communities

Of all vehicle trips to the study area, 0.88% of trips accessing the Marin Headlands and 1.42% of trips accessing Fort Baker would be expected to shift to transit as a result of improved transit options (see "Transit," sec. 4.2.1). This shift would be negligible and beneficial, as would related quality of life impacts for traffic congestion. Improved transit service and pedestrian and bicycle access would increase options for access to the park from surrounding communities, creating moderate beneficial impacts.

Similar to Alternative 3, transit service within Fort Baker, increased service frequency, and weekday internal shuttle service would create the potential for new jobs. Transit service between the park and regional transit and parking facilities would further increase transit operation hours, creating the potential for more new jobs than under Alternative 3. Workers from local communities could fill new jobs created by the expanded transit service; however, the number of jobs created would be negligible compared to the overall number of jobs in the surrounding communities. The number of park staff would not be affected.

Similar to the other alternatives, visitation projections are not expected to change substantially as a result of this alternative, and no indirect impacts to the economy or the quality of life would be anticipated.

Similar to Alternatives 2 and 3, construction activities would have short-term, minor, beneficial impacts on local businesses and employment. The numbers and sizes of contracts would vary in any given year, and some retail businesses could have increased sales because of construction activities. Construction expenditures of approximately $33.3 million (2007 dollars) over a 15–20 year period would provide jobs for a maximum of 25–35 people at any one time. These jobs would be primarily with construction contracting firms and would be located in the study area only for the duration of the contracts, most of which would be accomplished within one year or less. It is unknown what portion of construction labor would consist of local workers, but typically construction workers commute from all over the Bay Area. Impacts of construction would be short term, minor, and beneficial.

Cumulative Impacts

As described for Alternative 3, future projects such as the proposed NPS parklands water shuttle study would potentially provide ferry service to Fort Baker. Future improvements would provide pedestrian, bicycle, and transit improvements along Alexander Avenue in the vicinity of the U.S. 101 interchange, as well as additional transit, and nonmotorized access improvements under the Alexander Avenue Planning Study. Impacts of improving public transit access to the Marin Headlands and Fort Baker would be negligible and beneficial. Combined with the transit improvements proposed under Alternative 4, impacts would be negligible and beneficial.

Other projects that would be undertaken include expansion of the Manzanita park-and-ride facility, bicycle and pedestrian improvements at Vista Point, and improvements to the shuttle, waterfront, and trails system under the *Fort Baker Plan*. These actions could result in minor beneficial impacts to the quality of life in surrounding communities, as residents would have more choices for access to the study area, but negligible beneficial impacts on traffic congestion in local communities. Cumulative actions, when combined with actions under Alternative 4, would result in long-term, moderate, beneficial impacts to the quality of life related to park access and negligible, beneficial impacts on local traffic congestion.

Jobs created by a potential ferry service and the Fort Baker conference center would be negligible in comparison to the overall number of jobs in the park and in local communities. When combined with Alternative 4, long-term cumulative impacts to park and local employment would be negligible and beneficial.

Construction projects could result in short-term, minor, beneficial impacts to the local economy as these projects were implemented. When combined with the actions of Alternative 4, cumulative impacts would be short term, minor, and beneficial.

Mitigation Measures

There would be no mitigation for this alternative.

Conclusion

Changes to park visitation patterns resulting from improved transit access would be negligible and

beneficial, as would impacts on employment in local communities and impacts on local quality of life as it relates to traffic congestion. Quality of life impacts related to more options to access the study area would be moderate and beneficial. Construction activities would result in short-term, minor, beneficial impacts to the local economy. Overall social and economic impacts from this alternative would be minor and beneficial.

Cumulative impacts to park visitation patterns would be negligible and beneficial. Quality of life impacts in surrounding communities could be moderate in terms of more access options to the study area; cumulative impacts to local traffic congestion would be negligible and beneficial. Short-term cumulative impacts to the local economy from construction activities would be minor and beneficial, while long-term cumulative impacts would be negligible.

4.7 IMPACTS ON PARK OPERATIONS AND MANAGEMENT

4.7.1 REGULATORY FRAMEWORK

As a unit of the national park system, Golden Gate National Recreation Area is charged with the preservation of public lands and determination of their public use in accordance with federal law and regulations. The 1980 *General Management Plan*, its subsequent amendments, and more detailed implementation plans continue to serve as the basis for the park's planning and preservation decisions.

4.7.2 METHODOLOGY FOR ANALYZING IMPACTS

Impacts to park operations and management are assessed with regards to three topic areas: staffing, annual operating budget, and car-free days.

Elements of the alternative could change the park's existing staff requirements. The evaluation considers whether or not additional workload would be added or contracted services would be required in order to accomplish a larger workload on an ongoing basis. This includes changes that may occur within all divisions of the park, including Natural and Cultural Resource Management, Planning and Technical Services, Maintenance and Engineering, and Law Enforcement divisions.

The impacts of the alternatives on the park's annual operating budget and funding sources are evaluated for each alternative. The evaluation considers the financial requirements for each alternative and the availability of existing or new funding sources to meet additional operating and capital costs.

Short-term impacts would occur during the implementation of the alternatives, including construction and any required contract procurement activities. Long-term impacts would have a permanent effect on operations.

Reduced staffing needs and financial balances between operating costs and revenue sources or financial imbalances where revenue sources exceed operating costs would be considered beneficial impacts. The need for higher staffing levels that are not covered by increased revenues and financial imbalances where operating costs exceed revenue sources would be considered adverse impacts.

The following impact intensities were established:

Negligible: There would be no discernible change in park operations or financial balance between revenue sources and operating costs.

Minor: There would be slight but detectable changes in park operations requiring slight changes or reallocations in current staffing arrangements or existing funding streams.

Moderate: There would be readily apparent changes that would require adjustments in park operations, such as administrative reorganization, or a financial imbalance of up to 10% between available funding streams and annual operating costs.

Major: There would be substantial changes in park operations requiring new administrative structures or a financial imbalance of more than 10% between available funding streams and annual operating costs.

4.7.3 IMPACTS OF ALTERNATIVE 1 — NO-ACTION ALTERNATIVE

Impact Analysis

Staff and Resources

Alternative 1 would not affect the park's current staffing requirements, and there would be no new impacts on park operations and management. Existing facilities would continue to deteriorate and place an increasing burden on park operations to keep facilities open and usable by the public.

Annual Operating Budget and Funding Sources

The alternative would not change the park's annual operating budget or affect the allocations of its current funding sources.

Cumulative Impacts

There would be no cumulative impacts on park operations under this alternative.

Mitigation Measures

No mitigation measures would be required under this alternative.

Conclusion

There would be no direct, indirect, or cumulative impacts to park operations and management under Alternative 1.

4.7.4 IMPACTS OF ALTERNATIVE 3 — PREFERRED ALTERNATIVE

Impact Analysis

Staff and Resources

Alternative 3 would introduce a new shuttle service that would be available to all park visitors. Although the means of implementing this shuttle service are not currently specified, it is likely that the park would require additional staff to oversee the service.

The alternative would also propose adding transit access to Fort Baker, encouraging extending MUNI Route 76 service to Saturdays, and increasing service frequencies on MUNI Route 76 from 60 minutes to 30 minutes. These public transit service changes would have staffing implications for the transit agencies but would not require increased park staff.

The adoption of parking charges in selected areas of the park would require the park's Law Enforcement Division to monitor compliance and enforce payment. Parking fee collection could be administered by self-serve parking pay stations such as fee deposit boxes, parking pass vending machines, or parking fee sales kiosks. Although the staffing requirements would vary for these different means of fee payment, all of them would entail additional staff resources for collections and equipment maintenance. The associated costs have been included in the program costs and would be covered by estimated revenues. However, there could be some additional park staff impacts that have not been accounted for in the program cost estimate. New visitor information materials, in the form of signs and printed materials, would be required to inform visitors of the parking fees.

The implementation of car-free days would increase the park's staffing needs and operating expenses. In preparation for each event, the park would need to conduct an extensive public information campaign and coordinate the activity with other public agencies, including the San Francisco Municipal Transit System, Golden Gate Transit, and the Golden Gate Bridge and Highway District, as well as with park partners with facilities and programs within the restricted area. The performance of these administrative functions would likely require the hiring of a new part-time employee. On the day of the event, the shuttle service proposed for Alternative 3 would be expanded to include three separate routes. Providing these shuttle services would entail the hiring of temporary staff or payment to a third-party transit service provider to operate the vehicles. Additional staff would also be required to provide temporary signs throughout the park to assist visitors in navigating the changed circulation system, accessing the designated parking areas, and understanding the shuttle network. Staff resources would be needed to implement vehicle restrictions at the designated control points in the Marin Headlands and Fort Baker.

Clearing maintenance corridors along roads and trails in mission blue butterfly habitat would allow routine and preventive maintenance to resume along these routes.

This alternative proposes extensive improvements to the park's road, trail, and parking areas. These improvements would be designed to minimize maintenance needs and reduce the current burden on park staff to address ongoing infrastructure problems. In addition, equipment at the Marin roads and trails maintenance yard would be removed from the corrosive environment and stored in the new building, reducing wear on equipment. The net effect on park operations of proposed improvements to the NPS maintenance yard, including the construction of a new garage, would be long-term and beneficial.

The addition of new administrative functions associated with transit operations and parking fee collection, combined with the potential for slight impacts to current staffing allocations, would have a long-term, minor, adverse impact on park operations.

Annual Operating Budget and Funding Sources

The estimated capital costs for construction of the roadway and trail infrastructure improvements is $26.9 million (in 2007 dollars), and the additional estimated annual operating costs for additional transit service is $1,411,000 to $1,635,000 per year. The estimated annual operating costs for the car-free days program are identified separately below.

This alternative would result in substantial capital improvements to the park's circulation networks. Capital improvements associated with transit services would be financed through a combination of local, state, and federal funding sources in combination with private grants and philanthropic sources. Funding for other types of capital improvements (i.e., roads and trails) would be financed through a variety of federal programs. These capital improvements would be implemented over the next five years or longer as funding became available.

This alternative would also result in ongoing operating costs for the shuttle and transit service improvements, parking fee collection and enforcement, and maintenance of new bike paths and pedestrian trails. The additional costs associated with the alternative would be fully funded through new park revenue or would be generated primarily by parking fees and supplemented with additional funding sources such as leases, grants, or philanthropic sources. A detailed description of an example funding plan with these new funding sources is provided in Appendix B.

Parking fees would be established at rates that are competitive with other national parks and park destinations in the Bay Area. Frequent visitors would be eligible for a discounted parking pass. Although direct staffing costs for the car-free days program would be covered in the program budget, there could be additional indirect staffing costs or impacts. The National Park Service estimates that the annual cost of the program for seven days of operation would be between $134,000 and $157,500. All direct costs associated with car-free days would need to be fully funded through new revenue streams, such as parking fees or, revenue from leases, grants, and philanthropic sources.

Car-free days would result in a long-term, minor, adverse impact as a result of potential staffing impacts or costs not accounted for in the project budget. However, there would be no impacts on the park's annual operating budget. The transportation infrastructure improvements would not be implemented until there was sufficient funding for the improvements. In addition, the alternative's capital and operating expenses for transit services would be implemented only if fully funded through new revenue streams. This alternative would not impact the balance between the park's annual operating budget and existing funding sources.

Cumulative Impacts

The proposed NPS ferry study could result in regular ferry service between San Francisco and Fort Baker. Although the terms of the ferry operation have yet to be defined, the study notes that "it appears clear that it will need to be managed by the National Park Service," which would continue to play an ongoing role in the planning of the service and would need to be involved in its ongoing operation (NPS 2006d). Unlike the Fort Baker conference center shuttle, which would cater primarily to conference center guests, a ferry service at Horseshoe Bay would be a service open to all of the visitors to Fort Baker. Consequently, the park would likely need to expend greater labor resources on public safety around the ferry terminal.

Implementing the *Fort Baker Plan* would continue to require additional NPS staff and contracted services. Additional staff would not be needed to operate and maintain the marina and historic boat

shop, which would be converted to public use for community meetings and programs.

Most of the park projects listed in the cumulative impact scenario (see sec. 4.1.2) would require additional staff or contracted services for implementation. The projects generally would not require additional staff on an ongoing basis, and most of these projects would not be implemented until there was sufficient funding; therefore, these actions would result in a minor adverse impact on park staff and resources. When combined with the impacts of Alternative 3, the overall cumulative impacts on staffing would be long-term, minor, and adverse.

Mitigation Measures

No mitigation measures would be required under this alternative.

Conclusion

Alternative 3 would have long-term, minor, adverse direct impacts on staffing and resources. The cumulative impacts to staff and resources would be minor and adverse. Capital and operating costs associated with transit services and the costs of the transportation infrastructure improvements would not impact the balance between the park's annual operating budget and existing funding sources.

4.7.5 IMPACTS OF ALTERNATIVE 2

Impact Analysis

Staff and Resources

Under Alternative 2 additional MUNI Route 76 service on Saturdays would be encouraged. This service extension would increase staffing needs for the San Francisco Municipal Transit System but would not affect park staffing. No other staffing impacts would occur with this alternative.

This alternative proposes minimal improvements to the park's road, trail, and parking areas. Similar to Alternatives 3 and 4, these improvements would help minimize maintenance needs and reduce the current burden on park staff to address ongoing infrastructure problems; however, the overall beneficial effects would be less under Alternative 2 because of only minimal improvements to infrastructure. In addition, equipment at the Marin roads and trails maintenance yard would be removed from the corrosive environment and stored in the new building, reducing wear on equipment.

There would be no impacts to park staffing and resources associated with Alternative 2. The net effect on park operations of proposed improvements to the NPS maintenance yard, including the construction of a new garage, would be long-term and beneficial.

Clearing maintenance corridors along roads and trails in mission blue butterfly habitat would allow routine and preventive maintenance to resume along these routes.

Annual Operating Budget and Funding Sources

The estimated capital costs for construction of road and trail infrastructure improvements is $19.5 million (in 2007 dollars), and the additional estimated annual operating costs for the additional transit service is $88,400 per year. Car-free days would not be included in this alternative, so there would be no associated annual operating costs.

Ongoing operating costs for this alternative would be lower than Alterative 3 because less transit would be offered (only extended MUNI Route 76 service on Saturday would be encouraged). A detailed description of an example funding plan with these new funding sources is provided in Appendix B.

This alternative would not impact the balance between the park's annual operating budget and existing funding sources.

Cumulative Impacts

There would be no cumulative impacts on park operations under this alternative.

Mitigation Measures

Mitigation measures would not be required for this alternative.

Conclusion

Staffing requirements under Alternative 2 would not impact park operations. Capital and operating costs associated with transit services and transportation infrastructure improvements would not impact the balance between the park's annual operating budget and existing funding sources.

4.7.6 IMPACTS OF ALTERNATIVE 4

Impact Analysis

Staff and Resources

Impacts of Alternative 4 would be the same as Alternative 3. The alternative would introduce a new shuttle service that would operate within the park and extend to collection points outside the park. Although the means of implementing this shuttle service is not currently specified, the park would experience increased staffing needs to implement and oversee this service.

Clearing maintenance corridors along roads and trails in mission blue butterfly habitat would allow routine and preventive maintenance to resume along these routes.

Alternative 4 proposes extensive improvements to the park's road, trail, and parking areas. In addition, equipment at the Marin roads and trails

maintenance yard would be removed from the corrosive environment and stored in the new building, reducing wear on equipment. These improvements would be designed to minimize maintenance needs and reduce the current burden on park staff to address ongoing infrastructure problems.

The net effect on park operations of proposed improvements to the NPS roads and trails maintenance yard, including the construction of a new garage, would be long-term and beneficial. The addition of new administrative functions associated with transit operations, parking fee collection, and car-free days could affect current staffing allocations, with long-term, minor, adverse impacts on park operations.

Annual Operating Budget and Funding Sources

The estimated capital costs for road and trail infrastructure improvements is $33.3 million (in 2007 dollars), and the additional estimated annual operating costs for enhanced transit service is $1,879,000 to $2,150,000 per year. Annual costs associated with car-free days would be the same as Alternative 3, which would be between $134,000 and $157,500 for seven days of operation. There would be no impacts to the park's annual operating budget from the car-free days program.

Cumulative Impacts

Cumulative impacts under Alternative 4 would be the same as Alternative 3.

Mitigation Measures

No mitigation measures would be required for this alternative.

Conclusion

Staff and resource requirements under Alternative 4 would have a long-term, minor, adverse impact on park operations. The cumulative impacts to staff and resources would be minor and adverse. Capital and operating expenses associated with transit services would not impact the balance between the park's annual operating budget and existing funding sources.

4.8 RELATIONSHIP OF SHORT-TERM USES OF MAN'S ENVIRONMENT AND LONG-TERM PRODUCTIVITY

Short-term uses of the environment would result from visitor use of study area resources and from construction activities. Visitor use would include recreational use of trails and vehicle use of roads and parking lots. Individually, these activities would be of short duration, but they would have the potential to affect the long-term physical conditions and productivity of the environment because of their continual recurrence. With the exception of the No-Action Alternative, the proposed alternatives would increase long-term productivity of the environment by clearly defining which lands in the study area are specifically available for visitor use and which lands are to be protected for naturally occurring processes. This would channel the impacts of visitor use into designated areas and lessen resource degradation in other areas from activities such as social trail use and parking on road shoulders.

Short-term impacts associated with construction activities include traffic disruption; restricted access to visitor resources such as overlooks, parking areas, and trails; disruption of vegetation, wildlife activities and habitat, and water resources; increased noise; fugitive dust emissions; and visual intrusions to visitors. Replacing the aging transportation infrastructure in the Marin Headlands and

Fort Baker would enhance the long-term productivity of park operations and the environment. Fewer staff and equipment resources would be needed to maintain a newer infrastructure. Removing overly steep trails, repairing severe erosion sites, and taking other erosion control measures would reduce sedimentation in water resources and encourage the establishment of new vegetation and native habitats in the Marin Headlands and Fort Baker. Other restoration projects would also encourage the establishment of new vegetation and native habitats, and under Alternatives 3 and 4 previously filled wetlands would be restored. Enhanced transit capacity and improved safety conditions for visitors would also result from the proposed actions. These benefits to long-term productivity would outweigh the short-term impacts resulting from construction.

The National Park Service embraces appropriate use of the parks because these uses are key to the enjoyment of the parks and the appreciation and inspiration derived from the resources. An "appropriate use" is a use that is suitable, proper, or fitting for a particular park, or to a particular location within a park (NPS 2006b). The proposed project would continue to promote the appropriate use of Golden Gate National Recreation Area and specific locations in the park.

4.9 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible commitments of resources are commitments where the resource would be permanently lost or consumed. Irreversible commitments would result from the construction of new transportation infrastructure and the operation of a new transit system that would consume fossil fuels, labor, and roadway construction materials such as concrete and aggregate. The loss of geologic resources at Battery Spencer would be considered an irreversible resource commitment. The expenditure of federal funds and funds from other sources would be irretrievable. Some historic resources would be affected; impacts to these resources would be mitigated through various cultural landscape management requirements, but the impact would be irreversible.

The use of land for road, parking, and trail improvements would be an irretrievable commitment of resources during the period the land is used for transportation infrastructure. However, the land could be converted to another use at a future date, just as the proposed project would remove and restore some roads, parking areas, and trails in the study area.

4.10 UNAVOIDABLE ADVERSE IMPACTS

The loss of geologic resources at Battery Spencer under Alternatives 3 and 4 would be considered an unavoidable adverse impact, as well as an irreversible resource commitment.

Adverse impacts to historic resources in the Marin Headlands under Alternatives 3 and 4 would be unavoidable adverse impacts that could not be mitigated through alteration of the project's design.

The National Park Service also avoids impacts that it determines to be unacceptable (NPS 2006b). Based on the analysis in this *Final Environmental Impact Statement*, there would be no "unacceptable impacts" under the proposed project.

CHAPTER 5. CONSULTATION AND COORDINATION

5.1 PUBLIC INVOLVEMENT ACTIVITIES

5.1.1 SCOPING

The National Park Service held three public scoping meetings at the following locations:

- San Francisco — March 26, 2002, during a meeting of the GGNRA Advisory Committee at park headquarters.
- Marin City — April 10, 2002, at the Manzanita Community Center.
- Oakland — April 11, 2002, at the Metropolitan Transportation Commission Auditorium.

At these meetings input from the public was solicited on the study, the goals, and the process. The four conceptual approaches for the transportation plan that were presented included (1) simple improvements, such as signs; (2) circulation enhancements; (3) consolidated parking with a shuttle service in the Marin Headlands and Fort Baker; and (4) restriction of vehicles from the Marin Headlands and Fort Baker to provide the maximum level of auto reduction in the study area.

Public notification for the meetings was made through a postcard sent to approximately 1,750 individuals. Summaries of the comments received at each meeting and written comments from the public were documented in the "Scoping Summary Report" (DEA 2002). A summary of the main issues identified by the public, as well as agencies and park partners, is presented under "Public Involvement" (sec. 1.6.1). These issues were considered in the development and evaluation of the alternatives in this document.

5.1.2 ALTERNATIVES REFINEMENT WORKSHOP

The National Park Service held two public workshops to refine alternatives, on November 19, 2002, at Tamalpais High School in Mill Valley, and on November 26, 2002, at park headquarters in San Francisco. The primary goal of these meetings was to solicit public input on the four preliminary alternatives. Each alternative included a package of multi-modal transportation improvements (transit, auto, pedestrian, bicycle) and reflected the concepts that were proposed in the earlier *Transportation Management Study* and scoping comments received from the public and agencies in April 2002. The four preliminary alternatives included Alternative 1 — No Action, Alternative 2 — Basic Access, Alternative 3 — Enhanced Access, and Alternative 4 — Maximum Access.

Announcements of the meetings were mailed to approximately 2,000 individuals and organizations and were also distributed at the Marin Headlands visitor center and posted on bulletin boards in Marin County.

Summaries of the comments received at each workshop and written comments from the public were documented in a November 2002 memorandum (Nelson\Nygaard 2003). The comments from these workshops were used to further refine the alternatives and identify the main issues to be addressed in evaluating the final alternatives in the environmental impact statement.

5.1.3 PUBLIC FORUM

The National Park Service held a public forum to review the initial findings of the *Marin Headlands / Fort Baker Historic Roads Characterization Study* and *Fort Baker Cultural Landscape Report* on March 14, 2002 at Fort Baker. The park presented a summary of the initial findings of the two reports and solicited comments. Comments are documented in a memorandum in the "Scoping Summary Report" (DEA 2002). This meeting initiated National Historic Preservation Act section 106 compliance activities for the environmental impact statement.

5.1.4 OTHER PUBLIC OUTREACH ACTIVITIES

Updates were provided at regular GGNRA public meetings and published in *Park News*. During the working period prior to the release of *Draft Environmental Impact Statement,* two information web pages were maintained by Golden Gate National Recreation Area. As a courtesy the park also had informal briefing meetings with local community associations, park partners, and local elected officials.

The first web page is for preliminary planning work completed between 1999 and 2002. It is available at <http://www.nps.gov/goga/admin/transportation/tmp-foba>.

The second web page is the site of a copy of the *Draft Environmental Impact Statement* plus additional planning work completed between 2002 and 2006. It is available at <http://parkplanning.nps.gov/projectHome.cfm?projectId=12152>.

5.1.5 REVIEW OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

The *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan Draft EIS* was available for public review and comment from June 8, 2007 until August 13, 2007. A public meeting was held on July 18, 2007, in Sausalito, California, within the first 30 days of the public review period to provide the public an opportunity to learn more about the project and ask the project team questions concerning the project. The meeting consisted of an open house, presentation, and question and answer period. Attendees were provided background information (i.e., fact sheets) and comment forms. The presentation discussed the purpose and need for the project, the organization of the DEIS, major themes resulting from public scoping, the proposed alternatives, long-term impacts of the alternatives, major features of the preferred alternative, and next steps. A handout summarized select impacts on transportation, natural resources, cultural resources, and visitor use and experience.

The park also presented the project at the Sausalito City Council Meeting on June 10, 2007.

A summary of commonly identified issues, responses to agency comments, and responses to substantive comments received during public review of the DEIS are included in Chapter 6.

5.2 AGENCY AND PARK PARTNER COORDINATION

5.2.1 PUBLIC AGENCIES AND ORGANIZATIONS

NPS staff sent an announcement of the scoping process and a scoping summary information packet to federal, state, and local agencies, as listed in the "List of Recipients and Reviewers" (sec. 5.3).

NPS staff also issued formal letters requesting consultation from the U.S. Fish and Wildlife Service and the California State Historic Preservation Officer.

Response letters or communications were received from the following organizations:

- Association of Bay Area Governments / San Francisco Bay Trail Association
- California Coastal Commission
- California Department of Transportation, District 4
- Marin County Department of Public Works
- National Parks Conservation Association
- Sierra Club, Marin Group
- U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service
- U.S. Department of the Interior, Fish and Wildlife Service
- U.S. Department of the Army, Corps of Engineers
- U.S. Environmental Protection Agency, Region 9

In addition, several consultation meetings have been held to discuss specific agency issues or concerns with Caltrans and the City of Sausalito. Consultation with Caltrans has focused on the agency's transportation facilities within the Marin Headlands and Fort Baker area, including U.S. 101 and Alexander Avenue.

The City of Sausalito is concerned about improved signing, parking, transit, pedestrian and bicycle safety, and coordination with public safety providers.

Other issues or comments from these agencies and organizations related to transit technology; improving opportunities for alternative transportation modes; enhancing interpretation; assessing impacts on park resources, access for low-income and minority populations, parking, and cumulative impacts; funding and partnerships for implementation; and trail improvements, including the San Francisco Bay Trail project.

A public agency scoping meeting was held on May 6, 2002, with the Golden Gate National Recreation Area Parklands Transportation Task Force Techni-

cal Advisory Committee. Representatives from the following public agencies attended the meeting:

Marin County Department of Public Works

California Department of Transportation

Metropolitan Transportation Commission

Golden Gate Bridge Highway and Transportation District

In addition to the agencies in attendance, the City of Sausalito, California State Parks (Mount Tamalpais State Park), and Tamalpais Community Services District have representatives on the committee. Comments were documented in the "Scoping Summary Report" (DEA 2002).

The National Park Service presented the initial findings of the *Marin Headlands / Fort Baker Historic Roads Characterization Study* and *Fort Baker Cultural Landscape Report* to the Marin Subcommittee of the GGNRA Advisory Commission on February 13, 2002. A summary of the meeting is included in the "Scoping Summary Report" (DEA 2002).

The National Park Service will continue conversations with local and regional transportation providers such as Golden Gate Transit and the San Francisco Municipal Transit System, regarding opportunities to expand transit service to the project study area as described in the *Final Environmental Impact Statement.* No formal agreements for increased or additional service by these providers have been made at this time.

5.2.2 PARK PARTNER MEETINGS

NPS staff met with park partners on March 19, 2002, to present the information from the *Transportation Management Study.* During the past four years, park representatives have briefed park partners on several occasions at regular quarterly meetings.

For the transportation management planning effort, park partners were surveyed to determine their range of services, overall program goals, the number of visitors and staff they expect on an average day, and any transportation concerns they have within the park (Nelson\Nygaard 2000). A number of common themes shared by a majority of the respondents are listed below in order of importance.

- *Public Transportation* — Nearly all park partners emphasized the importance of either a park shuttle or regular public transportation throughout the park. Public transportation would provide more transit options for visitors, employees, and volunteers and would help preserve the character and natural environment within the study area.
- *Housing* — Many park partners stated that housing within the park helps reduce their commuting times. Of the 61 Capehart housing units in the Marin Headlands, 26 are occupied by park partner staff members. The remaining units are occupied by NPS staff or are currently unoccupied.
- *Better Signage / Wayfinding* — The poor quality of signs, coupled by the lack of signs, makes it difficult for visitors and employees to find their way around the park. This is especially important for the park partners, who regularly attract new and repeat visitors.
- *Bike Lanes* — A number of park partners would like to see improved bike access in the study area. Suggestions for improvements included not only continuous bike lanes throughout the park, but signage and infrastructure (bike lockers, racks, etc.) to better accommodate bicycles.
- *Parking* — While less of a concern for most park partners, feelings were mixed about the need for and appropriateness of parking in the park. Some believe that parking in the park is a problem and should be limited to preserve the character, while others mentioned that the current parking supply is inadequate to meet the needs of their organization.
- *Pedestrian Access* — Several pedestrian-related issues that were mentioned included improving the crosswalks throughout the park and allowing pedestrian access in the tunnel and underpasses.

5.2.3 GEOLOGIC CONSULTATION

The National Park Service contacted the U.S. Geological Survey and professors from local universities about the importance of the geologic formation at Conzelman Road across from the Battery Spencer parking area. Professors from the Univer-

sity of California (UC) at Berkeley, UC Davis, California State University (CSU) Sonoma, CSU San Francisco, CSU San Jose, Stanford University, and the College of Marin were contacted in November 2004. Based on these consultations, the National Park Service found that although the site has been used for decades by scientists and students for educational purposes, other nearby sites serve this purpose.

5.2.4 CULTURAL RESOURCE CONSULTATION

Because Forts Baker, Barry, and Cronkhite are listed as a historic district on the National Register of Historic Places, the National Park Service has initiated consultation with the Advisory Council on Historic Preservation and the California State Historic Preservation Office, as required by the National Historic Preservation Act. It is anticipated that the National Park Service will execute a section 106 memorandum of agreement on this undertaking.

5.2.5 THREATENED AND ENDANGERED SPECIES CONSULTATION

Consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service has been undertaken as required by the Endangered Species Act and the Magnuson-Stevens Fishery Conservation and Management Act.

5.3 LIST OF RECIPIENTS AND REVIEWERS

A copy of the *Draft and Final Environmental Impact Statement* has been provided to the following agencies and organizations. A notice of availability of the environmental impact statement has been sent to attendees of the public meetings, park partners, and others listed on the project mailing list.

Federal Agencies

Department of the Army
- Corps of Engineers
- U.S. Coast Guard, San Francisco
- U.S. Coast Guard, Golden Gate Station

Department of Commerce
- National Oceanic and Atmospheric Administration
  - National Marine Fisheries Service
    - Gulf of the Farallones National Marine Sanctuary

Department of Energy

Department of the Interior
- United States Fish and Wildlife Service

Department of Transportation
- Federal Highway Administration
  - Central Lands Office

Environmental Protection Agency

The Presidio Trust

California State Agencies

Coastal Commission

Coastal Conservancy

Department of Fish and Game

Department of Parks and Recreation

Department of Transportation, District 4

State Parks

Regional and Local Agencies

Association of Bay Area Governments

Bay Area Air Quality Management District

City of Sausalito
- Sausalito Department of Community Development
- Sausalito-Marin-City Sanitary District

City and County of San Francisco
- San Francisco Planning Department

Golden Gate Bridge Highway and Transportation District

Marin County
- Board of Supervisors
- Department of Community Development
- Department of Public Works
- Open Space District
- Transit District
- Municipal Water District

Metropolitan Transportation Commission

San Francisco Regional Water Quality Control Board

San Francisco Bay Conservation and Development Commission

Organizations

National Parks Conservation Association, Office of Preservation

San Francisco Bay Trail Association

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CHAPTER 6
Summary of Public Comments and Response

CHAPTER 6. SUMMARY OF PUBLIC COMMENTS AND RESPONSE

6.1 ANALYSIS OF PUBLIC COMMENTS

Solicitation of public comment on draft plans for major NPS actions is required under NEPA. Such comments are viewed by the National Park Service as critical in helping NPS managers shape responsible plans for our national park units that best meet the Service's mission, the goals of NEPA, and the interests of the American public.

This chapter of the *Final Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan/EIS* describes the process used to assess and consider the public comments received (from June 8, 2007 through August 13, 2007) on the *Draft Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan/EIS*. This chapter also presents the public concerns identified and provides responses, including responses to public, federal, state, and local agencies.

6.1.1 SCREENING PROCESS

A comprehensive process was implemented to screen public concerns and identify planning issues derived from public input. This process involved the following steps:

1. Receive correspondence and conduct preliminary review.
2. Enter correspondences into a database.
3. Identify and code comments within each correspondence.
4. Identify non-substantive and substantive comments.
5. Identify concern statements representing individual or groups of substantive comments.
6. Write responses to concern statements.

Receive Correspondence – A total of 321 correspondences were received on the *Draft Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan/EIS*. Public correspondences were accepted online on the NPS Planning, Environment and Public Comment (PEPC) web site and by e-mail, fax, or letter to the Superintendent.

Enter Correspondence into PEPC – All correspondences received as comment on the *Draft Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan/EIS* were read, analyzed, and entered into the PEPC database.

Identify and Code Comments – Discrete comments within each correspondence were identified and coded in PEPC according to the topics addressed. A total of 1,179 public comments were identified from the correspondences received. The total number of coded comments (1,930) exceeds the total number of comments received (1,179) because some comments addressed more than one topic and therefore received more than one code. For example, a comment suggesting a new alternative related to roads may also have addressed impacts to visitor use, and would have been coded as both AL4660 and VU4000.

TABLE 6-1. COMMENT CODES AND DESCRIPTIONS

Code	Code Description	Substantive	Total
AE13000	Affected Environment: Cultural Resources	Yes	2
AE24000	Affected Environment: Transportation	Yes	2
AE5000	Affected Environment: Wetlands	Yes	2

Code	Code Description	Substantive	Total
AL1000	Alternatives: Elements Common to All Alternatives	Yes	3
AL4100	Transit/Shuttle	Yes	24
AL4200	Close Roads	Yes	1
AL4300	Parking	Yes	15
AL4400	Entrance Fees	Yes	6
AL4500	Water Transportation (Ferry)	Yes	5
AL4600	Other	Yes	22
AL4610	New Alts, trails	Yes	52
AL4620	New alts, access	Yes	23
AL4630	New alts, law enforcement and safety	Yes	6
AL4640	New alts, bike	Yes	66
AL4650	New alts, signage	Yes	18
AL4660	New alts, roads and parking	Yes	55
AL5000	Alternatives: Comments and Questions	Yes	15
AL5100	Alternatives: Alternative 1, No Action	Yes	3
AL5200	Alternatives: Alternative 2	Yes	5
AL5300	Alternatives: Alternative 3	Yes	68
AL5400	Alternatives: Alternative 4	Yes	11
AL6000	Alternatives: Opinions or Preferences	No	175
AQ4000	Air Quality: Impact of Proposal and Alternatives	Yes	1
CC1000	Consultation and Coordination: General Comments	Yes	18
CO1000	Coastal Zone Consistency Determination	Yes	3
CR4000	Cultural Resources: Impact of Proposal and Alternatives	Yes	2
EJ4000	Environmental Justice: Impact of Proposal and Alternatives	Yes	6
GR4000	Geologic Resources: Impact of Proposal and Alternatives	Yes	4
MT1000	Miscellaneous topics: General Comments	Yes	4
MT6000	Miscellaneous topics: Nonsubstantive	No	13
NS1000	Agency Comment that Restates DEIS	No	64
NS2000	Out of Project Scope	No	10
ON1100	Public Involvement	Yes	21

Code	Code Description	Substantive	Total
PN11000	Purpose and Need: Other Policies and Mandates	Yes	23
PN3000	Purpose and Need: Scope of The Analysis	Yes	7
PN4000	Purpose and Need: Park Legislation/Authority	Yes	11
PN8000	Purpose and Need: Objectives in Taking Action	Yes	23
PN9000	Purpose and Need: Issues and Impact topics Selected For Analyses	Yes	1
PO4000	Park Operations: Impact of Proposal and Alternatives	Yes	9
SE4000	Socioeconomics: Impact of Proposal and Alternatives	Yes	19
SE4100	Parking Fee	Yes	52
SE5000	Socioeconomics: Cumulative Impacts	Yes	1
SE6000	Socioeconomics: nonsubstantive	No	44
TE4000	Threatened and Endangered Species: Impact of Proposal and Alternatives	Yes	11
TR2000	Transportation: Methodology and Assumptions	Yes	1
TR4000	Transportation: Impact of Proposal and Alternatives	Yes	41
TR5000	Transportation: Cumulative Impacts	Yes	10
VI4000	Visual Impacts	Yes	1
VR4000	Vegetation and Riparian Areas: Impact of Proposal and Alternatives	Yes	11
VS4000	Visitor Conflicts and Safety: Impact of Proposal and Alternatives	Yes	92
VU4000	Visitor Use: Impact of Proposal and Alternatives	Yes	47
VU4100	Car Free Days	Yes	181
VU4200	Biking	Yes	64
VU4300	Trails	Yes	121
VU4400	Parking Supply	Yes	17
VU6000	Visitor use: nonsubstantive	No	406
WH2000	Wildlife and Wildlife Habitat: Methodology and Assumptions	Yes	1
WH4000	Wildlife and Wildlife Habitat: Impact of Proposal and Alternatives	Yes	4
WQ2000	Water Resources: Methodology and Assumptions	Yes	2
WQ4000	Water Resources: Impact of Proposal and Alternatives	Yes	5
	Total Comments Received		1,930

Note: The number of individual comments received is not the same as concerns, defined below. Nonsubstantive comments were not identified as concerns, and where multiple comments addressed the same issue, one concern statement was used to capture and respond to the issue.

Identify Non-Substantive and Substantive Comments – This process identified comments that were out of the scope of the *Draft Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan/EIS* planning process, or were non-substantive and therefore did not warrant further consideration. Comments are typically classed as either substantive or non-substantive. NEPA requires the National Park Service to respond to substantive comments. As defined in the National Park Service's NEPA guidance (*Director's Order #12*) and based on Council of Environmental Quality regulations, a substantive comment is one that:

- Questions, with reasonable basis, the accuracy of the information in the environmental impact statement
- Questions, with reasonable basis, the adequacy of environmental analysis
- Presents reasonable alternatives other than those presented in the environmental impact statement
- Causes changes or revisions in the proposal

Nonsubstantive comments include those that simply state a position in favor of or against the proposed alternative, merely agree or disagree with National Park Service policy, are out of the scope of the plan, reiterate parts of the document, or otherwise express an unsupported personal preference or opinion. Although a commenter's personal opinions on a subject may influence the development of the final plan, they generally would not affect the impact analysis.

The National Park Service is required to respond only to substantive comments, which can result in changes to the text of the final environmental impact statement. If several concerns are very similar, they may be grouped, with a single answer for the group.

Identify Concern Statements – Substantive comments were reviewed to identify concern statements that represented either individual or groups of comments. For example, if several people expressed comments about the same issue, one comment from the group was selected to represent all of them. The selected comment typically included the most detail or best encompassed the nature of the issue. As described above, where several similar concerns were identified, one single concern statement was written to capture them all. If a comment was unique and no one else expressed similar sentiments, that individual comment was identified as a concern statement as well. A total of 317 public concerns were identified from the public comments.

During the process of identifying concerns, all comments were treated equally — they were not weighted by organizational affiliation or other status, and it did not matter if an idea was expressed by a majority of people or an individual. All public concerns identified by the National Park Service are included in this chapter, whether supported by one person or several people.

Write Responses – Responses were written for all concern statements, and any changes that needed to be made to the text of the plan/EIS based on concern statements were identified. A separate database was then created that could be manipulated to produce specific, more detailed reports.

There were five general types of National Park Service responses to public concerns:

- Responses to requests for documents or information
- Simple text revisions and technical edits of the plan/EIS
- Complex or extensive text revisions to more clearly explain goals, proposed actions, or environmental impacts analysis
- Revision of the plan's alternatives or impact analysis based on new ideas, information, or analysis

Agencies, organizations, and number of individuals who provided comments to the *Draft Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan/EIS* include:

Agencies

- United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service

- United States Environmental Protection Agency, Region IX
- United States Department of the Interior, U.S. Geological Survey
- State of California, California Coastal Commission
- State of California, Department of Transportation
- Association of Bay Area Governments
- City of Sausalito
- County of Marin, Department of Public Works
- Marin Transit
- Golden Gate Bridge, Highway and Transportation District
- San Francisco Bay Conservation and Development Commission

Organizations

- Alto Bowl Horseowners Association
- Bay Access
- Bay Area Barns and Trails
- Bay Area Discovery Museum
- Bay Area Ridge Trail Council
- Bay Area Sea Kayakers (BASK)
- Cal Trout
- California Canoe & Kayak
- California Coastal Commission
- California Equestrian Trails and Lands Coalition
- California State Parks Foundation
- Dolce Vita Cycling
- Equestrian Trails, Inc.
- Folsom-Auburn Trail Riders Action Coalition (FATRAC)
- Golden Gate Council of American Youth Hostels
- Golden Gate National Parks Conservancy
- Golden Gate Raptor Observatory
- Golden Gate Tours and Conversion Services (GGTC)
- Headlands Institute
- Indian Ranch Morgans
- International Mountain Bicycling Association (IMBA)
- Los Gatos Horsemen's Association
- Marin County Bicycle Coalition
- Marin Horse Council, Inc.
- Miwok Stables Center
- National Parks Conservation Association
- Negotiated Rulemaking Committee Advisory Committee for Dog Management
- People for a Golden Gate National Recreation Area
- Presidio Riding Club (PRC)
- Responsible Organized Mountain Pedalers (ROMP)
- San Francisco Bay Trail
- San Francisco Bicycle Coalition
- San Francisco Boardsailing Association
- San Francisco Horsemen's Association
- San Mateo County Horsemen's Association
- Sea Trek Ocean Kayaking Center
- SF Dog
- Sierra Club
- Surfrider Foundation, Marin County Chapter
- The Equestrian and Education Foundation
- The Marine Mammal Center
- Transportation Alternatives for Marin
- United Pier and Shore Anglers of California (UPSAC)
- USA Cycling
- Western Sea Kayakers
- WestGate Chain Gang
- Winzler & Kelly Consulting Engineers

Unaffiliated Individuals

Number of individuals who commented and did not specify an affiliation with one (or more) of the agencies or organizations listed above: 204.

6.1.2 MASTER RESPONSES/ISSUES IDENTIFIED

The majority of comments, which were in turn captured by concern statements, addressed the

following issues. This section provides master responses that are referred to in responses to specific individual comments later in this chapter.

Rodeo Valley Trail

Several concerns were raised regarding the proposed permitted uses of Rodeo Valley Trail and its surface. Currently, Rodeo Valley Trail is multi-use (hiking, equestrian and bicycle) west of the bridge over Rodeo Creek (currently, bicycles are not allowed east of the existing bridge). The preferred alternative proposed improving drainage and the trail surface and accommodating bicycle use to a new bridge that would connect with Bunker Road near McCullough Road and the Capehart residential neighborhood. The trail surface would be hardened but remain a permeable surface; not paved. One commenter questioned the legality of opening the trail to multiple use as related to the 1992 GGNRA trail use designation process. Equestrians stated that Rodeo Valley Trail is a favorite among many horseback riders and hikers who enjoy the peace and tranquility of the trail. They believed that adding a hardened (presumably paved) surface and redesignating it as a bike trail would encourage fast use by bicyclists, create more traffic, and increase the risk of accidents with horses. They further stated that this trail has many blind corners and in some areas difficult ground that would potentially cause problems to bicycles. Equestrians also stated that hardened trails are dangerous as horses can slip. Conversely, one cyclist believed that separating bicycles and horses should be discouraged so horses can become more accustomed to bikes.

Response: Alternatives 2 and 4 in the Draft EIS designated the Rodeo Valley Trail as hiker / equestrian only; the preferred alternative (Alternative 3) in the Draft EIS proposed allowing bicyclists on approximately an additional 3,600 feet of trail but would not change the designation (hiker-equestrian only) on the remainder of the trail, where it continues to the SCA and Alta Trails at Wolfback Ridge. The Final EIS retains the preferred alternative for Rodeo Valley Trail as defined in the DEIS, clarifying that the term "hardened surface" and drainage would be improved for year round multi-use, but would not be paved, and that to address comments related to safety where shared with bicyclists, additional signage would be installed, such as cautionary speed signs and sharing the trail signs. The trail would be 6-10 feet wide in the additional multi-use segment, which has good sight distance. The improved tread would be permeable and would meet Proposed Outdoor Accessibility Guidelines for firmness, grade, and cross slope as much as practicable.

Congress approved a regulation in 1987 that established a uniform rule for NPS units wherein all bicycle use for off-road areas would be prohibited unless designated as open by park superintendents through a special regulation process. In 1992 GGNRA completed an environmental assessment and rulemaking process that concluded with a special regulation (36 CFR Part 7.97) that allowed bicycle use on specified trails and provided for designation of additional trails through a written determination and public meeting process. Page 9 of the DEIS summarizes this and notes that this plan serves as written determination that bicycle use, where noted, is being proposed at the park.

Alternatives 2, 3, and 4 include improvements to Rodeo Valley Trail to address existing drainage problems. Beneficial impacts are expected from improving drainage east of the Coastal Trail and realigning approximately 900 feet of the Rodeo Valley Trail west of the rifle range to improve drainage and allow for restoration of the riparian area.

Slacker Road (trail)

Slacker Road (trail) is an existing unpaved road currently open to bicyclists, hikers, and equestrians. Due to the steep slopes and severe erosion on Slacker Road (trail), the DEIS preferred alternative proposed that Slacker Road (trail) would be closed and replaced with a 0.3-mile-long, less steep path to address erosion problems while maintaining access to two research sites. Cyclists and hikers were opposed to closing the unpaved road up to Slacker Hill as proposed in the DEIS preferred alternative, noting that it has been used by cyclists and other users "without problems" and offers unique panoramic views. Some hikers commented that eliminating the trail between McCullough Road and the SCA Trail would create a gap in access and suggested re-routing, rather than closing the trail.

The Golden Gate Raptor Observatory noted that during its research season it requires daily access to the Slacker Hill region to attend to two research sites, and requested continued vehicle access for this purpose.

Response: The preferred alternative in the DEIS provided a rerouted sustainable hiker-only trail with ATV access for Golden Gate Raptor Observatory to the research site and closed the trail beyond that point. The preferred alternative has been changed in the FEIS so that the proposed rerouted sustainable trail would continue to the launch site, part of which would be restored, and allow both pedestrian and equestrian use. Access to the GGRO research sites would be via improved or new foot trails. As described, the existing trail connection between the SCA Trail and McCullough Road would be rerouted in its problematic section to a more sustainable alignment and retained for hiker only access beyond the trail to Slacker Hill.

Car-free Days

Concerns related to the car-free days program proposed in the preferred alternative generally discussed restriction of access and transportation of recreational equipment during the trial basis that would be implmeneted a maximum of seven days per year.

Several commenters were concerned that car-free days would restrict access to areas of the park, particularly Horseshoe Bay at Fort Baker and Rodeo Beach at Fort Cronkhite in the Marin Headlands. Water recreationists using Horseshoe Bay noted that car-free days would further restrict their access when taken in conjunction with tides, which already affect the number of days available for water sports. Further time constraints were identified in conjunction with wait times involved in using a shuttle. Specific launch points were noted as necessary for water sports access, such as Point Cavallo for windsurfers, and Horseshoe Cove for kayak launching for day trips or camping at Angel Island or Kirby Cove.

Access for seniors, people with physical disabilities, and families with small children was also noted as a concern related to car-free days. Dog owners were concerned that they would be excluded from the park during car-free days because dogs would not be allowed on shuttles.

Some commenters believed that more restrictions within the park would discourage visitors from coming.

Commercial businesses and park partners were also concerned about access and the economic impacts that they perceive would result. A commercial sea kayaking business noted that restrictions to Horseshoe Cove at Fort Baker would further limit its access. Park partners were concerned that car-free days would interfere with their operations by preventing employees, volunteers, visitors, and supply deliveries from reaching their facilities. The Marin Headlands Hostel and the Headlands Institute noted that overnight visitors would have difficulty carrying packs, luggage, and groceries on car-free days. The Golden Gate Raptor Observatory said that it requires access for interns and volunteers, and the Marine Mammal Center believed implementation of car-free days would reduce the number of visitors, significantly impacting its educational, retail, and fundraising activities. The center was also concerned about animal response vehicles, which require access at all hours of the day, and requested provisions for staff and volunteers to access the site. The Bay Area Discovery Museum was similarly concerned that families with young children and strollers would not be able to easily access the museum without a car.

Several commenters expressed concern about the ability to transport equipment during car-free days, such as for recreation (kayaks, canoes, windsurfers, fishing equipment, folding chairs, volleyball nets, art equipment) and family activities (strollers, food, coolers, diaper bags). Similarly, equestrians were concerned that they would not be able to access park trails with horse trailers.

Some commenters were uneasy about a perceived open-ended approach to implementing car-free days and wanted firm, predictable dates and assurances that transit would be in place before car-free days were implemented. One commenter was concerned that buses would incur more environmental damage than cars and would be more hazardous to cyclists.

Response: The FEIS makes no change to the car-free days program as defined in the DEIS. Car-free days would be implemented on a limited, trial basis to allow the park flexibility in tailoring

implementation and to coordinate with the public and park partners. The trial program is described in detail in the FEIS (2.5.6). Impacts of the trial program are analyzed in the FEIS (4.5.2), which acknowledges impacts to visitors and park partners. Car-free days as proposed would be implemented on a trial basis for a maximum of seven days per year, which represents 1.9% of the year and 6.7% of weekend days per year. After completion of the trial program, it would be reviewed to determine if the program should be continued or refined.

The details analyzed in the DEIS represent current thinking about how such a trial would operate, and revised or reduced scenarios could be tested as a result of more detailed planning. Prior to implementing the program to test car-free days, NPS would work with affected stakeholders, including park user group representatives and park residents, staff, and partners to refine the details of the car-free area and operation to be tested.

Car-free days detailed planning would address the concerns expressed above to the greatest extent possible, and may test other scenarios and strategies, including coordination with partner special events. Exceptions to vehicle restrictions during car-free days would be addressed during detatiled planning to allow essential vehicle access and/or equipment drop-off and address park partners' concerns regarding operations, delivery vehicles, and other related issues.

During car-free days, autos would be restricted in specific locations, but those locations would remain open with access provided by other modes, such as transit, walking, or biking. Access for people with physical limitations would be provided with ADA-accessible shuttle buses.

The Fort Baker waterfront is addressed under the Fort Baker FEIS and has recently been identified as a component of the NPS Centennial Initiative. A park partner, the Golden Gate National Parks Conservancy, will start working with the park to refine the plans for the Fort Baker waterfront as currently expressed in the approved Fort Baker FEIS. Beginning in 2007 and continuing through 2008, the NPS made improvements to the waterfront parking and circulation system in conjunction with the rehabilitation of Center Road and the construction of new public parking areas south of the Bay Area Discovery Museum (BADM). Under the car-free days program identified in the preferred alternative for this plan, the Conference Center parking would remain open for its patrons, and public parking would only be allowed on East Road, Center Road, and at the BADM parking areas. As specified in the Fort Baker Plan, East Road would be used for special event parking, such as during car-free days. East Road special event parking would allow waterfront parking to be closed during car-free days if BADM had their specified parking supply. Major through roads would remain open; however, their operation would be changed to a one-way loop, allowing visitors and the transit shuttle to drive in a clockwise direction from U.S. 101 to Alexander Avenue, East Road, Center Road, Bunker Road, and Danes Drive. A shuttle would transport visitors from the East Road, Center Street, or BADM parking to stops along the one-way loop. BADM visitors, including families with small children, would have the option of parking at the BADM visitor parking area or at East Road and being transported via the shuttle bus to a bus stop at the museum. After leaving the museum, visitors parked at East Road would board the shuttle bus that would continue its one-way route to Bunker Road, Danes Drive, Alexander Avenue, and the East Road parking area.

As described in the DEIS, equestrians would still park at the Smith Road parking area during car-free days as a result of closing parking at the rifle range.

Parking Fees

Concerns related to implementing parking fees, as proposed in the preferred alternative, generally fell into three categories: access, implementation, and impacts to tenants.

Commenters concerned about access thought that instituting a parking fee program would restrict access to areas of the park, and affect access to shoreline areas and the proposed water trail. Commenters also expressed concerns about how parking fees would affect economically disadvantaged visitors. In addition, commenters were concerned about the potential expansion of the fee parking program to other park areas. Some commenters questioned how the parking fee program would be implemented, and what the fee

would be. Some believed the park underestimated implementation costs. Questions were posed regarding costs for grading parking areas, purchasing and installing signs, enforcing parking rules, and conducting public involvement and advertising about the new rules. Some commenters believed the park overestimated revenues that would be generated from parking fees and questioned how revenues would be affected if fewer people park, particularly during winter when visitation is less. One commenter believed that future transit costs would outpace revenues generated from parking fees. There also was concern that if parking fees were implemented only in specific locations, visitors may avoid those parking areas and park along the road instead.

Park tenants were concerned about how parking fees would affect volunteers who may become discouraged from volunteering. One commenter suggested free parking passes for volunteers and another suggested free parking for Sausalito residents. Commenters were also concerned that visitation to the Bay Area Discovery Museum would decrease, resulting in loss of business, and that free days at the museum would be less attractive. Park partners believed they should be exempt from the parking fee. Conversely, some residents believed that park partners should pay more for improvement costs as they are perceived to have a large "footprint use." There was sentiment that there should be no free parking for tenants if the public has to pay.

One commenter questioned the park's authority to implement parking fees, stating that parking fees were not part of the park's original legislation, and that when the park was established, it was "clearly defined" as allowing "free public access."

Response: The purpose of the parking fee program is to fund expanded transit service that would make the project area of the park more available to those who do not own a car and to support and encourage the use of alternative transportation to reduce impacts associated with auto traffic. Implementing parking fees at other locations outside of the project area was not a consideration in this plan and there are no such proposals to evaluate; therefore, an analysis of parking fees at other areas was not included in this FEIS. Revenue generated from parking fees would be used to provide enhanced transit service operations to and within Marin Headlands and Fort Baker. Improved transit service would provide an opportunity to access this portion of the park for those people who do not drive or own automobiles, including lower income users.

Although a parking fee would be implemented under the preferred alternative, private autos would continue to be able to access the project area and its coastal sites. (Refer to the "Car-free Days" discussion in the FEIS (2.5.6) for information on access during car-free days.) The parking fees would be used to enhance transit services that would improve access to coastal areas of the Marin Headlands and Fort Baker, including the most popular destinations.

Section 4.2 of the *Draft San Francisco Bay Area Water Trail Plan*, "Existing Access onto the Bay" (dated May 22, 2007), notes that other bay access points outside the park currently charge parking fees. The plan states that access to the water trail consists of over 130 launch and landing points, and that "some launch ramps require a fee to park or launch."

Implementation of a parking fee program would create incentives for visitors to use the transit service rather than drive. Fee payment options could include an annual parking pass that may reduce costs for more frequent users.

Parking restrictions and fees would be enforced by the park. The cost projections for operating the shuttle service considered the varying visitation levels during peak and off-peak seasons. The shuttle service would not be suspended during off-peak seasons, but would operate at levels appropriate for the demand and subject to available funding. The details of implementation, administrative, and maintenance costs for the parking fee program would be considered in developing the final program budget and fee. As stated in Section 2.5, revenue generated from parking fees would be used to provide enhanced transit service operations in Marin Headlands and Fort Baker — not roadway, parking, or trail improvements. Establishing parking fees and implementing transit service improvements could result in a 2.5% reduction of internal automobile trips inside the park. Based on visitor demand at the park, it is assumed that the appropriately priced parking fees would not be a deterrent for

visitors. The proposed shuttle service has been developed based on these assumptions. After implementation of the parking fee program, it would be monitored to refine both the transit service and parking fee programs.

Regarding the park's authority to implement parking fees, GGNRA's enabling legislation states:

"No fees or admission charges shall be levied for admission of the general public to the recreation area except to portions under lease or permit for a particular and limited purpose authorized by the Secretary. The Secretary may authorize reasonable charges for public transportation and for admission to . . . historic vessels of the National Maritime Museum" (Public Law 92-589, 16 USC 460bb).

The park's proposed fees are for parking, not admission. Visitors would still be admitted to the park free of charge whether they arrive by foot, bike, bus, or their own private vehicle. Visitors would only pay a fee to park, and only in certain areas. This parking fee is not in conflict with the enabling legislation.

Parking fees would be compatible with other comparable park areas where fees are charged for parking. Park partners would be consulted during the detailed planning and development and refinement of the parking fee program.

Hawk Hill Parking on Conzelman Road

Parking in the Hawk Hill area would be reduced in Alternatives 2, 3, and 4 compared to Alternative 1, which represents the existing condition.The intent of the alternatives is to address the roadside erosion resulting from improper parking and to improve safety at the Hawk Hill parking area at the turnaround. The preferred alternative in the DEIS (Alternative 3) would result in a loss of 30 parking spaces at Hawk Hill. Several commenters were concerned about the reduced Hawk Hill parking supply under the action alternatives. However, one commenter felt that expanding parking along Conzelman Road would degrade the "open space" feeling of this area of the park, noting that parking along Conzelman Road is inappropriate. Another commenter suggested providing a shuttle from the visitor center to Hawk Hill to reduce parking demand at this location.

A kiosk-entry point along Conzelman Road was requested, as well as more signs near Hawk Hill to help with wayfinding. Some commenters expressed concern about erosion below Conzelman Road, especially near Hawk Hill, and believed that even closing Conzelman Road would result in erosion problems.

Response: The improvements at the Hawk Hill parking area were proposed to address existing safety and resource concerns. The existing parking is primarily configured as head-in parking; however, there currently is inadequate space for head-in parking and cars partially block the travel lanes near the turnaround and back into traffic lanes to exit parking spaces. In addition, visitors walking in this area where there are no pedestrian walkways add to congestion and safety concerns. The preferred alternative in the DEIS would replace the head-in spaces at the turnaround with parallel parking spaces to address these safety issues, resulting in the loss of parking spaces. Currently, there are 55 spaces in the area; changing the head-in parking to parallel parking would result in a total of 25 spaces, which is a net loss of 30 spaces.In response to public concern about loss of parking, NPS staff observed parking utilization at Hawk Hill in the fall of 2007. These observations showed that demand for the parking spaces sometimes exceeds 25 spaces. Therefore, the preferred alternative in the FEIS includes a revised parking configuration at Hawk Hill. Instead of changing the head-in parking to parallel parking (as proposed in the DEIS), the FEIS preferred alternative improves the safety of the head-in parking by expanding the area. The parking stalls are extended out over the side of the hill (using a retaining wall) and away from the driving lane. Additional parallel parking is also provided on the inboard side of Conzelman Road. The proposed plan in the FEIS increases parking over the DEIS, for a revised total in the area of 55 parking spaces and represents no net loss in parking compared to the existing condition. The park would also consider a shuttle between Hawk Hill and other parking locations, such as the Visitor Center, if the Hawk Hill parking becomes full when Golden Gate Raptor Observatory (GGRO) activities are occurring and demand is likely to exceed supply.

The FEIS preferred alternative also includes erosion control measures to restore natural drainage patterns and minimize erosion at parking areas on Conzelman Road. In addition to roadway drainage improvements to address causes of erosion, restricting vehicle parking on unpaved road shoulders would help address the loss of vegetation that contributes to erosion problems.

The park will consider signage improvements in the Hawk Hill area when developing details for the proposed wayfinding signs program. A kiosk entry point on Conzelman Road was not considered feasible due to staffing requirements and compatibility with the historic setting.

Alexander Avenue

Commenters requested improvements to Alexander Avenue, particularly improving safety for cyclists and pedestrians, noting the current conditions on Alexander Avenue between the entrances to the park. Suggestions included narrowing the travel lanes, providing bike lanes on both sides of the road, constructing a new bicycle/pedestrian tunnel to provide a connection to the Bay Trail, as well as providing other facilities, such as information kiosks and restrooms. Commenters felt that providing a tunnel under Alexander Avenue would improve safety and the user experience by encouraging bicycling and walking as a means of accessing the area. Some commenters questioned how funding would be provided for improvements to Alexander Avenue.

Response: A new bicycle/pedestrian tunnel under Alexander Avenue parallel to Bunker Road was included in the preferred alternative in the DEIS and is retained in the FEIS. This tunnel would help connect Fort Baker with the Marin Headlands for bicyclists and would avoid Alexander Avenue. It would also provide a pedestrian connection between Alexander Avenue and Fort Baker where there currently is no pedestrian path or sidewalk.

Currently, bicyclists traveling between San Francisco and Sausalito or Fort Baker either ride in the travel lanes on Alexander Avenue or use a pedestrian/bike/service vehicle only route on Lower Conzelman Road, passing under the Golden Gate Bridge and connecting through Fort Baker to Alexander Avenue at East Road. This condition continues under all alternatives in the FEIS. Alexander Avenue is not under the sole jurisdiction of the park, so actions that would affect Alexander Avenue are not included in this plan. The park would continue to coordinate with jurisdictional agencies on future plans for Alexander Avenue, particularly regarding transportation issues such as safety. As noted in GGBHTD's comments, the FEIS will reflect that the GGBHTD did not take any board action on Alexander Avenue improvements and that no funding is available to implement improvements at this time. Since the publication of the DEIS, the NPS has initiated coordination with these agencies, as well as the City of Sausalito and Marin County, to take part in an NPS planning study to address issues specific to Alexander Avenue. This study would result in a master plan to improve multi-modal access and safety, and would be subject to separate environmental and public review. NPS is also working with Marin county and GGBHTD to improve bicycle route signage to encourage use of the Lower Conzelman/Fort Baker route.

As mentioned under Section 1.5, a significant amount of planning activities and funding have been invested in investigating improvements for Alexander Avenue. The Alexander Avenue Planning Study will identify actions for approximately $1 million in intersection improvements with Alexander Avenue at Conzelman Road west of Highway 101 and East Road just outside Sausalito city limits. The National Park Service has also agreed to fund a planning study to develop a range of alternatives and associated costs to implement the improvements described in Section 1.5.

Ferry Service

Commenters suggested the park provide ferry service between Fort Baker or Sausalito and the ferry terminal in San Francisco, and that bus service in the park be coordinated with ferry service. Commenters also suggested that the public be informed that parking fees would be applied toward paying for the bus and ferry service. Some commenters requested more clarification of the role of ferry service in the transportation plan, and suggested that future ferry service (analyzed as a cumulative project under Alternatives 3 and 4) would have "significant" impacts on

access to Fort Baker, particularly during special events.

Response: Ferry service was not included as a component of this plan because it is being investigated in a separate study, the *GGNRA Water Shuttle Access Study & Conceptual Plan Summary Final Report* and would be evaluated in a separate environmental document. Although ferry service is not being investigated in this plan, the preferred alternative identifies two transit connections to potential ferry service should such service be implemented in the future. One of these potential connections is for the Fort Baker Lodge shuttle. The routes and service for the Fort Baker Lodge shuttle have not been specified, although the shuttle would likely connect to either the Sausalito ferry or future Fort Baker ferry service. The second potential transit connection is the internal park shuttle identified in the preferred alternative. The park shuttle service, which includes a stop at the Fort Baker waterfront, could provide internal mobility between a potential future ferry service if implemented at Fort Baker and the Marin Headlands. This service would be available to all members of the public and is proposed to operate every 60 minutes throughout the day depending on funding.

Conzelman Road and Battery Spencer

Many commenters noted safety issues related to tourists and sightseers along Conzelman Road and the resulting congestion, especially at the popular Battery Spencer overlook parking. Safety concerns included vehicles traveling uphill on Conzelman making left turns or U-turns and crossing the downhill traffic lanes at blind curves to park at the Battery Spencer overlook. This is a safety concern for downhill bicyclists as well as autos. Concerns were also expressed regarding pedestrians walking along Conzelman Road to access Battery Spencer and the Marin Headlands from the Golden Gate Bridge.

Response: The FEIS makes no changes to Conzelman Road and Battery Spencer compared to the DEIS. However, several improvements identified in the preferred alternative address these issues. A Class 2 (striped shoulder) bike lane would be added to Conzelman Road between U.S. 101 and McCullough Road, providing a dedicated uphill (westbound) bicycle lane in this area. Parking areas at Battery Spencer and Overlooks 1 and 2 on Conzelman Road would be reorganized to minimize the conflicts in these areas between parking movements and motorized and non-motorized traffic flows. Measures to eliminate other unofficial parking areas along Conzelman Road would also minimize left turns. The roundabout at Conzelman and McCullough Roads would also reduce the need for left turns by west-bound vehicles or unsafe U-turns. A separate pedestrian trail will be constructed along Conzelman Road west of Highway 101. These measures would improve safety for pedestrians, bicyclists and vehicles.

Improvements identified in the preferred alternative to reduce vehicular congestion and improve safety at Battery Spencer include excavating an existing rock cut to realign the roadway to provide improved sight distance and increase backing area for vehicles exiting head-in parking spaces. These improvements would allow vehicles to back out of parking stalls without entering the travel lanes at Battery Spencer. A wayfinding program would be implemented and intelligent transportation systems (ITS) technologies (such as electric changeable message signs and highway advisory radio alerts) would provide improved visitor information and safety and reduce congestion at key locations, such as Battery Spencer.

Smith Road Parking

The preferred alternative in the DEIS proposes a new parking area at Smith Road to provide replacement parking including for the trailhead parking eliminated at the rifle range. This new parking area would also be used for special events, car-free days, and trailhead parking for Rodeo Valley Trail. A new bridge would be constructed over Rodeo Creek to provide a connection from the Smith Road parking to Rodeo Valley Trail.

Comments were received concerning the Smith Road parking as well as the new bridge. Commenters expressed concern about the new bridges proposed under Alternative 3 regarding wetland impacts, as well as habitat for the endangered California red-legged frog and possible bobcat use near the proposed parking area. Commenters thought that removing Smith Road and restoring

the habitat as described for Alternative 2 was preferable to constructing a parking area and bridge in this location.

Commenters noted that the grassland-coastal scrub-willow area north of the stables is an ecologically sensitive area, and believed that human traffic should not be encouraged. Commenters were also concerned that pollutants from the new parking area at Smith Road would enter the creek channel and be discharged into Rodeo Lake, which contains sensitive species. In addition, commenters were concerned that increased runoff would change the runoff dynamics of the stream channel and lead to changes in the width, depth, and sediment transport regime of the creek channel, which in turn could alter the flood frequency and riparian vegetation assemblage of the area.

Another commenter believed that a large parking lot on Smith Road would be obstructed from view, and was concerned about personal safety. Commenters also were concerned that the proposed parking along Smith Road would create additional traffic congestion and dangerous situations for equestrians, cyclists, and motorists across from the new trailhead.

Response: The rifle range parking and bridge would be removed and the site restored to rehabilitate the historic setting and improve riparian habitat; the Smith Road parking would replace the parking that would be removed at the rifle range. Under the preferred alternative, the proposed parking area at Smith Road has been redesigned in the FEIS to avoid the emergent wetland on the eastern portion of the site. In the FEIS, Smith Road parking has been reduced in size and realigned to the south, moving it farther from Rodeo Creek and the riparian area along the creek. As proposed in both the DEIS and FEIS, a new bridge and trail would be constructed to the Rodeo Valley Trail, which would eliminate the need for the bridges and trails to the west and east of the new bridge. Therefore, these two bridges would be removed and the riparian area restored.

The DEIS acknowledged that short-term, major adverse impacts would result from construction of the new bridge and trail, which would last only as long as the construction activities. However, the DEIS also notes that restoring willow riparian habitat along the creek and creating riparian and/or emergent wetland habitat (from realigning the road and restoring the existing bridges and trails to natural conditions) would result in a major beneficial impact in the long term. In addition, the new parking area at Smith Road would be beneficial because it would allow removal of parking on the historic rifle range.

The proposed actions should have a beneficial effect through rehabilitation of the riding stables parking lot to drain into a vegetated swale. At other sites, drop inlets would either be installed with filters or discharged into vegetated swales to reduce sediment transport to streams.

The parking area would modify the configuration and nature of the low permeability surface. BMPs, including bioswales, would be implemented to reduce the rate of runoff as well as the pollutant load from the parking lot. Since all stormwater runoff for the parking area would be directed to the vegetated bioswale, hydrologic conditions for the floodplain from the construction of the parking area would not change.

The size and location of the parking area in context to the watershed is inconsequential in terms of affecting the watershed's flood frequency or severity, and the construction of the parking area would not change surface or groundwater. Much of the proposed Smith Road parking is located on existing disturbed area — both existing asphalt pavement and graded housing sites. Changes in surface or groundwater conditions that would affect riparian vegetation are expected to be negligible.

Under the preferred alternative, the informal parking that now occurs on the Bunker Road bypass, the historic pistol range, and the edges of the rifle range — all of which are important wildlife areas — would be relocated to the Smith Road parking area. Less auto traffic in these informal parking areas may reduce wildlife disturbance and enhance wildlife viewing, and the park does not anticipate wildlife movements to be interrupted by this proposed change.

The proposed parking area at Smith Road would be designed to accommodate larger vehicles, such as horse trailers, and would be organized and delineated to provide adequate space for pedestrians, bicyclists, and equestrians to safely

move through this area. A designated crossing area would be provided at this location for trail users to safely cross Bunker Road while accessing the new trail. Regarding personal safety, the parking area would be visible from Bunker Road.

East Road and Bay Trail

Commenters expressed questions regarding East Road in relation to the Bay Trail, particularly regarding providing a multi-use trail. Some commenters requested a fully separated, Class I multi-use pathway alongside East Road to be used in conjunction with, and to complete, the Bay Trail. Other commenters requested Class II bike lanes on both sides of the road. The park also received questions about how cyclists and pedestrians would be affected by parking along East Road.

Response: The preferred alternative includes improvements to East Road in Fort Baker, including accommodating the extension of the San Francisco Bay Trail (Bay Trail) along the east side of the road. Extension of the Bay Trail would improve access to scenic viewing areas along East Road and improve connectivity between Fort Baker and the community of Sausalito.

A separated multi-use path (Class I bike path) and a striped bike lane (Class II bike facility) on East Road were considered, however, the existing road bench is not wide enough to accommodate travel lanes and a separated multi-use path or bike lanes; either a widened road bench or a new, separate trail alignment would be required. These options would result in cuts into the hillside and/or fills in some locations, resulting in adverse impacts on the natural, scenic, and cultural resources (East Road is a contributing element of the historic district comprised of Forts Baker, Barry, and Cronkhite). The preferred alternative has been revised in the FEIS to provide additional width where possible in the shoulder area for bicyclists, providing a balance between protecting the resources and improving bicyclists' safety and experience. The refined design includes 11-foot travel lanes in each direction and widened paved shoulders. A 4-foot shoulder would be provided northbound from Fort Baker to the curve before the Sausalito-Marin City Sanitary District Entrance, changing to a 3-foot shoulder from this point to the Alexander Avenue/East Road intersection. Southbound bicyclists from Alexander Avenue and Sausalito would have a consistent 3-foot wide shoulder until reaching the downhill grade north of Murray Circle, where the shoulder would become 2 feet wide (see typical sections in Appendix A). The refined FEIS concept for East Road would also accommodate the extension of the San Francisco Bay Trail along the east paved shoulder of the road from the current connection to Alexander Avenue.

Other than the pullout areas, no formal parking is proposed along East Road as part of this plan. Therefore, conflicts between parked vehicles and bicyclists should be minimal. During the seven car-free days or special events, cars could be parked along East Road as they currently are during special events, consistent with the Fort Baker Plan/FEIS. Safety of pedestrians and bicyclists would continue to be addressed for each event.

6.2 AGENCY CONCERNS AND RESPONSES

This section provides the agency concerns and responses to the DEIS. Comment letters and responses are provided in this section for all concerns raised by federal, state, and local agencies. Many of the concerns raised by agencies are also stated in public comments; therefore, many responses to agency concerns also address those identified by the general public.

6.2.1 COMMENT LETTERS FROM FEDERAL, STATE, AND LOCAL AGENCIES

A

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

August 7, 2007

In response refer to:
2007/02938:DL

Brian O'Neill
General Superintendent
Golden Gate National Recreation Area
National Park Service
Building 201, Fort Mason
San Francisco, California 94123-0022

Dear Mr. O'Neill:

This letter relates to the National Park Service's (NPS) Transportation Management Plan for the Marin Headlands and Fort Baker, and the Coastal Trail Corridor Enhancement Plan for the Marin Headlands (Project), NPS File Number L76 (PLAN). By letter dated February 8, 2006, NOAA's National Marine Fisheries Service (NMFS) received from the NPS a request for formal consultation for the Project pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended. That February 8, 2005, letter also transmitted NPS's biological assessment for ESA-listed species.

The Project includes various components related to vehicle and pedestrian transportation throughout the Marin Headlands. NPS's biological assessment concluded that the Project was likely to adversely affect ESA-listed Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*)[1]. After review of the original NPS submission, NMFS concluded that additional information was necessary to adequately analyze the effect of the proposed Project on ESA-listed salmonids. On April 12, 2006, NMFS sent a letter to the NPS specifying additional information needs. On May 23, 2006, staff from NMFS met with staff from the NPS at Fort Cronkhite for a site visit. The NPS provided to NMFS additional information related to the Project at that May 23, 2006, meeting, and on January 3, 2007, May 16, 2007, May 29, 2007, June 14, 2007, and July 9, 2007.

Based on information obtained during the May 23, 2006, site visit/meeting with NPS staff and information provided by the NPS, NMFS concluded that only the Project's proposed actions occurring within the Rodeo Creek watershed may affect ESA-listed salmonids and designated

A-1

[1] 71 FR 834. National Marine Fisheries Service. Final rule: Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead. Federal Register 71:834-862. January 5, 2006.

2

critical habitat. The remaining activities included in the Project will occur in watersheds without salmonids or designated critical habitat. Within the Rodeo Creek watershed, the NPS proposes six actions: (1) remove two pedestrian bridges crossing Rodeo Creek; (2) decommission the approach trails for those bridges and restore the riparian vegetation at those sites; (3) place two free-spanning bridges across Rodeo Creek at different locations than the existing bridges; (4) create 700 linear feet of new trails (approaches to the two new bridges); (5) excavate 0.97 acres of historic fill near Rodeo Creek lagoon; and (6) undertake trail maintenance throughout the Rodeo Creek watershed. The NPS proposes to work near steelhead bearing surface water between July 1 and October 15. The bridge and trail related elements will commence in 2009 or later and excavation of historic fill will be undertaken in 2011 or later; however, individual elements will be completed with a single construction season.

A-1 cont.

Rodeo Creek is in southern Marin County, California, and drains directly into the Pacific Ocean northwest of San Francisco. A seasonal barrier beach occurs at the mouth of Rodeo Creek during low water conditions (usually late spring through late fall) creating a lagoon. Fish cannot emigrate from or immigrate to the Rodeo Creek watershed when the barrier beach is present, and the lagoon is not tidally influenced when the barrier beach is present.

Available information indicates that Rodeo Creek supports threatened CCC steelhead. The NPS conducted fish surveys of Rodeo Creek and found low densities of steelhead (NPS 2006). CCC steelhead use Rodeo Creek near the bridge demolition and construction sites primarily as a migration corridor, though a small number of juvenile steelhead may rear near those sites during the summer/fall construction period. A portion of the shorelines of Rodeo Lagoon and Rodeo Lake were sampled several times during the early and mid-1980s (Wang 1983, Wang 1984, Wang and Keegan 1987); steelhead were not found in those surveys. However, steelhead often use lagoons of coastal California streams (Shapovalov and Taft 1954, Larson 1987, Zedonis 1992) and steelhead may use the deeper sections of Rodeo Lagoon. Wang (1983, 1984) and Wang and Keegan (1987) did not sample deeper water habitat within Rodeo Lagoon.

The life history and habitat requirements of steelhead in California have been well documented (Shapovalov and Taft 1954, Barnhart 1986, Sandercock 1991, Busby *et al.* 1996, McEwan 2001). Steelhead are anadromous fish, spending some time in both fresh- and saltwater. The older juvenile and adult life stages occur in the ocean, until the adults ascend freshwater streams to spawn. Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles all rear in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults. NMFS does not have migration timing information for adult or juvenile steelhead from the Rodeo Creek watershed. However, steelhead migration information from neighboring Marin County streams (Coast Creek, Pine Gulch Creek, and Redwood Creek) is available; NMFS assumes that migration timing is similar for Rodeo Creek. Adult steelhead typically migrate into or out of those neighboring Marin County streams from December through April and juvenile steelhead typically emigrate from those neighboring Marin County streams from March to June (Fukushima and Lesh 1998). Given the proposed construction period - June 15 through October 15 - and the life history of steelhead, only juvenile steelhead are likely present in the action area during construction.

A-2

3

The NPS effects determination in the biological assessment was based on the original proposal to dewater a portion of Rodeo Creek, to capture and relocate steelhead, if present, and to work in the stream channel either dismantling the current bridges or placing the new bridges. However, NPS plans have been modified and the current construction proposal is to build the bridges as free-spanning structures, negating the need to enter the channel, dewater the stream, or capture and relocate steelhead. Therefore, NMFS anticipates no direct effects to steelhead residing in the stream at the Rodeo Creek sites associated with the construction or demolition of the bridges. A-3

Indirect effects to listed steelhead during bridge demolition or construction activities are expected to be minor. Since the NPS will incorporate best management practices (BMPs) to control or eliminate potential erosion, sedimentation, and pollution sources, construction noise will be the source of any indirect effects to steelhead from implementation of the proposed action. Although the project area is a migration corridor for steelhead, Rodeo Creek naturally dewaters at the project sites during many summers and falls, preventing migration during those times. Even without workers or equipment entering the stream, NMFS expects that steelhead, if present at the site during bridge demolition or construction, may become startled by bank-side activities; the fish may temporarily leave the immediate vicinity of the bridge sites, thereby, vacating preferred habitat or temporarily reducing feeding efficiency. These behavioral changes are not likely to adversely affect steelhead or reduce the survival chances of individuals.

Proposed trail maintenance activities include: mowing, clearing of minor slides, placing aggregate to maintain tread surface, replacing signage or fencing, and cleaning and repairing above-grade culverts on non fish bearing channels. Based on NPS's project description, the majority of trail maintenance activities are far outside the creek channel and no in-water work will be performed. Therefore, direct impacts to listed salmonids by trail maintenance activities are likely discountable. At trail maintenance sites closest to the stream channel, NPS will incorporate BMPs to control or eliminate potential erosion, sedimentation, and pollution sources. The potential minor, localized, and short-term increases in turbidity during trail maintenance activities are not expected to rise to levels that will affect listed salmonids. Overall, the effects of the trail maintenance activities are insignificant and discountable.

The NPS proposes to use an excavator to remove historic fill (0.97 acres) at two locations in the lower Rodeo Creek watershed. Both sites flank Bunker Road, the access road to Fort Cronkhite, at the crossing of Rodeo Creek lagoon. Both sites are currently used for parking. One of the two sites (northern site) has fill that enters the lagoon. NPS proposes to utilize silt fences and other BMPs to prevent the introduction of sediment into the waters of the lagoon during excavation. At both sites the NPS will rehabilitate riparian vegetation using native plant species.

At the northern fill removal site, NPS has proposed several measures to avoid and minimize impacts to listed fish species. Since this site requires some in-water work to removal fill, NPS proposes to excavate during the summer when lagoon water levels are lowest. In addition to CCC steelhead, tidewater goby (*Eucyclogobiusnewberryi*),an ESA-listed fish species under the jurisdiction of the US Fish and Wildlife Service[2], are present in Rodeo Lagoon (Wang 1983,

[2] 59 FR 5494: US Fish and Wildlife Service. Final Rule: Determination of Endangered Status for the Tidewater Goby. Federal Register 59:5459. February 4, 1994.

Wang 1984, Wang and Keegan 1987). To minimize potential construction impacts, NPS proposes to capture and relocate tidewater goby from the northern lagoon site by using beach seines. The northern lagoon site is a shallow area distinct from the deep water areas of Rodeo Lagoon. Sampling by Wang (1983, 1984) and Wang and Keegan (1987) in this portion of the lagoon has never resulted in the capture of a salmonid, but the area is good habitat for tidewater goby.

Before the NPS captures and relocates tidewater goby from the lagoon excavation site, a fish excluder screen will be put in place to isolate the northern fill removal site from the main body of the lagoon. This exclusion device will prevent fish from entering the work area from elsewhere in the lagoon. Since steelhead have not been observed along the margins of Rodeo Lagoon and the shallow area at the northern work site, it is unlikely steelhead will be collected during the tidewater goby fish relocation efforts. Installation of a fish excluder screen on the margin of the northern lagoon work area will prevent fish from entering the site during construction. Silt fencing and other BMPs designed to minimize the mobilization of sediment into the waters of the lagoon are anticipated to adequately protect water quality. A-4

At the second site (southern fill removal location) existing fill does not enter the water; rather it is perched on a seasonally-wetted flood plain. At this second site, construction equipment and operations will not enter the water. Since the historic fill on the southern margin of Rodeo Lagoon will not require any in-water work and the NPS will incorporate sediment and pollution BMPs, NMFS does not anticipate any impacts to steelhead during activities at the second site. A-5

Rodeo Creek is not designated as critical habitat for CCC **steelhead**[3], but is designated as critical habitat for CCC coho salmon *(O. **kisutch**)*.[4] Although coho salmon have not been documented from Rodeo Creek, they are present in neighboring Marin County streams (Wang and Keegan 1987, NMFS 2000) and it is possible that coho salmon may stray into Rodeo Creek on occasion. Direct effects to coho salmon are not anticipated since project construction is schedule for summer months and this species does not commonly occur in the watershed.

Primary constituent elements (PCEs) of designated critical habitat for CCC coho salmon in the project area include water quality and quantity, foraging habitat, natural cover including large substrate and aquatic vegetation, and migratory corridors free of obstructions. The potential effects of this project to designated critical habitat include minor, short-term changes in the riparian area during demolition of the old bridges, construction of the new bridges, and sedimentation associated with extraction of historic fill. The demolition and removal of the existing bridges or construction of the new bridges will be done from the top of bank; neither workers nor equipment will need to be in the creek during demolition or construction. The proposed construction of the bridges as free-spanning structures is expected to minimize

[3] 70 FR 52488. National Marine Fisheries Service. Final rule: Designation of Critical Habitat for Seven **Evolutionarily** Significant Units of Pacific Salmon and Steelhead in California. Federal Register 70:52488-52586. September 2, 2005.

[4] 64 FR 24049: National Marine Fisheries Service. Final Rule and Correction: Designated Critical Habitat for Central California Coast Coho and Southern **Oregon/Northern** California Coast Coho Salmon. Federal Register 64:24049-24062. May 5, 1999.

5

disturbance to the creek channel and avoid the introduction of sediment into the channel. The proposed removal of historic fill from two areas in and adjacent to Rodeo Lagoon is not expected to diminish habitat values in the area, because both project sites are not appropriate for spawning, incubation, or rearing of CCC coho salmon, even if the species was present in Rodeo Creek.

In summary, NPS has incorporated design considerations and measures to minimize or avoid the potential effects of the proposed actions on salmonid habitat. For example, the bridges have been redesigned to eliminate all in-channel construction activities. Also, all anticipated effects to riparian vegetation will be temporary, as all disturbed areas resulting from demolition or construction activities will be revegetated using native tree and shrub species. Additionally, the NPS will incorporate construction BMPs, such as placement of sediment control devices, to further reduce the potential for sediment and turbid discharges to the surface waters of Rodeo Creek and Rodeo Lagoon. Thus, the demolition and construction of the bridges, creation of the trails and trail maintenance, and excavation of the historic fill is not expected to adversely affect essential physical or biological features associated with salmonid critical habitat and no ongoing impacts to designated critical habitat are expected.

Based on the best available information, NMFS has determined that the Project is not likely to adversely affect ESA-listed CCC steelhead or designated critical habitat for CCC coho salmon. This concludes consultation in accordance with 50 CFR §402.14(b)(1) for the proposed Transportation Management Plan for the Marin Headlands and Fort Baker, and the Coastal Trail Corridor Enhancement Plan for the Marin Headlands, Marin County, California. However, further ESA consultation may be required if new information becomes available indicating that ESA-listed species or critical habitat may be adversely affected by the project in a manner not previously considered, current project plans change in a manner that affects ESA-listed species or critical habitat, or a new species is listed or critical habitat designated that may be affected by the action. A-6

If you have questions concerning this consultation, please contact Daniel Logan at (707) 575-6053.

Sincerely,

for Rodney R. McInnis
Regional Administrator

cc: Russ Strach, NMFS Assistant Regional Administrator for Protected Resources.
Copy to ARN file: 151422SWR2005SR00561

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Letter A: National Oceanic and Atmospheric Administration – National Marine Fisheries Service

(August 7, 2007)

Response to Comment A – 1

These actions would occur with implementation of the preferred alternative.

Response to Comment A – 2

Comment noted.

Response to Comment A – 3

The comment is correct. As agreed to with National Marine Fisheries Service, free-spanning structures would be used to negate the need to enter the channel, dewater the stream, or capture and relocate steelhead. This information has been included in the FEIS as mitigation.

Response to Comment A – 4

A fish excluder screen would be used as described in the comment. This information has been added to the FEIS as mitigation.

Response to Comment A – 5

In order to avoid impacts to steelhead, compensation actions to remove fill will avoid having to place equipment in the water. This information has been added to the FEIS as mitigation.

Response to Comment A – 6

As noted, the National Park Service will inform NMFS of any change in project actions that might impact species under the agency's purview.

B

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

RECEIVED
AUG - 3 2007
SUPERINTENDENT'S OFFICE

July 31, 2007

Superintendent
Golden Gate National Recreation Area
Fort Mason, Building 201
San Francisco, CA 94123

Attn: MH_FB TMP

Subject: Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan Draft Environmental Impact Statement (EIS) [CEQ #20070227]

Dear Superintendent:

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.

EPA supports the objectives of this project, and it appears the proposed alternative will meet the project purpose while minimizing resource impacts. We have, therefore, rated this Draft EIS/EIR as LO – Lack of Objections (see enclosed "Summary of Rating Definitions").

We appreciate the opportunity to review this Draft EIS and request a copy of the Final EIS 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

003934

Enclosure: "Summary of Rating Definitions"

Printed on Recycled Paper

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

(July 31, 2007)

Thank you for your comment. The National Park Service appreciates the response from the U.S. Environmental Protection Agency.

C

United States Department of the Interior

U. S. GEOLOGICAL SURVEY

Reston, VA 20192

In Reply Refer To:
Mail Stop 423

AUG 1 0 2007

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

Subject: Draft Environmental Impact Statement for the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan

Dear Mr. O'Neill:

As requested by your correspondence of June 7, 2007, the U.S. Geological Survey (USGS) has reviewed the subject draft environmental impact statement (DEIS) and offers the following comments.

SPECIFIC COMMENTS

Section 4.3.4, Biological Resources, pages 206-233

In the methodology section regarding an analysis of impacts on wildlife (pages 211-212), consideration should be given to including a discussion of the methodology to assess potential impacts on aquatic species. C-1

The assessment would benefit from the incorporation of scientific references, if available, to support conclusions, such as on page 217, "…after fill removal, impacts would be long term, major, and beneficial from a potential increase in [Tidewater] gobies." C-2

The National Park Service is commended for recognizing that the (page 216, 1st column, 2nd to last paragraph) "project construction could result in direct and indirect adverse effects to individual wildlife species, beyond the more general effects to their habitat. Vegetation removal and the use of construction equipment could result in direct loss of individuals that were unable to escape and the destruction of active bird nests. Disturbance associated with project construction…could disturb individual animals. Potential effects include, but are not limited to, disrupting movement patterns, utilization of nearby habitat, and breeding activities. Some animals could die if breeding activities were disrupted to the extent that active nests were abandoned." However, upon making these comments, the DEIS goes on to say that (page 216, 1st column, bottom paragraph), "In the long term Alternative 3 [the preferred alternative] could have more beneficial effects to wildlife habitat quality, connectivity, and integrity than adverse C-3

2

effects, depending on the design and success of revegetation activities. Overall, revegetation efforts would create more habitat than would be permanently lost." It seems that the assessment is heavily relying on the "success of revegetation activities" to minimize impacts to wildlife and aquatic species, instead of a more complete analysis that includes other important components for avoiding/mitigating impact on species. It is advisable to not only consider revegetation success, but also consider a more complete (holistic) analysis that involves species (terrestrial and aquatic) specific requirements, including species specific foraging, site fidelity, and vegetative stage/age requirements, or an analysis involving indicator species requirements. C-3 cont.

References Cited

The URL listed for the USGS publication below is no longer functional. The document can be found at: http://pubs.usgs.gov/of/1997/of97-745/sfbr-sef-dbdesc.pdf. C-4

Wentworth, Carl M., Graham, Scott E., Pike, Richard J., Beukelman, Gregg S., Ramsey, David W., and Barron, Andrew D., 1997, Summary distribution of Slides and Earth Flows in the San Francisco Bay Region, California; USGS Open-File Report 97-745 C, 10 p.

Maps in ARC/INFO vector coverage format to accompany the pamphlet can be found at: http://pubs.usgs.gov/of/1997/of97-745/of97-745c.html

Appendix F, Wetlands Statement of Finding, Section 5.2 Best Management Practices, and Section 5.3, Resource Specific Measures, Hydrology and Water Quality, pages F-18 and F-19

The discussion identifies a series of construction best management practices (BMPs) designed to minimize potential water-quality effects from stormwater runoff on receiving wetland systems. However, limited discussion is provided concerning the potential effects of stormwater runoff from the roadways and parking lots after construction. Operational BMPs for oil, grease, and suspended sediment are commonly incorporated into roadway and parking lot projects and may warrant further consideration. C-5

Thank you for the opportunity to review and comment on the DEIS. If you have any questions concerning our comments, please contact Lloyd Woosley, Chief of the USGS Environmental Affairs Program, at (703) 648-5028 or at lwoosley@usgs.gov.

Sincerely,

James F. Devine
Senior Advisor for Science Applications

Letter C: United States Department of the Interior – U.S. Geological Survey

(August 10, 2007)

Response to Comment C – 1

Comment noted. The "Methodology for Analyzing Impacts on Wildlife and Aquatic Wildlife" was revised in the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan EIS* to include methodology specific to aquatic species. The "Wildlife and Aquatic Life" impact analysis sections for Alternatives 2–4 were revised in the FEIS to clarify impacts specific to aquatic life. As appropriate, relevant sections of the FEIS were also revised for clarification (e.g., "Summary" and "Summary of Impacts and Mitigation").

Response to Comment C – 2

Comment noted. Where appropriate, scientific references were incorporated into the Final EIS to support conclusions. Impacts to tidewater goby were fully examined in the Biological Assessment (BA) prepared by the National Park Service in compliance with the Endangered Species Act, and were summarized in the Final EIS. The Final EIS assessment that there would be benefits to tidewater goby is based on fill removal and full restoration of the Rodeo Lagoon site. When completed the restoration of this site would enhance habitat characteristics important to the conservation of the goby.

The BA used the following tidewater goby citations:

Fish Species of Special Concern in California, Tidewater Goby. California Department of Fish and Game, 1995.

Fong, D. 2001. Year 2000 Tidewater Goby (Eucyclogobius newberryi) Sampling in Rodeo Lagoon, Golden Gate National Recreation Area, Marin Co. Division of Natural Resource Management and Science, Golden Gate National Recreation Area, National Park Service. May 2001.

Swift, C.C., J.L. Nelson, C. Maslow, and T. Stein. 1989. Biology and distribution of the tidewater goby, Eucyclogobius newberryi (Pisces: Gobiidae) of California in Contributions in Science, no. 404, pp. 1- 19, Natural History Museum of Los Angeles County.

U.S. Fish and Wildlife Service. 2005. Recovery Plan for the Tidewater Goby (Eucyclogobius newberryi). U.S. Fish and Wildlife Service, Portland, Oregon. vi + 199 pp.

Wang, J.C.S. 1982. Early life history and protection of the tidewater goby (Eucyclogobius newberryi)(Girard) in the Rodeo Lagoon of the Golden Gate National Recreation Area. Cooperative National Park Research Study Unit, Technical Report 7, Institute of Ecology, University of California, Davis, CPSU/UCD 022/3.

Response to Comment C – 3

The study area covers more than 2,800 acres; within this area, impacts would total less than 6.4 acres and would be localized in that they generally would occur adjacent to previously disturbed areas. Given the limited nature of the project impacts, a more expanded analysis was not undertaken. Based on this analysis in the FEIS and the Biological Assessment, mitigation and avoidance have been developed in consultation with US Fish and Wildlife Service and state agencies.

Response to Comment C – 4

The URL address listed in the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan* DEIS for the USGS publication *Summary Distribution of Slides and Earth Flows in the San Francisco Bay Region, California* was replaced in the FEIS with the following addresses as requested: <http://pubs.usgs.gov/of/1997/of97-745/sfbr-sef-dbdesc.pdf> and <http://pubs.usgs.gov/of/1997/of97-745/of97-745c.html>.

Response to Comment C – 5

The DEIS contains discussions about groundwater and surface water protection measures in Section 4.3.3. The description of the NPDES II Program discusses the general effects oil and grease have on roadways, sediment, and other common pollutants. The discussion notes that Phase II of the stormwater program extends to all of Fort Baker and lands east of the ridgeline running through Battery Spencer, and describes the stormwater program's requirements that would apply in the area, including control of post-construction runoff. During the final design of the roadway and parking lots, operational BMPs for oil, grease, and suspended sediment will be further considered.

D

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

August 13, 2007

Superintendent
GGNRA
Attn: MH_FB TMP
Fort Mason, building 201
San Francisco, CA 94123

RE: Comments on Draft Environmental Impact Statement, Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan, Marin County

Dear Superintendent:

Thank you for the opportunity to review and comment on the Draft EIS for the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan dated June 2007. The GGNRA proposes to implement a complex transportation management plan with attendant infrastructure improvements in the 2,500-acre Marin Headlands and the adjacent 335-acre Fort Baker.

The preferred alternative is Alternative 3 – Enhanced Multi-Modal Access. This alternative consists of many actions that would rehabilitate or reconstruct roadway infrastructure without altering the character of the roadway; improve parking facilities; and provide additional transit options to and within the park, subject to available funding.

The GGNRA is required to submit a consistency determination for this project, because it would affect 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. See Attachment A for the applicable Coastal Act policies). D-1

Public Access

The proposed project would decrease the total number of parking spaces available to visitors and impose parking fees. These actions will adversely affect public access to the coast. Appendix C – Transportation Data shows a negligible reduction in car traffic in the project area under the preferred Alternative 3. Please explain how the beneficial environmental impacts of these actions would outweigh the decreased access caused by parking fees in an area where parking has historically been free. D-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.

Comments
Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan
GGNRA
Page 2 of 2

The increased transit options—whether implemented by Golden Gate Transit, SF Muni or a private contractor in the case of the shuttles—would increase access to this area, at least in the short term. The DEIS states that the transit options designed to increase non-auto use of the area are dependent upon the revenue generated by parking fees. Please explain how the parking fees would be structured such that future funding of the transit options would be secure, thereby protecting the public access afforded by transit to the project area. The information in Appendix B – Cost Summary by Alternative estimates enough parking revenue to cover the costs of increased transit services in 2007 dollars. A likely future scenario is that transit costs will increase at a greater rate than parking fees. Please analyze the long-term plans for providing the increased transit at the level Alternative 3 proposes, considering the implications of increased transit costs. D-3

Wetlands and Environmentally Sensitive Habitat Area (ESHA)

The Coastal Act protects wetlands and, in its regulations, defines wetlands and submerged lands within the coastal zone (see Attachment A for regulations). Please include a wetlands and submerged lands delineation of the project area for areas where wetlands and/or submerged areas may be affected. D-4 Please describe each wetland or submerged area in terms of the restoration activities proposed for that area and the benefits of restoration. D-5 Please include the amount of soil in cubic yards proposed to be dredged from wetlands or submerged lands cumulatively for the entire project, and area-by-area.

Please describe ESHA in the proposed project area and describe the actions that may affect each area qualifying as ESHA. D-6 Please demonstrate how each area of ESHA will be protected such that there is no loss of habitat values.

Thank you for the opportunity to comment on the Draft EIS for Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan. We look forward to working closely with you and your 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: Tami Grove, CCC
Michael Endicott, CCC
Linda Locklin, CCC

STATE OF CALIFORNIA – THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, GOVERNOR

CALIFORNIA COASTAL COMMISSION

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ATTACHMENT A
COASTAL ACT SECTIONS AND REGULATIONS
MARIN HEADLANDS AND FORT BAKER TRANSPORTATION INFRASTRUCTURE AND MANAGEMENT PLAN

Section 30240 Environmentally sensitive habitat areas; adjacent developments

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

(Amended by Ch. 285, Stats. 1991.)

Coastal Act § 30233 Diking, filling or dredging; continued movement of sediment and nutrients

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

...

(6) Restoration purposes.

(7) Nature study, aquaculture, or similar resource dependent activities.

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for these purposes to appropriate beaches or into suitable longshore current systems.

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. 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 for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and

development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.

...

(d) Erosion control and flood control facilities constructed on watercourses can impede the movement of sediment and nutrients that would otherwise be carried by storm runoff into coastal waters. To facilitate the continued delivery of these sediments to the littoral zone, whenever feasible, the material removed from these facilities may be placed at appropriate points on the shoreline in accordance with other applicable provisions of this division, where feasible mitigation measures have been provided to minimize adverse environmental effects. Aspects that shall be considered before issuing a coastal development permit for these purposes are the method of placement, time of year of placement, and sensitivity of the placement area.

(Amended by: Ch. 673, Stats. 1978; Ch. 43, Stats. 1982; Ch. 1167, Stats. 1982; Ch. 454, Stats. 1983; Ch. 294, Stats. 2006.)

Coastal Act § 30240 Environmentally sensitive habitat areas; adjacent developments

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

(Amended by Ch. 285, Stats. 1991.)

California Code of Regulations (Title 14, Division 5.5) § 13577

...

(b) Wetlands.

(1) Measure 100 feet landward from the upland limit of the wetland. Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. For purposes of this section, the upland limit of a wetland shall be defined as:

(A) the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;

Attachment A
Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan
GGNRA
Page 3 of 3

(B) the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or

(C) in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not.

...

(e) Submerged Lands. Submerged lands shall be defined as lands which lie below the line of mean low tide.

Letter D: California Coastal Commission (August 13, 2007)

Response to Comment D – 1

Comment noted. The National Park Service will submit a consistency determination to the California Coastal Commission pursuant to the requirements of section 307 of the Federal Coastal Zone Management Act. Proposed improvements under all alternatives presented in the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan* would be consistent with and support the policies in the *Bay Plan*. The National Park Service will submit a consistency determination to the San Francisco Bay Conservation and Development Commission.

Response to Comment D – 2

Eliminating, reconfiguring, delineating, and formalizing parking facilities would improve parking operations, reduce congestion, better match parking supply with demand, and reduce natural resource impacts resulting from informal and undesignated parking areas. Although a parking fee would be implemented under the preferred alternative, private autos would continue to be able to access the coast, except during the seven car-free days. Also, the project includes improvements to transit services and non-motorized facilities that would improve access to the coast, especially for those people who do not have access to an automobile, or choose to use public transportation. The parking fees would be used to provide additional transit service, which would increase access opportunities for some park visitors.

Response to Comment D – 3

The National Park Service cannot guarantee a certain level of transit service to and within the Marin Headlands because the level of transit service is dependent upon the amount of revenue generated from parking fees and other new revenue streams. The National Park Service would diligently pursue revenue generation to provide the amount of service outlined in the analysis. The park's most likely new revenue source is the parking fee component of this analysis. It is very likely that transit costs may escalate; however, it is not a given that the park would rely on increasing parking fees to cover this increase, as the park has committed to keep its fees commensurate with other similar park areas. Although the National Park Service would diligently pursue revenues to provide consistent transit service to and within the project area, the park can only provide the amount of transit service commensurate to generated revenue.

Response to Comment D – 4

The analysis depicts both Cowardin (Cowardin et al. 1979) and U.S. Army Corps (USACE 1987) wetlands. Wetland impact analysis uses Cowardin wetlands because this methodology is the National Park Service standard. However, because the NPS anticipates impacts to US Army Corps jurisdictional wetlands, these impacts have also been disclosed so that the National Park Service can meet Clean Water Act regulations and receive project approval from US Army Corps of Engineers and the California Regional Water Quality Control Board.

A wetland delineation is contained within The Wetland Statement of Findings, which can be found in Appendix F of the EIS. Each wetland and proposed restoration activities and benefits are described in this document. This wetland delineation was field verified and revised with the assistance of the Corps of Engineers as described in Section 4.3.4 – Mitigation Measures. A wetland mitigation plan has been developed (Cooper and Wolf, 2008), which will be submitted to the Corps of Engineers in association with a request for confirmation of coverage under Section 404 of the Clean Water Act using Nationwide Permits #14 and 42. No submerged areas would be affected by the proposed project.

Response to Comment D – 5

The requested information regarding dredged soil will be included in the park's submittal for a consistency determination. Also, please refer to section 2.5.7 in the FEIS for a discussion on restoring the Rodeo Beach parking lot, section 4.3.3 on water resources, and section 4.3.1 on soils.

Response to Comment D – 6

The requested information for Environmentally Sensitive Habitat Areas (ESHA) will be included in the park's submittal for a consistency determination.

E

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5505
FAX (510) 286-5559
TTY (800) 735-2929

Flex your power!
Be energy efficient!

August 9, 2007

MRN101368
MRN-101-0.32

Mr. Brian O'Neill, Superintendent
National Park Service
Attn: MH_FB TMP
Fort Mason, Building 201
San Francisco, CA 94123

Dear Mr. O'Neill:

Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan (TIMP) – Draft Environmental Impact Statement (DEIS)

Thank you for continuing to include the California Department of Transportation (Department) in the environmental review process for the project referenced above. We reviewed the DEIR and have the following comments:

Cultural Resources

For construction activities within State ROW, the Department requires documented results of a current archaeological record search from the Northwest Information Center (NIC) of the California Historical Resources Information System before an Encroachment Permit can be issued. Record searches must be no more than five years old. The Department requires the records search, and if warranted, a cultural resource study by a qualified, professional archaeologist, to ensure compliance with CEQA, Section 5024.5 of the California Public Resources Code (for state-owned historic resources) and Volume 2 of the Department's Environmental Handbook (Caltrans Standard Environmental Reference (SER) at http://www.dot.ca.gov/hq/env/index.htm). Work subject to these requirements includes, but is not limited to: lane widening, channelization, auxiliary lanes, and/or modification of existing features such as slopes, drainage features, curbs, sidewalks and driveways within or adjacent to State ROW. E-1

Encroachment Permit

Please note that any work or traffic control that encroaches onto the State Right of Way (ROW) requires an encroachment permit that is issued by the Department. To apply, a completed encroachment permit application, environmental documentation, and five (5) sets of plans clearly E-2

"Caltrans improves mobility across California"

Mr. Brian O'Neill
August 9, 2007
Page 2

indicating State ROW must be submitted to the address listed below. See the following website link for more information: http://www.dot.ca.gov/hq/traffops/developserv/permits/ E-2 cont.

Julie Hsu
Office of Permits
California DOT, District 4
P.O. Box 23660
Oakland, CA 94623-0660

Should you require further information or have any questions regarding this letter, please call or email Ina Gerhard of my staff at (510) 286-5737 or ina_gerhard@dot.ca.gov .

Sincerely,

TIMOTHY C. SABLE
District Branch Chief
IGR/CEQA

"Caltrans improves mobility across California"

Letter E: California Department of Transportation

(August 9, 2007)

Response to Comment E – 1

If it is determined during final design that there would be construction activities within or adjacent to State rights-of-way, the National Park Service would provide the required documented results of a current archaeological record search or a cultural resource study, if warranted, from the Northwest Information Center (NIC) to obtain an encroachment permit.

Response to Comment E – 2

If it is determined during final design that any work or traffic control would encroach onto State rights-of-way, the National Park Service would apply for an encroachment permit issued by the California Department of Transportation.

F

RECEIVED
AUG - 8 2007
SUPERINTENDENT'S OFFICE

August 6, 2007

Superintendent
Golden Gate National Recreation Area
Building 201, Fort Mason
San Francisco, CA 94123
Attention: MH-FB TMP

Subject: Draft Environmental Impact Statement for the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan

Dear Superintendent O'Neill:

Thank you for the opportunity to review and comment on the above referenced document. Fort Baker is an important component of the San Francisco Bay Trail's planned 500-mile recreational pathway that will one day encircle the Bay, traveling through 9 counties and 47 cities. To date, approximately 290 miles, or 58% of the trail has been completed. At Fort Baker, approximately one mile of the proposed 2.75 miles of Bay Trail is complete.

The Fort Baker Plan, the Transportation Infrastructure and Management Plan (TIMP), and the Bay Trail Plan

It is our understanding that the Fort Baker Plan, adopted in 2000, proposes significant improvements to the Bay Trail through the construction/improvement of an interpretive trail from Lime Point to East Road, and that the only improvements to the Bay Trail proposed under the current TIMP involve the widening of East Road to accommodate a Class III bicycle facility. As stated in the Bay Trail Plan, adopted in 1989, the goal of the Bay Trail is to "…develop a continuous trail which…is situated as close as feasible to the shoreline…" and "Wherever possible, new trail should be physically separated from streets and roadways to ensure the safety of trail users". The Bay Trail Board of Directors interprets the latter policy as a clear mandate to pursue and implement Class I fully separated pathways as the standard for the Trail, as it fulfills many of the stated Bay Trail Plan policy goals. F-1

As East Road will require widening in order to accommodate the proposed improvements, the Bay Trail Project requests that the plan be altered to include the construction of a fully separated, Class I, multi-use pathway alongside East Road that will provide safe, high-quality access for bicyclists and pedestrians at one of the Park's major ingress/egress points. The current plan offers no facility for pedestrians on East F-2

Administered by the Association of Bay Area Governments
P.O. Box 2050 • Oakland California 94604-2050
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Road aside from an "informal footpath", representing a significant shortcoming for the purposes of the Bay Trail, as well as overall user experience.

With the development of a conference center and other major upgrades to Fort Baker, the number of vehicles traveling to and from this site may dramatically increase with the completion of these projects, though it is unclear from the DEIS whether East Road will be "temporarily or conditionally close(d)…to general through-traffic to discourage vehicle access to Sausalito" (Chapter 2, pg. 64 DEIS). A Class III facility (essentially consisting of signage and minor widening) on East Road with no formalized pedestrian pathway would not meet the goals of the Bay Trail Plans and Policies, and would continue to represent a significant gap in this important regional trail system. At a bare minimum, Class II bike lanes and a high-quality pedestrian facility would be needed in order for East Road to be considered "complete" Bay Trail. F-2 cont.

Please clarify/confirm in the Final EIS that under the preferred alternative, the entirety of East Road will be widened, and please provide a detailed explanation of how cyclists and pedestrians may be affected by parking along East Road. If a facility other than a Class I fully separated multi-use path is selected, serious consideration must be given to the design of roadside parking throughout the site, and on East Road in particular. Parking maneuvers and insufficient separation from the "door zone" represent a serious safety concern for cyclists and pedestrians alike. Please include a discussion of this topic in the FEIS. F-3 F-4 F-5

Section 3.1.5, pg. 93 of the DEIS states "Bicyclists are prohibited from all segments of the San Francisco Bay Trail within Fort Baker". This statement is concerning on two fronts. The Bay Trail is—by definition—a multi-use pathway, and within the system, segments that do not provide facilities for bicycles and pedestrians are considered incomplete as referenced above. The Bay Trail Project fully understands that in some instances it is prudent to separate user groups, and the shoreline trail at Horseshoe Bay may in fact be an example of an appropriate prohibition of bicycles. However, we strongly object to the characterization that bicycles are prohibited on the Bay Trail in Fort Baker and request that this reference be removed in the Final EIS. F-6

Additionally, as shown on the attached map depicting the planned and existing Bay Trail alignment in Fort Baker, the pathway around the Vista Point parking lot is currently accessible to bicycles, as is East Road from the waterfront to Alexander Avenue. While East Road is currently considered "incomplete" Bay Trail, it is nevertheless open and usable to the public—cyclists and pedestrians alike.

New Bicycle/Pedestrian Tunnel Under Alexander Avenue

While not located on the San Francisco Bay Trail alignment, Alexander Avenue provides an important connection to the Bay Trail at Fort Baker and one that is used daily by a multitude of cyclists. Constructing a new bicycle/pedestrian tunnel in this location would greatly enhance not only the safety of those traveling to and around the Park, but would also vastly improve "user experience" so that more people would be encouraged to use F-7

bicycles or walking as a means of accessing this area, thereby reducing vehicle trips and congestion. F-7 cont.

Bay Trail & Ridge Trail Connections

The Bay Area Ridge Trail is a planned 500-mile pathway encircling the San Francisco Bay Area on the ridgelines. The Bay Trail and The Ridge Trail try to encourage and facilitate connections between the two regional trail systems wherever possible. At Fort Baker, the spine or primary alignments of the Bay and Ridge Trail happen to intersect at the Vista Point Trailhead Parking Lot. This intersection of two important regional trail systems may be worthy of interpretive signage describing and displaying the two trail projects. The San Francisco Bay Trail and the Bay Area Ridge Trail would welcome an opportunity to work with GGNRA in developing such a display. F-8

Wayfinding Signage

We are pleased to see that wayfinding signage is included as part of this project. The Bay Trail Project is currently working with the Golden Gate National Parks Conservancy on a trail signage plan in the Presidio. A coordinated effort regarding signage at Fort Baker would ensure a consistent approach to wayfinding on either side of the Golden Gate Bridge. The Bay Trail Project provides signage free to jurisdictions implementing the trail. Because many of the improvements associated with the Marin Headlands-Fort Baker TIMP may not be implemented for several years, Bay Trail Project staff would like to work with GGNRA staff to discuss near-term implementation of a sign plan for the currently existing sections of Bay Trail at Fort Baker. F-9

Fort Baker is a critically important piece of the Bay Trail in Marin County, and the Transportation Infrastructure and Management Plan represents a unique opportunity to construct 1.75 miles of Bay Trail, closing a critical gap between San Francisco and Sausalito. With the current and ever-growing number of cyclists (and pedestrians) of vastly differing skill-levels riding across the Golden Gate Bridge to various destinations in Marin County, it is imperative that our National Parks provide the best facilities possible—a Class I pathway along the entirety of East Road from Murray Circle (west) to Alexander Avenue. F-10

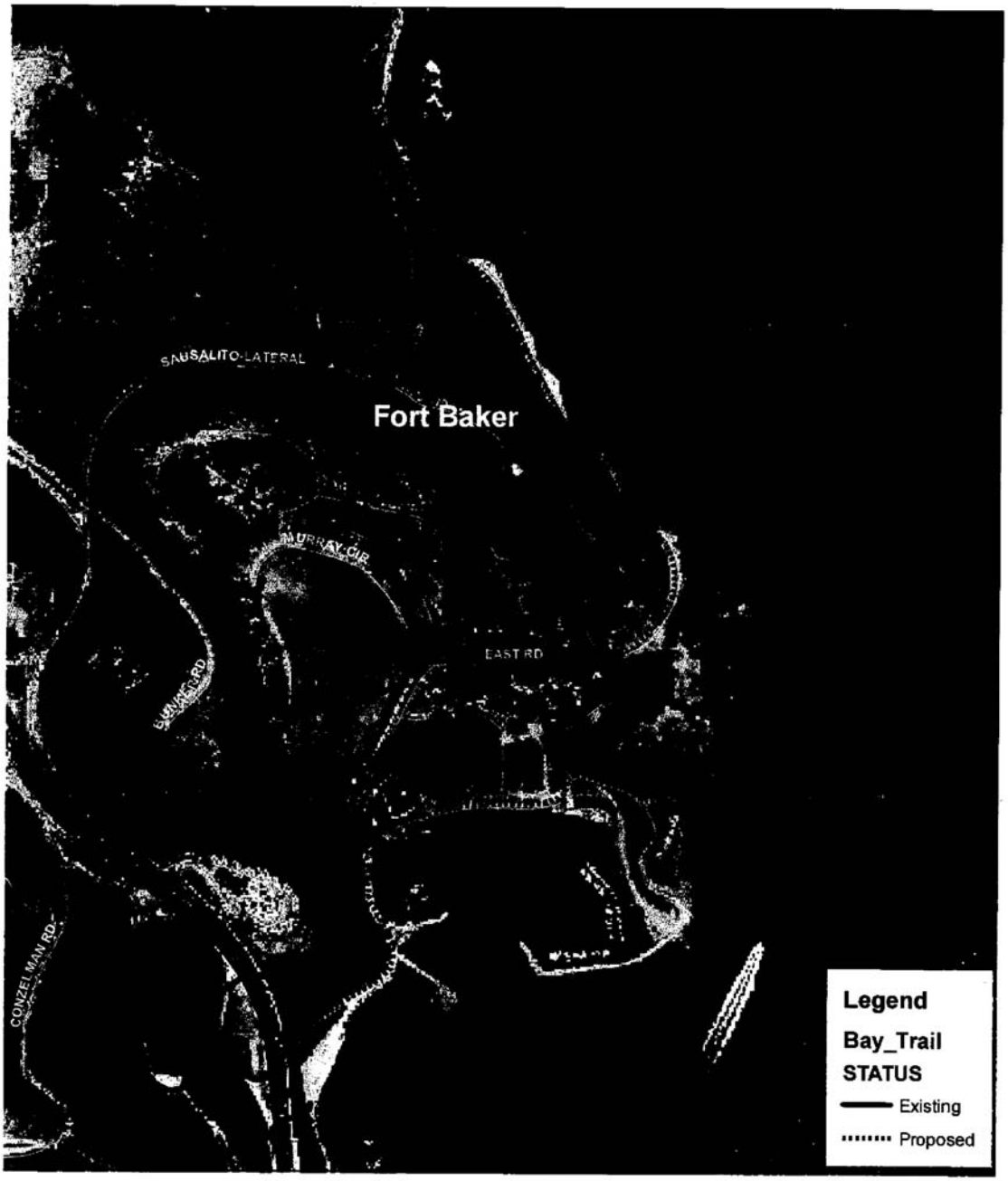
Thank you for your consideration of our comments. If you have any questions about the Bay Trail or these comments, please do not hesitate to contact me at (510) 464-7909, or by e-mail at maureeng@abag.ca.gov.

Sincerely,

Maureen Gaffney
Bay Trail Planner

Cc: Dee Swanhuyser, Bay Area Ridge Trail Council

Fort Baker, GGNRA, Sausalito



Letter F: Association of Bay Area Governments

(August 6, 2007)

Response to Comment F – 1

Relevant aspects of the *Fort Baker Plan Final Environmental Impact Statement* and the subsequent Record of Decision, including extending the San Francisco Bay Trail along East Road, are included in the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan* as "Elements Common to All Alternatives" as described in Chapter 2. This section notes that the existing road is too narrow to accommodate the trail, and refers to the action alternatives for additional actions. The preferred alternative (Alternative 3) includes improvements to the Bay Trail. Pedestrians are accommodated on the improved trail adjacent to East Road. Bicyclists are accommodated on East Road in a widened shoulder area.

Response to Comment F – 2

In response to your comment, a separated multi-use path (Class I bike path) and a striped bike lane (Class II bike facility) were considered. The existing road bench is not wide enough to accommodate travel lanes and a separated multi-use path or bike lanes. To provide the multi-use path, there would be either a widened road bench or a new, separate trail alignment. To provide bike lanes there would be a widened road bench. Both options would result in cuts into the hillside and/or fills in some locations. Widening the road bench or providing a separate alignment for a Class I bike path would have adverse impacts on the natural, scenic, and cultural resources (East Road is a contributing element of the historic district comprised of Forts Baker, Barry, and Cronkhite). The design in the DEIS has been refined to provide additional width where possible in the shoulder area for bicyclists. This refined design strikes a balance between protecting the resources and improving the recreational bicyclists' safety and experience. The refined design includes 11-foot travel lanes in each direction and widened shoulders where practicable. A 4-foot shoulder would be provided northbound from Fort Baker until the curve before the Sausalito-Marin City Sanitary District Entrance, changing to a 3-foot shoulder to the Alexander Avenue intersection. Southbound bicyclists from Alexander Avenue and Sausalito would have a consistent 3-foot wide shoulder until reaching the downhill grade north of Murray Circle, where the shoulder would become 2 feet wide (see typical sections in Appendix A).

The Bay Trail policy recommends creation of Class I paths where feasible. As identified above and below in the discussion of East Road, the park evaluated a Class I path option but did not find it feasible due to the environmental, scenic, and historic setting of East Road. The Bay Trail Plan states: "Trail design policies underscore the importance of creating a trail which is accessible to the widest possible range of trail users and which is designed to respect the natural or built environments through which it passes." The park believes that the proposed plan to accommodate bicyclists and pedestrians along East Road creates a trail that is accessible to a range of trail users and respects the environmental and historic resources.

Response to Comment F – 3

For ease of explaining the revised design, and the limited widening, East Road roadway characteristics and improvements are described in three distinct sections (see typical sections in Appendix A). For all sections, the travel lanes are 11-feet wide.

- Section 1 – southernmost (0.17 mile from Murray Circle north to the second curve where the trail meets the road) would have a 4-foot wide northbound shoulder and a 2-foot wide southbound paved shoulder, allowing for a wider uphill shoulder for the approximately 5-7% grade in this section and a narrower shoulder for the downhill section. This configuration is necessary because of the constrained road bench width that exists in this area.

- Section 2 – middle (0.45 mile between the trail and the curve south of the Sausalito-Marin Sanitary District entrance) generally has more road bench room to facilitate wider shoulder improvements for bicycles. This section would be widened by one foot (0.3 m) to a total width of 29 feet with a 4-foot wide northbound shoulder and a 3-foot wide southbound shoulder (this is a change from DEIS, which identified two 3-foot wide shoulders and total width of 28 feet).
- Section 3 – northernmost (0.27 mile between the curve south of the Sausalito-Marin City Sanitary District entrance and the Alexander Avenue intersection) has a constrained roadway bench. Widening the road bench beyond 28 feet would require extensive retaining wall construction at a considerable impact and cost (this option was proposed and evaluated in Alternative 4). The preferred alternative was changed to include two 3-foot shoulder widths for northbound and southbound bicycle travel.

Response to Comment F – 4

Other than the pullout areas, no formal parking is proposed along East Road. Therefore, conflicts between parked vehicles and bicyclists should be minimal. During the seven car-free days or special events, there could be cars parked along East Road as they currently are during special events, consistent with the Fort Baker Plan/FEIS. Safety of pedestrians and bicyclists would continue to be addressed for each event. As described under the "Master Responses/Issues Identified" section of this chapter, the preferred alternative has been revised in the FEIS to provide additional width where possible in the shoulder area for bicyclists.

Response to Comment F – 5

For Alternatives 2, 3, and 4, the parking improvements at the formal roadside parking areas such as Battery Spencer, Hawk Hill, and the overlooks on Conzelman Road will provide more separation between vehicles, and pedestrians/bicyclists, thereby improving safety.

Response to Comment F – 6

The San Francisco Bay Trail Plan is a result of Senate Bill 100, which directed the Association of Bay Area Governments to develop a plan ". . . for a continuous recreational corridor which will extend around the perimeter of San Francisco and San Pablo Bays. The plan shall include a specific route of a bicycling and hiking trail . . . ." As mentioned in the DEIS under Section 2.2, "Elements Common to All Alternatives," the San Francisco Bay Trail "will be extended along the east shoulder of East Road in Fort Baker . . ." as called for in the Fort Baker Plan. Section 2.2 further notes that "additional actions would be required under the action alternatives" in the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan.

The sentence from page 93 of the DEIS that states, "Bicyclists are prohibited from all segments of the San Francisco Bay Trail within Fort Baker" was reworded to say: "Bicyclists typically use East Road because the San Francisco Bay Trail is incomplete within Fort Baker."

Response to Comment F – 7

A bicycle/pedestrian tunnel under Alexander Avenue is proposed in Alternative 3 (preferred alternative) as part of a new connection between Fort Baker and the Barry-Baker tunnel.

Response to Comment F – 8

The park would consider further discussions regarding interpretive signage at the intersection of the Bay and Ridge Trails.

Response to Comment F – 9

Although the specific design for wayfinding has not yet been determined, a consistent program for signage in Fort Baker will be implemented. In development of the proposed wayfinding program, the park welcomes your suggestions and will work with local authorities. Marin County has had some suggestions for trail signing as well that will be taken into consideration.

Response to Comment F – 10

Please see responses to comments F3 and F4 above that address the Bay Trail and East Road.

G

CITY OF SAUSALITO

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Telephone: (415) 289-4100
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August 13, 2007

Superintendent
Golden Gate National Recreation Area
Attn: MH_FB TMP
Fort Mason, Building 201
San Francisco, CA 94123

RE: Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan, Marin County, California, DRAFT Environmental Impact Statement

Thank you for the opportunity to comment on the DRAFT Environmental Impact Statement (Draft EIS) for Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan (the "Plan"). The City of Sausalito (City) has reviewed the document and supports the National Park Service's (NPS's) efforts to improve transportation and enhance access to both the Marin Headlands and Fort Baker. The City believes, however, that there is additional information which should be included in the Plan and the Draft EIS to provide a more comprehensive and thorough approach to better serve the area as a whole.

The stated purpose of the Plan is to "… provide improved access to and within the study area for a variety of users, and to initiate these improvements in a way that minimizes impacts to the area's rich natural and cultural resources." However, in order for transportation and access to be effective they need to be viewed at a regional level and plans need to be coordinated between all effected agencies and jurisdictions. The Plan and the Draft EIS need to be expanded to include at a minimum the following:

1. The Draft EIS indicates that the provisions of the Fort Baker Plan, Final Environmental Impact Statement (FEIS), and Record of Decision dated July 2000 will apply regardless of which of the four proposed alternatives is selected. However, the Draft EIS, does not, and must specifically incorporate and coordinate with all of the provisions of the FEIS and Settlement Agreement by and between the City and the NPS related to transportation. G-1

FAX NUMBERS:

Administration: (415) 289-4167
Recreation: (415) 289-4189
Community Development: (415) 339-2256
Library: (415) 331-7943
Public Works: (415) 289-4138

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2. In order to provide better access to Fort Baker and the Headlands, the Draft EIS should be modified to provide that the shuttle bus (or enhanced Golden Gate Transit or Marin County Transit District Service described below) will be implemented to serve visitors to Fort Baker under the FEIS will provide transportation to the ferry terminal in the City with a schedule that ensures consistent weekday service and that is increased to serve the peak tourism season and weekend use of the Headlands. The shuttle bus should be open to all members of the public not just patrons of the Fort Baker Retreat Center. G-2

3. The City has received concerns and comments from residents regarding the imposition of parking fees under the Preferred Alternative 3; particularly parking fees at Rodeo Beach. The fee would be imposed on recreational users the majority of whom are residents of the surrounding areas, including Sausalito. Please see the attached correspondence regarding this issue (Attachment No. 1). In addition, please note that the FEIS requires numerous improvements to the roadways, parking areas and trails be made in connection with both the Fort Baker Retreat Center and the Marine Mammal Center without any cost to the NPS. Therefore, the need to impose a parking fee to fund infrastructure improvements is greatly reduced. G-3

4. The Draft EIS needs to address existing and potential water transportation to the Headlands. The Draft EIS relies on Muni bus transportation only from San Francisco and does not account for the connection to the Sausalito ferry. The Draft EIS should be modified to include consideration of water taxis and/or ferry service from the Sausalito ferry landing to Fort Baker and the extension of existing ferry service to both Sausalito and Fort Baker similar to the Tiburon/Angel Island ferry service. G-4

5. The Draft EIS needs to include consideration of improving access to Fort Baker and the Headlands on Golden Gate Transit and Marin County Transit District bus service both on buses coming from the North and from San Francisco (e.g. Routes 10 and 22). Bus transit must coordinate with ferry transit. G-5

6. The Draft EIS needs to include consideration of connections to the Muir Woods shuttle from Sausalito and/or Manzanita/Marin City which would both improve access to Fort Baker and the Headlands and relieve traffic into these areas and Muir Woods.

7. The Draft EIS should be modified to include improved bicycle access from Alexander Avenue, which is the main bicycle route to and from the park. Both of these approaches to the park are heavily trafficked and potentially hazardous. The Draft EIS cannot ignore the hazardous conditions on Alexander Avenue between the entrances to the park and should include cooperation with the Golden Gate Bridge Highway and Transportation District to improve safety to this corridor. G-6 G-7

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8. The Veterans Administration has announced plan to utilize the Pacific Lab Building which is located in the City. The Draft EIS should include requirements to coordinate parking and transportation for workers at the building. G-8

Thank you again for the opportunity to review the DRAFT Environmental Impact Statement for Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan. The City of Sausalito looks forward to the incorporation of the issues raised above into the Draft EIS and the implementation of the transportation improvements in the Plan.

Sincerely,

D. Michael Kelly / by MAW

D. Michael Kelly
Mayor, City of Sausalito

Cc: City Council
Chief Scott Paulin; City Manager Pro Tem
Mary Wagner, City Attorney

Letter to Superintendent
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ATTACHMENT NO. 1

Re: Marin Headlands and Fort Baker
Transportation Infrastructure and Management Plan (TIMP)

The residents of the City of Sausalito (the City) are fortunate to have Fort Baker and the Marin Headlands as our "back and side yards". For years we enjoyed the use of these lands while they were under the management of the US Army. Now they are under the management of the National Park Service (NPS). We welcomed this change in management in the hopes that the land would be preserved for all to enjoy.

The NPS preferred alternative for the TIMP is Alternative 3. We advocate for Alternative 2.

Alternative 3 would impose a parking fee at Rodeo Beach. When the GGNRA was established, it was clearly stated that access to the Park was to be free to the public. Imposing a fee to park at Rodeo Beach is in direct opposition to the original intent that this Park remain open to one and all without a fee.

The stated intent of the fee, that would be imposed by Alternative 3, is to assist in paying for the improvements in Alternative 3, including increased public transit. This fee would penalize the many residents (in addition to all other visitors, except for Park Partners) that visit the Headlands on a regular basis, especially those of us that visit Rodeo Beach.

On the weekdays, and on the many weekends that the beach is cold and grey, the same two groups of users can still be found at the Beach: surfers and humans with their dogs. These two groups of users would be unfairly 'taxed' for using the beach. Neither of these groups would even be able to use public transit that the fees would be collected to support. Surfboards and gear would exclude the one group, and dogs would exclude the other.

Rodeo Beach is one of the most highly used areas for surfing in the Bay Area. Both locals and visitors from around the Bay travel here on a regular basis (many daily) to surf.

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The NPS is currently negotiating a Dog Management plan for the GGNRA. The only place under consideration in the Marin Headlands for off-leash use is Rodeo Beach.

The residents of Sausalito would be directly (and adversely) impacted by the parking fee that Alternative 3 imposes. We do not support Alternative 3.

Alternative 2, on the other hand, would provide basic multi-modal access. Roadway infrastructure would be rehabilitated within the existing roadway width; parking facilities would be improved; transit service to the Marin Headlands would be expanded on weekends; and minor pedestrian and bicycle facility enhancements would be implemented to improve access to the park.

Alternative 2 would rehabilitate roadway infrastructure within the existing road width.

As Transportation Safety Engineer's have pointed out for years, narrowing (not widening) roadways is one of most effective methods of traffic calming. Currently, bikes and cars share the roadway. The few pedestrians along the roads, use the soft shoulder of dirt and grass. This has successfully kept cars at the 25-35 MPH maximum speeds, has kept bikers from riding two abreast, and has kept pedestrians at a safe distance from both.

In addition, Alternative 2 does provide for safety improvements at critical intersections. Class 1 Bike Lanes will be provided on Mendell Road under Alternative 2, just as they would be under Alternative 3.

Parking availability by Alternative:

Parking spaces available under preferred Alternative 2 = 2298
Parking spaces available under Alternative 3 = 2294

The internal shuttle service will not be provided in Alternative 2, only in Alternatives 3 and 4. Most of us are strong advocates for public transit, however, public transit that exists without use does not benefit anyone.

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The NPS traffic consultant, Nelson/Nygaard, concluded that:

> *Generally, the automobile will be faster, cheaper, and more convenient for the majority of internal park trips. They also concluded a free internal shuttle service in tandem with parking fees in selected areas have the potential for achieving auto-reduction of 2.5%.*

That is not a reduction that the City feels warrants imposing fees on our residents when they visit the Headlands.

From the presentations given by the NPS to the City Council and at the Bay Model on this subject, it sounds like all NPS and Park Partner employees would be exempt from any and all parking fees.

In addition, a casual study of traffic in and out of the Headlands shows that cars coming and going in early morning and late afternoon belong mostly to NPS and NPS Park Partners employees who arrive for work from outside the Headlands area. There is also an exodus in the early morning of those living in the Headlands housing driving to their places of work outside the Headlands. The reverse is then repeated in the late afternoon in both directions. This traffic is likely to be little impacted by a shuttle.

Appendix C of the TIMP includes the Revised Auto-Reduction Analysis for MH/FB TIMP EIS done by Nelson/Nygaard and the Golden Gate National Recreation Area Parking Analysis.

Much of Appendix C is included below, as are four maps from the TIMP. The remainder of this document (with the exception of the maps at the end) was taken verbatim from Appendix C:

The Nelson/Nygaard analysis is strictly concerned with the potential for auto-reduction under typical conditions on a Sunday during the summer, the park's peak visitation period. The transit elements of the new alternatives are summarized in the table below. The proposed transit program, and therefore the potential auto-reduction, could be affected by the outcomes of the Marin County Short Range Transit Plan, a comprehensive transit needs assessment that is currently underway for all of Marin County.

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Figure 1: Transit Elements Of Revised Alternatives

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Transit Service Improvements				
Muni 76 [San Francisco – Marin Headlands]	▪ Sundays only ▪ 60 minute headway	▪ Saturdays & Sundays ▪ No Weekday Service ▪ 60 minute headway	▪ Saturdays & Sundays ▪ No Weekday Service ▪ 30 minute headway	▪ Saturdays & Sundays ▪ No Weekday Service ▪ 30 minute headway
GGT Local Service (#10) [San Francisco – Alexander Avenue – Marin County]	▪ 60 minute headway ▪ Weekdays and Weekends ▪ No direct service to Fort Baker	▪ 60 minute headway ▪ Weekdays and Weekends ▪ No direct service to Fort Baker ▪ Improvement of Bus Stops along Alexander Avenue ▪ Transit Transfer Interface @ Alexander Avenue/US 101 intersection	▪ 60 minute headway ▪ Weekdays and Weekends ▪ Direct service to Fort Baker ▪ Improvement of Bus Stops along Alexander Avenue ▪ Transit Transfer Interface @ Alexander Avenue/US 101 intersection	▪ 60 minute headway ▪ Weekdays and Weekends ▪ Direct service to Fort Baker ▪ Improvement of Bus Stops along Alexander Avenue ▪ Transit Transfer Interface @ Alexander Avenue/US 101 intersection
Internal Shuttle [Marin Headlands - Fort Baker]	None	None	▪ 13 daily trips ▪ Weekdays & weekends ▪ 60 minute headway	▪ 13 daily trips ▪ Weekdays & weekends ▪ 60 minute headway
Access Shuttle [GGB Toll Plaza – Marin Headlands/Fort Baker – Sausalito – Manzanita Transit Center]	None	None	None	Extension of Internal Shuttle to Collection Points outside the Park ▪ Sausalito – Manzanita Transit Center: 6 daily roundtrips trips ▪ GGB Toll Plaza: 7 daily roundtrips ▪ Weekday & Weekends ▪ Interlined with internal shuttle
Fort Baker Conference Shuttle [Sausalito – Fort Baker Conference Center – Airport]	▪ Service Plan Undetermined	▪ Service Plan Undetermined	▪ Service Plan Undetermined	▪ Service Plan Undetermined

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CIRCULATION INSIDE OF MARIN HEADLANDS AND FORT BAKER

Generally, the automobile will be faster, cheaper, and more convenient for the majority of internal park trips. However, as shown in the table below, the provision of a free internal shuttle service in tandem with parking fees in selected areas has the potential for achieving auto-reduction under Alternatives 3 and 4.

Figure 2: Auto-Reduction Factors for Circulation Inside The Park on a Peak Period Sunday

Alternative	Auto Reduction inside Marin Headlands	Auto Reduction inside Fort Baker
Alternative 1: No Action	0%	0%
Alternative 2: Basic Multi-modal Access	0%	0%
Alternative 3: Enhanced Multi-modal Access	2.5%	2.5%
Alternative 4: Maximum Multi-modal Access	5.0%	5.0%

Based on our professional judgement and peer review of other shuttle systems in other national park settings and rural areas, we assigned a 2.5% auto-reduction factor for Alternative 3. The frequency of the shuttle service and the location of parking fees in selected areas are expected to be identical for Alternatives 3 and Alternative 4. It is our understanding that the Park Service is continuing to develop the parking fee structure. Under the assumption that the parking fees under Alternative 4 will be higher than Alternative 3, we have assigned it a higher auto reduction factor of 5.0%.

ACCESSING MARIN HEADLANDS AND FORT BAKER

Given the modest changes in the overall levels of transit service under the action alternatives, we do not expect significant opportunities for auto-reduction. The results are summarized in the table below.

Figure 3: Auto-Reduction Factors for Accessing Park on a Peak Period Sunday

Alternative	Auto Reduction for Accessing Marin Headlands	Auto Reduction for Accessing Fort Baker
Alternative 1: No Action	0%	0%
Alternative 2: Basic Multi-modal Access	0%	0%
Alternative 3: Enhanced Multi-modal Access	.44%	.71%
Alternative 4: Maximum Multi-modal Access	.88%	1.42%

Pedestrian and bikeway improvements will surely attract new visitors to the park, but these types of improvements are unlikely to change the levels of automobile access to the Park. Consequently, our analysis is restricted to the expected impact of the transit elements as outlined in Figure 1. It is important to note that a formal demand model analysis was beyond the scope of our analysis. We did not predict the actual ridership on each proposed transit service nor did we prepare an overall mode choice estimate. We measured only the expected impact of the alternatives in auto-reduction in terms of *the percentage of current vehicle trips that could reasonably be expected to shift to transit*. Three key factors were considered in our analysis:

> ***Travel Time:*** the complete time it takes to access the park from trip origin to the park including waiting times for transit service.
>
> ***Travel Cost:*** the immediate user costs associated with transportation to the park. This includes transit fares and parking fees.
>
> ***Transfer:*** the directness of the transportation service to the desired destination (i.e. the ability to access a park location without needing to transfer).

As shown in the subsequent tables, transit services result in auto-reduction only when they serve large transit markets (San Francisco and Marin County), offer direct service without entailing a transfer to another transit service, and occur in tandem with parking fees.

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Figure 4: Auto-Reduction For Trips To Fort Baker On A Peak Period Sunday

Alternative 1: No Action						
Alternative Access Option to Fort Baker	Potential Transit market	Comparison of Alternative Access Option to Driving			Estimated Auto-Reduction	Notes
		Travel Time	Travel Cost	Transfer		
Muni 76	-	-	-	-	0%	No Muni service to FB
GGT #10	-	-	-	-	0%	No direct service to FB
Internal Shuttle	-	-	-	-	0%	Not operational
Access Shuttle	-	-	-	-	0%	Not operational
FB Conference Center Shuttle	Conference Center Guests	-	-	-	0%	Service plan undetermined but will not be designed to serve all park visitors.

Alternative 2: Basic Multi-modal Access						
Alternative Access Option to Fort Baker	Potential Transit market	Comparison of Alternative Access Option to Driving			Estimated Auto-Reduction	Notes
		Travel Time	Travel Cost	Transfer		
Muni 76	-	-	-	-	0%	No Muni service to FB
GGT #10	-	-	-	-	0%	No direct service to FB
Internal Shuttle	-	-	-	-	0%	Not operational
Access Shuttle	-	-	-	-	0%	Not operational
FB Conference Center Shuttle	Conference Center Guests	-	-	-	0%	Service plan undetermined but will not be designed to serve all park visitors.

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Alternative 3: Enhanced Multi-modal Access						
Alternative Access Options to Fort Baker	Potential Transit market	Comparison of Alternative Access Options to Driving			Estimated Auto-Reduction	Notes
		Travel Time	Travel Cost	Transfer		
Muni 76	San Francisco	15 minute waiting + transfer to internal shuttle + longer travel time	Transit Fares lower than parking fees for 50% of park locations	Yes	0%	Muni 76 does not provide a direct connection to Fort Baker. Relative to driving, the longer travel times and the inconvenience of the transfer suggests that auto-reduction will not be achieved – even with the parking fees.
	San Francisco and Marin County	30 minute waiting time + longer travel time	Transit fares lower than parking fees for 50% of park trips	No	.71%	The large size of the transit markets, the wide coverage of the B10, and the parking fees may result in auto-reduction. Based on traffic counts collected on a Sunday during the summer of 2000, there are a total of 1,646 vehicles entering Fort Baker. (See Nelson/Nygaard's *Data Collection Analysis, December 2001*). Visitor survey data indicates that 57% of park visitors are from either San Francisco or Marin County. This correlates with approximately 938 of the 1,646 vehicles entering Fort Baker. Under Alternative 3, parking fees will be applied to major parking locations, affecting about 50% of park trips. Assuming that 50% (or 469) of the 938 vehicular trips would encounter parking fees and based upon a 2.5% mode shift to GGT#10, there is a potential auto-reduction of 11 vehicles. This accounts for approximately .71% of the 1,646 automobiles entering Fort Baker. Note that the parking fee auto-reduction factor (2.5%) is lower than the parking fee auto-reduction factor (5.0%) used in Alternative 4 where higher parking prices are expected.
Internal Shuttle	Sausalito	30 minute waiting time + comparable travel time	Free	No	0%	Auto-reduction is insignificant as a result of waiting time and the small size of the transit market relative to total visitor population.
Access Shuttle	-	-	-	-	0%	Not operational
FB Conference Center Shuttle	Conference Center Guests	-	-		0%	Service plan undetermined but will not be designed to serve all park visitors.

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Alternative 4: Maximum Multi-modal Access						
Alternative Access Option to Fort Baker	Potential Transit market	Comparison of Alternative Access Option to Driving			Estimated Auto-Reduction	Notes
		Travel Time	Travel Cost	Transfer		
Muni 76	San Francisco	15 minute waiting + transfer to internal shuttle + longer travel time	Transit fares lower than parking fees for 50% of peak trips	Yes	0%	Muni 76 does not provide a direct connection to Fort Baker. Relative to driving, the longer travel times and the inconvenience of the transfer suggests that auto-reduction will not be achieved – even with the parking fees.
GGT #10	San Francisco and Marin County	30 minute waiting time + longer travel time	Transit fares lower than parking fees for 50% of peak trips	No	1.42%	The large size of the transit markets, the wide coverage of the #10, and the parking fees may result in auto-reduction. Based on traffic counts collected on a Sunday during the summer of 2000, there are a total of 1,646 vehicles entering Fort Baker. (See Nelson/Nygaard's *Data Collection Analysis, December 2001*). Visitor survey data indicates that 57% of park visitors are from either San Francisco or Marin County. This correlates with approximately 938 of the 1,646 vehicles entering Fort Baker. Under Alternative 4, parking fees will be applied to major parking areas, affecting about 50% of park trips. Assuming that 50% (or 469) of the 938 vehicular trips would encounter parking fees and based upon a 5% mode shift to GGT#10, there is a potential auto-reduction of 23 vehicles. This accounts for approximately 1.42% of the 1,646 automobiles entering Fort Baker. Note that the parking fee auto-reduction factor (5.0%) is higher than the parking fee auto-reduction factor (2.5%) used in Alternative 3 where lower parking prices are expected.
Internal Shuttle	Sausalito	30 minute waiting time + comparable travel time	Free	No	0%	Even with parking fees, auto-reduction is insignificant as a result of waiting time and the small size of the transit market relative to total visitor population.
Access Shuttle	San Francisco and Marin County	Access Time + 30 minute waiting time + longer travel time	Free	No	0%	Like Muni 76, regional park and ride shuttles enable access for the transit dependent but do not provide a faster or more convenient alternative than driving to the park.
FB Conference Center Shuttle	Conference Center Guests	-	-	-	0%	Service plan undetermined but will not be designed to serve all park visitors.

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Figure 5: Auto-Reduction Analysis For Trips To Marin Headlands On A Peak Sunday

Alternative 1: No Action						
Alternative Access Option to Marin Headlands	Potential Transit market	Comparison of Alternative Access Option to Driving			Estimated Auto-Reduction	Notes
		Travel Time	Travel Cost	Transfer		
Muni 76	San Francisco	30 minute waiting time + longer travel time	Transit fare	No	0%	Travel time and cost on Muni is not competitive with driving
GGT 610	-	-	-	-	0%	No direct service to Marin Headlands
Internal Shuttle	-	-	-	-	0%	Not operational
Access Shuttle	-	-	-	-	0%	Not operational
FB Conference Center Shuttle	Conference Center Guests	-	-	-	0%	Service plan undetermined but will not be designed to serve all park visitors.

Alternative 2: Basic Multi-modal Access						
Alternative Access Option to Marin Headlands	Potential Transit market	Comparison of Alternative Access Option to Driving			Estimated Auto-Reduction	Notes
		Travel Time	Travel Cost	Transfer		
Muni 76	San Francisco	30 minute waiting time + longer travel time	Transit fare	No	0%	Travel time and cost on Muni is not competitive with driving
GGT 610	-	-	-	-	0%	No direct service to Marin Headlands
Internal Shuttle	-	-	-	-	0%	Not operational
Access Shuttle	-	-	-	-	0%	Not operational
FB Conference Center Shuttle	Conference Center Guests	-	-	-	0%	Service plan undetermined but will not be designed to serve all park visitors.

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Alternative 3: Enhanced Multi-modal Access						
Alternative Access Option to Marin Headlands	Potential Transit market	Comparison of Alternative Access Option to Driving			Estimated Auto-Reduction	Notes
		Travel Time	Travel Cost	Transfer		
Muni 76	San Francisco	15 minute waiting time + longer travel time	Transit fares are lower than parking fees for 50% of park trips	No	.44%	The large size of the San Francisco transit market, the wide coverage of the #76, and parking fees in main locations of the park may result in auto-reduction. Based on traffic counts collected on a Sunday during the summer of 2000, there are a total of 5,358 vehicles entering the Marin Headlands. (See *Nelson/Nygaard's Data Collection Analysis, December 2001)* Visitor survey indicates that 35% of park trips are from San Francisco. This correlates with approximately 1,875 vehicles of the total 5,358 vehicles entering the Marin Headlands. Under Alternative 3, parking fees will be applied to major parking areas, affecting about 50% (or 937) of the 1,875 park trips from San Francisco. Based on a 2.5% mode shift factor, there is a potential auto-reduction of 23 vehicles. This accounts for approximately .44% of the total number of vehicles entering the Marin Headlands. Note that the parking fee auto-reduction factor (2.5%) is lower than the parking fee auto-reduction factor (5.0%) used in Alternative 4 where higher parking prices are expected.
CCT 418	San Francisco and Marin County	30 minute waiting time + transfer to internal shuttle + longer travel time	Transit fares are lower than parking fees for 50% of park trips	Yes	0%	Transit dependent populations may use CCT and transfer to the internal shuttle to reach the Headlands. However, even with parking fees, the total travel times will be too long to expect auto-reduction.
	Sausalito	30 minute waiting time + longer travel time	Free	Yes	0%	Even with parking fees, auto-reduction is insignificant as a result of waiting time and the small size of the transit market relative to total visitor population.
Access Shuttle	-	-	-	-	0%	Not operational
YB Conference Center Shuttle	Conference Center Guests	-	-	-	0%	Service plan undetermined but will not be designed to serve all park visitors.

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Alternative 4: Maximum Multi-modal Access						
Alternative Access Option to Marin Headlands	Potential Transit market	Comparisons of Alternative Access Options to Driving			Estimated Auto-Reduction	Notes
		Travel Time	Travel Cost	Transfer		
Muni 76	San Francisco	15 minute waiting time + longer travel time	Transit fares are lower than parking fees for 50% of park trips	No	.2%	The large size of the San Francisco transit market, the wide coverage of the #76, and parking fees in main locations of the park may result in auto-reduction. Based on traffic counts collected on a Sunday during the summer of 2000, there are a total of 5,358 vehicles entering the Marin Headlands. (See *Nelson/Nygaard's Data Collection Analysis, December 2001)* Visitor survey indicates that 35% of park trips are from San Francisco. This correlates with approximately 1,875 vehicles of the total 5,358 vehicles entering the Marin Headlands. Under Alternative 3, parking fees will be applied to major parking areas, affecting about 50% (or 937) of the 1,875 park trips from San Francisco. Based on a 5% mode shift factor, there is a potential auto-reduction of 46 vehicles. This accounts for approximately .2% of the total number of vehicles entering the Marin Headlands. Note that the parking fee auto-reduction factor (5.0%) is higher than the parking fee auto-reduction factor (2.5%) used in Alternative 3 where lower parking prices are expected.
GGT #10	San Francisco and Marin County	30 minute waiting time + transfer to internal shuttle + longer travel time	Transit fares are lower than parking fees for 50% of park trips	Yes	0%	Transit dependent populations may take advantage of the GGT and internal shuttle connection to the Headlands. However, even with parking fees, the travel times will be too long to expect mode shift.
Internal Shuttle	Sausalito	30 minute waiting time + longer travel time	Free	Yes	0%	Even with parking fees, auto-reduction is insignificant as a result of waiting time and the small size of the transit market relative to total visitor population.
Access Shuttle	San Francisco and Marin County	Access Time + 30 minute waiting time + longer travel time	Free	No	0%	Like Muni 76, regional park and ride shuttles enable access for the transit dependent but do not provide a faster or more convenient alternative than driving to the park
EB Conference Center Shuttle	Conference Center Guests	-	-	-	0%	Service plan undetermined but will not be designed to serve all park visitors.

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Marin Headlands \ Fort Baker

Parking Analysis 05-Jan-06

Golden Gate National Recreation Area

Legend: Gray shaded areas = existing or proposed lot or improved parking areas
White shaded areas = existing or proposed roadside shoulder parking areas

Parking Area Location:	General Information		Alternative 1 No Action/Existing Conditions		Alternative 2 Basic Access		Alternative 3 Enhanced Access		Alternative 4 Maximum Access	
	Description	Designation	Est. Spaces	Surface	Spaces	Surface	Spaces	Surface	Spaces	Surface
MENDELL ROAD										
[illegible]	Head-in	Unmarked	10	Gravel	10	No change	0	Closed to vehicles	10	No change
[illegible]	Shoulder	Unmarked	20	Gravel	20	No change	0	Revegetate	0	Revegetate
[illegible]	Lot	Unmarked	30	Gravel	0	Closed to vehicles	0	Closed to vehicles	9	Paved
Sub Total: Mendell Road			[illegible]		30		0		19	
FORT BARRY										
[illegible]	Lot	Marked	12	Gravel	12	No change	12	Paved	12	Paved
[illegible]	Head-in and Lot	Some marked	55	Mixed Gravel & Paved	55	No change	55	No change	55	No change
Sub Total: Storeroom and Rosenstock Rds.			67		67		67		67	
MITCHELL ROAD										
[illegible]	Head-in	Unmarked	150	Gravel	150	No change	52	Gravel	40	Gravel
[illegible]	Varies	Varies	116	Varies	116	No change	196	Varies	196	Varies
[illegible]	Lot	Striped	94	Paved	94	No change	94	No change	94	No change
[illegible]	Lot	Marked	80	Gravel	55	Gravel	0	Revegetate	0	Revegetate
Sub Total: Fort Cronkhite Area (Including Mitchell Road)			440		416		342		326	
OLD BUNKER ROAD										
[illegible]	Lot	Unmarked	3	Gravel	3	No change	3	No change	3	No change
[illegible]	Lot	Unmarked	12	Gravel	12	Paved	12	Paved	12	Paved
[illegible]	Lot	Unmarked	13	Paved	13	Paved	13	Paved	13	Paved
[illegible]	Lot	Unmarked	10	Gravel	2	2 bus spaces and remainder to be used for Maint. Yard	2	2 bus spaces and remainder to be used for Maint. Yard	2	2 bus spaces and remainder to be used for Maint. Yard
Old Bunker Rd. - Maintenance Yard to Marine Mammal Center	Parallel	Unmarked	19	Paved	19	Paved and striped	19	Paved and striped	19	Paved and striped
[illegible]	Lot	Striped	43	Paved (per MMC site improvements EA/FONSI	43	No change	43	No change	43	No change
Sub Total: Old Bunker Rd. & Marine Mammal Center			100		92		92		92	
SUB-TOTAL MARIN HEADLANDS			1583		1327		1360		1428	

[illegible]

Letter to Superintendent
Headlands/Fort Baker Draft EIS
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Marin Headlands \ Fort Baker

Parking Analysis 05-Jun-08

Golden Gate National Recreation Area

Legend: Gray shaded areas = existing or proposed lot or improved parking areas

White shaded areas = existing or proposed roadside shoulder parking areas

Parking Area Location:	General Information		Alternative 1 No Action/Existing Conditions		Alternative 2 Basic Access		Alternative 3 Enhanced Access		Alternative 4 Maximum Access	
	Description	Designation	Est. Spaces	Surface	Spaces	Surface	Spaces	Surface	Spaces	Surface
EAST BUNKER ROAD										
Lot at Danes Dr. Intersection	Lot	Striped	8	Paved	8	No change	8	No change	8	No change
Roadside Parking along East Bunker Rd.										
Sub Total: East Bunker Road			8		8		8		8	
EAST ROAD										
East Rd. - Alexander Ave. to Murray Circle	Mixed Head-in & Parallel	Unmarked	58	Gravel	58	No change	41	Paved	41	Paved
Sub Total: East Road			58		58		41		41	
FORT BAKER RCC AREA*			445		445		445		445	
SATERLEE ROAD (COVE AREA NEAR WATERFRONT)*			150		150		150		150	
COAST GUARD STATION (CENTER ST)*			30		30		30		30	
⇨ EAST RD (GENERAL & BADM PARKING)*			240		240		240		240	
LIME POINT *			20		20		20		20	
FISHING PIER *			10		10		10		10	
SUB-TOTAL FORT BAKER--			961		961		944		944	
SUM TOTAL			2254		2258		2254		2252	

⇨ Parking utilization information available from Existing Conditions Report, November 15, 2000.

* These locations are not part of the MH-FB TMP, but are listed here as a convenience to allow a complete summary of parking located in the greater MH-FB area. The figures listed here are taken from the Fort Baker Plan, and if that plan did not include a specific number of parking spaces for an area, they are estimates by NPS staff.

Letter to Superintendent
Headlands/Fort Baker Draft EIS
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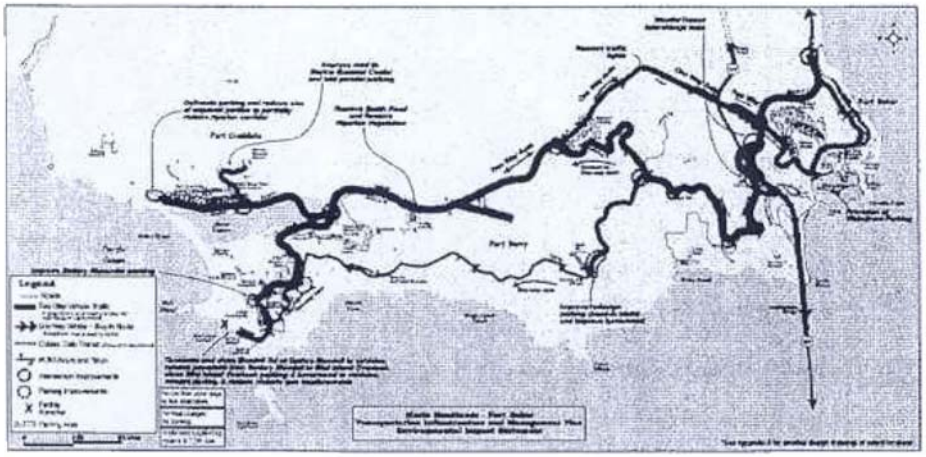

FIGURE 2.6 ALTERNATIVE 2 — BASIC MULTI-MODAL ACCESS (ROADS, PARKING, AND TRANSIT IMPROVEMENTS)
United States Department of the Interior / National Park Service

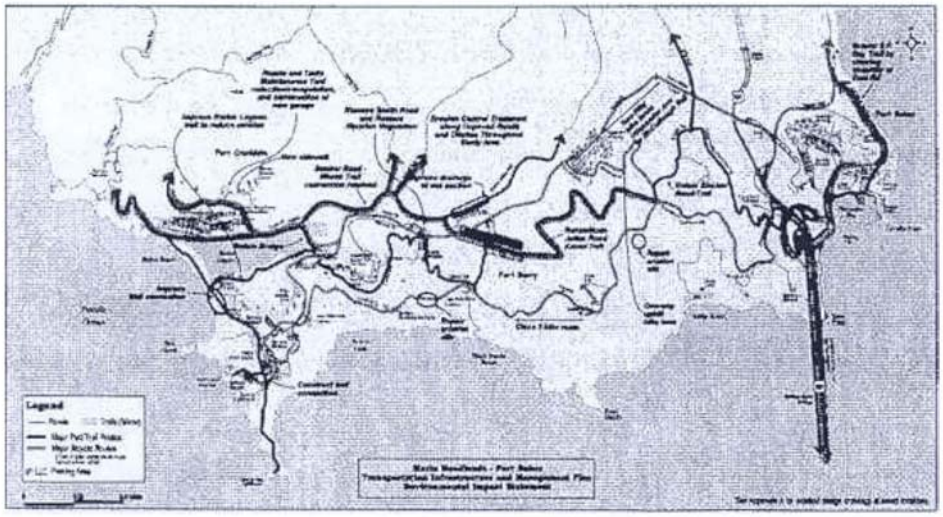

FIGURE 2.7 ALTERNATIVE 2 — BASIC MULTI-MODAL ACCESS (PEDESTRIAN, TRAIL, BIKE, AND NATURAL RESOURCE IMPROVEMENTS)
United States Department of the Interior / National Park Service

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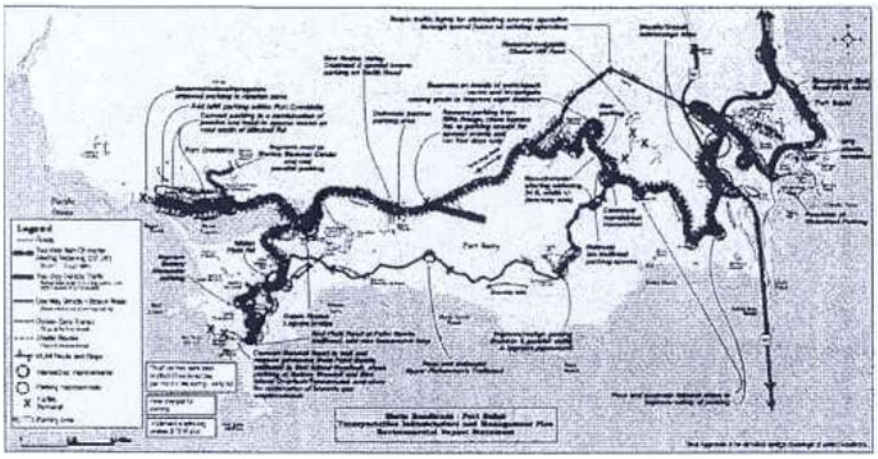

FIGURE 2.3 ALTERNATIVE 3 (PREFERRED ALTERNATIVE) — ENHANCED MULTI-MODAL ACCESS (ROADS, PARKING, AND TRANSIT IMPROVEMENTS)
United States Department of the Interior / National Park Service

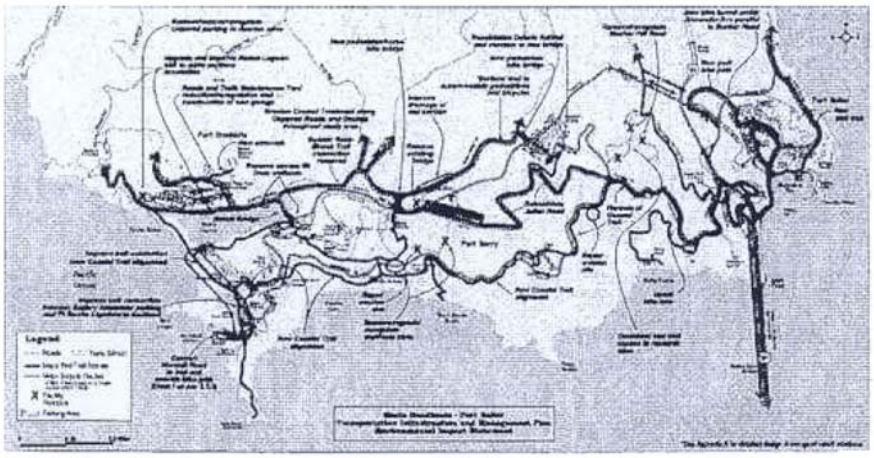

FIGURE 2.4 ALTERNATIVE 3 (PREFERRED ALTERNATIVE) — ENHANCED MULTI-MODAL ACCESS (PEDESTRIAN, TRAIL, BIKE, AND NATURAL RESOURCE IMPROVEMENTS)
United States Department of the Interior / National Park Service

Letter G: City of Sausalito

(August 13, 2007)

Response to Comment G – 1

Relevant aspects of the *Fort Baker Plan Final Environmental Impact Statement* and the subsequent *Record of Decision* are included in the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan* as "Elements Common to All Alternatives" as described in Chapter 2. Regarding inclusion of terms of a Settlement Agreement in the MH/FB DEIS, we are not aware of a settlement agreement between NPS and the City of Sausalito. However, the park will continue to work closely with the City of Sausalito, especially regarding transportation planning.

Response to Comment G – 2

The *Fort Baker Plan* commits to providing shuttle service that would be scaled to the size of the retreate conference center and would go to the Sausalito ferry. The routes, stops, and service frequency for the Fort Baker shuttle have not been finalized at this time, but will meet the commitments in the *Fort Baker Plan*. Alternative 3, the preferred alternative in the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan*, proposes another shuttle service that would provide internal mobility between Fort Baker and Marin Headlands, and would be available to all members of the public. This service is proposed to operate every 60 minutes throughout the day, seven days a week, depending on funding and would be coordinated with the Fort Baker shuttle.

Response to Comment G – 3

This comment and attachment 1 referenced in the comment identifies several concerns regarding the imposition of parking fees especially for local residents. As stated in Section 2.5 of the DEIS, revenue generated from parking fees would be used to provide enhanced transit service operations in Marin Headlands and Fort Baker. Parking fees would not be used to fund roadway, parking, or trail improvements. The main purpose for providing transit is to provide improved access to and within the study area for those people who are dependent on transit or prefer to use transit rather than a private auto. All visitors would have access to the beach, regardless of the mode of access (walking, biking, and driving). Those visitors driving would still have access to the beach but would pay a fee to park. Frequent parkers, including local residents, would be able to purchase an annual parking pass. Depending on their frequency of use, the pass could reduce their parking costs.

Regarding the park's authority to implement parking fees, please see "Parking Fees" under the "Master Responses/Issues Identified" section of this chapter for more information about GGNRA's enabling legislation. In addition to the recreational users, other park visitors would be subject to the parking fee program. The local jurisdictions and park partners will be consulted in developing the program.

Response to Comment G – 4

The *Fort Baker Plan* does not include water-based transportation; however, the plan states that the fishing pier could be used for this purpose. The *Fort Baker Plan* also notes that a water-based transportation plan would be evaluated as part of a separate planning effort. A water-based transportation system is currently under separate study. Please see "Ferry Service" under the "Master Responses/Issues Identified" section in this chapter for more details.

Response to Comment G – 5

Alternatives 3 and 4 do not propose changes to GGT Route 10 service on Alexander Avenue. The park would work with agencies to plan a transit transfer location at the Alexander Avenue/U.S. 101 interchange

for easier transfers between service providers. The DEIS did not consider improvements to GGT Route 22 because it does not enter the park. The alternatives in the DEIS describing connections between potential ferry and transit services, and impacts to transit service quality related to the proposed NPS parklands ferry study, are provided under cumulative impacts in Section 4.2.1. The park is working closely with GGBHTD to examine ways to provide service to Fort Baker. GGBHTD has indicated to the NPS that roadway widening improvements would have to be made to accommodate their buses. This plan would not widen Bunker Road to accommodate GGBHTD buses, but the park would continue to work with transit providers, including GGBHTD, to provide transit service to Fort Baker.

Park visitors arriving at Sausalito's ferry landing would continue to have the option to go to Muir Woods via the Muir Woods shuttle. The Fort Baker Conference Center Shuttle is discussed on page 20 of the DEIS as an "element common to all alternatives." Therefore, implementation of this shuttle was assumed under the analysis of all alternatives, including the no action alternative. The Fort Baker Conference Center shuttle would provide access between Sausalito and Fort Baker appropriate to the scale of the Lodge. The specific operations, route, and stops for the Conference Center shuttle are still in development. The park would continue to work with transit providers to promote connections between the park and regional activity centers.

Response to Comment G – 6

Please refer to Alexander Avenue in the "Master Responses/Issues Identified" section. As mentioned in this section, a new bicycle/pedestrian tunnel under Alexander Avenue parallel to Bunker Road is included in the preferred alternative to help connect Fort Baker with Alexander Avenue and the Marin Headlands, avoiding Alexander Avenue. The Master Response also includes a description of a separate planning effort initiated by the NPS in coordination with other agencies and the City of Sausalito to develop a master plan that will address multi-modal access and safety on Alexander Avenue.

Response to Comment G – 7

Please see Alexander Avenue in the "Master Responses/Issues Identified" section.

Response to Comment G – 8

City of Sausalito's comment regarding coordinating parking for workers occupying the Pacific Lab Building located within the City of Sausalito is outside the scope of this plan.

H

DEPARTMENT OF PUBLIC WORKS

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NOVATO, CA 94945
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Farhad Mansourian, RCE
Director

August 13, 2007

Superintendent, Golden Gate National Recreation Area
Fort Mason Building 201
San Francisco, CA 94123

ATTN: MH_FB TMP

SUBJECT: Marin Headlands and Fort Baker Transportation Infrastructure Management Plan DEIS

To Whom It May Concern:

The Marin County Department of Public Works appreciates the opportunity to review and comment on the DEIS for the transportation plan. The Department is in general concurrence with the recommendations of Alternative 3 (Preferred) but also has no objection to Alternative 4.

In both Alternatives 3 and 4 the improved facilities for cyclists and pedestrians west of Highway 101 should greatly improve safety and the visitor experience in the park. Providing bike lanes or widened shoulders on the uphill portions of roadways will help reduce congestion and improve safety by removing slower moving bicycles from the vehicle travel lanes and the attendant backups that result.

For the east side of Highway 101 (Fort Baker), the Department would ask project staff to consider minor modifications to Alternative 3, as discussed below.

Bike Routing

The Marin County Unincorporated Area Bicycle and Pedestrian Master Plan shows both Alexander Avenue and East Road as connecting routes between Sausalito and the Golden Gate Bridge. It is recognized that Alexander Avenue is under the purview of the Bridge District. Nonetheless, how park roads interface with Alexander Avenue in terms of bicycle and pedestrian usage should be carefully considered.

Alexander Avenue is used primarily by commuters and 'regular' riders through the corridor. East Road is a better alternative for visitors and inexperienced riders because of its much lower traffic volumes and vehicle speeds. With the increasing popularity of cycling, especially with the bicycle rental agencies in San Francisco directing tourists to Sausalito, a significant number of cyclists are utilizing these two routes. H-1

It has been demonstrated that narrowing vehicle travel lanes, even if only by striping, can have a traffic calming effect. In the interest of encouraging slower driving speeds on East Road and providing dedicated space for cyclists, we request that the proposed road section drawing for East Road provide Class II bike lanes on both sides of the roadway. This can be accomplished by reducing the travel lane width or minor widening. This would also include appropriate striping, stencils, and signage.

The four foot minimum bike lane width is a commonly accepted standard, including in the Caltrans Highway Design Manual. We would request that this also be applied to any roadways planned for bike accommodation on the east side of Highway 101 because of the number of cyclists in this area. H-1 cont.

For roads on the west side of 101, we concur with the proposed designs, including the uphill bike routes (Class III) and provision of wider shoulders where feasible.

Signage

As discussed above, there are a considerable number of visitors to the area traveling between the bridge and Sausalito. We would request that improved signage for bicyclists and pedestrians be provided to direct people to and through the site. Especially on the west side parking lot, cyclists coming off the bridge are presented with no information on how to proceed. Most do not realize that next to the new anti-terrorist barrier is a bike path which routes cyclists under the bridge, into Fort Baker, and on to East Road. Many end up crossing under the freeway through the narrow subway and then riding the shoulder of Alexander Avenue. While this route may be acceptable for commuters, not directing visitors to the more pleasant and less-trafficked East Road is a missed opportunity. H-2

Signage placed in a few key locations would greatly aid visitors to navigate around and through the park. At major hubs, such as at the west parking lot at the bridge, a kiosk could provide information about getting around and through the park in a centralized location. H-3

The County, cities, and towns have developed a standard signage program for a backbone of network routes to connect destinations in Marin. Route 5 is planned to extend south from Sausalito to the Golden Gate Bridge. We request that NPS partner with the County and City and install appropriate guide signage consistent with the county standard to close this gap in the system. H-4

Bike Parking

Once visitors get to their destinations in the park it would be beneficial to have bike parking facilities provided. Standard 'inverted U' racks should be provided at key activity nodes, including the Marine Mammal Center, Children's Discovery Museum, at trailheads where bikes are not permitted to continue, and other appropriate locations likely to have cyclists wishing to lock their bikes and walk to other park destinations or activities. H-5

Thank you for consideration of our comments. Please contact me at 415-499-6287 or ddawson@co.marin.ca.us if you have any questions.

Sincerely,

Dan Dawson, AICP
Principal Transportation Planner

c: Tim Haddad, Environmental Coordinator

Letter H: Marin County – Department of Public Works

(August 13, 2007)

Response to Comment H – 1

The park agrees with your assessment regarding the importance of East Road for the non-commuter bicycle rider. Therefore, the proposed design for East Road was reevaluated. To accommodate both traffic lanes and bike lanes, the existing road bench would need to be widened resulting in cuts into the hillside and/or fills in some locations. Widening the road bench would have adverse impacts on the natural, scenic, and cultural resources (East Road is a contributing element of the historic district comprised of Forts Baker, Barry, and Cronkhite). Therefore, the current refined design strikes a balance between protecting the resources and improving the recreational bicyclists' safety and experience. For ease of explaining the revised design, East Road roadway characteristics and improvements are described in three distinct sections (see typical sections in Appendix A). For all sections, the travel lanes are 11 feet wide.

- Section 1 – southernmost (0.17 mile from Murray Circle north to the second curve where the trail meets the road) would have a 4-foot wide northbound shoulder and a 2-foot wide southbound paved shoulder, allowing for a wider uphill shoulder for the approximately 5-7% grade in this section and a narrower shoulder for the downhill section. This configuration is necessary because of the constrained road bench width that exists in this area.

- Section 2 – middle (0.45 mile between the trail and the curve south of the Sausalito-Marin Sanitary District entrance) generally has more road bench room to facilitate wider shoulder improvements for bicycles. This section would be widened by one foot (0.3 m) to a total width of 29 feet with a 4-foot wide northbound shoulder and a 3-foot wide southbound shoulder (this is a change from DEIS, which identified two 3-foot wide shoulders and total width of 28 feet).

- Section 3 – northernmost (0.27 mile between the curve south of the Sausalito-Marin City Sanitary District entrance and the Alexander Avenue intersection) has a constrained roadway bench. Widening the road bench beyond 28 feet would require extensive retaining wall construction at a considerable impact and cost (this option was proposed and evaluated in Alternative 4). The preferred alternative was changed to include two 3-foot shoulder widths for northbound and southbound bicycle travel.

In summary, a 4-foot wide shoulder would be provided northbound from Fort Baker until the curve before the Sausalito-Marin City Sanitary District Entrance, changing to a 3-foot wide shoulder to the Alexander Avenue intersection. Southbound bicyclists from Alexander Avenue and Sausalito would have a consistent 3-foot wide southbound shoulder until reaching the downhill grade of Section 1, where the shoulder would become 2 feet wide. East Road wayfinding signage would be provided, and the park would work with local jurisdictions on placement and content.

Response to Comment H – 2

The park agrees with your comments and is working with the GGBHTD and Marin County to install signs directing cyclists and pedestrians to Conzelman Road on the west side of the bridge. The jurisdictions are working on opening the road that passes under the bridge from the Dan Bowers Vista Point down into Fort Baker. This will become a signed route to and from Fort Baker, and from Sausalito to the Golden Gate Bridge. It will also provide a connection to the San Francisco Bay Trail along East Road in Fort Baker. This route would encourage cyclists to avoid using Alexander Avenue and to travel through Fort Baker to their destinations. The park is in discussion with the County and other groups concerning placement and style of sign to assure clarity of routes.

Response to Comment H – 3

The park agrees with DPW's assessment that signage in key locations would greatly assist visitors navigate their way through this area. The DEIS analysis described wayfinding throughout the project area to be inadequate causing visitor confusion. During project design the park would work with adjacent jurisdictions, including the Golden Gate Bridge District, Marin County, and the City of Sausalito for proper placement and language to better aide visitors traveling to and within this area.

Response to Comment H – 4

GGNRA has adopted a parkwide sign design standard to be used on all of GGNRA lands. This design has been incorporated in areas such as Lands End, Fort Baker, and the Presidio. By having a consistent design standard, visitors will be able to readily determine vital wayfinding information, and correlate the sign with GGNRA national park land. As suggested, the park would incorporate the standard signage for multi-jurisdictional routes alongside NPS standard signage.

Response to Comment H – 5

The park agrees that it would be beneficial to have biking amenities at key destination areas to ensure that bicyclists are able to park and lock their bikes. These amenities would be provided at appropriate locations.

I

marin transit

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barbara heller
director
city of san rafael

dick swanson
director
city of mill valley

August 9, 2007

Superintendent
Golden Gate National Recreation Area
Fort Mason Building 201
San Francisco, CA 94123

Re: Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan

To Whom It May Concern:

Marin County Transit District (Marin Transit) staff has reviewed your agency's Draft Environmental Impact Statement (DEIS) for the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan. The plan proposed transportation infrastructure alternatives to address the need for improved access to and within the Marin Headlands and Fort Baker.

As the agency responsible for providing local transit service within Marin County, Marin Transit is submitting the following comments on the DEIS noting that transit service improvements are a central aspect of each of your agency's Plan alternatives.

Marin Transit staff is aware that all of the Plan's alternatives are subject to the findings of the earlier Fort Baker Final Environmental Impact Statement, in which the National Park Service (NPS) is required to operate a shuttle or assist in the operation of a shuttle as part of the proposed Fort Baker retreat and conference center. We understand that the park's shuttle operations have not yet been fully determined, but the shuttle is expected to transport conference center visitors to and from the center, parking areas, and sites in Fort Baker and Sausalito. The park shuttle could also potentially provide service to other local attractions outside the park study area, including connections to local and regional transit providers.

Additionally, the DEIS states that, regardless of the chosen alternative, NPS plans to "pursue the provision of direct transit service to Fort Baker by continuing consultation with Golden Gate Transit, the Marin County Transit District, MUNI, or another service provider to determine the feasibility and cost of such a service."

Preferred Alternative 3 refers to the desire to establish a transit transfer location at the Alexander Ave/101 interchange between existing transit routes and a new park shuttle service. According to the DEIS, the new park shuttle system would likely be operated by a private contractor or a local transit provider such as Golden Gate Transit. Transit stops within the park would also be improved in cooperation with service providers and would include benches, signage, and shelters at heavily used stops. We are in favor of the DEIS proposal to pay for any park shuttle service expansion with parking fees or other potential revenue sources, such as lease revenues, since potential funding from other agencies would likely be very limited.

Based on the above mentioned transit service-related recommendations in the DEIS, we highly encourage NPS to coordinate with Marin Transit and Golden Gate Transit staff regarding the development of an internal park shuttle system, the provision of a direct transit service to Fort Baker, or transit infrastructure improvements as early in the park's planning process as possible. As the local public transit provider, Marin Transit is interested in ensuring the coordination of our services with any future transit improvements within our County. I-1

If you have any questions regarding these comments, please contact Suzanne Bourguignon, Senior Transportation Planner at (415) 507-2597 or via email at SBourguignon@co.marin.ca.us.

Sincerely,

Amy Van Doren

Amy Van Doren
Transit Planning Manager

Letter I: Marin Transit

(August 9, 2007)

Response to Comment I – 1

The NPS has worked closely with transit providers and will continue to do so in an effort to improve transit access to the project area.

J

GOLDEN GATE BRIDGE
HIGHWAY & TRANSPORTATION DISTRICT

August 10, 2007

Superintendent Brian O'Neill
Attention: MH-FB TMP
Golden Gate National Recreation Area
Building 201, Fort Mason
San Francisco, CA 94123

Re: **Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan Draft Environmental Impact Statement**

Dear Superintendent ~~O'~~ Brian Neill:

On behalf of the staff of the Golden Gate Bridge, Highway and Transportation District (District), I am transmitting comments on Golden Gate National Recreation Area (GGNRA) Draft Environmental Impact Statement (DEIS) for the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan (Plan).

District staff understand from the DEIS that GGNRA desires to rehabilitate its road and trail infrastructure, improve safety and circulation, reduce congestion and promote transit, bicycle and pedestrian travel to and within this section of the park to improve the visitor experience. To this end, GGNRA is considering several Transportation Infrastructure and Management Plan Alternatives. The District's interests in this GGNRA endeavor stem from three elements of our jurisdiction described in the DEIS.

1. The Golden Gate Bridge is the south access to the Marin Headlands and Fort Baker for all motorists, pedestrians and bicyclists, connecting the north section of the park in Marin County to the south section of the park in San Francisco, and to the City itself, and is directly affected by the Plan;
2. Alexander Avenue is part of the north approach to the Golden Gate Bridge and, since the transfer of federal lands responsibility from the Department of Defense to the Department of the Interior, is also a critical part of the GGNRA Headlands and Fort Baker transportation infrastructure, and is directly affected by the Plan; and
3. Golden Gate Transit (GGT) and Golden Gate Ferry (GGF) are the District's public bus and ferry services operating between San Francisco and Marin County, providing transit access to, through or near GGNRA Headlands and Fort Baker, and are directly affected by the Plan.

Regarding the Golden Gate Bridge, the DEIS does not present an analysis or a discussion of possible impacts of the Alternatives on the Bridge, with the exception of the pedestrian underpass at the north end and traffic controls necessary for Fort Baker special events. It appears from the DEIS that the Alternatives will reduce, by varying degrees, vehicular traffic to/from and within the park by improving transit, bicycle and pedestrian portions of the transportation infrastructure and further influencing a shift of travel modes by reducing parking capacity and implementing parking fee and car-free programs. Would there be a significant impact on the Bridge if vehicular traffic decreases and pedestrian and bicycle

J-1

BOX 9000, PRESIDIO STATION • SAN FRANCISCO, CA 94129-0601 • USA

Superintendent Brian O'Neill, GGNRA, Attn: MH-FB TMP
RE: Marin Headlands/Ft. Baker Transportation Plan DEIS

August 10, 2007
Page 2

traffic increases as estimated in the DEIS? What specific efforts will GGNRA undertake to obtain funding for the District to improve the pedestrian underpass at the north end of the Bridge? Would the security of the Bridge be impacted by increased activity on, near or below the north end? J-1 cont.

Regarding Alexander Avenue, the DEIS identifies proposed improvements to several intersections of park roads as elements of the Alternatives. It is our understanding that GGNRA is developing plans for improvements at Danes Drive and East Road and is seeking federal parkland funds for construction. Also, the DEIS identifies, on page 140, a specific set of future improvements to Alexander Avenue, characterizing these as "reasonably foreseeable actions" within and outside the park. The DEIS also contains a statement that "… on January 27, 2005, the GGBHTD Board of Directors agreed to support the following improvement concepts for Alexander Avenue:" The recorded minutes of this January 27, 2005, meeting of the Building & Operating Committee of the Board of Directors shows that District staff provided the Committee with a description of GGNRA concepts for future Alexander Avenue and Merchant Road improvements as an informational report. No Board action was taken on the subject. In fact, the minutes show that the District's General Manager stated that District funds were not available for Alexander Avenue improvements. The District currently has no plans to improve Alexander Avenue as an approach to the Bridge. The District questions GGNRA characterization of the improvements identified on page 140 as "reasonably foreseeable actions". Does GGNRA intend to design and fund construction of the improvements identified on page 140? The District would be open to discussing means for GGNRA to improve Alexander Avenue as access to parklands. J-2

Regarding GGT bus and GGF services, please clarify the following statements in the DEIS:

1. Section 2.5.5 describes Alternative 3 transit services and states that GGT Route 10 service on Alexander Avenue would continue with connections to other transit services at bus stops on the east and west sides of Highway 101 and with pedestrian/ bicycle access at Danes Drive. However, Figure 2.3 and Table 2.1 show GGT operating on Bunker Road and East Road into Fort Baker. Further, it is not clear how connections between GGT and other services would be enabled at Highway 101 since GGT currently does not have a bus stop near Hwy. 101 in the southbound direction due to roadway conditions, and pedestrian access between the west and east sides of Highway 101 is constrained by the narrow underpass. Table 2.1 Summary of Alternatives, page 65, identifies bus stop and underpass improvements as future projects in Alternative 1 – the no-action alternative. District seeks clarification on how such apparently necessary improvements to GGNRA can be part of a no-action alternative. J-3 J-4
2. Section 2.6.5 describes Alternative 2 transit services. Figure 2.6 also shows the Highway 101 transit connection locations described in Section 2.5.5 and we reiterate our related comment above. J-5
3. Section 2.7.5 describes Alternative 4 transit services. Figure 2.8 shows GGT operating on Bunker Road and East Road into Fort Baker. District staff had previously informed GGNRA staff and consultants of need for roadway improvements, such as wide lanes and standard bus stops, to accommodate GGT bus operations and bus stops at Fort Baker. Please clarify if such improvements are J-6

included in GGNRA plans. Figure 2.8 also shows the Highway 101 transit connection locations described in Section 2.5.5 and we reiterate our related comment above. J-6 cont.

4. Table 2.1, Summary of Alternative Actions, page 72, identifies a Transit/Ferry interchange as a component of Alternative 3. However, there is no other reference to this component in the DEIS, and reference to a possible ferry service to Fort Baker is in the cumulative impact scenario. Please clarify if ferry service is included in the GGNRA transportation plan. J-7
5. Section 3.1.1, Transit, page 86, states that a standard 40-foot bus on Route 10 can accommodate 75 passengers. Please correct that to "up to 53" passengers since our regional buses on Route 10 have between 39 and 43 seats and can carry up to 10 standees. J-8
6. Section 4.2, Transportation Impacts, presents methods for assessing transit, traffic, and non-motorized use and access impacts and the results of these assessments. The methods appear to be specially developed by GGNRA for this particular comparison of alternative transportation plans.
7. Section 4.2.1, Transit, provides a comparative assessment of the alternatives. The market, quality and capacity assessments of Alternatives 2, 3 and 4 appear to overlook the Fort Baker shuttle service provided in the "no build" Alternative 1 because the shuttle is not a direct service in conjunction with transfers to and from Muni and GGT services. District disagrees with this assessment. Section 2.2.2 describes the Fort Baker shuttle, and this description does not preclude the shuttle as a means to connect with public transit services. Regarding internal shuttle service in general, indirect service via shuttle transfers appears to be discounted entirely in the market assessment. District disagrees with this conclusion and suggests that indirect vs. direct service be considered more significant in the service quality assessment. J-9
8. Section 4.2.1 also makes reference to future Fort Baker ferry service as a cumulative project in Alternatives 3 and 4, but only summarizes its impact as minor and beneficial and not a factor in auto trip reduction. District experience with ferry service suggests that ferry service could have significant impacts on access to Fort Baker, in particular for special events. J-10
9. Section 4.2.2, Traffic, Figure 4.2 provides estimated 2023 traffic levels. LOS analysis of Alexander Avenue at Highway 101 and Danes Drive for the four alternatives is referenced without supporting data. Results for Alternatives 1 and 3 are summarized as "no change" and "negligible", while Alternative 2 notes that Alexander/Danes "could be signalized" to avoid minor adverse impacts on LOS, and Alternative 4 notes the possibility of a signal despite negligible LOS impact. District requests that detailed traffic analysis data be presented in the EIS to support findings. J-11 J-12
10. Section 4.2.2's description of Alternative 3 cumulative impacts on vehicular safety makes reference to a proposed resurfacing of Alexander Avenue with upgrading of guard rails and shoulders. Please clarify GGNRA's intent to fund this proposal. Possible Fort Baker ferry service is cited in the assessment of Alternatives 3 and 4 parking utilization. District asks that the role of ferry service in the GGNRA transportation plan be clarified. J-13 J-14
11. Overall, transit options in all alternatives appear to make no significant impact on traffic levels and parking demand. District questions this conclusion based on the recent experience of the Muir Woods shuttle bus service and suggests that GGNRA J-15

further consider the assessment presented in Section 4.2.2 and in Appendix C. Appendix C provides shuttle service assumptions and shows a 60-minute service frequency. Would GGNRA consider a more frequent shuttle service to encourage greater ridership? Also, parking fees are part of Alternatives 3 and 4 but the assessment appears to overlook or dismiss the impact of fees on traffic and parking. What amount of parking fee is assumed? Would GGNRA consider restricting parking availability to encourage greater use of transit to major traffic destinations within the park? J-15 cont.

12. Section 4.2.3, Nonmotorized Use and Access, describes various improvements to bike and pedestrian access along Alexander Avenue associated with cumulative impacts of all alternatives. Please clarify GGNRA's intent to fund such improvements. J-16
13. Section 4.2.3 proposes a new bus stop on the east side of Highway 101 in Alternatives 3 and 4 to improve safe pedestrian access to Vista Point, but does not mention a companion, opposite-direction bus stop on the west side of Highway 101. Pedestrian and bicycle access improvements between the east and west sides of Highway 101 are referenced in the cumulative impacts. Please clarify GGNRA's intent to fund pedestrian access improvements between the east and west sides of Highway 101 at Vista Point. J-17

In conclusion, the District thanks GGNRA for the opportunity to review and comment on its DEIS on the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan. District staff is very supportive of GGNRA goals to improve the parklands transportation infrastructure. After reviewing the DEIS, it is apparent that further discussion between our agencies may be mutually desirable to effectively address GGNRA's objectives for parkland transportation infrastructure improvements as related to travelways and transit services within the park and under District jurisdiction. J-18

Please do not hesitate to contact me or Alan Zahradnik, Director of Planning, at (415) 257-4475 regarding our comments.

Very truly yours,

Celia G. Kupersmith
General Manager

c: Alan Zahradnik
Denis Mulligan
Kary Witt
Teri Mantony
David Miller

Letter J: Golden Gate Bridge, Highway and Transportation District (August 10, 2007)

Response to Comment J – 1

The percentage of park traffic on US 101 is a very small component of overall bridge traffic and therefore any reduction in park traffic would not result in a significant vehicle reduction on the Golden Gate Bridge. The plan's proposed transportation enhancements (such as increased transit service or improved trail connections) may increase the number of pedestrians and bicyclists in the park. However, this increase is not expected to noticeably increase the 9 million pedestrians and cyclists that visit the bridge annually.

NPS recognizes that funding to improve the GGBHTD pedestrian underpass at the north end of the Golden Gate Bridge has not been identified. Similar to the efforts on Alexander Avenue, NPS will continue discussions with GGBHTD to identify potential funding sources and will continue to work with the GGBHTD to identify a strategy to improve and open a connection to Lower Conzelman Road from Dan Bowers Vista Point providing a safer bike/pedestrian route through Fort Baker to Alexander Avenue at East Road. GGNRA is currently discussing the placement and style of the signage with GGBHTD, the county, and other jurisdictions to ensure route clarity and encourage use of Lower Conzelman Road from the Golden Gate Bridge northwest parking lot (off Conzelman Road and referred to locally as the Dillingham Lot) to Fort Baker. As noted on the GGBHTD website (under Golden Gate Bridge Construction Alerts and Bike Detours), security is a concern and GGBHTD would close this route under the bridge to bicycle and pedestrian traffic when Department of Homeland Security threat levels are "orange" or "red." The park will work with the GGBHTD on any security actions required as part of the plan to establish this convenient route.

Response to Comment J – 2

The preferred alternative has been revised in the FEIS to reflect that the GGBHTD did not take any board action on Alexander Avenue improvements and that no funding is available. NPS will continue discussions with GGBHTD, Caltrans, and Marin County to identify potential funding sources. Please refer to the discussion about Alexander Avenue in the "Master Responses/Issues Identified" section at the beginning of chapter 6.

Response to Comment J – 3

In alternative 3, NPS would encourage the GGT Route 10 on Alexander Avenue to be rerouted to provide direct service to Fort Baker. Section 2.5.5 of the FEIS will be clarified for consistency with Figure 2.3 and Table 2.1, which show GGT operating on Bunker Road and East Road to provide service to Fort Baker.

The northbound transit interface would be on the east side of Highway 101 at the existing stop on the Alexander Avenue exit ramp off northbound US 101. For the southbound transit interface, the park would work with GGT and other service providers to identify a feasible location for the interface. The wording in the FEIS text was also clarified to reflect that there is no existing GGT stop in the southbound direction near Highway 101. GGNRA would work in collaboration with GGT, MUNI, and the shuttle service providers to develop an interface that could provide connections among these transit services.

Response to Comment J – 4

The no-action alternative includes those activities necessary for maintaining current operations and facilities and to continue existing policy. The park supports implementing improved bus stops and underpass of Highway 101. However, these actions would occur as a separate project, involving the responsible jurisdictions for Alexander Avenue. To clarify, these improvements are not included in the no-action alternative. Coordination with other agencies to seek funding is included in the alternative, as included in the *Fort*

Baker Plan/FEIS. The National Park Service would continue its policy to coordinate with GGBHTD, Marin County, Caltrans, and other agencies as needed regarding funding for future improvement projects.

Response to Comment J – 5

See response to Comment J-3.

Response to Comment J – 6

Under this plan, no roads would be widened due to the need to protect and preserve the character of the historic park roads that comprise the park's cultural landscape. GGT has provided service to Fort Baker in the past, and the park encourages restoring service in the future. The park understands GGT's concerns and requirements and would like to work closely with GGT to identify methods of providing transit service to Fort Baker that can address GGT's requirements and the park's concerns about impacts to the historic cultural landscape.

Please see response to Comment J-3 regarding your comment on the Highway 101 transit interface connection.

Response to Comment J – 7

Potential ferry service is being investigated in a separate study and is listed in the FEIS under section 4.1.2, "Cumulative Impact Scenario," "Current and Future Actions." The FEIS has been clarified to indicate that no ferry service would be provided as part of the *Marin Headlands and Fort Baker Transportation Infrastructure and Master Plan*. However, alternatives 3 and 4 of this plan include a new internal shuttle bus. Under these alternatives, a shuttle stop would be included at the waterfront, thus providing an opportunity to connect with future ferry service if it is implemented. Regardless of whether or not ferry service is eventually provided through a separate future plan, the waterfront shuttle stop would still be desirable. See also the "Master Responses/Issues Identified" section at the beginning of chapter 6 regarding ferry service.

Response to Comment J – 8

The FEIS text was revised to state up to 53 passengers.

Response to Comment J – 9

As stated in Section 2.2.1, "Elements from the Fort Baker Plan," the conference center shuttle is included in all alternatives, including the no-action alternative. The assessment of transit service quality for the no-action alternative in Section 4.2.1, "Transit," describes the conference shuttle and includes it in the existing conditions baseline. Because the conference center shuttle service operations have not been determined, this analysis assumed only the specific requirements identified in the Fort Baker FEIS/ROD. However, as mentioned in the comment, the conference center shuttle is not precluded from connecting to the public transit services and the shuttle proposed in the preferred alternative would be coordinated with the conference center shuttle for maximum efficiency and service, subject to available funding.

Response to Comment J – 10

At the time this plan was developed, the ferry study was not underway. Now that the *GGNRA Water Shuttle Access Study and Conceptual Plan Summary* is available, the cumulative scenario was updated to reflect the assumptions and findings for the project referred to as the parklands ferry study. For example, the assumptions for ferry service were updated from peak hour to hourly service to reflect the alternatives described in the water shuttle access study. Based on the updated assumptions, cumulative impact factors, such as transit market opportunity, transit capacity and auto reduction in automobile trips, were revised to reflect a greater beneficial impact as you have suggested. Please see section 4.2.1

of the FEIS for additional information. Also, as you indicated, some of these benefits may be even greater during special events.

Response to Comment J – 11

The methodology for the level of service (LOS) analysis is summarized in Section 4.2.2. Peak hour traffic was estimated at specific locations based on existing peak hour percentages and expected alternative traffic distributions. The results of the LOS analysis as presented in the table below have also been included in Section 4.2.2 of the FEIS. The technical memorandum is included in Appendix C: Transportation Data of the FEIS.

TABLE 6-2. ROADWAY AND INTERSECTION LOS

Intersection/Roadway Segment	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Conzelman Road / McCullough Road	B	A	A	A
Bunker Road / McCullough Road	B	B	B	B
Bunker Road / Danes Drive	B	B	B	A
Alexander Avenue / Danes Drive – *Unsignalized*	C	D	C	C
Alexander Avenue / Danes Drive – *Signalized*	-	B	-	B
Alexander Avenue/ US 101 NB Ramps	F	F	F	F
Conzelman Road – US 101 to McCullough Rd	C	C	C	C
Alexander Avenue – Conzelman Rd to Danes Dr	D	D	D	D

Response to Comment J – 12

Please see the response to comment J-11 for a summary of the requested information. The technical memorandum for the traffic analysis is included in Appendix C.

Response to Comment J – 13

Please refer to the discussion about Alexander Avenue in the “Master Responses/Issues Identified” section at the beginning of chapter 6 noting that NPS has initiated a multi-agency planning effort to address multi-modal improvements to Alexander Avenue and the potential funding sources for the improvements. No funding has been identified at this time.

Response to Comment J – 14

Potential ferry service is being investigated in a separate study and is not part of this FEIS. The *GGNRA Water Shuttle Access Study & Conceptual Plan Summary Final Report* notes that parking demand and parking patterns will need to be studied in the future. The NEPA analysis for the water shuttle (ferry) will begin as funding becomes available.

Response to Comment J – 15

The purpose of this plan is to provide improved access to and within the study area for a variety of users. The park is difficult to access by persons without, or wishing not to use, private automobiles. Although one of this plan's goals is to reduce traffic congestion, the main purpose is to promote increased mobility options. In developing this plan and assessing the alternatives, the park did look at transit examples at other national park units. Conclusions were derived using the best available information, and we appreciate your comment suggesting that the potential benefits of reducing car traffic may be underrepresented.

The park appreciates the suggestions provided by GGBHTD regarding changing shuttle frequency and parking restrictions as methods to encourage greater transit use. As stated in the analysis, the shuttle program must operate within the funds generated from parking fees and other revenue sources. The NPS would certainly be willing to increase shuttle frequency should its popularity warrant such a change and should sufficient revenue exist to make such a change.

Overall, parking supply would be reduced with implementation of the preferred alternative. Utilization of paid parking areas would be evaluated in conjunction with fee revenues and transit use to identify correlations. The NPS would not rule out changing the parking fee program in the future to further expand and encourage transit use to and within the park, consistent with parking fees in comparable park destinations as stated in the DEIS.

Response to Comment J – 16

Please refer to the discussion about Alexander Avenue in the "Master Responses/Issues Identified" section at the beginning of chapter 6 for a discussion of the multi-agency effort to identify potential funding sources.

Response to Comment J – 17

A transit interface at the existing bus stop on the east side of Highway 101 is proposed to improve regional and park transit connections. The FEIS text will be clarified to indicate that this is not a new bus stop. The NPS agrees that pedestrian improvements between the east and west sides of Highway 101 at Vista Point should be improved. Therefore, the NPS will continue discussions with GGBHTD, Caltrans, and Marin County regarding potential funding sources. Please refer to the discussion about Alexander Avenue in the "Master Responses/Issues Identified" section at the beginning of chapter 6 for additional information.

Response to Comment J – 18

Since the release of the Draft EIS, coordination meetings have occurred with GGBHTD to discuss issues and concerns regarding Alexander Avenue (please refer to the discussion about Alexander Avenue in the "Master Responses/Issues Identified" section at the beginning of chapter 6). We expect that the Alexander Avenue planning effort under way resolves the concerns of GGBHTD, and that future planned enhancements will address transit needs for those who use this important travel corridor. The National Park Service will continue to work cooperatively and in consultation with GGBHTD and other federal, state, and local jurisdictions on transportation issues in this area as well as southern Marin County as a whole.

San Francisco Bay Conservation and Development Commission

K

SUBJECT: Marin Headlands and Fort Baker Transport Infrastructure and Management Plan, Draft Environmental Impact Statement

Thank you for the opportunity to comment on the Marin Headlands and Fort Baker Transport Infrastructure and Management Plan, Draft Environmental Impact Statement (DEIS). These are San Francisco Bay Conservation and Development Commission (BCDC or Commission) staff comments, they are based on the Commission's law, the McAteer-Petris Act, and the provisions of its San Francisco Bay Plan (Bay Plan).

Jurisdiction. Although the DEIS does not mention BCDC's jurisdiction it should be noted that on Plan Map 4 of the Bay Plan, BCDC designates much of the Marin Headland's as Waterfront Park, Beach. In general BCDC's jurisdiction as stated in the Bay Plan is, "San Francisco Bay, being all areas that are subject to tidal action from the south end of the Bay to the Golden Gate (Point Bonita –Point Lobos) and to the Sacramento River line (a line between Stake Point and Simmons Point, extended northeasterly to the mouth of Marshall Cut), including all sloughs, and specifically the marshlands lying between mean high tide and five feet above mean sea level; tidelands (land lying between mean high tide and mean low tide); and submerged lands (land lying below mean low tide)." Shoreline Band jurisdiction as stated in the Bay Plan is, " A shoreline band consisting of all territory located between the shoreline of San Francisco Bay … and a line 100 feet landward of and parallel with that line…"

Under the Coastal Zone Management Act, federal agencies are generally required to carry out their activities and programs in a manner "consistent" with the Commission's coastal management program. To implement this provision, federal agencies make "consistency determinations" on their proposed activities, and applicants for federal permits, licenses, other authorization, or federal financial assistance make "consistency certifications." The Commission then has the opportunity to review the consistency determinations and certifications and to either concur with them or object to them. The Commission's decisions on federal consistency matters are governed by the provisions of the Coastal Zone Management Act and the Department of Commerce regulations.

Although the DEIS does mention City and County Plans that were included in the Scoping section there is no mention of the land use or policies from the Bay Plan and no mention of the consistency determination process. As federal activities and federal development plans located within the coastal zone must be consistent to the maximum extent practicable with the coastal management program, the DEIS should mention Bay Plan Policies where applicable. K-1

Transportation. Alternative 3, the preferred alternative, proposes a new ferry terminal at Fort Baker. Bay Plan policies on transportation state, "Ferry terminals should be sited at locations that are near navigable channels, would not rapidly fill with sediment and would not significantly impact tidal marshes, tidal flats or other valuable wildlife habitat. Wherever possible, terminals should be located near higher density, mixed-use development served by public transit. Terminal parking facilities should be set back from the shoreline to allow for public access and enjoyment of the Bay." These policies should be taken into consideration during the anticipated Ferry Study and design of a new ferry terminal and connecting transportation. K-2

The preferred alternatives also include a continuation of the Bay Trail. BCDC policies on this mode of transportation state, "Transportation projects on the Bay shoreline and bridges over the Bay or certain waterways should include pedestrian and bicycle paths that will either be a part of the Bay Trail or connect the Bay Trail with other regional and community trails. Transportation projects should be designed to maintain and enhance visual and physical access to the Bay and along the Bay shoreline." New trails and trail improvements that are listed in the Alternatives should be designed to connect bridges, and other access-ways to the Bay Trail. K-3

Bay Plan Policies on Public Access. The Commission can only approve a project within its jurisdiction if it provides maximum feasible public access, consistent with the project. The Bay K-4

Plan policies on public access state, in part that, "in addition to the public access to the Bay provided by waterfront parks, beaches, marinas, and fishing piers, maximum feasible access to and along the waterfront and on any permitted fills should be provided in and through every new development in the Bay or on the shoreline....Whenever public access to the Bay is provided as a condition of development, on fill or on the shoreline, the access should be permanently guaranteed....Public access improvements provided as a condition of any approval should be consistent with the project and the physical environment, including protection of natural resources, and provide for the public's safety and convenience. The improvements should be designed and built to encourage diverse Bay-related activities and movement to and along the shoreline, should permit barrier-free access for the physically handicapped to the maximum feasible extent, should include an ongoing maintenance program, and should be identified with appropriate signs.....Access to the waterfront should be provided by walkways, trails, or other appropriate means and connect to the nearest public thoroughfare where convenient parking or public transportation may be available...." K-4 cont.

Although federal projects go through a consistency determination rather than a permitting process, the Commission considers consistency determinations and certifications in the same manner as permit applications, and projects in BCDC jurisdiction should provide maximum feasible public access.

San Francisco Bay Plan Policies Appearance Design and Scenic Views. The Bay Plan Policies on Appearance Design and Scenic Views state, in part, that "all bayfront development should be designed to enhance the pleasure of the user or viewer of the Bay. Maximum efforts should be made to provide, enhance or preserve views of the Bay and shoreline, especially from public areas….Shoreline developments should be built in clusters, leaving open area around them to permit more frequent views of the Bay….Views of the Bay from….roads should be maintained by appropriate arrangements and heights of all developments and landscaping between the view areas and the water."

DEIS Alternatives 3, 2 and 4 will all have some amount of improvements or new transportation construction. These projects should be designed to preserve scenic Bay views.

Sea Level Rise and Safety of Fills. Bay Plan findings and policies anticipate the need for planning associated with safety of fills and sea level rise. The safety of fills findings state, in part, "…structures on fill or near the shoreline should be above the highest expected water level during the expected life of the project…Bay water levels are likely to increase in the future because of a relative rise in sea level… Relative rise in sea level is the sum of: (1) a rise in global sea level and (2) land elevation change (lifting and subsidence) around the Bay." Bay Plan policies on safety of fills state, in part, "local governments and special districts with responsibilities for flood protection should assure that their requirements and criteria reflect future relative sea level rise and should assure that new structures and uses attracting people are not approved in flood prone areas or in areas that will become flood prone in the future, and that structures and uses that are approvable will be built at stable elevations to assure long-term protection from flood hazards." K-5

The DEIS does not mention sea level rise and how public access and trails will be adapted for potential sea level rise. This issue should be addressed.

Thank you for the opportunity to comment on the Marin Headlands and Fort Baker Transport Infrastructure and Management Plan, Draft Environmental Impact Statement If you have any questions regarding this letter, or any other matter, please contact me by phone at 415-352-3649 or email sahryec@bcdc.ca.gov.

Sincerely,
Sahrye Cohen
Coastal Planning Analyst

Letter K: San Francisco Bay Conservation and Development Commission (August 13, 2007)

Response to Comment K – 1

Section 1.5.2 of the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan DEIS* provides a summary of the California Coastal Management Program. This section has been updated in the FEIS, as suggested, to include a discussion of the *Bay Plan* and the proposed project's consistency with the policies presented in the *Bay Plan*. Proposed improvements under all alternatives presented in the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan* would be consistent with and support the policies in the *Bay Plan*.

Response to Comment K – 2

The anticipated ferry study and potential design of a new ferry terminal at Fort Baker is not part of the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan*. However, as stated in that DEIS, the preferred alternative includes the provision of an internal shuttle that could connect with a new ferry service in Fort Baker if such service is implemented in the future. Design of a new ferry terminal at Fort Baker would be addressed in a separate environmental analysis and would address consistency with the *Bay Plan's* policies in regards to siting and constructing ferry.

Response to Comment K – 3

The preferred alternative includes improvements to East Road in Fort Baker, including accommodating the extension of the San Francisco Bay Trail (Bay Trail) along the east side of the road. Extension of the Bay Trail would improve access to scenic viewing areas along East Road and improve connectivity between Fort Baker and the community of Sausalito.

Response to Comment K – 4

The National Park Service will submit a consistency determination to the California Coastal Commission and the San Francisco Bay Conservation and Development Commission. Access to waterfront sites would be improved under the preferred alternative through improving vehicular circulation; implementing a wayfinding program, including signage to reduce visitor confusion and traffic congestion while accessing sites in the park; improving visitor parking areas; improving biking conditions on roadways and trails; improving the trail system; and modifying existing transit services and providing additional transit service to and within the park. Universal design concepts that maximize accessibility for all visitors (including those with disabilities) would be applied to all facility designs to the greatest extent practicable. Under the preferred alternative, access to aquatic recreation sites would not change except on car-free days. On car-free days access to the Fort Baker waterfront and Rodeo Beach would be available to all visitors, but in a car-free environment; access would be available by shuttle.

Response to Comment K – 5

According to NPS *Management Policies 2006* the National Park Service will strive to site facilities where they will not be damaged or destroyed by natural physical processes. In areas where dynamic natural processes cannot be avoided, such as shorelines, developed facilities should be sustainably designed. When it has been determined that facilities must be located in such areas, their design and siting will be based on a thorough evaluation of the nature of the physical process; and avoiding or mitigating (1) the risks to human life and property, and (2) the effect of the facility on natural physical processes and the ecosystem.

Although sea level rise is expected to affect road infrastructure in lower Rodeo Valley within the next 50 years, it is important to address the functional deficiencies of the roads within the Marin Headlands and

Fort Baker to continue to safely support park operations, the visiting public, and park partner operations at Fort Cronkhite in the more immediate future. Sea level rise, based on the Intergovernmental Panel on Climate Change (IPCC) estimates, is not expected to affect road infrastructure during the expected life of the rehabilitation actions (i.e., life of the repaving) proposed under the Preferred Alternative. Because of their historical integrity as a registered landmark site, these roads would only be moved if necessitated by eventual sea level rise. Although bay water levels are expected to rise, only stairs to the beach (proposed to control erosion) and the lagoon trail would be affected in the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan*. The stairs would be adjusted when necessary to adjust to sea level rise. Nothing else identified in the plan is expected to be affected by predicted sea level rise. Therefore, chapter 1 of the FEIS was amended to include sea level rise as an impact topic dismissed from further analysis.

6.3 PUBLIC CONCERNS AND RESPONSES

This section provides the public concerns and responses to the DEIS. Although the analysis process attempted to capture the full range of public comments, those people who provided comments do not constitute a valid random or representative sample of the general public. Therefore, this information can provide insight into the perspectives and values of the specific commenters, but does not necessarily represent the desires of society as a whole. The comment response report for representative concerns is included in this section.

6.3.1 PUBLIC CONCERNS AND RESPONSES REPORT

MARIN HEADLANDS AND FORT BAKER TRANSPORTATION INFRASTRUCTURE AND MANAGEMENT PLAN
CONCERN RESPONSE REPORT

Report Date: 07/18/2008

AE13000 - Affected Environment: Cultural Resources

Concern ID: 14836

CONCERN STATEMENT: The EIS needs to include trails of the first ranch land home, Native American trails, etc. It should also include a description of the tunnel building in order to augment the "tunnel experience."

Response: A number of mitigation measures will enhance the park's understanding of the history of the headlands and improve historic coastal defenses: Cultural Landscape Reports (CLR's) will advance the park's understanding of history of the headlands considerably; coastal defenses at Hawk Hill (Battery Construction 129) and Bird Rock (AA Site 88) will be enhanced. As for pre-1858 roads, some roads went from Sausalito to the lighthouse, as well as through the Rodeo Valley, but are poorly documented and by now have disappeared or been paved over. Mid-19th century maps indicate certain trails, but these are poorly documented. Due to their comprehensive scope, the CLR's will gather information that is known about these trails. Descriptions of the historic roads and trails were documented in a Historic Roads Characterization Study (2006), and summaries are included in the EIS. Because the project would not change the experience visitors would have going through the tunnel, describing visitors' "tunnel experience" is not necessary for this EIS.

AE24000 - Affected Environment: Transportation

Concern ID: 14837

CONCERN STATEMENT: Section 3.1.1, Transit, page 86, states that a standard 40-foot bus on Route 10 can accommodate 75 passengers. Please correct that to "up to 53" passengers since our regional buses on Route 10 have between 39 and 43 seats and can carry up to 10 standees.

Response: The FEIS text was revised to state up to 53 passengers.

AE5000 - Affected Environment: Wetlands

Concern ID: 14838

CONCERN STATEMENT: Include a wetlands and submerged lands delineation of the project area where these areas may be affected. Describe each wetland or submerged area in terms of restoration activities proposed and benefits of restoration. Describe the actions that may affect each area.

Response: The analysis depicts both Cowardin (Cowardin et al. 1979) and U.S Army Corps (USACE 1987) wetlands. Wetland impact analysis uses Cowardin wetlands because this methodology is the National Park Service standard. However, because the NPS anticipates impacts to US Army Corps jurisdictional wetlands, these impacts have also been disclosed so that the National Park Service can meet Clean Water Act regulations and receive project approval from US Army Corps of Engineers and the California Regional Water Quality Control Board.

Please see more information in Appendix F, Wetlands Statement of Findings.

AL1000 - Alternatives: Elements Common To All Alternatives

Concern ID: 14839

CONCERN STATEMENT: The Executive Summary repeatedly ignores "Elements Common to All" to promote Alternative 3. The No Action alternative does not include road improvements for transportation and vehicle safety. Rehabilitation and reconstruction of roads, including widening, should be a requirements for all the alternatives.

Response: The "Elements Common to All Action Alternatives" is summarized in the Executive Summary. In order to provide a range of alternatives, roadway widening was not included in all alternatives.

Concern ID: 14840

CONCERN STATEMENT: Section 2.1.2, Elements of Alternatives, currently indicates that Class 2 striped bicycle lanes for 1-way travel must be a minimum width of 4 feet 5 feet on steep roads. We recommend increasing these widths to a minimum of 5 feet and 6 feet on steep roads to alleviate potential conflicts between motor vehicles and cyclists.

Response: As indicated in the affected environment section of the DEIS under "Cultural Resources: Road Types and Functions," several roads are historic. Furthermore, "The historic integrity of individual roads is not the same as their importance in terms of contribution to the overall integrity of the historic district." The DEIS identifies character-defining features of these roads that are sensitive to change; in many cases, these characteristics include the road width, shoulders, and alignment. Therefore, the decision to add bike lanes, and decisions about their widths, must be made on a case-by-case basis and in consideration of these characteristics.

AL4100 - Transit/Shuttle

Concern ID: 14841

CONCERN STATEMENT: Use the Marin Headlands or Ft Barry region as a shuttle to heighten interest in the Visitor Center. Create a shuttle for the Discovery Museum, Marine Mammal Center, and convention center visitors. The Marine Mammal Center should be a stop on the shuttle and/or Muni routes. Add drop-offs at the Golden Gate Bridge and on Alexander Ave to get staff and visitors safely to the museum; the walk from the current stop is long and there are no sidewalks or paths.

Response: The stops for the proposed shuttle system have not been identified. These suggestions will be considered in developing the plan.

Concern ID: 14842

CONCERN STATEMENT: Consider equipment hauling for picnicers, surfers, bicyclists, kayakers, etc. when designing the shuttle system; perhaps include shuttles for boats. Consider shuttles/buses that have bike and surfboard racks.

Response: In designing the shuttle system, these concerns will be taken into consideration.

Concern ID: 14844

CONCERN STATEMENT: Consider connections to the Muir Woods shuttle from Sausalito or Manzanita/Marin City to improve access to Fort Baker and the Headlands. Consider a shuttle connection to regional park 'n ride lots to directly connect communities that traditionally have not visited the Headlands. Connect with the MUNI 76 route. Provide bus transportation to Fort Baker. Improve MUNI and other public transportation access on weekends and during summer.

Response: Except for the connection to the Muir Woods Shuttle, these transit suggestions were included in Alternative 4.

Concern ID: 14845

CONCERN STATEMENT: Provide free parking and transit together and observe the results to test park user preferences. Have you considered the effectiveness of the past free transit program to the Headlands?

Response: The park's financial resources are limited; therefore, a new revenue source would be needed to fund the transit program. After investigating potential funding mechanisms, parking fees were identified as the revenue source for the transit program. Past and current transit service to the park as well as experiences at other national parks were taken into consideration in developing the transit element of this plan.

Concern ID: 15603

CONCERN STATEMENT: The Draft EIS needs to include consideration of improving access to Fort Baker and the Headlands on Golden Gate Transit and Marin County Transit District bus service both on buses coming from the North and from San Francisco (e.g. Routes 10 and 22). Bus transit must coordinate with ferry transit.

The Draft ElS needs to include consideration of connections to the Muir Woods shuttle from Sausalito and/or Manzanita/Marin City which would both improve access to Fort Baker and the Headlands and relieve traffic into these areas and Muir Woods.

Response: Alternatives 3 and 4 would continue to provide GGT Route 10 service on Alexander Avenue at 60-minute intervals seven days a week. The park would work with agencies to plan a transit transfer location at the Alexander Avenue/U.S. 101 interchange for easier transfers between service providers. The EIS did not consider improvements to GGT Route 22 because it does not enter the park. The alternatives in the DEIS describing connections between potential ferry and transit services, and impacts to transit service quality related to the proposed NPS parklands ferry study, are provided under cumulative impacts in Section 4.2.1. The park is working closely with GGBHTD to examine ways for them to provide service to Fort Baker. GGBHTD has indicated to the NPS that roadway widening improvements would have to be made to accommodate their buses. This plan would not widen Bunker Road to accommodate GGBHTD buses, but the park would continue to work with transit providers, including GGBHTD, to provide transit service to Fort Baker.

Park visitors arriving at Sausalito's ferry landing would have the option to go to Muir Woods via the Muir Woods shuttle. The Fort Baker Conference Center Shuttle is discussed on page 20 of the DEIS as an "element common to all alternatives." Therefore, implementation of this shuttle was assumed under the analysis of all alternatives, including the no action alternative. The Fort Baker Conference Center shuttle would provide access between Sausalito and Fort Baker for conference center patrons. The specific operations, route, and stops for the Conference Center shuttle would be determined in the near future. The park would continue to work with transit providers to promote connections between the park and regional activity centers.

AL4200 - Close Roads

Concern ID: 14846

CONCERN STATEMENT: Consider how park roads interface w/Alexander Ave in terms of bicycle and pedestrian use: Narrowing travel lanes, providing Class II bike lanes on both sides of the roadway by reducing both sides of the roadway w/minor widening, applying the 4-foot minimum bike lane width.

Response: Alternative 4 includes four-foot bike lanes on both sides of East Road.

AL4300 - Parking

Concern ID: 14847

CONCERN STATEMENT: I would like to see some combination of the official alternatives for creating parking spaces on Conzelman Road at Hawk Hill. The "nose-in" parking (39 spaces) would require an intense amount of foundation-building, which will further scar that hillside and set up erosion problems below. I think some combination of well-delineated parking spaces along Conzelman, along with a shuttle option from the VC, would provide enough access to Hawk Hill parking.

Response: The Preferred Alternative includes a combination of head-in and parallel parking spaces. Appendix A provides an illustration of the proposed parking improvements at Hawk Hill and a parking analysis is provided in Appendix B. There would be a total of 35 spaces, 11 head-in, and 24 parallel spaces. The proposed project includes comprehensive erosion control measures that would restore natural drainage patterns and minimize erosion at parking areas on Conzelman Road. Due to safety concerns for motorized and non-motorized traffic on Conzelman Road, parallel parking is limited to areas that would minimize conflicts between parking movements and motorized and non-motorized traffic flows.

Concern ID: 14848

CONCERN STATEMENT: If parking fees are implemented there should be an annual pass available for frequent users.

Response: As referenced in Section 2.5.3, an annual pass would be considered in developing a parking fee program.

Concern ID: 14849

CONCERN STATEMENT: Parking fees are an appropriate and easy way to raise revenue to provide for an increase in public transportation in the park. While we have no objection to the fees in general we would like to see a clear plan on how the fees will impact Park Partner staff (both resident and non resident), Park Partner volunteers and Park Partner program participants. If possible, we would like to suggest a waiver or pass for staff, guests, and volunteers at the Headlands Institute who already support the park through their contributions to partner organizations.

Response: As the parking fee plan is developed, these suggestions will be taken into consideration.

Concern ID: 14850

CONCERN STATEMENT: If a facility other than a Class I fully separated multi-use path is selected, serious consideration must be given to the design of roadside parking throughout the site, and on East Road in particular.

Response: Other than the pullout areas, no formal parking is proposed along East Road. Therefore conflicts between parked vehicles and bicyclists should be minimal. During the seven car-free days or special events, there could be cars parked along East Road. During those limited occasions, there would be increased activity in general along East Road and all visitors, not only the bicyclists, would need to be attentive.

Concern ID: 14851

CONCERN STATEMENT: Please do not eliminate car access to the beach and charge for parking. Reconfigurations of existing parking facilities can minimize impacts and maintain public vehicular access to the beach.

Response: Car-free days would be implemented on a trial basis for maximum of seven days per year. On car-free days, autos would be restricted at Rodeo Beach, but this location would remain open with access provided by other modes such as transit, walking or biking. The purpose of car-free days is to provide a "car-free" experience for park visitors and to not restrict access to locations in the park. The parking fee program would be instituted to provide funding for improved transit service. Improvements to the transit service would include providing additional opportunities to access Rodeo Beach by transit. Additionally, the Alternatives 2, 3, and 4 would include removing all or a portion of the unpaved parking to restore natural resources in this area. Additional parking supplies would be provided as infill in the Fort Cronkhite area allowing for vehicular access to the beach on the non car-free days.

Concern ID: 14852

CONCERN STATEMENT: If any parking is fee based, all should be so any reserved parking for park partners would not be seen as a free space to park visitors.

Response: The DEIS preferred alternative remains unchanged regarding parking fees. Although park partners at Fort Cronkhite will not be exempt from parking fees, the park would involve park partners as the plan is developed. The plan would con-

sider park partner parking demand, parking designations, and signage.

Concern ID: 14853

CONCERN STATEMENT: Create bicycle parking and revisit the reclamation of the "Surfer Lot" in alternative 2; move some parking to the side of the campus whalebones; increase parking in the stables area.

Response: Facilities for bicycle parking throughout Fort Baker and Marin Headlands will be considered. Parking demand and supply within the Fort Cronkhite area would be monitored to match parking supply with the park's goals for managing parking in this area. The elimination of the unpaved Rodeo Beach parking lot (surfer lot) would occur after the appropriate parking supply is available within Fort Cronkhite. In determining the appropriate parking supply, the park would consider park partner needs, visitor demand, availability of transit, and park goals for managing parking within the context of historic Fort Cronkhite.

Concern ID: 14854

CONCERN STATEMENT: Perhaps on days when cars are restricted, kayakers can off load their gear, and park in a special area.

Response: The park will work with user groups and park partners to work out the details of the car-free days program.

Concern ID: 14855

CONCERN STATEMENT: Provide overnight parking at Horseshoe Cove.

Response: The parking configuration at Fort Baker, including waterfront parking, was decided in the Fort Baker Plan. Although the Conference and Retreat Center development is close to completion, the waterfront development portion of the plan has not started. Paid parking would be implemented incrementally as the parking configuration evolves toward its final configuration. Parking policies would likely remain the same until paid parking becomes established. The park supports the San Francisco Bay Water Trail Plan, and realizes that Horseshoe Cove has been included as an access site trail head. Once the programmatic Water Trail Plan is completed, the park will look for opportunities to develop Horseshoe Cove as an access site for integration as part of the Water Trail. This would be a separate planning process, and would decide issues such as launch locations, amenities, overnight parking, and other site specific issues.

Concern ID: 14856

CONCERN STATEMENT: Provide kiosks and restroom facilities at major parking areas, including Alexander Ave.

Response: Depending on funding availability, visitor amenities including kiosks and restrooms (vault toilets not requiring water) would be incorporated into the design of our major parking areas, including, but not limited to: Battery Alexander, Smith Road, Hawk Hill, and McCullough/Conzelman parking lot. Specific descriptions of what would be part of these areas has been modified in the alternative descriptions and Appendix A maps. Amenities for transit users along Alexander Ave are being considered in another planning process (see Master

Response at the beginning of this chapter).

Concern ID: 14857

CONCERN STATEMENT: The parking areas within the study area should be obscured to the most feasible possibility by berms, crowns of shade trees for distance views and safe pedestrian walkways to amenities and trailheads.

Response: Using berms and vegetation to screen parking areas would introduce new physical features into the Marin Headlands/Fort Baker that are not consistent with the historic setting of the Forts Barry, Baker, and Cronkhite, which comprise a National Historic District.

Concern ID: 14858

CONCERN STATEMENT: Ensure all parking fees are specifically stated to the public when paying as going toward the bus and ferry service.

Response: Comment would be considered in developing the details of the parking fee program.

Concern ID: 14859

CONCERN STATEMENT: If the unpaved part of the parking lot at Rodeo Beach is causing too much erosion, it seems the easy answer is to pave it...

Response: One of the purposes of the project is to improve natural resource protection, including the riparian area at the Rodeo Beach parking area. Removing the unpaved portion under Alternatives 3 and 4 would allow for the restoration of the riparian corridor in the area and address the erosion issues. Alternative 2 would reduce the size of the unpaved portion and provide a riparian stream buffer at the parking lot. Paving the parking area could result in increased run-off and would not restore the riparian area.

Concern ID: 14860

CONCERN STATEMENT: Finally, we note that the Plan as a whole does not address the issue of parking for those many trailriders traveling with their horses from elsewhere in the Bay Area and the state. Dedicated truck/trailer parking should be provided in Rodeo Valley, as well as at the Tennessee Valley/Miwok Stables trailhead.

Response: An adequate design of parking for horse trailers and large vehicles would be provided at the proposed Smith Road parking in Rodeo Valley near the stables. The Tennessee Valley is outside the study area for this plan.

Concern ID: 15676

CONCERN STATEMENT: We could obtain 20+ spaces along the summit stretch east of the one-way road at Hawk Hill by providing lines to parking areas.

Response: The preferred alternative was revised to include an additional 10 striped parallel parking spaces (inboard and outboard).

Concern ID: 15679

CONCERN STATEMENT: Parking areas need disabled/green line minimum time parking spaces.

Response: Handicap parking will be considered for all the main parking destinations.

AL4400 - Entrance Fees

Concern ID: 14862

CONCERN STATEMENT: Public comments were received suggesting consideration of an entrance fee/Golden Eagle Pass.

Representative Quote(s): **Corr. ID:** 246 **Organization:** Golden Gate Raptor Observatory

Comment ID: 62058 **Organization Type:** Non-Governmental

Representative Quote: I understand the need to find revenue to support bus transportation. Have we considered an entrance fee to the Marin Headlands with waivers for staff and registered volunteers?

Response: The legislation creating Golden Gate National Recreation Area does not allow the implementation of an entrance fee.

Concern ID: 14864

CONCERN STATEMENT: An NPS kiosk-entry point along Conzelman Road and another near the Baker-Barry Tunnel would allow (1) some Park income for cars entering the Park (instead of penalizing cars for parking); (2) some opportunity to monitor and regulate the numbers of cars per day in the Park; (3) discouragement for people to bring more cars into the Headlands instead of say buses or bikes; (4) a distinct line at which all visitors would need to recognize they'd entered a national park; (5) a chance to distribute NPS brochures and trail maps, and building local knowledge; (6) us all a chance to build personal relationships between our visitors and our ranger staff.

Response: Entry fees are not allowed under the current legislation authorizing the park; therefore, kiosks could not be used for entry fee collection. However, the use of kiosks at entry points could be considered in the wayfinding program to be developed.

Concern ID: 14866

CONCERN STATEMENT: Provide Park Pass for students (and their parent's) to those children eligible for Federal school lunch. This would also encourage park use of this underserved population.

Response: There is no fee for entering the park and none is proposed in the plan.

AL4500 - Water Transportation (Ferry)

Concern ID: 14870

CONCERN STATEMENT: In order to provide better access to Fort Baker and the Headlands, the Draft EIS should be modified to provide that the shuttle bus (or enhanced Golden Gate Transit or Marin County Transit District Service described below) will be implemented to serve visitors to Fort Baker under the FEIS will provide transportation to the ferry terminal in the City with a schedule that ensures consistent weekday service and that is increased to serve the peak tourism season and weekend use of the Headlands. The shuttle bus should be open to all members of the public not just patrons of the Fort Baker Retreat Center.

Response: The Fort Baker Plan commits to providing shuttle service that would be scaled to the size of the retreat conference center and would go to the Sausalito ferry. The routes, stops, and service frequency for the Fort Baker Retreat and Conference Center shuttle have not been finalized at this time, but the shuttle would be in operation after the opening of the conference and retreat center in summer 2008. The Fort Baker shuttle will meet the commitments in the Fort Baker Plan. Alternative 3, the preferred alternative in the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan, proposes another shuttle service that would provide internal mobility between Fort Baker and Marin Headlands, and would be available to all members of the public. This service would operate every 60 minutes throughout the day, seven days a week.

Concern ID: 15216

CONCERN STATEMENT: Possible Fort Baker ferry service is cited in the assessment of Alternatives 3 and 4 parking utilization. District asks that the role of ferry service in the GGNRA transportation plan be clarified.

Response: Potential ferry service is being investigated in a separate study and is not part of this FEIS. The GGNRA Water Shuttle Access Study & Conceptual Plan Summary Final Report notes that parking demand and parking patterns will need to be studied in the future. The NEPA analysis for the water shuttle (ferry) will begin as funding becomes available.

Concern ID: 16160

CONCERN STATEMENT: The Draft EIS needs to address existing and potential water transportation to the Headlands. The Draft EIS relies on Muni bus transportation only from San Francisco and does not account for the connection o the Sausalito ferry. The Draft EIS should be modified to include consideration of water taxis and/or ferry service from the Sausalito ferry landing to Fort Baker and the extension of existing ferry service to both Sausalito and Fort Baker similar to the Tiburon/Angel Island ferry service.

Response: The Fort Baker Plan does not commit to providing water-based transportation; however, the plan states that the fishing pier could be used for this purpose. The Fort Baker Plan also notes that a water-based transportation plan would be evaluated as part of a separate planning effort. The park intends to propose a water-based transportation system in the future. This system is currently under separate study. Please see "Ferry Service" under the "Issues Identified" section

in this chapter for more details.

Concern ID: 17287

CONCERN STATEMENT: Table 2.1, Summary of Alternative Actions, page 72, identifies a Transit/Ferry interchange as a component of Alternative 3. However, there is no other reference to this component in the DEIS, and reference to a possible ferry service to Fort Baker is in the cumulative impact scenario. Please clarify if ferry service is included in the GGNRA transportation plan.

Response: Potential ferry service is being investigated in a separate study and is listed in the EIS under section 4.1.2, "Cumulative Impact Scenario," "Current and Future Actions." The FEIS has been clarified to indicate that no ferry service would be provided as part of the Marin Headlands and Fort Baker Transportation Infrastructure and Master Plan. However, alternatives 3 and 4 of this plan include a new internal shuttle. Under these alternatives, a shuttle stop would be included at the waterfront, thus providing an opportunity to connect with future ferry service if it is implemented. Regardless of whether or not ferry service is eventually provided through a separate future plan, the waterfront shuttle stop would still be implemented. See also the "Issues Identified" section at the beginning of chapter 6 for more details about ferry service.

AL4600 - Other

Concern ID: 14872

CONCERN STATEMENT: Consider free parking to cars w/4 passengers to encourage carpooling. The backlog of cars in early morning and late afternoon appears to be NPS staff and partner employees. Help them find ways to carpool.

Response: Reducing or eliminating fees for cars carrying multi-passengers works well for toll booths or other collection sites where an attendant can visually verify passengers. However, proposed paid parking areas would not be attended and as such would be difficult to enforce. Enhancing transit to and within the Marin Headlands and Fort Baker would provide greater opportunity for employees and partners to take transit to work. Because park partners at Fort Cronkhite would not be exempt from parking fees, implementing paid parking may also encourage car-pooling and use of public transit.

Concern ID: 14873

CONCERN STATEMENT: Direct more attention to road and trail maintenance.

Response: The road and trail improvements proposed in Alternatives 2-4 would rehabilitate the existing infrastructure, thereby reducing current maintenance needs.

Concern ID: 14874

CONCERN STATEMENT: Remove and revegetate the old Nike Missile site.

Response: The Nike Missile site is an important historical site being preserved and protected as part of the mission of the National Park Service. It is not within the

scope of this planning process to remove the Nike Missile site.

Concern ID: 14875

CONCERN STATEMENT: BRAVO on reclaiming the dirt parking lot near Rodeo Beach! Other barriers to ecological damage: (1) add guard rails on the edges of Rodeo Pond and Lagoon near the little bridge, both east and west of the bridge; (2) eliminate Mitchell Road as a driving road and run cars along Old Bunker Road and Kirkpatrick. I know this is an old plan what happened? The lagoon's edges cannot be too well protected from close vehicle access. And (3) providing continual walking ranger presence in the Lagoon-Beach area: people act much more responsibly when they're being watched.

Response: Thank you for your suggestions on design details for proposed work at the Rodeo Lagoon bridge; these suggestions will be considered during construction design. It is important to note that specific features added to projects must be compatible with the design guidelines approved by the California State Historical Preservation Office. For this analysis, eliminating Mitchell Rd. as a driving road was never seriously considered. Rodeo Beach is a destination for many visitors who come to the Marin Headlands. Routing this amount of traffic through Fort Cronkhite along Kirkpatrick Street is impractical and unsafe given the roadway's narrow character (approx. 14 feet) and the park partners' activities in this area are not compatible with this amount of traffic volume. In the preferred alternative parking was reduced along Mitchell Road to enhance safety. Where parking was removed, these areas would be restored to native vegetation. Bioswales would be designed into the parking areas to reduce the potential for oil and grease to directly move into the lagoon. Comment noted regarding having more NPS ranger presence at the Lagoon/Beach area.

Concern ID: 14876

CONCERN STATEMENT: Route tourists away from residents; limit improvements to the Vista Points area so local residents can continue the activities they are used to.

Response: Vista Point is not part of the park and therefore is not included in the project study area. Proposed traffic, transit, pedestrian and bicycle improvements in the Fort Baker area are being provided to improve access for park visitors in this area. These improvements will also improve connections for residents in Sausalito. The proposed project focuses on providing improved access to the Marin Headlands area.

Concern ID: 14878

CONCERN STATEMENT: Consider requiring the stables to install a planted buffer at least 20'feet wide, and downhill of the stable area (between the stables and the road) to help mitigate excess nutrient runoff and sediments during storm events. (I have noticed a small drainage ditch along a portion of the road along the stable area, but a wider, more robustly vegetated buffer would be most effective.)

Response: The commenter is correct; a ditch already exists in the area described. This ditch would be maintained with implementation of this plan, and more stormwater BMPs would likely be considered in the Southern Marin Equestrian Plan (SMEP). The SMEP planning process will propose options for the future use of

three Marin County stables, including the stables in Rodeo Valley, and would specifically address site and facility needs, improvements, and protection of important resources at and surrounding the sites. For more information on this plan visit: http://parkplanning.nps.gov/goga

Concern ID: 14879

CONCERN STATEMENT: Apalled at the suggestion that kayak users would not be able to launch kayaks from Horseshoe Cove. If you want to restrict recreation for the sake of parking problems why not move the Discovery Center somewhere else? Its not like we have lots of boat launching choices. You do have lots of buildings to use as alternates for the Discovery Center.

Response: This plan does not change any of the recreation uses at Horseshoe Cove. It is not within the scope of this planning process to move the Discovery Center.

Concern ID: 14882

CONCERN STATEMENT: Provide for public boat tie-ups and ample space for boat trailers and parking away from the beach.

Response: At Fort Baker, parking locations and their configuration, including waterfront parking, was decided in the Fort Baker Plan and is not part of this plan. Although the Conference and Retreat Center development is close to completion, the waterfront development portion of the plan has not started. As part of the Fort Baker plan, parking is being developed away from the beach in a couple different locations. Depending on the day, demand for parking may fluctuate, and finding enough space for a boat and trailer may be difficult on high visitor use days (summer weekends and holidays) close to the beach (see also Master Response for Ft. Baker Waterfront at the beginning of this chapter).

Concern ID: 14884

CONCERN STATEMENT: Besides bike lanes I would welcome other amenities such as restrooms and drinking fountains. Women's restrooms in particular, for example on the South side of the bridge, tend to have waiting lines in the summer. And in many areas, there is no restroom or fountain conveniently located.

Response: South of the Golden Gate Bridge is not National Park Service land.

Concern ID: 14885

CONCERN STATEMENT: I would also like to see an NPS plan for monitoring the impact of any proposed changes on park visitors. Thank you.

Response: The pilot car-free days and parking fee programs would be monitored to evaluate their effectiveness and impacts on visitor experience.

Concern ID: 14887

CONCERN STATEMENT: during construction- advance notice and considerate re-routing while roads and trails are being worked on

Response: Advance notice and signing would be provided for any major roadway construc-

tion and reroutes to minimize disruption during construction.

Concern ID: 14888

CONCERN STATEMENT: free parking and shuttle passes for employees, volunteers, guests, etc. of park partners, and exceptions to car free days for them

Response: The park will work with user groups and park partners to work out the details of the car-free days program.

Concern ID: 14889

CONCERN STATEMENT: The proposed project presents an opportunity to create a new continuous connection between the Coastal Trail/ Ridge Trail Connector (currently ending at Conzelman Road) and the Golden Gate Bridge. Please coordinate with the Ridge Trail Council regarding the possibility of formally designating this new trail as a Ridge Trail Connector route.

Response: The park is actively working with the GGBD to open the road that passes under the bridge from the Dan Bowers Vista Point down into Fort Baker. This route will become the signed route to and from Fort Baker, Sausalito and the Bridge, and will connect with the SF Bay Trail along East Road in Fort Baker. This route will encourage cyclists to avoid using Alexander Avenue and to travel through Fort Baker to their destinations. Likewise, this trail would be accessible from the west side of the bridge as a trail connection for the Bay Area Ridge Trail and Coastal Trail that currently end at Conzelman Road or the Dillingham (sp) parking lot. As this road opening project evolves through negotiations with the GGBD, the park will work with the Ridge Trail Council to establish this connection opportunity.

Concern ID: 14892

CONCERN STATEMENT: The Alexander Ave. plans need to be made available as part of the plan; incorporate proposals to improve the roadway into the plan.

Response: The Alexander Avenue roadway is not a park road and therefore is not included in the Park's transportation plan. The Park will continue to cooperate with Caltrans and the Golden Gate Bridge Transportation District on future plans for Alexander Avenue.

Concern ID: 14893

CONCERN STATEMENT: If only 70% of visitors use only lower (southeastern) Conzelman Rd., encourage pedestrian use between Battery Spencer and Hawk Hill.

Response: Rerouting the coastal trail along Conzelman Road as proposed in Alternative 3 (preferred alternative) would provide an opportunity to encourage pedestrian use from US 101 to the Lower Fisherman's parking area on Conzelman Road.

Concern ID: 14894

CONCERN STATEMENT: Encourage urban residents to visit using publicity and outreach programs, such as newspaper and newsletter articles and media stories.

Response: Once we've established our enhanced transit options the park will promote its use widely as suggested. The park considers outreach and public promotion as a key component for the success of the transit system.

AL4610 - New Alts, trails

Concern ID: 14896

CONCERN STATEMENT: The Preferred Alternative indicates that a new trail for AWD vehicles will be built to service raptor enthusiasts. It will lead to a location part way up Slacker Hill. We have been told that because of this new trail, it will be necessary to remove the Slacker Hill road, so that there is "no net gain" in trails in the GGNRA. If this is the policy, then we strongly suggest that the GGNRA find another, less important trail to remove. It is unfair to remove a trail for this reason that has been historically used for so many years.

Response: The majority of the existing trail to the top of the hill would be restored. The existing route to the top of Slacker Hill would be converted from a road to a trail and the majority of the existing route would be removed and the site restored. The new route would provide access to the two GGRO research sites, via a new foot trail, and to the viewpoint at the top of the hill for hikers and equestrians. Access to the east side of the launch site would be maintained for its views of the bay and city. The spur road leading from this trail that currently provides access to a raptor observatory research site would be closed and restored; access to this site would be provided through a new foot trail.

Concern ID: 15332

CONCERN STATEMENT: It has come to my attention that you are unaware of a certain proposal, one that is extremely important for enhancing and saving lives in and around the Golden Gate.

Please find enclosed the proposal to include a Class 1 Path in the TMP Class 1 proposal. This proposal was sent to Brian O'Neill, Superintendent, Golden Gate National Recreation Area March 8, 2000 and copied as listed on the signature page.

It is now four years later and the response received from the National Park Service has recently been explained as "no recollection of the proposal."

TAM and MCBC requests that you consider this proposal and include it, despite certain deadlines that may have passed. It is imperative for the inclusion of a Class 1 path in the TMP Class 1 proposal for the safety of our area.

Response: Marin County Bicycle Coalition's (MCBC's) letter, sent March 8, 2000 in response to the Fort Baker Plan that was approved in June 2000, made 13 specific suggestions; 5 were beyond the scope of this project because they were specific to the Fort Baker project (nos. 3, 4, 7, 8, 9). However, the park understands MCBC's desire for the NPS to review the remaining suggestions in light of the current FEIS:

No. 1: Create a new Alexander Ave bicycle path: See response at the beginning of chapter 6 related to Alexander Ave.

No. 2: Close Lower Conzelman to car traffic: From the intersection of Conzelman Rd/Lower Conzelman Rd, Lower Conzelman Rd leads to the Dillingham Parking lot. From here, Lower Conzelman Rd is closed to vehicles but is open to bicycle and pedestrian traffic. However, the GGBHTD will close the road for all uses in the event the Department of Homeland Security raises the security alert to "orange" or "red."
No. 5: The Discovery Museum should have traffic mitigation programs in place, preferably with input from the MCBC. Bike parking and bike lockers would be a good start: The Bay Area Discovery Museum (BADM) operates under a cooperative agreement (CA) with the National Park Service, which contains a Transportation Demand Management (TDM) program to be followed by BADM. The TDM is included in the Fort Baker Final EIS and discussed briefly in this analysis (Section 2.2.3 and 2.2.4).
No. 6: All roads leading to the site should have bicycle lanes: Three roads provide access to Fort Baker: Bunker Rd East, Lower Conzelman Rd, and East Rd. Lower Conzelman Rd from the Dillingham parking lot is closed to vehicles but open to bicycles and pedestrians. On East Rd the shoulders would be widened to provide safer bicycle access, although road widths vary by alternative. Bunker Rd East is narrow with minimal shoulder widths and is not recommended for bike travel. However, two alternate Fort Baker access routes are under consideration. GGNRA is working with the GGBHTD to open a path that contours around Vista Point and connects with Lower Conzelman Rd (not a part of this plan), and another route that would be accessed from a parking area east of the Barry-Baker tunnel where a pedestrian and bicycle route would be opened underneath Alexander Ave into Fort Baker (see Figure 2.4). In a field visit on July 1, 2008, MCBC and GGNRA discussed this issue as well as the proposed bicycle routes to Fort Baker. All of these proposed improvements would make bicycle travel safer to and from Fort Baker.
No. 10: Install non-point source pollution catch basins in all automobile parking lots: Developed parking areas would be designed to include BMPs for drainage and stormwater runoff.
No. 11: Install transit kiosks similar to the type proposed by MCBC for Vista Point: Developed parking areas would have information kiosks that would provide wayfinding information and other site-specific information.
No. 12: Reduce speed limits on Alexander Ave and install traffic control device to allow increased vehicular use of Bunker Rd: See response at the beginning of chapter 6 related to Alexander Ave.
No. 13: Create transit passes good on all local systems: Transit passes that could be used on all local systems is currently being pursued by area transit authorities through the Translink card system to help integrate and reduce the number of transit systems. Currently only AC Transit and GGT officially accept the cards. Expansion is expected to continue in summer 2008 to include Caltrain and MUNI, as well as BART in fall 2008. MUNI is currently in the process of installing and testing the system in MUNI metro stations and all MUNI buses, trains, and streetcars. After this program is implemented, this pass could be used by park visitors that ride GGT or MUNI buses to or within the park. The internal park shuttle would be free and therefore would not require a pass.

Concern ID: 16165

CONCERN The preferred alternatives also include a continuation of the Bay Trail. BCDC policies on this mode of transportation state, "Transportation projects on the

STATEMENT: Bay shoreline and bridges over the Bay or certain waterways should include pedestrian and bicycle paths that will either be a part of the Bay Trail or connect the Bay Trail with other regional and community trails. Transportation projects should be designed to maintain and enhance visual and physical access to the Bay and along the Bay shoreline." New trails and trail improvements that are listed in the Alternatives should be designed to connect bridges, and other access-ways to the Bay Trail.

Response: The preferred alternative includes improvements to East Road in Fort Baker, including accommodating the extension of the San Francisco Bay Trail (Bay Trail) along the east side of the road. Extension of the Bay Trail would improve access to scenic viewing areas along East Road and improve connectivity between Fort Baker and the community of Sausalito.

AL4620 - New alts, access

Concern ID: 14897

CONCERN STATEMENT: Retain vehicle access while developing multi-access options, such as improved bus/shuttle service, and let the individual visitor decide which transportation option best suits their needs and desires.

Response: Except on the car-free days of the pilot program, multi-access options are provided.

Concern ID: 14898

CONCERN STATEMENT: Preserve access to Horseshoe Cove for water sports: delete one of the several access routes to Horsehoe Cove from car-free days; provide access to boat dock/launching area; allow cars to drive down and unload gear at the beach; provide shuttle for boats down to the cove that can park nearby; remove the Fort Baker waterfront area from the car-free zone; permit access to the parking area next to the Yacht Club on car-free days via the road between the proposed parking area south of the Discovery Museum and the parking area next to the Yacht Club even if this is limited to unloading and loading of kayak gear; allow exceptions to car-free days for kayakers and windsurfers; closure to waterfront areas could be avoided by limiting auto access to other parts of the park.

Response: The park will coordinate with user groups and park partners to work out the details of the car-free days program, including the transporting of recreational equipment. It is important to note that the park is going forward with the car-free day program only as a pilot program in order to evaluate whether it should be retained as a permanent program. As the commenter notes, there are many details yet to be finalized, however, the park would coordinate with user groups, and the suggestions provided herein, in the planning of the pilot car-free days program.

Concern ID: 14899

CONCERN STATEMENT: I would love to see more options at the south end of the Headlands for mountain bikes than just this basic loop.

For example, there is some bike access to Hill 88, but it doesn't make a loop. It would be great if the 0.7 mile stretch of Wolf Ridge Trail to Miwok Trail could

be opened to bikes, so as allowing another loop option. And perhaps opening the short stretch between Alta Trail and Oakwood Valley Trail, for another loop.

I would love to see trail access right at the GG Bridge and/or from over by Sausalito, but I guess those are not options right now.

To make trail from McCullagh/Bunker more useful, it would be good to allow bikes on the rehabilitated Dubois Road trail that is noted in Alternate 3.

At the very least, please put in "share the road" signs on this stretch.

Response: The Wolf Ridge/Miwok route suggestion bike route is outside of the project area and is not under consideration as part of this plan. As for options for bike routes from the Golden Gate Bridge - the park is working with GGBHD to open the road that passes under the bridge from the Dan Bowers Vista Point down into Fort Baker. This route will become the signed route to and from Fort Baker, Sausalito and the Bridge, and will connect with the SF Bay Trail along East Road in Fort Baker. This route will encourage cyclists to avoid using Alexander Avenue and to travel through Fort Baker to their destinations. Likewise, the park sees an opportunity to use this road to access Conzelman Road on the west side of the bridge. We also support use of the Dubois Road (trail) as a multi-use trail and have changed the preferred alternative to allow bicycles.

Concern ID: 14901

CONCERN STATEMENT: Limit auto traffic to tourists only; local Sausalito residents should park for free wherever they wish; provide residents with stickers to place on their cars.

Response: A proposed parking fee program would consider annual pass options for visitors and park partners.

Concern ID: 14902

CONCERN STATEMENT: Use timing restrictions for car access, e.g., provide open travel until 11:00 am; close traffic until 5:00 pm. Have car-free days on holidays when park partners don't have as many staff or guests. Allow alternative days or full access.

Response: These ideas will be taken into consideration in developing the details of the car-free days pilot program.

Concern ID: 15736

CONCERN STATEMENT: Instead, it should be one way up the hill, with the return coming back down the backside. This would free up a lane for bikes and pedestrians. Instead of spending the money on buses and all the channels around that, put a station at the bases and charge $10 a car to travel the road. This and a one way road would limited cars and add revenue.

Response: Alternative 2 did consider a one-way road system up Conzelman Road, to McCullough Road and then exiting via the Barry-Baker tunnel; by removing one lane, this provided more area for bicyclists. Alternative 2 was not preferred because many visitors travel to Battery Spencer only and then exit the park. Because visitors would not be able to turn around at Battery Spencer and exit, this

one way system would create a longer travel distance for many visitors and increase traffic volumes on McCullough and Bunker Roads. The park's enabling legislation does not allow a fee to be collected to enter the park.

AL4630 - New alts, law enforcement and safety

Concern ID: 14903

CONCERN STATEMENT: Enforce traffic laws; emphasize basic driving regulations to deal with traffic problems.

Response: Enforcement would be done as park priorities and available funding allow. As part of the proposed wayfinding program (including improved signage), there would be an opportunity to improve driver safety and reduce traffic problems.

Concern ID: 14904

CONCERN STATEMENT: Open more trails to bikes but restrict their speeds or types (e.g., no downhill bikes); increase law enforcement activity aimed at cyclists.

Response: The park can inform cyclists of regulations and would enforce regulations to the extent possible given park priorities and available funding. The park would install more signage encouraging compliance with regulations, including speed limits. The wayfinding discussion in the FEIS was amended to include this.

Concern ID: 14937

CONCERN STATEMENT: Not mentioned in any of the alternatives has been discussion of late by the NPS of their desire to close the Paramedic and Fire facility at Ft. Cronkite/Rodeo Beach. It does not seem reasonable or sensible to consider that decision given your desire to increase the visitorship to the Headlands area by way of your approval of various Park Partner expansion plans.

Response: The closing of the paramedic and fire house at Fort Cronkhite is not part of this plan. Park partner projects in the Marin Headlands, such as the Marine Mammal Center and the Headlands Institute are separate projects, and their development impacts are discussed in the cumulative impacts section of this document.

AL4640 - New alts, bike

Concern ID: 14905

CONCERN STATEMENT: Bike lanes: separate cars and bikes with a bike lane enforced by a 3-4' concrete barrier for safety; create bike lanes and ban bikes from roads; add a Class 2 or Class 1 bike lane along East Road, suggest from Murray Circle to Alexander Ave; offer bikes a different route along Bunker Road by adding a bike lane - it is wide enough to accommodate one.

Response: Installation of a concrete barrier would introduce additional safety issues. The concrete barrier would be a permanent fixed object in the clear zone of both the roadway and bike lane, becoming an additional object for drivers and bicyclists to hit. When a barrier is installed to reduce head-on crashes, it will result in an increase in overall crashes as more drivers will hit the barrier. Barriers may reduce the number of head-on crashes, but more crashes will occur in general.

There are also maintenance and drainage issues with barriers since they will channelize water and debris. This fixed structure would also change the visual character of the roadway which may detract from a visitor's scenic experience. The installation of a barrier needs to consider these types of implications and it should be installed only when warranted. For these reasons, the park has decided against installing barriers.

Given the historical characteristics of many of the park's roads, it would not be appropriate to ban bikes from roads and construct bike lanes throughout the park. Park staff has identified specific roads for bike lanes where feasible. East Rd. in the preferred alternative (see Appendix A) would provide a consistent 4 ft. shoulder leaving Fort Baker towards Sausalito until the road narrows around the Sausalito/Marin City Treatment plant entrance, where the road shoulder width would be reduced to 3 ft. On East Rd., starting from Alexander Ave. towards Ft. Baker, the road shoulder would be a consistent 3 ft. until the last corner leading into Ft. Baker where the road steepens, where the road shoulder would be reduced to 2 ft.

Concern ID: 14906

CONCERN STATEMENT: Tunnel: The timing of the control light in the tunnel has been shortened and there is no "system registration" for cyclists in the tunnel - this should be addressed. Improve the timing system in the tunnel. Groundwater dripping in the tunnel has deposited a slick layer of sediment along both bike lakes in the western half of the tunnel and is a major hazard that should be removed; drainage should be installed to divert water.

Response: These are valid concerns and the park will investigate further. The park will consider adding signs warning cyclists about these issues.

Concern ID: 14907

CONCERN STATEMENT: We also ask that the GGNRA consider providing bike access on the road that proceeds from Battery Alexander, around the hill, and down to the Lagoon Trail. We realize that this road will drop in on an area heavily used by pedestrians enjoying the Lagoon, but suggest that conflicts can be avoided with use or appropriate educational tools.

Response: This road is currently open to bikes. However, bikes are not allowed on Lagoon Trail. This is a proposed ADA accessible trail; therefore, it would not be compatible to convert this trail to multi-use. In addition, cyclists can access the lagoon from Field Road.

Concern ID: 14908

CONCERN STATEMENT: Once visitors get to their destinations in the park it would be beneficial to have bike parking facilities provided. Standard 'inverted U' racks should be provided at key activity nodes including the Marine Mammal Center, Children's Discovery Museum. at trailheads where bikes are not permitted to continue, and other appropriate 1ocations likely to have cyclists wishing to lock their bikes and walk to other park destinations or activities. Another suggestion is to provide racks with attached cables to lock bikes and other equipment such as helmets.

Response: Bike racks would help meet the park's objective to enhance bike use. The park will investigate facilities for bike racks during trailhead redesign.

Concern ID: 14909

CONCERN STATEMENT: Construct new bike/ped tunnel near Alexander Ave to provide a connection to the Bay Trail at Fort Baker that would improve safety and the user experience by reducing vehicle trips and congestion.

Response: A bicycle/pedestrian tunnel under Alexander Avenue as part of a new connection between Fort Baker and the Barry-Baker tunnel is proposed in Alternative 3 (preferred alternative).

Concern ID: 14910

CONCERN STATEMENT: If it were deemed at a later date that there was a desire for separating auto and bicycle traffic, the lower portion of the loop road on Point Cavallo could be made 2-way for vehicles while the upper return portion of the loop could be reserved for non-motorized traffic.

Response: The suggestion is appropriate but this area is not being addressed in this plan; it may be addressed in the future under planning for Fort Baker.

Concern ID: 15211

CONCERN STATEMENT: MCBC is pleased to see the inclusion of upgraded bicycle facilities in Alternative 3 (2.5.4 Bicycle and Pedestrian Improvements, page 37), however, we believe that the proposal in Alternative 4 to include bicycle lanes on nearly all major roads appropriately reflects the Plan Goals and Objectives (page iv) [italicized by MCBC for emphasis] of, "Promote public transit, pedestrian, and bicycle travel to and within the park to improve visitor experience and enhance environmental quality. Rehabilitate the Marin Headlands and Fort Baker road and trail infrastructure in a manner that protects resources and improves safety and circulation. Reduce traffic congestion and improve safety at key park locations and connecting roads." We therefore request that the inclusion of bicycle lanes and upgraded facilities as detailed in Alternative 4 (pages 48-52) be included in the final EIS.

Response: The widening of the roadways for bike lanes would impact the historic character of the roadways and therefore this was not the preferred alternative. The preferred alternative improves trails and bicycling opportunities while minimizing the impacts to the historic character including the roadways.

Concern ID: 15584

CONCERN STATEMENT: As East Road will require widening in order to accommodate the proposed improvements, the Bay Trail Project requests that the plan be altered to include the construction of a fully separated, Class I, multi-use pathway alongside East Road that will provide safe, high-quality access for bicyclists and pedestrians at one of the Park's major ingress/egress points. The current plan offers no facility for pedestrians on East Road aside from an "informal footpath", representing a significant shortcoming for the purposes of the Bay Trail, as well as overall user experience.

With the development of a conference center and other major upgrades to Fort Baker, the number of vehicles traveling to and from this site may dramatically increase with the completion of these projects, though it is unclear from the DEIS whether East Road will be "temporarily or conditionally close(d)...to general through-traffic to discourage vehicle access to Sausalito" (Chapter 2, pg. 64 DEIS). A Class III facility (essentially consisting of signage and minor widening) on East Road with no formalized pedestrian pathway would not meet the goals of the Bay Trail Plans and Policies, and would continue to represent a significant gap in this important regional trail system. At a bare minimum, Class II bike lanes and a high-quality pedestrian facility would be needed in order for East Road to be considered "complete" Bay Trail.

Response: In response to your comment, a separated multi-use path (Class I bike path) and a striped bike lane (Class II bike facility) were considered. The existing road bench is not wide enough to accommodate travel lanes and a separated multi-use path or bike lanes. To provide the multi-use path, there would be either a widened road bench or a new separate trail alignment. To provide bike lanes there would be a widened road bench. Both options would result in cuts into the hillside and/or fills in some locations. Widening the road bench or providing a separate alignment for a Class I bike path would have adverse impacts on the natural, scenic, and cultural resources (East Road is a contributing element of the historic district comprised of Forts Baker, Barry, and Cronkhite). The design in the DEIS has been refined to provide additional width where possible in the shoulder area for bicyclists. This refined design strikes a balance between protecting the resources and improving the recreational bicyclist's safety and experience. The refined design includes 11-foot travel lanes in each direction and widened shoulders where practicable. A 4-foot shoulder would be provided northbound from Fort Baker until the curve before the Sausalito-Marin City Sanitary District Entrance, changing to a 3-foot shoulder to the Alexander Avenue intersection. Southbound bicyclists from Alexander Avenue and Sausalito would have a consistent 3-foot wide shoulder until reaching the downhill grade north of Murray Circle, where the shoulder would become 2 feet wide (see typical sections in Appendix A). East Road would also accommodate the extension of the San Francisco Bay Trail along the east paved shoulder of the road from the current connection past the Sausalito-Marin-City Sanitary District entrance to Alexander Avenue.

The Bay Trail policy recommends creation of Class I paths where feasible. As identified above and below in the discussion of East Road, the park evaluated a Class I path option but did not find it feasible due to the environmental, scenic, and historic setting of East Road. The Bay Trail Plan states: "Trail design policies underscore the importance of creating a trail which is accessible to the widest possible range of trail users and which is designed to respect the natural or built environments through which it passes." The park believes that the proposed plan to accommodate bicyclists and pedestrians along East Road creates a trail that is accessible to a range of trail users and respects the environmental and historic resources.

Concern ID: 15588

CONCERN STATEMENT: New Bicycle/Pedestrian Tunnel Under Alexander Avenue
While not located on the San Francisco Bay Trail alignment, Alexander Avenue provides an important connection to the Bay Trail at Fort Baker and one that is

used daily by a multitude of cyclists. Constructing a new bicycle/pedestrian tunnel in this location would greatly enhance not only the safety of those traveling to and around the Park, but would also vastly improve "user experience" so that more people would be encouraged to use bicycles or walking as a means of accessing this area, thereby reducing vehicle trips and congestion.

Response: A new bicycle/pedestrian tunnel under Alexander Ave parallel to Bunker Road is proposed under the Preferred Alternative.

Concern ID: 16159

CONCERN STATEMENT: New Bicycle/Pedestrian Tunnel Under Alexander Avenue

While not located on the San Francisco Bay Trail alignment, Alexander Avenue provides an important connection to the Bay Trail at Fort Baker and one that is used daily by a multitude of cyclists. Constructing a new bicycle/pedestrian tunnel in this location would greatly enhance not only the safety of those traveling to and around the Park, but would also vastly improve "user experience" so that more people would be encouraged to use bicycles or walking as a means of accessing this area, thereby reducing vehicle trips and congestion.

Response: A bicycle/pedestrian tunnel under Alexander Avenue is proposed in Alternative 3 (preferred alternative) as part of a new connection between Fort Baker and the Barry-Baker tunnel.

Concern ID: 16815

CONCERN STATEMENT: Once visitors get to their destinations in the park it would be beneficial to have bike parking facilities provided. Standard 'inverted U' racks should be provided at key activity nodes including the Marine Mammal Center, Children's Discovery Museum. at trailheads where bikes are not permitted to continue, and other appropriate 1ocations likely to have cyclists wishing to lock their bikes and walk to other park destinations or activities.

Response: The park agrees that it would be beneficial to have biking amenities at key destination areas to ensure that bicyclists are able to park and lock their bikes. These amenities would be provided at appropriate locations.

Concern ID: 16819

CONCERN STATEMENT: Fort Baker is a critically important piece of the Bay Trail in Marin County, and the Transportation Infrastructure and Management Plan represents a unique opportunity to construct 1.75 miles of Bay Trail, closing a critical gap between San Francisco and Sausalito. With the current and ever-growing number of cyclists (and pedestrians) of vastly differing skill-levels riding across the Golden Gate Bridge to various destinations in Marin County, it is imperative that our National Parks provide the best facilities possible'a Class I pathway along the entirety of East Road from Murray Circle (west) to Alexander Avenue.

Response: Please see Chapter 6 responses to comments F3 and F4 that address the Bay Trail and East Road:

For ease of explaining the revised design, and the limited widening, East Road roadway characteristics and improvements are described in three distinct sec-

tions (see typical sections in Appendix A). For all sections, the travel lanes are 11-feet wide.
* Section 1 - southernmost (0.17 mile from Murray Circle north to the second curve where the trail meets the road) would have a 4-foot wide northbound shoulder and a 2-foot wide southbound paved shoulder, allowing for a wider uphill shoulder for the approximately 5-7% grade in this section and a narrower shoulder for the downhill section. This configuration is necessary because of the constrained road bench width that exists in this area.
* Section 2 - middle (0.45 mile between the trail and the curve south of the Sausalito-Marin Sanitary District entrance) generally has more road bench room to facilitate wider shoulder improvements for bicycles. This section would be widened by one foot (0.3 m) to a total width of 29 feet with a 4-foot wide northbound shoulder and a 3-foot wide southbound shoulder (this is a change from DEIS, which identified two 3-foot wide shoulders and total width of 28 feet).
* Section 3 - northernmost (0.27 mile between the curve south of the Sausalito-Marin City Sanitary District entrance and the Alexander Avenue intersection) has a constrained roadway bench. Widening the road bench beyond 28 feet would require extensive retaining wall construction at a considerable impact and cost (this option was proposed and evaluated in Alternative 4). The preferred alternative was changed to include two 3-foot shoulder widths for northbound and southbound bicycle travel.

Other than the pullout areas, no formal parking is proposed along East Road. Therefore, conflicts between parked vehicles and bicyclists should be minimal. During the seven car-free days or special events, there could be cars parked along East Road. During those limited occasions, there would be increased activity in general along East Road and all visitors, not only the bicyclists, would need to be attentive.

AL4650 - New alts, signage

Concern ID: 14911

CONCERN STATEMENT: In the most recent meeting, the issue of random car parking throughout the Park was brought up as a problem. Without signage telling people not to park in certain areas, how can the public possibly know they shouldn't be parking somewhere?

Response: The park tries to balance the need to provide more signage to influence people's behavior and less signage in consideration of the scenic qualities of the park. Signage would be considered during implementation of the proposed plan.

Concern ID: 14914

CONCERN STATEMENT: Improve wayfinding: Hawk Hill is a confusing area - need more signs to warn large vehicles to turn off at McCollough; wayfinding needs to be be coordinated with a handout map with history of sites; provide directional maps at trail intersections; the Visitor Center is not clearly signed; when parking lots are full, have a directional sign; use standard signage consistent with the county standards; place signage at key locations and major hubs, such as the west parking lot at the bridge where a kiosk could provide wayfining information; wayfinding

from Golden Gate Bridge should indicate the location of the museum; include signage throughout the park, especially for rental bike reiders at the bottom of Conzelman Rd trying to get to Sausalito.

Response: In development of the proposed wayfinding program, these types of measures would be considered.

Concern ID: 14916

CONCERN STATEMENT: Include signs for bikes: to encourage them to ride single file, especially on tight curves and narrow roads; to direct them (and peds) traveling between the bridge and Sausalito, especially on the west side parking lot where cyclists have no information on how to proceed; to yield to equestrians; to describe how to ride single track trails without doing damage and causing more ruts, etc.

Response: Pavement markings and signage would be considered during implementation of the proposed plan projects.

Concern ID: 15575

CONCERN STATEMENT: As discussed above, there are a considerable number of visitors to the area traveling between the bridge and Sausalito. We would request that improved signage for bicyclists and pedestrians be provided to direct people to and through the site. Especially on the west side parking lot, cyclists coming off the bridge are presented with no information on how to proceed: Most do not realize that next to the new anti-terrorist barrier is a bike path which routes cyclists under the bridge, into Fort Baker, and on to East Road. Many end up crossing under the freeway through the narrow subway and then riding the shoulder of Alexander Avenue. While this route may be acceptable for commuters, not directing visitors to the more pleasant and less-trafficked East Road is a missed opportunity.

Response: The park agrees with your comments and is working with the GGBHTD and Marin County to install signs directing cyclists and pedestrians to Conzelman Road on the west side of the bridge. The jurisdictions are working on opening the road that passes under the bridge from the Dan Bowers Vista Point down into Fort Baker. This will become a signed route to and from Fort Baker, and from Sausalito to the Golden Gate Bridge. It will also provide a connection to the San Francisco Bay Trail along East Road in Fort Baker. This route would encourage cyclists to avoid using Alexander Avenue and to travel through Fort Baker to their destinations. The park is in discussion with the County and other groups concerning placement and style of sign to assure clarity of routes.

Concern ID: 15578

CONCERN STATEMENT: Signage placed in a few key locations would greatly aid visitors to navigate around and through the park. At major hubs, such as at the west parking lot at the bridge, a Kiosk could provide information about getting around and through the park in a centralized location.

Response: In development of the proposed wayfinding program, these types of measures would be considered.

Concern ID: 16814

CONCERN STATEMENT: Signage placed in a few key locations would greatly aid visitors to navigate around and through the park. At major hubs, such as at the west parking lot at the bridge, a Kiosk could provide information about getting around and through the park in a centralized location.

Response: The park agrees with DPW's assessment that signage in key locations would greatly assist visitors in navigating their way through this area. The EIS analysis described wayfinding throughout the project area to be inadequate causing visitor confusion. During project design the park would work with adjacent jurisdictions, including the Golden Gate Bridge District, Marin County, and the City of Sausalito for proper placement and language to better aid visitors traveling to and within this area.

Concern ID: 16817

CONCERN STATEMENT: We are pleased to see that wayfinding signage is included as part of this project. The Bay Trail Project is currently working with the Golden Gate National Parks Conservancy on a trail signage plan in the Presidio. A coordinated effort regarding signage at Fort Baker would ensure a consistent approach to wayfinding on either side of the Golden Gate Bridge. The Bay Trail Project provides signage free to jurisdictions implementing the trail. Because many of the improvements associated with the Marin Headlands-Fort Baker TIMP may not be implemented for several years, Bay Trail Project staff would like to work with GGNRA staff to discuss near-term implementation of a sign plan for the currently existing sections of Bay Trail at Fort Baker.

Response: Although the specific design for wayfinding has not yet been determined, a consistent program for signage in Fort Baker will be implemented. In development of the proposed wayfinding program, the park welcomes your suggestions and will work with local authorities. Marin County has had some suggestions for trail signing as well that will be taken into consideration.

Concern ID: 16818

CONCERN STATEMENT: The Bay Area Ridge Trail is a planned 500-mile pathway encircling the San Francisco Bay Area on the ridgelines. The Bay Trail and The Ridge Trail try to encourage and facilitate connections between the two regional trail systems wherever possible. At Fort Baker, the spine or primary alignments of the Bay and Ridge Trail happen to intersect at the Vista Point Trailhead Parking Lot. This intersection of two important regional trail systems may be worthy of interpretive signage describing and displaying the two trail projects. The San Francisco Bay Trail and the Bay Area Ridge Trail would welcome an opportunity to work with GGNRA in developing such a display.

Response: The park would consider further discussions regarding interpretive signage at the intersection of the Bay and Ridge Trails.

AL4660 - New alts, roads and parking

Concern ID: 14920

CONCERN STATEMENT: My suggestions is keep access to the beach but get rid of the parking along and adjacent to the lagoon. Remove the fiberglass footbridge. Reconfigure the parking area by the bathrooms using a wetland stormwater treatment system between beach the bluff and parking area. The adjacent dirt parking area west of the bathrooms could be used for this. Daylight the culvert which collects spring flow from the upslope drainage area. This spring flow from the adjacent drainage behind the bathrooms can be used to maintain a wet pond water quality improvement system. Reconfigure the parking lot drainage to enter into this wetland treatment system prior to discharge on to the beach. Remove the paved road up Hill 88. These feature changes will have a much bigger impact than just banning cars outright from the beach area.

Response: The park is working Colorado State University wetland researchers to develop a restoration plan for the unpaved dirt parking area. Portions of the plan include elements as you described, including the daylighting of culverts that are underneath the parking area. This will also increase the amount of wetland habitat north of Mitchell road. Details of this restoration plan have been added to this Final EIS and can be found in Chapter 2, Alternatives.

Concern ID: 14921

CONCERN STATEMENT: Alternative 3 has two new bridges that would be constructed in sensitive wetlands. The Smith Road area has been designated as habitat for the endangered California Red-legged frog. Constructing a 200 car parking area and a 60 foot bridge in the middle of an endangered species habitat does not seem like a particularly good thing for the frog. A much better alternative is to remove Smith Road and restore the habitat as detailed in Alternative 2.

Response: Under the preferred alternative, Smith Road would be realigned to the south, moving it farther from Rodeo Creek and the riparian area along the creek. A new bridge and trail would be constructed to the Rodeo Valley Trail, which would eliminate the need for the bridges and trails to the west and east of the new bridge. Therefore, these two areas would be restored. The DEIS acknowledges that major adverse impacts would result from construction of the new bridge and trail, which would be short-term, lasting only as long as the construction activities. However, the DEIS also notes that restoring willow riparian habitat along the creek and creating riparian and/or emergent wetland habitat (from realigning the road and restoring the existing bridges and trails to natural conditions) would result in a major beneficial impact in the long term.

Concern ID: 15165

CONCERN STATEMENT: While it is true that Slacker Hill Road is steep, and can erode in bad weather, this can easily be remedied by a minor re-route, or other means. It is no steeper than many other roads that are open to us.

Response: The majority of the existing trail to the top of the hill would be restored. The existing route to the top of Slacker Hill would be converted from a road to a trail and the majority of the existing route would be removed and the site restored. The new route would provide access to the two GGRO research sites, via a new foot trail, and to the viewpoint at the top of the hill for hikers and equestrians.

Access to the east side of the launch site would be maintained for its views of the bay and city. The spur road leading from this trail that currently provides access to a raptor observatory research site would be closed and restored; access to this site would be provided through a new foot trail.

Concern ID: 15295

CONCERN STATEMENT: Please consider leaving the Rodeo Trail designation as hiker/equestrian only and adding bike lanes to the existing roads. Thank you for your time and consideration.

Response: Alternatives 2 and 4 leave the Rodeo Trail designation as hiker/equestrian only.

AL5000 - Alternatives: Comments and Questions

Concern ID: 14926

CONCERN STATEMENT: There are many instances when I see the Muni buses empty on Sundays and Holidays. It does not seem to make sense to increase a service at a big cost to Park users or taxpayers for a service that does not seem to be popular.

Response: The transit service increases would be paid for by the revenue generated by parking fees or other potential revenue sources. As proposed in alternatives 3 and 4, the specific park users that would incur costs would be those parking vehicles, other park users who do not park a vehicle would not incur costs.

Concern ID: 14927

CONCERN STATEMENT: The museum would like clarification on the "Special Park Use Guidelines" and what that will mean for our signature events. We have several events and festivals that we have done here at Fort Baker for 16 years. Some of these events are major fundraisers for the museum and if they are impacted the operations of the museum would be greatly impacted.

Response: The "Special Park Use Guidelines" are currently in effect and the requirements are tailored for each specific event in consultation with NPS.

Concern ID: 14928

CONCERN STATEMENT: The museum would like clarification on overflow parking for our use at Fort Baker. We would like to know the number of parking spaces and where they will be for our large attendance times. I believe the plan calls for our overflow parking to be at the top of East Road as you enter Fort Baker. This would be workable, as long as there is a stroller/kid friendly path put in from the parking down to the front entrance to the museum.

Response: The proposed actions in the Marin Headlands Fort Baker Transportation Infrastructure and Management Plan would not change how overflow parking would be handled for large BADM events. Proposed East Road enhancements would widen the paved road shoulder under alternatives 3 and 4, as well as create a separate pedestrian trail for most of the length of East Road. Both of these features would make for easier walking along East Road.

Concern ID: 14929

CONCERN STATEMENT: The museum would like clarification on the parking plans for the new conference center at Fort Baker and what impacts the operations of the conference center will have on Fort Baker in general and on the museum in particular.

Response: Parking will be behind the Conference Center Lodge and a shuttle bus will be implemented to reduce the number of automobiles and traffic associated with the Conference Center. No changes to the Bay Area Discovery Museum are anticipated from the Conference Center. The impacts associated with the Conference Center were addressed in a different project, the Fort Baker EIS.

Concern ID: 14934

CONCERN STATEMENT: The alternatives seem to focus so much on bicycles that it seems they are being singled out as the preferred form of recreation at the headlands.

Response: Transportation, not recreation, is the primary focus of the proposed plan and therefore it addresses all modes of transportation including bicycles.

Concern ID: 14936

CONCERN STATEMENT: Is there a plan to replace or widen the tunnel which provides much of the access?

Response: There is no plan to replace or widen the Barry-Baker Tunnel.

Concern ID: 14938

CONCERN STATEMENT: Conzelman Rd. cross section: show 5' + 11" + 11'+ 1' = 28' w new Where was that indicated in summary? Is there really room for 28" w roadway at all areas of Conzelman? Existing ROW does not seem able to accommodate 28 feet.

Response: Table 2.1 Summary of Alternative Actions summarizes the existing and proposed width of Conzelman Road for specific segments. The existing paved width of Conzelman Road varies from 14 feet to 27 feet.

Concern ID: 14940

CONCERN STATEMENT: From the plan, it is not clear how much of these trails are planned to be open to bikes. We would appreciate it if you could clarify this.

Response: In the preferred alternative, the trails currently open to bikes would continue to be open, except Slacker Road. New trails that allow bicycles would result from the conversion of Mendell Road to a trail, the construction of a new trail and bicycle/pedestrian tunnel to connect Fort Baker to the Marin Headlands, and the Rodeo Valley trail.

Concern ID: 15352

CONCERN STATEMENT: Section 4.2.3 proposes a new bus stop on the east side of Highway 101 in Alternatives 3 and 4 to improve safe pedestrian access to Vista Point, but does not mention a companion, opposite-direction bus stop on the west side of Highway 101.

Response: The transit stop on the west side of Highway 101 northbound would be at the existing stops: the Alexander Avenue exist ramp off northbound US 101 and the Alexander Avenue/East Road intersection.

Concern ID: 15721

CONCERN STATEMENT: Provide access for people with physical limitations; exempt private vehicles transporting persons with disabilities; this parking should be free, easy to access (smooth surfaces, adequate widths for 2 wheelchair users to pass, proper slopes and curb ramps); enforce regulations for use of disabled placards/plates.

Response: Universal design concepts that maximize accessibility for all visitors (including visitors with disabilities) would be applied to all facility designs to the greatest extent possible. During car-free days, access for people with physical limitations would be provided with ADA-accessible shuttle buses. The park would continue to enforce regulations for use of disabled placards/plates in designated parking areas.

Concern ID: 15722

CONCERN STATEMENT: " Formalize pedestrian access to Rodeo Beach from parking lot: Install wooden or more permanent rustic stone stairs at the steep embankment along the edge of the parking area at Rodeo Beach. The existing embankment is constantly impacted and eroding from rutted footpaths created by users accessing the beach.

Response: A stair access would be provided down the slope to access the beach from parking lots in Fort Baker.

AL5100 - Alternatives: Alternative 1, No Action

Concern ID: 15200

CONCERN STATEMENT: Table 2.1 Summary of Alternatives, page 65, identifies bus stop and underpass improvements as future projects in Alternative 1 -the no-action alternative. District seeks clarification on how such apparently necessary improvements to GGNRA can be part of a no-action alternative.

Response: The no-action alternative includes those activities necessary for maintaining current operations and facilities and to continue existing policy. The park supports implementing improved bus stops and underpass of Highway 101. However, these actions would occur as a separate project, involving the responsible jurisdictions for Alexander Avenue. To clarify, these improvements are not included in the no-action alternative. Coordination with other agencies regarding funding is included in the alternative. The National Park Service would continue its policy to coordinate with GGBHTD, Marin County, Caltrans, and other agencies as needed regarding funding for future improvement projects.

AL5200 - Alternatives: Alternative 2

Concern ID: 14953

CONCERN In general, we support Alterative 2 as the most cost effective, safe and effective option. However, changing Bunker Road and McCullough road to one way ve-

STATEMENT: hicular traffic is neither safe nor reasonable. Many Park Partners require deliveries via large trucks, and equestrian visitors to the park utilize horse trailers. The one way traffic would force these large vehicles onto narrow roads and the densest traffic in the area. It would make these stretches of road much more dangerous for the frequent pedestrian and bicycle activity on the road.

Response: The one-way circulation on Bunker Road and McCullough Road would require all vehicles including large trucks and trailers to use McCullough Road, which is narrow and winding, therefore does not accommodate these large vehicles as well as Bunker Road would in alternatives 1, 3, and 4. This information will be included in the FEIS.

Concern ID: 15194

CONCERN STATEMENT: Section 2.6.5 describes Alternative 2 transit services. Figure 2.6 also shows the Highway 101 transit connection locations described in Section 2.5.5 and we reiterate our related comment above.

Response: In Alternative 3, the GGT Route 10 on Alexander Avenue would be rerouted to provide direct service to the main post area of Fort Baker. Section 2.5.5 of the FEIS will be clarified for consistency with Figure 2.3 and Table 2.1, which show GGT operating on Bunker Road and East Road to provide service to the main post area.
The northbound transit interface would be on the east side of Highway 101 at the existing stop on the Alexander Avenue exit ramp off northbound US 101. For the southbound transit interface, the park would work with GGT and other service providers to identify a feasible location for the interface. The wording in the FEIS text was also clarified to reflect that there is no existing GGT stop in the southbound direction near Highway 101. GGNRA would work in collaboration with GGT, MUNI, and the shuttle service providers to develop an interface that could provide connections among these transit services.

AL5300 - Alternatives: Alternative 3

Concern ID: 14957

CONCERN STATEMENT: It is unclear from the preferred alternative wording if bikes would have access on the new trail from the visitor center at Rodeo Lagoon to the riding stable. It is unlcear if alternative 3 or 4 includes dirt trail access for bikes from the bottom of Coastal Trail (at the rifle range) to the Bobcat Trail/Miwok trail.

Response: Both Alternatives 3 and 4 use Julian Road (unpaved trail) to a short segment on Bunker Road to cross over to the new bridge to Rodeo Valley Trail to the Bobcat Trail/Miwok Trail.

Concern ID: 14958

CONCERN STATEMENT: I also understand that Alternative 3 includes that there would be only one access road to and from Rodeo Beach; the entry point would be from Conzelman Road and the exit would be the Tunnel. Retaining the two access points for Rodeo Beach would reduce (and does currently reduce) traffic and congestion. Traffic and congestion would greatly increase to the dismay of all visitors, especially on a sunny weekend.

Response: Alternative 3 retains the existing access to and from Rodeo Beach.

Concern ID: 14959

CONCERN STATEMENT: Also, the Park's traffic consultant concluded that the internal shuttle service only has the potential of reducing auto traffic by 2.5%. Please clarify and address the merits behind the Park's proposed internal shuttle service in the Final EIS.

Response: With the proposed improvement of transit service to access the park, an internal transit system would be needed to distribute visitors within the park so that they can get to different sites within the park. Improving transit service provides improved access to and within the park for those who are transit dependent or desire an alternative to private auto.

Concern ID: 14960

CONCERN STATEMENT: How will handicap and elderly park visitors use the internal shuttle service?

Response: The shuttle vehicles would be handicap accessible, and transit stops would incorporate universal design.

Concern ID: 14964

CONCERN STATEMENT: The A-40 diagram also does not match up with the photo in Appendix E.

Response: The A-40 diagram is incorrect and will be replaced with the correct version.

Concern ID: 14966

CONCERN STATEMENT: We wonder about what looks like a conflict between the parking figures given at the bottom of page A-38 and the drawing on page A-40. The former states there will be no gravel parking in Alternative 3, but the diagram says there will be.

Response: The A-40 diagram is incorrect and will be replaced with the correct version.

Concern ID: 14968

CONCERN STATEMENT: Section 2.5.5 describes Alternative 3 transit services and states that GGT Route 10 service on Alexander Avenue would continue with connections to other transit services at bus stops on the east and west sides of Highway 101 and with pedestrian/ bicycle access at Danes Drive. However, Figure 2.3 and Table 2.1 show GGT operating on Bunker Road and East Road into Fort Baker. Further, it is not clear how connections between GGT and other services would be enabled at Highway 101 since GGT currently does not have a bus stop near Hwy. 101 in the southbound direction due to roadway conditions, and pedestrian access between the west and east sides of Highway 101 is constrained by the narrow underpass.

Response: In Alternative 3, the GGT Route 10 on Alexander Avenue would be rerouted to provide direct service to the main post area of Fort Baker. Section 2.5.5 of the FEIS will be clarified for consistency with Figure 2.3 and Table 2.1, which

show GGT operating on Bunker Road and East Road to provide service to the main post area.

The northbound transit interface would be on the east side of Highway 101 at the existing stop on the Alexander Avenue exit ramp off northbound US 101. For the southbound transit interface, the park would work with GGT and other service providers to identify a feasible location for the interface. The wording in the FEIS text was also clarified to reflect that there is no existing GGT stop in the southbound direction near Highway 101. GGNRA would work in collaboration with GGT, MUNI, and the shuttle service providers to develop an interface that could provide connections among these transit services.

Concern ID: 14969

CONCERN STATEMENT: more designated parking areas are needed to minimize users from parking in no parking areas and destroying habitat but alternatives three and four propose to construct new parking areas throughout the Headlands which will require the removal of natural habitat / wetlands but somehow justify this habitat removal by proposing to returning the unpaved parking lot at Rodeo Beach to wetlands...why remove habitat to make new parking areas when existing parking areas seem ample (except for at the promontory on Conzelman) removal of any of the Rodeo parking area will cause a negative impact on the use of the Rodeo Beach area...this area is heavily used by beachgoers, surfers, hikers, runners, adjacent office users and vacationers, sight see-ers...returning this lot to wetlands to justify removing habitat elsewhere to create new parking is totally unclear on the concept...

Response: The replacement parking for the unpaved Rodeo Beach parking lot is infill within Fort Cronkhite, which is a developed and/or disturbed area and therefore is not a high quality habitat.

Concern ID: 14970

CONCERN STATEMENT: Third plan alternatives three and four seem "unclear on the concept"...i.e. the executive summary indicates the buildings and architectural character at Fort Cronkite and the surrounds are significantly historical but alternatives 3 and 4 propose to demolish several of the buildings and replace the buildings with a "new" architectural vernacular...generally if structures are historically significant they are rehabilitated on torn down and replaced with building architecture of a completely different character...

Response: Alternatives 3 and 4 do not include any plans to demolish buildings at Fort Cronkhite.

Concern ID: 15587

CONCERN STATEMENT: Please clarify/confirm in the Final EIS that under the preferred alternative, the entirety of East Road will be widened, and please provide a detailed explanation of how cyclists and pedestrians may be affected by parking along East Road.

Response: For ease of explaining the revised design, and the limited widening, East Road roadway characteristics and improvements are described in three distinct sections (see typical sections in Appendix A). For all sections, the travel lanes are 11-feet wide.

* Section 1 - southernmost (0.17 mile from Murray Circle north to the second curve where the trail meets the road) would have a 4-foot wide northbound shoulder and a 2-foot wide southbound paved shoulder, allowing for a wider uphill shoulder for the approximately 5-7% grade in this section and a narrower shoulder for the downhill section. This configuration is necessary because of the constrained road bench width that exists in this area.
* Section 2 - middle (0.45 mile between the trail and the curve south of the Sausalito-Marin Sanitary District entrance) generally has more road bench room to facilitate wider shoulder improvements for bicycles. This section would be widened by one foot (0.3 m) to a total width of 29 feet with a 4-foot wide northbound shoulder and a 3-foot wide southbound shoulder (this is a change from DEIS, which identified two 3-foot wide shoulders and total width of 28 feet).
* Section 3 - northernmost (0.27 mile between the curve south of the Sausalito-Marin City Sanitary District entrance and the Alexander Avenue intersection) has a constrained roadway bench. Widening the road bench beyond 28 feet would require extensive retaining wall construction at a considerable impact and cost (this option was proposed and evaluated in Alternative 4). The preferred alternative was changed to include two 3-foot shoulder widths for northbound and southbound bicycle travel.

Concern ID: 15708

CONCERN STATEMENT: The EIS needs to address the hazardous conditions on Alexander Ave. between the entrances to the park. A large parking lot on Smith Rd. that would be obstructed from view creates potentially unsafe scenarios by encouraging improper use of the area. A new trail alongside a road is not healthy - get bikes away from cars and their dangerous emissions.

Response: Alexander Avenue is under the joint jurisdiction and control of Golden Gate National Recreation Area, Caltrans, and the Golden Gate Bridge Highway and Transportation District. The National Park Service is working with the district, Caltrans, the City of Sausalito, and Marin County to address transportation issues, including safety, along Alexander Avenue. The parking lot on Smith Road maybe less obtrusive than other parking areas, NPS will consider this when patrolling and enforcing park regulations.

AL5400 - Alternatives: Alternative 4

Concern ID: 14971

CONCERN STATEMENT: Section 2.7.5 describes Alternative 4 transit services. Figure 2.8 shows GGT operating on Bunker Road and East Road into Fort Baker. District staff had previously informed GGNRA staff and consultants of need for roadway improvements, such as wide lanes and standard bus stops, to accommodate GGT bus operations and bus stops at Fort Baker. Please clarify if such improvements are included in GGNRA plans. Figure 2.8 also shows the Highway 101 transit connection locations described in Section 2.5.5 and we reiterate our related comment above.

Response: Under this plan, no roads would be widened due to the need to protect and preserve the character of the historic park roads that comprise the park's cultural landscape. GGT has provided service to the Fort Baker post in the past, and the park would like to have service in the future. The park understands some of GGT's concerns and requirements and would like to work closely with GGT to identify methods of providing transit service to Fort Baker that can address GGT's requirements and the park's concerns about impacts to the historic cultural landscape.
Please see response to concern 14968 regarding your comment on the Highway 101 transit interface connection.

AL6000 - Alternatives: Opinions or Preferences

AQ4000 - Air Quality: Impact Of Proposal And Alternatives

Concern ID: 14974

CONCERN STATEMENT: The DEIR does not discuss air quality impacts of diesel / old school busses (a likely fleet source) nor does it discuss prohibition of use of off road vehicles and motorbikes.

Response: The fleet for the proposed transit services is not known. A statement regarding the prohibition of off-road vehicles and motorbikes will be included in Section 3.1 Transportation.

CC1000 - Consultation and Coordination: General Comments

Concern ID: 14978

CONCERN STATEMENT: Further discussion, consultation and coordination is requested between the NPS and other agencies (City of Sausalito, Golden Gate Bridge Highway & Transportation District, Marin Transit, and NOAA) to address various issues in the EIS.

Response: The National Park Service will continue to work cooperatively and in consultation with Federal, state, and local agencies.

Concern ID: 14979

CONCERN STATEMENT: For construction activities within State ROW, the Department requires documented results of a current archaeological record search from the Northwest Information Center (NIC) of the California Historical Resources Information System before an Encroachment Permit can be issued. Record searches must be no more than five years old. The Department requires the records search, and if warranted, a cultural resource study by a qualified, professional archaeologist, to ensure compliance with CEQA, Section 5024.5 of the California Public Resources Code (for state-owned historic resources) and Volume 2 of the Department's Environmental Handbook (Caltrans Standard Environmental Reference (SER) at http://www.dot.ca.gov/hq/env/index.htm). Work subject to these requirements includes, but is not limited to: lane widening, channelization, auxiliary lanes, and/or modification of existing features such as slopes, drainage features, curbs, sidewalks and driveways within or adjacent to State ROW.

Please note that any work or traffic control that encroaches onto the State Right of Way (ROW) requires an encroachment permit that is issued by the Department. To apply, a completed encroachment permit application, environmental documentation, and five (5) sets of plans clearly indicating State ROW must be submitted to the address listed below. See the following website link for more information: http//www.dot.ca.gov/hq/traffops/developserv/permits/

Response: If it is determined during final design that there would be construction activities within or adjacent to State rights-of-way, the National Park Service would provide the required documented results of a current archaeological record search or a cultural resource study, if warranted, from the Northwest Information Center (NIC) to obtain an encroachment permit.

Concern ID: 15576

CONCERN STATEMENT: The County, cities, and towns have developed a standard signage program for a backbone of network routes to connect destinations in Marin. Route 5 is planned to extend south from Sausalito to the Golden Gate Bridge. We request that NPS partner with the County and City and install appropriate guide signage consistent with the county standard to close this gap in the system.

Response: GGNRA has adopted a parkwide sign design standard to be used on all of GGNRA lands. This design has been incorporated in areas such as Lands End, Fort Baker, and the Presidio. By having a consistent design standard, visitors will be able to readily determine vital wayfinding information, and correlate the sign with GGNRA national park land. As suggested, the park would incorporate the standard signage for multi-jurisdictional routes alongside NPS standard signage.

Concern ID: 16166

CONCERN STATEMENT: The URL listed for the USGS publication below is no longer functional. The document can be found at: http://pubs.usgs.gov/of/1997/of97-745/sfbr-sef-dbdesc.pdf.

Wentworth, Carl M., Graham, Scott E., Pike, Richard J., Beukelman, Gregg S., Ramsey, David W., and Barron, Andrew D., 1997, Summary distribution of Slides and Earth Flows in the San Francisco Bay Region, California; USGS Open-File Report 97.745 C, 10 p.

Response: The URL address listed in the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan DEIS for the USGS publication Summary Distribution of Slides and Earth Flows in the San Francisco Bay Region, California was replaced in the EIS with the following addresses as requested: <http://pubs.usgs.gov/of/1997/of97-745/sfbr-sef-dbdesc.pdf> and <http://pubs.usgs.gov/of/1997/of97-745/of97-745c.html>.

Concern ID: 16168

CONCERN STATEMENT: Please note that any work or traffic control that encroaches onto the State Right of Way (ROW) requires an encroachment permit that is issued by the Department. To apply, a completed encroachment permit application, environmental documentation, and five (5) sets of plans clearly indicating State ROW must be submitted to the address listed below. See the following website link for more

information: http//www.dot.ca.gov/hq/traffops/developserv/permits/

Response: If it is determined during final design that any work or traffic control would encroach onto State rights-of-way, the National Park Service would apply for an encroachment permit issued by the California Department of Transportation.

Concern ID: 16816

CONCERN STATEMENT: Based on the above mentioned transit service-related recommendations in the DEIS, we highly encourage NPS to coordinate with Marin Transit and Golden Gate Transit staff regarding the development of an internal park shuttle system, direct transit service to Fort Baker, or transit infrastructure improvements as early in the park's planning process as possible. As the local public transit provider, Marin Transit is interested in ensuring the coordination of our services with any future transit improvements within our County.

Response: The NPS has worked closely with transit providers and will continue to do so in an effort to improve transit access to the project area.

CO1000 - Coastal Zone Consistency Determination

Concern ID: 14981

CONCERN STATEMENT: Although the DEIS does mention City and County Plans that were included in the Scoping section there is no mention of the land use or policies from the Bay Plan and no mention of the consistency determination process. As federal activities and federal development plans located within the coastal zone must be consistent to the maximum extent practicable with the coastal management program, the DEIS should mention Bay Plan Policies where applicable.

Response: Section 1.5.2 of the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan DEIS provides a summary of the California Coastal Management Program. This section has been updated in the EIS, as suggested, to include a discussion of the Bay Plan and the proposed project's consistency with the policies presented in the Bay Plan. Proposed improvements under all alternatives presented in the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan would be consistent with and support the policies in the Bay Plan.

Concern ID: 14982

CONCERN STATEMENT: It seems to me you should restrict your consideration to alternatives (presumably alternatives 1 and 2) that preserve the no fee aspect aspect of our current Golden Gate National Recreation Area experience. Otherwise you are basically violating the intent of the Coastal Commission and restricting public access to California coastal areas.

Response: Article 3, "Recreation," Section 30220, "Protection of certain water-oriented activities" of the California Coastal Act (2008) states, "Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses." Section 30221, "Oceanfront land; protection for recreational use and development" further states "Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial

recreational activities that could be accommodated on the property is already adequately provided for in the area." However, Section 30214, "Implementation of public access policies; legislative intent" states, (a) The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case including, but not limited to, the following:
(1) Topographic and geologic site characteristics.
(2) The capacity of the site to sustain use and at what level of intensity.
(3) The appropriateness of limiting public access to the right to pass depending on such factors as the fragility of the natural resources in the area. . . .

Concern ID: 14984

CONCERN STATEMENT: The GGNRA is required to submit a consistency determination for this project, because it would affect the coastal zone. This regulatory requirement arises under Section 307 of the federal Coastal Zone Management Act. 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. See Attachment A for the applicable Coastal Act policies).

Response: Comment noted. The National Park Service will submit a consistency determination to the California Coastal Commission pursuant to the requirements of section 307 of the Federal Coastal Zone Management Act.

CR4000 - Cultural Resources: Impact Of Proposal And Alternatives

Concern ID: 14985

CONCERN STATEMENT: Alts 3 & 4 are "Beneficial" for Natural Resources yet "Adverse" to Cultural Resources due to road widening. How does this diminish the "cultural" resource? Explain adverse impacts to cultural resources.

Response: Please refer to Section 4.4 Impacts to Cultural Resources for an explanation of potential impacts to historic resources and landscape within the project area, in particular, the historic district of Forts Baker, Barry, and Cronkhite.

Concern ID: 15212

CONCERN STATEMENT: Widening the roads to include a bike lane seems to be the most cost effective and meaningful plan to promote safety. Most of the roads currently have a shoulder that would be easy to pave to accommodate this. And since these side sections/shoulders already exist, this "cultural resource" impact of preserving the look of a two lane road would not have an impact since visually one already sees the "wider" road.

Response: Providing a wider road shoulder would provide a safer roadway for bikes. Road widening varies by alternative, with the preferred alternative (Alt. 3) widening the roads less than Alternative four. Road width is an important character defining feature for the roads in this Historic District and will be a factor in deciding the appropriate shoulder width. The road widths proposed in the preferred alter-

native provides significant improvement over existing conditions, but does not have the same character defining road widening impacts as Alternative 4.

EJ4000 - Environmental Justice: Impact of Proposal & Alternatives

Concern ID: 15562

CONCERN STATEMENT: The goals set forth in the Plan are good, but one is incompletely developed. The plan proposes a number of ways to reduce auto use in this area, but it suggests little in the way of improvement of means of access to these lands for city people who do not own cars. GGNRA was to be "a park for the people," and one of its primary intentions was to give access to people who can't take a drive out of town to have the experience of a national park. The Presidio, Fort Funston and Lands End are wonderful, but they do not have the grand scale of the rest of the GGNRA's 80,000 acres. The southern tip of Marin County has that scale. It is the closest place to the city for that experience, most of all for people from San Francisco, but also from Oakland and Berkeley. Getting to this area ought to become be the most affordable place for inner city, car-less, and disadvantaged individuals and families beyond the San Francisco lands.

Response: One of the goals of the project is to promote public transit to and within the park. Promoting transit service improvements improves access to the park for city people who don't own cars. Encouraging MUNI Route 76 service on Saturdays under Alternatives 2, 3, and 4 would enhance access to Marin Headlands park destinations on this day by providing an additional mode for visitors for accessing the Marin Headlands. Providing an internal shuttle under Alternatives 2, 3, and 4 would also improve access to destinations within the Marin Headlands and Fort Baker. Providing transit access to Fort Baker on Saturdays under Alternatives 3 and 4 would also provide an additional mode for visitors to access this area.

GR4000 - Geologic Resources: Impact Of Proposal And Alternatives

Concern ID: 15147

CONCERN STATEMENT: Please quantify the geomorphic and sediment transport impacts to the creek system based on alterations of the parking areas within the park.

Response: Unfortunately, Rodeo Creek is an incised channel over much of its distance (Bass and Choy 2004). The proposed parking area at Smith Road is perched on a fill terrace above the wetted channel. The main factors affecting natural channel processes are associated with past land uses, such as grazing and residential development, which placed a fill pad next to the creek for housing. The proposed actions should have a beneficial effect through rehabilitation of the riding stables parking lot to drain into a vegetation swale. At other sites, drop inlets would either be installed with filters or discharged into vegetated swales to reduce sediment transport to streams.

Concern ID: 15157

CONCERN STATEMENT: I'm very concerned about erosion below Conzelman Road, especially along the high stretch near Hawk Hill. How do we protect this region in the face of adding

cement, walking trails, more parking spaces?

Response: The erosion scars that now exist below Conzelman Road were formed due to improper runoff control from the roadway. Although proper runoff control has been implemented and erosion gullies are no longer forming or getting worse, the scars from past erosion still remain. These scars are proposed for restoration under this plan. Runoff control (i.e. culvert replacement and proper water energy dissipation) is part of the design/construction of the roadwork on Conzelman Road.

Concern ID: 15161

CONCERN STATEMENT: Your references to erosion, and the mitigation to further erosion through your alternatives seem specious, and without scientific merit. As a frequent hiker and viewer of the entire area (perhaps twice to three times weekly) I manage to keep away on the weekends or during the press of tour busses. And I have yet to see any erosion caused by vehicle traffic. Your report is woefully blank on that topic.

Response: In addition to roadway drainage improvements to address causes of erosion, the prevention of vehicle parking on unpaved road shoulders would help address the loss of vegetation that contributes to erosion problems.

Concern ID: 15169

CONCERN STATEMENT: I understand that there are concerns with parking and erosion. I think the proposed changes in most of the options would have similar impacts in the proposed areas, and really would just be moving around the problems. Conzelman Road, even if closed, will have erosion problems. I am not a geologist but it seems that the building of the road in the first place caused this problem. Widening it to create a new sidewalk would likely create even more problems.

Response: The rehabilitation of roadways with improved drainage would address some causes of erosion.

MT1000 - Miscellaneous Topics: General Comments

Concern ID: 14988

CONCERN STATEMENT: Please read the report "Port Baker" produced by the Richardson's Bay Maritime Association, forwarded to you by Michael Rex, Chair.

Response: The park has reviewed the report in context with the proposed actions of this plan. Richardson Bay Maritime Association (RBMA), authors of the report, asks that the contents of the report be used as a tool for waterfront planning at Fort Baker. We applaud the effort of RBMA to pull together the information in the report, and found the summary of existing recreation user groups to be useful, as some of these groups provided comments on this plan. However, after review, the park found that the recommendations in the report are directed specifically toward waterfront development, a project that is out of the scope of this plan. It should be noted that waterfront development actions were decided in the Fort Baker planning effort concluded in 2000 when the record of decision (ROD) was approved. As noted in the report, the waterfront actions approved in

the Fort Baker Plan have not been implemented.

Concern ID: 14989

CONCERN STATEMENT: Limitations on car access and parking, and the bus transit system seem to work well at Yosemite. Can anything from Yosemite be applied at the Headlands?

Response: Alternatives were developed for this plan recognizing what worked at Yosemite, and relevant aspects were included. However, only a small portion of a road is closed to private vehicles at Yosemite; other than that, there are no restrictions on private vehicle access or parking. Yosemite has one centralized parking area people are encouraged to use, but this use is voluntary, as is the frequent shuttle service.

MT6000 - Miscellaneous Topics: nonsubstantive

NS1000 - Agency Comment that Restates DEIS

NS2000 - Out of Project Scope

ON1100 - Public Involvement

Concern ID: 14991

CONCERN STATEMENT: Include park users in planning; more discussion is needed. Request for comments was not well publicized. Notices of the plan or public hearings were not posted at highly used locations within the park. The public hearing process should be re-done.

Response: GGNRA used a wide variety of methods to reach interested and affected public regarding the release of the Draft EIS for this project. These methods include: letters and postcards sent to the Park's mailing list (approximately 5,000 addresses that includes individuals, organizations, and agencies); newspaper notices in the Marin Independent Journal and the San Francisco Examiner; posting in the Federal Register; posting on the park's website; news release; copies of the Draft EIS at Marin County libraries (Marin County Free Library, Mill Valley Public Library, Point Reyes Public Library, and Sausalito Public Library); and information flyers at the park's visitor center, including the visitor center in Rodeo Valley. At the time of public release of the Draft EIS, newspaper articles were posted in the Marin Independent Journal, San Francisco Chronicle, Point Reyes Light, and the San Francisco Examiner. Local TV and radio stations conducted news features on the project before and during the public meeting on July 18, 2007. Also, the project was brought before the Sausalito City Council on July 10, 2007 and was noticed on their website as an agenda topic. Public participation is an important part of the environmental review process, and the park will continue to cast a wide net in order to reach interested and affected public.

Concern ID: 14992

CONCERN STATEMENT: I note with dismay that my response to your EIS regarding L76 (GOGA-PLAN) was not accepted, bounced back by your e-mail system from the address noted in the text for response. I wonder how many other hundreds of letters were not received? I ask that you bring this unfortunate event to proper attention of the overseeing body, so that when this matter comes out in press in support of the notion that the EIS was announced on the QT, and that response was stymied by having the improper address on the letter text.

Response: The park acknowledges that there was an incorrect e-mail address in the cover letters that accompanied the CD's and paper copies of the Draft EIS sent to interested publics. Although the correct e-mail address was also listed in the same letter, it is unfortunate that this error was made. The other public notification announcements (notification cards, press release, newspaper advertisements, and flyers), all had the correct information. GGNRA, in all of its correspondence soliciting public input, offers the public several options for sending their comments and concerns, including letter, e-mail, and on-line through the park's project website. Because of the number of options provided to the public for sending comments and concerns, NPS staff feel confident that anyone wanting to provide a comment on this project was successful in reaching the park. Also, the park provided a name and telephone number in all public notifications for anyone having questions or difficulties.

Concern ID: 14993

CONCERN STATEMENT: Regarding the DEIS for Ft. Baker Trans. Plan: Please reference the letter that I copied from our files and hand delivered to the July meeting in Sausalito in July 2007. This 10 page document starts with a letter from T.A.M. dated 6-22-04. Please make sure that this packet is included in the official comments , as we have been trying for 8 years to make the area safer for bikes without much co-operation
from government agencies.

If you want input on the actual details of these ideas, we have a toolbox and trained people to assist you.

Response: This letter has been included and is addressed under the comments related to trails.

PN11000 - Purpose And Need: Other Policies And Mandates

Concern ID: 15182

CONCERN STATEMENT: ACCESS ONTO THE WATER IS A PROTECTED FORM OF PUBLIC ACCESS

Access onto the water has been protected in California since establishment of the State's Constitution, and has recently received additional encouragement in the passage of the Water Trail Act. The Constitutional provision is included in Section 4 of Article 10, and provides:

No individual ...shall be permitted to exclude the right of way to such water ...or obstruct the free navigation of such water; and the Legislature shall enact such laws as will give the most liberal construction to this provision, so that access to the navigable waters of this State shall always be attainable for the people thereof.

Response: The California Constitution states in Section 4:

No individual, partnership, or corporation, claiming or possessing the frontage or tidal lands of a harbor, bay, inlet, estuary, or other navigable water in this State, shall be permitted to exclude the right of way to such water whenever it is required for any public purpose, nor to destroy or obstruct the free navigation of such water; and the Legislature shall enact such laws as will give the most liberal construction to this provision, so that access to the navigable waters of this State shall be always attainable for the people thereof.

Furthermore, Section 7 states:
Whenever any agency of government, local, state, or federal, hereafter acquires any interest in real property in this State, the acceptance of the interest shall constitute an agreement by the agency to conform to the laws of California as to the acquisition, control, use, and distribution of water with respect to the land so acquired.

The National Park Service interprets these sections to mean that federal agencies are obliged to comply with Section 4. The National Park Service also interprets "nor to . . . obstruct the free navigation of such water" to mean physically impede, prohibit, or block open navigation of water under NPS jurisdiction. The National Park Service is not proposing to charge a fee to navigate the water. In fact, Section 4.2 of the Draft San Francisco Bay Area Water Trail Plan dated May 22, 2007, "Existing Access onto the Bay," says that access to the water trail consists of over 130 launch and landing points, and that "some launch ramps require a fee to park or launch." The existence of fee-based parking or launching indicates that the NPS interpretation is consistent with other interpretations of this part of the constitution, and implies that charging fees to park or launch is not in violation of the state constitution.

Concern ID: 15183

CONCERN STATEMENT: One such law that is intended to increase access is the MacAteer-Petris Act, which provides in Section 66602 that:

...existing public access to the shoreline and waters of the San Francisco Bay is inadequate and that maximum feasible public access, consistent with a proposed project, should be provided. (Emphasis added)

While the MacAteer-Petris Act puts access to the waters of the Bay on equal footing with access to the shoreline, the legislature has provided further guidance in implementing this Constitutional provision in the Water Trail Act, establishing a legislative goal of "...improving access to, within, and around the bay...(emphasis added)

Response: Section 66602 of the McAteer-Petris Act states:

The Legislature further finds and declares that certain water-oriented land uses along the bay shoreline are essential to the public welfare of the bay area, and that these uses include ports, water-related industries, airports, wildlife refuges, water-oriented recreation and public assembly, desalinization plants, upland dredged material disposal sites, and powerplants requiring large amounts of water for cooling purposes; that the San Francisco Bay Plan should make provision for adequate and suitable locations for all these uses, thereby minimizing the necessity for future bay fill to create new sites for these uses; that existing public access to the shoreline and waters of the San Francisco Bay is inadequate and that maximum feasible public access, consistent with a proposed project, should be provided.

Access to the shoreline from/to the land, as well as to the water, would still be allowed; a fee would be charged to visitors parking in specific locations.

Concern ID: 15184

CONCERN STATEMENT: Although the Park Service is not part of the Department of Transportation, it is useful to look as well at Section 4(f) of the Transportation Act of 1966 which establishes national policy on the importance of preserving recreation. That Act establishes that it is "...the national policy that special effort be made to preserve ...public park and recreation lands..." While this policy is not necessarily binding on the Department of Interior, the approach of preserving recreational resources unless there are no feasible and prudent alternatives is not easily overlooked.

Response: As the comment notes, Section 4(f) of the Transportation Act of 1966 does not apply to the National Park Service. Rather, the National Park Service is obligated to carry out its responsibilities under the 1916 National Park Service Organic Act, which requires that NPS units be managed in a way that allows them to be enjoyed not just by those who are here today, but also by generations that follow. The key management-related provision of the Organic Act is as follows:

[The National Park Service] shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified & by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

Although Congress has provided that conservation is predominant over recreation in NPS units, the National Park Service embraces appropriate use of parks. An "appropriate use" is one that is suitable, proper, or fitting for a particular park, or to a particular location within a park. Not all uses are appropriate in all units of the national park system, and what is appropriate may vary among and within NPS units. The National Park Service believes that it has preserved appropriate recreational resources at GGNRA in several ways, such as the proposed improvements to roads, which would improve recreational opportunities for cyclists, and improvements to trails, which would also provide additional recreational opportunities, as well as access to areas without motor vehicles.

Concern ID: 15601

CONCERN STATEMENT: The Draft EIS indicates that the provisions of the Fort Baker Plan, Final Environmental Impact Statement (FEIS), and Record of Decision dated July 2000 will apply regardless of which of the four proposed alternatives is selected. However, the Draft EIS, does not, and must specifically incorporate and coordinate with all of the provisions of the FEIS and Settlement Agreement by and between the City and the NPS related to transportation.

Response: Relevant aspects of the Fort Baker Plan Final Environmental Impact Statement and the subsequent Record of Decision are included in the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan as "Elements Common to All Alternatives" as described in Chapter 2. Regarding inclusion of terms of the Settlement Agreement in the MH/FB DEIS, to the park's knowledge a settlement agreement was never signed between NPS and the City of Sausalito. However, the park will continue to work closely with the City of Sausalito, especially regarding transportation planning.

Concern ID: 15709

CONCERN STATEMENT: Redesignation of this section of the Rodeo Valley Trail as "multiple use including bicycles" conflicts directly with the designations approved (after intense discussion and legal challenge) as part of the 1992 GGNRA trail designation process.

Response: GGNRA adopted a trail plan in 1992 that established which trails were to be open to bicycles and which trails were to be closed. Prior to 1992, bicyclists retained access to all trails in the GGNRA pending development of this trail use plan. This is because the National Park Service had, in 1964, implemented a management scheme in which NPS units classified as "recreational" would permit bicycle use on trails unless designated as closed by the park superintendent. In 1987, Congress disapproved on this management scheme and directed that all NPS units were to be treated consistently, with resource protection as the primary goal. The 1987 regulation established a uniform rule for NPS units wherein all bicycle use of off-road areas would be prohibited unless designated as open by park superintendents. GGNRA decided not to enforce this rule until it was determined which trails would be open and which would be closed to bicycles. The result of this determination was the 1992 trail plan, which allowed bicycles on specific trails.

Concern ID: 15714

CONCERN STATEMENT: Please advise what is different that would allow this proposal to trump the decision in BTC v. Babbitt? Seems they are the same. Please advise. thank you.

Response: GGNRA adopted a trail plan in 1992 that established which trails were to be open to bicycles and which trails were to be closed. Prior to 1992, bicyclists retained access to all trails in the GGNRA pending development of this trail use plan. This is because the National Park Service had, in 1964, implemented a management scheme in which NPS units classified as "recreational" would permit bicycle use on trails unless designated as closed by the park superintendent. In 1987, Congress disapproved on this management scheme and directed that all NPS units were to be treated consistently, with resource protection as the primary goal. The 1987 regulation established a uniform rule for NPS units

wherein all bicycle use of off-road areas would be prohibited unless designated as open by park superintendents. GGNRA decided not to enforce this rule until it was determined which trails would be open and which would be closed to bicycles. The result of this determination was the 1992 trail plan, which allowed bicycles on specific trails.

Bicycle Trails Council of Marin brought a lawsuit against the Secretary of the Interior, Bruce Babbitt, et. al., over shared use of single track trails at GGNRA, specifically against enforcement of the 1992 trail plan. The plaintiffs challenged two agency actions: the adoption in 1987 of the regulation prohibiting all off-road bicycle use in NPS units, and the development and promulgation of the 1992 trail plan for the Marin Headlands. The plaintiff's application was denied. Plaintiffs challenged the legality of the regulation, believing that it was not based upon a permissible interpretation of the Organic Act (see Concern 15184 for more information about the Organic Act). The court disagreed, stating that the National Park Service interpreted Congress's amendments to the Organic Act to be clear in the message that the National Park Service was not to single out particular class of units of the park system (i.e., recreational units) for less protective treatment, but instead was to manage all units to effect the purpose of the Organic Act - primarily resource protection. The court also found that the Park Service is empowered with the authority to determine what uses of park resources are proper and what proportion of the park's resources are available for each use. Therefore, the proposed actions in this plan are consistent with the findings of the court case.

Concern ID: 16173

CONCERN STATEMENT: It is our understanding that the Fort Baker Plan, adopted in 2000, proposes significant improvements to the Bay Trail through the construction/improvement of an interpretive trail from Lime Point to East Road, and that the only improvements to the Bay Trail proposed under the current TIMP involve the widening of East Road to accommodate a Class III bicycle facility. As stated in the Bay Trail Plan, adopted in 1989, the goal of the Bay Trail is to "...develop a continuous trail which...is situated as close as feasible to the shoreline..." and "Wherever possible, new trail should be physically separated from streets and roadways to ensure the safety of trail users". The Bay Trail Board of Directors interprets the latter policy as a clear mandate to pursue and implement Class 1 fully separated pathways as the standard for the Trail, as it fulfills many of the stated Bay Trail Plan policy goals.

Response: Relevant aspects of the Fort Baker Plan Final Environmental Impact Statement and the subsequent Record of Decision, including extending the San Francisco Bay Trail along East Road, are included in the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan as "Elements Common to All Alternatives" as described in Chapter 2. This section notes that the existing road is too narrow to accommodate the trail, and refers to the action alternatives for additional actions. The preferred alternative (Alternative 3) includes improvements to the Bay Trail. Pedestrians are accommodated on the improved trail adjacent to East Road. Bicyclists are accommodated on East Road in a widened shoulder area.

Concern ID: 16182

CONCERN STATEMENT: Transportation. Alternative 3, the preferred alternative, proposes a new ferry terminal at Fort Baker. Bay Plan policies on transportation state, "Ferry terminals should be sited at locations that are near navigable channels, would not rapidly fill with sediment and would not significantly impact tidal marshes, tidal flats or other valuable wildlife habitat. Wherever possible, terminals should be located near higher density, mixed-use development served by public transit. Terminal parking facilities should be set back from the shoreline to allow for public access and enjoyment of the Bay." These policies should be taken into consideration during the anticipated Ferry Study and design of a new ferry terminal and connecting transportation.

Response: The anticipated ferry study and potential design of a new ferry terminal at Fort Baker is not part of the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan. However, as stated in that DEIS, the preferred alternative includes the provision of an internal shuttle that could potentially interchange with a new ferry service in Fort Baker if such service is implemented in the future. Design of a new ferry terminal at Fort Baker would be part of the NPS's proposed ferry study (a separate project). Consistency with the Bay Plan's policies in regards to siting and constructing ferry terminals would be taken into consideration as part of the proposed NPS ferry study.

Concern ID: 16183

CONCERN STATEMENT: Bay Plan Policies on Public Access. The Commission can only approve a project within its jurisdiction if it provides maximum feasible public access, consistent with the project. The Bay Plan policies on public access state, in part that, "in addition to the public access to the Bay provided by waterfront parks, beaches, marinas, and fishing piers, maximum feasible access to and along the waterfront and on any permitted fills should be provided in and through every new development in the Bay or on the shoreline...Whenever public access to the Bay is provided as a condition of development, on fill or on the shoreline, the access should be permanently guaranteed....Public access improvements provided as a condition of any approval should be consistent with the project and the physical environment, including protection of natural resources, and provide for the public's safety and convenience. The improvements should be designed and built to encourage diverse Bay-related activities and movement to and along the shoreline, should permit barrier-free access for the physically handicapped to the maximum feasible extent, should include an ongoing maintenance program, and should be identified with appropriate signs....Access to the waterfront should be provided by walkways, trails, or other appropriate means and connect to the nearest public thoroughfare where convenient parking or public transportation may be available..."

Response: The National Park Service will submit a consistency determination to the California Coastal Commission and the San Francisco Bay Conservation and Development Commission. Access to waterfront sites would be improved under the preferred alternative through improving vehicular circulation; implementing a wayfinding program, including signage to reduce visitor confusion and traffic congestion while accessing sites in the park; improving visitor parking areas; improving biking conditions on roadways and trails; improving the trail system; and modifying existing transit services and providing additional tran-

sit service to and within the park. Universal design concepts that maximize accessibility for all visitors (including those with disabilities) would be applied to all facility designs to the greatest extent practicable. Under the preferred alternative, access to aquatic recreation sites would not change except on car-free days. On car-free days access to the Fort Baker waterfront and Rodeo Beach would be available to all visitors, but in a car-free environment; however, access would be available by shuttle.

Concern ID: 16184

CONCERN STATEMENT: Sea Level Rise and Safety of Fills. Bay Plan findings and policies anticipate the need for planning associated with safety of fills and sea level rise. The safety of fills findings state, in part, "&structures on fill or near the shoreline should be above the highest expected water level during the expected life of the project&Bay water levels are likely to increase in the future because of a relative rise in sea level& Relative rise in sea level is the sum of: (1) a rise in global sea level and (2) land elevation change (lifting and subsidence) around the Bay." Bay Plan policies on safety of fills state, in part, "local governments and special districts with responsibilities for flood protection should assure that their requirements and criteria reflect future relative sea level rise and should assure that new structures and uses attracting people are not approved in flood prone areas or in areas that will become flood prone in the future, and that structures and uses that are approvable will be built at stable elevations to assure long-term protection from flood hazards."

The DEIS does not mention sea level rise and how public access and trails will be adapted for potential sea level rise. This issue should be addressed.

Response: Section 4.3.2 of the EIS has been revised to address siting facilities to avoid hazards related to potential sea level rise. According to NPS Management Policies 2006 the National Park Service will strive to site facilities where they will not be damaged or destroyed by natural physical processes. In areas where dynamic natural processes cannot be avoided, such as shorelines, developed facilities should be sustainably designed. When it has been determined that facilities must be located in such areas, their design and siting will be based on a thorough understanding of the nature of the physical process; and avoiding or mitigating (1) the risks to human life and property, and (2) the effect of the facility on natural physical processes and the ecosystem.

Although bay water levels are expected to rise, only stairs to the beach (proposed to control erosion) and the lagoon trail would be affected in the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan. The stairs and the trail would represent minimal capital expense should they be lost to rising sea levels. Nothing else identified in the plan would be affected by sea level rise.

PN3000 - Purpose And Need: Scope Of The Analysis

PN4000 - Purpose And Need: Park Legislation/Authority

Concern ID: 15022

CONCERN STATEMENT: Charging parking fees is not part of the park's original legislation. When the NRA was established, it clearly defined free public access to the park.

Response: GGNRA's enabling legislation states:

No fees or admission charges shall be levied for admission of the general public to the recreation area except to portions under lease or permit for a particular and limited purpose authorized by the Secretary. The Secretary may authorize reasonable charges for public transportation and for admission to . . . historic vessels of the National Maritime Museum.

The park's proposed fees are for parking, not admission. Visitors would still be admitted to the park free of charge whether they arrive by foot, bike, bus, or their own private vehicle. Visitors would only pay a fee to park, and only in certain areas. This parking fee is in compliance with the enabling legislation, as the proposed fees called for in this EIS would be used to pay for the public transportation the plan describes.

Concern ID: 15187

CONCERN STATEMENT: We understand the physical constraints along much of the Marin Highlands, and agree that in many areas it is impossible to provide increased parking without diminishing the values of the Park. In such areas, NPS policies that protect the natural environment mean that visitor use can only be increased by encouraging alternative means of transportation. However, the Horseshoe Cove area can readily be distinguished in a number of ways. First, this area bas been dramatically altered, and historically been used as a marina; thus protection of the historic character of the area is fully within the NPS's mission. Second, there are existing areas that have been used for parking by water access users, so we are merely asking for protection of existing access resources, rather than new construction that would sacrifice natural resources.

Response: Access to Horseshoe Cove by water users would not be eliminated. As part of the proposed car-free day pilot program, parking at the waterfront may be restricted and users would park along East Road. In developing the car-free day program, NPS will consult with user groups that access the waterfront area with recreational equipment.

PN8000 - Purpose And Need: Objectives In Taking Action

Concern ID: 14999

CONCERN STATEMENT: Please provide bike access to the trail that descends from Conzelman Road, east of Battery McIndoe, to the Visitor Center on Rodeo Lagoon. It is critical that cyclists have off road routes from Conzelman Road, down into the Valley. This is in furtherance of the Plan's goal to improve trails and connectivity within the area. Please provide bike access on the existing trail that starts at the riding stables, proceeds westerly, then southerly, passing to the east of the Headlands Center for the Arts, and finally joining the newly created Visitor Center - Con-

zelman Road trail.

Response: These suggested routes have been reviewed by the NPS, which has identified a suitable bike route that would provide access from Conzelman Road to Rodeo Valley. This route has been added to the preferred alternative and can be viewed in Figure 2.4. As for the second route suggestion, this route is currently marked as a hiking/equestrian trail and the park feels this is the appropriate use designation for this trail.

Concern ID: 15000

CONCERN STATEMENT: I am a resident of San Francisco and an avid Mountain Biker who rides regularly in the GGNRA area in Marin. I gather that the park service is in the process of updating its transportation plan and that the plans have significant implications for mountain bikers.

As I understand it the stated purpose of the plan is, in part, to "provide improved access to and within the Marin Headlands and Fort Baker for a variety of users." As well, I understand that the purpose of the plan is to "create an attractive and viable alternative to auto access." The preferred alternative that is currently being considered by the GGNRA fails to accomplish these objectives on several counts.

Response: As stated in Section 1.1, "The purpose of the proposed action is to provide improved access to and within the study area for a variety of users, and to initiate these improvements in a way that minimizes impacts to the area's rich natural and cultural resources." A variety of users include mountain bikers as well as many others such as recreationists (hiking, surfing, boating, kayaking, sailing, scenic viewing), educational users, residents, and park partners. As stated above in the purpose, improvements should be initiated in a way that minimizes impacts to park resources.

Concern ID: 15003

CONCERN STATEMENT: We realize that once beyond the boundary of the park, any transportation improvements require the financial assistance of local and state agencies, However, if the agencies joined with the Park Service in reviewing what city routes already exist and which ones could serve a broader public connecting more conveniently, for example, with the MUNI 76 route in a couple of San Francisco central city locations we could get improvement without a huge price tag. We don't know what could be possible for the East Bay, but think it should be considered. We think this issue is significant enough to state it as an important goal of this plan.

Response: Planning transit service for areas in San Francisco or the East Bay is outside the park's authority and the scope of this project. GGNRA will continue to coordinate with MUNI and GGT to encourage improved access and service to the park.

Concern ID: 15004

CONCERN If a student goes on a school trip to the Headlands or Fort Baker, and wants to repeat the experience with his family, it will take some good publicizing and

STATEMENT: information-sharing to make this possible. We are reminded of the early efforts during the first years of the GGNRA to bring city kids out to the nearby park areas in the summertime. That generation of visitors introduced to the park now have grandchildren. No one has thought much about this for some years, and some modest, well-publicized urban-based transportation improvements could make this possible. This also should be among the goals of this plan.

Response: As stated in Section 1.3, one of the goals of the plan is "Promote public transit, pedestrian, and bicycle travel to and within the park to improve visitor experience and enhance environmental quality." The plan proposes expanded transit service within and to the Marin Headlands and Fort Baker. This expanded transit service would connect with the existing urban transit system providing more opportunity for city dwellers to access the park.

Concern ID: 15006

CONCERN STATEMENT: With all due respect, if your intention is to make the Marin Headlands into a revenue-generating theme park for able-bodied tourists, please say so.

Response: No, it is not the intent of this plan to make the Marin Headlands into a revenue-generating theme park.

Concern ID: 15012

CONCERN STATEMENT: Since the purpose for improved circulation in this special recreational area is "to pursue improved access to and within the Marin Headlands and Fort Baker for a variety of users" (p. iv) in the spirit of the dedication of this land by Congressperson Burton and Congress as a no fee recreational area; it seems inappropriate to charge for parking - the alternative of shuttle and to close the park on special event days and one day monthly (on an experimental basis).

Response: A "variety of users" also includes those that wish to access and enjoy the park via walking, hiking, and biking. The plan would not close the park on special event days or one day monthly. On those particular days, autos would be restricted in specific locations, but those locations would remain open with access provided by other modes such as transit, walking or biking.

Concern ID: 15175

CONCERN STATEMENT: As it presently is formulated, the windsurfing communities of the Bay area are strongly opposed to the elements of the plan that would institute carless days (Alternatives 3 and 4) because those alternatives would effectively eliminate access to the water. We believe that this is inconsistent with the stated purpose of the EIS.

Response: As stated in the EIS, the purpose of the plan is to:

provide improved access to and within the study area for a variety of users, and to initiate these improvements in a way that minimizes impacts to the area's rich natural and cultural resources.

The purpose of the plan is to provide improved access, which can be interpreted differently by different people. Therefore, this purpose statement is further refined by the plan goals and objectives in section 1.3. The plan's three goals in-

clude promoting public transit, pedestrian, and bicycle travel; rehabilitating the road and trail infrastructure; and reducing traffic congestion. The National Park Service believes that implementation of car-free days supports the first and third objectives.

Concern ID: 15180

CONCERN STATEMENT: The subject EIS establishes that the purpose of the action "...is to provide improved access to and within the study area for a variety of users..." Eliminating parking and increasing demand for a limited parking supply fails to meet this purpose because there are no alternatives that would provide for the existing water users.

Response: As stated in the EIS, the purpose of the plan is to:

provide improved access to and within the study area for a variety of users, and to initiate these improvements in a way that minimizes impacts to the area's rich natural and cultural resources.

"Improved" access does not necessarily mean "increased" private vehicle access. The National Park Service feels that the improvements proposed under the preferred alternative in the form of a greater number of transit options provided to and within the park support the plan's purpose of improving access, including improving access for those visitors who are transit-dependent and/or would prefer to use transit rather than other modes of transportation.

Concern ID: 15181

CONCERN STATEMENT: There is no objective evidence that the car-free days would accomplish the stated purpose for most recreational users because the primary mode of access for almost all recreational trips is by automobile.

Response: Under the preferred alternative, the National Park Service would implement a car-free days program on a trial basis. The trial program would then be reviewed to provide objective evidence to evaluate how well the trial program met the program's objectives.

Concern ID: 15296

CONCERN STATEMENT: The goals set forth in the Plan are good, but one is incompletely developed. The plan proposes a number of ways to reduce auto use in this area, but it suggests little in the way of improvement of means of access to these lands for city people who do not own cars. GGNRA was to be "a park for the people," and one of its primary intentions was to give access to people who can't take a drive out of town to have the experience of a national park.

Response: Under the preferred alternative, "existing transit services would be expanded to improve access to and within . . . the area" (Section 2.5.5). The second paragraph in this section provides more information about how regional transit service to the park would be expanded and thereby provide improved access opportunities for those visitors who do not own cars.

PN9000 - Purpose And Need: Issues And Impact Topics Selected For Analyses

PO4000 - Park Operations: Impact Of Proposal And Alternatives

Concern ID: 15299

CONCERN STATEMENT: In the most recent meeting, we heard that the costs and problems for running car free days in the Park would be high (needing to pay for advertising, information, in addition to the actual bus and shuttle service), and that the parking fees alone would not even cover this. How is there any funding in the budget when already there are issues of not enough Rangers, Park Police, Park employees, and even issues of closing the Headlands Fire Department due to lack of funding?

Response: Although there may be potential staffing impacts or costs not accounted for in the project budget, there would be no impacts on the park's annual operating budget and existing funding sources. A full and detailed operations and financial plan would be worked out in advance of actual implementation.

Concern ID: 15300

CONCERN STATEMENT: Implementation Funding: Other than parking fees, I found little discussion of funding, expenditures, or revenue plans. How will the proposed improvements be funded?

Response: Impacts to park operations and management, including annual operating budget, are provided in Section 4.7 of the DEIS. Capital improvements associated with the transit service would be financed through a combination of local, state, and federal funding sources in combination with private grants and philanthropic sources. Funding for other capital improvements would be financed through a variety of federal programs. Operating costs would be fully funded through new park revenue or would be generated primarily by parking fees and supplemented with additional funding sources such as leases, grants, or philanthropic sources. A detailed description of an example funding plan is provided in Appendix B.

SE4000 - Socioeconomics: Impact Of Proposal And Alternatives

Concern ID: 15301

CONCERN STATEMENT: Socioeconomic impacts to residents: Why should we fund a shuttle bus we will never ride? As a resident, I support shuttling a limited amount of people from SF to Vista Point who should pay to support the transportation and day use. Additional fire hazard and refuse and patrols should be paid for by those using this land. Residents should retain their privilege of being able to enjoy this area that has been impacted by tourism at our expense. It is unfair to burden the residents further with traffic, whether on foot, auto, or shuttle - shuttle pick up and drop off and parking should remain outside town limits.

Response: In the Preferred Alternative, the shuttle bus would be funded by the parking fees. Residents have the same opportunity to ride the shuttle system as tourists. The proposed project is expected to have negligible beneficial impacts on the quality of life in local communities as it relates to traffic congestion because as presented in the plan, all transportation improvements including pedestrian,

roadway, shuttle stops and parking are in the park and therefore outside town limits.

Concern ID: 15302

CONCERN STATEMENT: We have car-alternatives already. The Marin Headlands already has flat, well-graded, car-free dirt trails for bicycling and walking, such as Rodeo Valley Trail, Rodeo Lagoon Trail, and the lower Bobcat Trail. There are also fabulous flat coastal trails within an hour's drive in Marin at Tennessee Valley, Bear Valley, and Limantour. It would be a huge administrative cost to try to provide car-free experiences in the Ft Cronkhite vicinity, and especially with great personnel costs to organizations, like GGRO, that run daily programs requiring vehicles.

Response: A "variety of users" also includes those that wish to access and enjoy the park without vehicles. For car-free days when vehicle access is restricted, a plan for access by residents, staff and park partners would be developed.

Concern ID: 15303

CONCERN STATEMENT: The museum would like clarification on the "Special Park Use Guidelines" and what that will mean for our signature events. We have several events and festivals that we have done here at Fort Baker for 16 years. Some of these events are major fundraisers for the museum and if they are impacted the operations of the museum would be greatly impacted.

Response: The "Special Park Use Guidelines" are currently in effect and the requirements are tailored for each specific event in consultation with NPS.

Concern ID: 15306

CONCERN STATEMENT: Your document (Summary, page vi) suggests in Traffic that Alternatives 3 and 4 compared to Alternative 1, resulting in long-term, negligible, beneficial impacts. I ask, if the benefits are "negligible," why ask the taxpayers to bear their costs?

Response: The proposed project would provide negligible to major beneficial impacts to other elements, including transit service, a reduction in automobile trips, non-motorized access and use, wayfinding, coastal resources, biological resources, visitor use and experience, recreation and visitor enjoyment. Additionally, the transit improvements would be paid for through revenue generated by the parking fee program.

Concern ID: 15308

CONCERN STATEMENT: One of the major improvements to The Marine Mammal Center is the ability of visitors to come and see the important work being done at our animal hospital. Anything that makes this difficult is of great concern to us. It is imperative that public access not be discouraged as we need to utilize the public to increase economic support for our organization. This is particularly important to us in light of anticipated increased costs associated with the operations in the new facilities.

Response: The new sidewalk and additional parking on the access road to the Marine Mammal Center enhances access, especially for pedestrians. Improved transit to the Fort Cronkhite area also provides an opportunity for those who do not own an auto to visit the Center.

Concern ID: 15309

CONCERN STATEMENT: Should the NPS and the Park Partners within the Marin Headlands find there is a need for an internal shuttle system for their employees and visitors it should be paid for by the Park Partners for whom it would best serve.

Response: We agree that a shuttle would benefit park partners who reside in the Marin Headlands, and we will encourage our partners to utilize the shuttle to reduce auto trips within the Headlands. However, the internal shuttle needs to serve not only staff and park partners, but the public at large. As mentioned in Chapter 1, the Marin Headlands Fort Baker area is difficult to access by persons without, or wishing not to use, private automobiles. The internal shuttle, together with the other transit options proposed in the Final EIS, would help the park achieve broader objectives as stated in the "Purpose and Need," namely: reduce automobile trips through incentives and improved transportation options; offer a range of transportation choices that enhance the visitor experience and acknowledge the diversity in transportation needs of visitors, staff, and park partner volunteers and in possible park destinations and special events; and reduce the environmental and traffic impacts of the park on the Highway 101 corridor.

Concern ID: 15311

CONCERN STATEMENT: Lastly, while we admire the sentiment behind the car free days, the concept as planed would have very little positive impact in car reduction 0.44% with significant cost.

Response: The 0.44% reduction in vehicles is not a result of car-free days. Establishing parking fees in conjunction with increased frequencies on MUNI Route 76 are expected to shift 0.44% of current vehicular trips to the Marin Headlands to transit. During car-free days more than 30% of visitors would be able to experience the park without the intrusion of vehicles (assuming that they would ride the shuttle buses to various park sites), resulting in long-term moderate beneficial impacts to visitor experience.

Concern ID: 15314

CONCERN STATEMENT: Please do not consider this very hard. I don't have a problem with putting in a bike lane. However, I am strongly against restricting access to people that don't ride bikes. Bikes are supposed to follow the same rules as cars. If you are going to charge a car for access or parking it is only fair to charge the bikes too. Thank you for your time.

Response: There is no access charge for cars; a fee for parking is proposed. A fee on bicyclists is not proposed because alternative modes of transportation such as bicycling are encouraged to reduce traffic.

Concern ID: 15315

CONCERN STATEMENT: The DEIS does not consider costs for purchase or rental of shuttles, drivers, administrative and staffing costs are not indicated as offset in evaluating social and economic impacts.

Response: Cost summaries by alternatives are provided in Appendix B of the DEIS.

Concern ID: 15621

CONCERN STATEMENT: I haven't even started talking about Equal Access under the Law. What about people that can get to the beach but don't have the extra money for parking, are they just out of luck now. Which means the beach is only for rich white people who can afford the parking fees or the ticket fee should they forget to feed the meter.

Response: The proposed project would not have a disproportionate effect on minorities on minorities or low-income populations. Although there may be an adverse impact to visitors who had to pay for parking, the implementation of the parking fee program would fund improved transit service, which would be available for all visitors who wanted to access the beach, and would improve the accessibility for lower-income populations and those who do not own a car.

SE4100 - Parking Fee

Concern ID: 15020

CONCERN STATEMENT: Impacts to volunteers and park partners: numbers of volunteers will be reduced; how will park partners and their volunteers be affected; park partners should be exempt from the parking fee; parking fees will decrease visitation at the museum; museum would lose business; "free days" at the museum would be less attractive; museum's viability would be threatened.

Response: The DEIS preferred alternative remains unchanged regarding parking fees. GGNRA will consult with park partners during the planning and development of the parking fee program (it is not known at this time if park partners will pay). GGNRA will continue to involve park partners as the plan is developed.

Concern ID: 15021

CONCERN STATEMENT: Parking fees would discourage visitation and penalize visitors, particularly local residents who are frequent users, especially to Rodeo Beach. This will lead to a measurable reduction in the number of cars and people coming to the park. People will drive farther to other recreation areas that do not pay to park. Veterans and local visitors from Travis AFB would be penalized. Visitors already pay a bridge toll to visit the NRA. Parking fees should at least include access to areas under or along side the golden gate bridge.

Response: The implementation of a parking fee program would create incentives for visitors to use the transit service rather than drive. Frequent users including local residents would be able to purchase an annual parking pass. Depending on their frequency of use this could reduce their parking costs. Access to areas under the Golden Gate Bridge is regulated by the Golden Gate Bridge District in accor-

dance with federal security measures.

Concern ID: 15023

CONCERN STATEMENT: While I understand that paid parking would generate additional revenue for park services, I would like to urge the GGNRA to reconsider paid parking for the following reasons:
" Paid parking could result in people trying to avoid fees by parking on shoulders, or other non-designated parking areas causing potentially unsafe conditions.
" To prevent the above from occurring would require the installation of numerous "No Parking" signs along roadways, negatively impacting the visual quality and character of the park.
" Paid parking could lower park use, and/or discourage lower socio-economic user groups from visiting the park.
" What assurances, if any, would the public have that paid parking would not be subsequently instituted in other GGNRA areas that are currently free (i.e.: Stinson Beach, Muir Beach, etc.)?

A final question I have related to paid parking is, would the parking fees generated at the Headlands be used for park services and capital improvements only within the Headlands, or would they be used for other GGNRA facilities?

Response: Parking in designated areas only would be enforced by the Park. The park tries to balance the need to provide more signage (such as no parking signs) to influence people's behavior and less signage in consideration of the scenic qualities of the park. Signage would be considered during implementation of the proposed plan. The proposed project study area does not include other GGNRA areas therefore an analysis of parking fees at these other areas was not considered. Revenue generated from parking fees would be used to provide enhanced transit service operations to and within Marin Headlands and Fort Baker. Improved transit service provides an opportunity to access the park for those who do not drive or own automobiles including lower socio-economic users.

Concern ID: 15024

CONCERN STATEMENT: Implementation: How would the parking fee program be managed; how will it be enforced; what are the associated costs; how will it be developed and implemented; what additional public involvement would occur; would the cost of management not be worth violating the park's funding premise. You are underestimating implementation costs; have you considered costs of grading parking areas'; puchasing and installing parking signs; enforcing parking rules; advertising to inform the public. How long will it take to recover implementation costs?

Response: The implementation, administrative, and maintenance costs for parking fee program would be considered in developing the final program budget and fees schedule. Please see Appendix B for initial estimated costs.

Concern ID: 15025

CONCERN STATEMENT: In addition, it seems like the Park Partners should carry a significant amount of the financial burden for the improvement costs. The Park Partners have a significantly larger "footprint use" in the Headlands and in Ft. Baker than even other daily park visitors. Also, it appeared from the presentation at the Bay

Model that NPS staff and Park Partners would be exempt from any parking fees. I hope that this is not accurate. Please clarify this in the Final EIS.

Response: The DEIS preferred alternative remains unchanged regarding parking fees. GGNRA will consult with park partners during the planning and development of the parking fee program (it is not known at this time if park partners will pay). GGNRA will continue to involve park partners as the plan is developed.

Concern ID: 15026

CONCERN STATEMENT: The City has received concerns and comments from residents regarding the imposition of parking fees under the Preferred Alternative 3; particularly parking fees at Rodeo Beach. The fee would be imposed on recreational users the majority of whom are residents of the surrounding areas, including Sausalito. Please see the attached correspondence regarding this issue (Attachment No. I). In addition, please note that the FEIS requires numerous improvements to the roadways, parking areas and trails be made in connection with both the Fort Baker Retreat Center and the Marine Mammal Center without any cost to the NPS. Therefore, the need to impose a parking fee to fund infrastructure improvements is greatly reduced.

Response: This comment and attachment 1 referenced in the comment identifies several concerns regarding the imposition of parking fees especially for local residents. As stated in Section 2.5 of the DEIS, revenue generated from parking fees would be used to provide enhanced transit service operations in Marin Headlands and Fort Baker. Parking fees would not be used to fund roadway, parking, or trail improvements. The main purpose for providing transit is to provide improved access to and within the study area for those people who are dependent on transit or prefer to use transit rather than a private auto. All visitors would have access to the beach, regardless of the mode of access (walking, biking, driving). Those visitors driving would still have access to the beach but would pay a fee to park. Frequent parkers, including local residents, would be able to purchase an annual parking pass. Depending on their frequency of use, the pass could reduce their parking costs.

Regarding the park's authority to implement parking fees, please see "Parking Fees" under the "Issues Identified" section of this chapter for more information about GGNRA's enabling legislation. In addition to the recreational users, other park visitors would be subject to the parking fee program. The local jurisdictions and park partners will be consulted in developing the program.

Concern ID: 15027

CONCERN STATEMENT: The proposed project would decrease the total number of parking spaces available to visitors and impose parking fees. These actions will adversely affect public access to the coast. Appendix C Transportation Data shows a negligible reduction in car traffic in the project area under the preferred Alternative 3. Please explain how the beneficial environmental impacts of these actions would outweigh the decreased access caused by parking fees in an area where parking has historically been free.

Response: Eliminating, reconfiguring, delineating, and formalizing parking facilities would improve parking operations, reduce congestion, better match parking

supply with demand, and reduce natural resource impacts resulting from informal and undesignated parking areas. Although a parking fee would be implemented under the preferred alternative, private autos would continue to be able to access the coast, except during the seven car-free days. Also, the project includes improvements to transit services and non-motorized facilities that would improve access to the coast, especially for those people who do not have access to an automobile, or choose to use public transportation. The parking fees would be used to provide additional transit service, which would increase access opportunities for some park visitors.

Concern ID: 15028

CONCERN STATEMENT: Instituting parking fee programs at other GGNRA areas: We are concerned that once a parking fee program is operating at Marin Headlands and Fort Baker, the park service will institute like programs at all the other GGNRA recreational areas, such as:

" Muir Woods
" Muir Beach
" Stinson Beach
" Palomarin
" Point Reyes, etc.

This is our greatest concern.

Response: The purpose of the parking fee program for this plan is to fund expanded transit service. Implementing parking fees at other NPS locations was not a consideration in this plan. It is possible that other park units in the future could also assess the applicability to their individual park.

Concern ID: 15029

CONCERN STATEMENT: Also, there is a very seasonal usage of the park. During the winter months there will be days, maybe several in a row, when few or no cars pay to park. During the low usage seasons, there will be little to no money coming in from parking fees. Will this cause you to suspend the shuttle service during these periods?

Response: The cost of operating the shuttle service takes into consideration the varying visitation levels during peak and off-peak seasons. The shuttle service would not be suspended during the off-peak seasons, but would operate at levels appropriate for the demand.

Concern ID: 15030

CONCERN STATEMENT: We fear you are over-estimating the revenues the park will receive from parking fees. The number of cars coming into the park will decline. Our rough guess is there will be a 50% drop in the number of cars. Will this provide sufficient income to cover the costs of the shuttles? We doubt that it will.

Response: An analysis of the required costs to operate the shuttle service is provided in Appendix B. Establishing parking fees and implementing transit service improvements could result in a 2.5% reduction of internal automobile trips inside the park. Based on visitor demand at the park, it is assumed that the relatively small parking fees would not be a deterrent for visitors. The shuttle service has

been developed based on these assumptions.

Concern ID: 15036

CONCERN STATEMENT: Research from social science studies conducted by Dr. Nina Roberts and Emilyn Sheffield should be consulted, if not already done. These studies should also be consulted for matters relating to parking fees, in hopes to minimize reduced visitation and/or unfavorable views towards the park if fees are implemented.

Response: Golden Gate National Recreation Area and Golden Gate National Parks Conservancy funded a study prepared by Nina S. Roberts titled "Visitor/Non-Visitor Use Constraints: Exploring Ethnic Minority Experiences and Perspectives," published in March 2007. The report mentioned cost as a key factor affecting ethnic minority groups. Costs include "gas/auto, parking, buying food, equipment or gear required for certain activities, and entrance fees (where applicable)." The park acknowledges that parking costs are viewed as a concern. However, transit service would be enhanced and expanded to improve access under Alternative 3 by implementing a parking fee, as described under Section 2.5.5. Dr. Roberts' report identifies access and transportation issues as a "major result and finding," noting that "Lack of a personal/private vehicle, poor public transport links, and or lack of knowledge for accessing transportation to reach GGNRA units (offering recreational or educational opportunities) impacts independent, self-sustained access." The National Park Service recognizes this need for improved access, as reflected in the plan's purpose defined in Section 1.1 of the FEIS: "The purpose of the proposed action is to provide improved access to and within the study area for a variety of users...." Under "Need for Action," Section 1.2.4, the FEIS acknowledges that "...the study area is difficult to access by persons without, or wishing not to use, private automobiles" and that public transit stops "are hard to find, generally lack amenities, and are not connected to any of the Marin Headlands' primary attractions or facilities." Furthermore, "the intent [of the General Management Plan] was to make the parklands accessible for a diverse group of users, not just those with cars..." Therefore, by implementing a parking fee, which the park acknowledges as a factor affecting ethnic minorities, the important transportation issues also identified in the report can be addressed by providing enhanced transit service and access which would benefit a wide range of diverse visitors, including ethnic minorities.

Dr. Emilyn Sheffield was a guest speaker at the National Park Service's Superintendents' Summit in July 2008, where she presented a demographic study. She noted that "convergence of population and economic trends, as well as new directions in the demographic portrait of the United States, demand efforts to re-conceptualize the nation's parks for the future." Sheffield also said that those people not visiting parks are young people, those over 65, racial minorities, people with limited English, and those with lower incomes. By enhancing transit services to and within the park (funded by parking fees), GGNRA believes the park is offering better options for those groups noted above and encouraging a variety of users to visit the park.

To further extend accessibility to all park visitors (including those with disabilities), universal design concepts would be applied to all facility designs to the greatest extent possible, as noted under Section 2.2 of the FEIS.

Concern ID: 15039

CONCERN STATEMENT: Charge parking fees during events in order to raise money rather than charging locals; charge tourists during busy sumer weekends or special events. Are special events also to be a fee charge occasion?

Response: As a National Park, Golden Gate National Recreation area is used by local, regional, national and international visitors. Although we value the support of the local community, as a National Park we would enforce the parking fees equally among all visitors. We encourage the local community residents who visit the park frequently to purchase an annual parking pass, as this option would provide the best value.

Concern ID: 15119

CONCERN STATEMENT: I also understand that Alternative 3 would provide exemptions from the parking fees for the various entities that use the Park buildings in the headlands as well as for Park staff. The concept of free parking for Park tenants while park visitors must pay seems inconsistent unless the Park plans on increasing the rent paid by these tenants in an amount equal to paying the daily parking fee. There should be no free parking for tenants while the public must pay.

Response: The DEIS preferred alternative remains unchanged regarding parking fees. GGNRA will consult with park partners during the planning and development of the parking fee program (it is not known at this time if park partners will pay). GGNRA will continue to involve park partners as the plan is developed.

Concern ID: 15171

CONCERN STATEMENT: I remember you as one of the early supporters of the establishment of the Bay Water Trail for San Francisco Bay. Thus, I was disappointed to review the subject EIS, which included only cursory analysis of the impact on the Water Trail, and had no detailed analysis on either the impacts of the restrictions proposed on parking, or any realistic examination of alternatives that might protect and enhance access to the Bay.

Response: The San Francisco Bay Area Water Trail Act establishes a water trail in the "San Francisco Bay Area that includes the nine Bay Area counties and navigable waters and tributaries under tidal influence that are part of or feed into San Francisco Bay." The water trail shall, "to the extent feasible, link access to the waters of the San Francisco Bay that are available for navigation by human-powered boats and beachable sail craft...."

The Water Trail Act does not restrict landowners from imposing fees to access or launch at sites along the water trail, nor does it define how access should be provided. The act also does not identify the location of the water trail or access points. However, the Draft San Francisco Bay Area Water Trail Plan dated May 22, 2007, includes maps describing the trail. Figure 9.1.b of the Central Bay shows an existing launch at Horseshoe Bay, and an existing destination at Kirby Beach for overnight camping. Section 4.2, "Existing Access onto the Bay," says that access consists of over 130 launch and landing points, and that "some launch ramps require a fee to park or launch." There would be no changes to Kirby Beach for overnight camping. Access to launch at Horseshoe Bay would still be provided, but visitors would pay to park. Access to the bay would be

enhanced for those visitors that use transit or didn't have access to private vehicles. The parking fee would pay for the transit that would provide that access.

Concern ID: 15177

CONCERN STATEMENT: We understand the grave difficulties that the terrain and number of visitors pose to the NPS, particularly at the scenic outlooks on the ridges of the site. We support the general idea of improving access to the site through encouraging transit and other modes of access, particularly the Bay Trail. While we are willing to consider parking fees that would cover the cost of improving parking areas and providing amenities that would implement the Bay Water Trail, such fees cannot be seen as a tool for general fundraising or discouragement of automobile access because such a proposal utterly fails the nexus test. The EIS lacks sufficient information to be able to evaluate the impacts of parking fees on access, and thus cannot be relied upon to formulate a record of decision.

Response: As stated in Section 2.5 of the DEIS, revenue generated from parking fees would be used to provide enhanced transit service operations in Marin Headlands and Fort Baker. Parking fees would not be used to fund roadway, parking, or trail improvements. The main purpose for providing transit is to provide improved access to and within the study area for those people who are dependent on transit or prefer to use transit rather than a private auto. All visitors would have access to the beach, regardless of the mode of access (walking, biking, driving). Those visitors driving would still have access to the beach but would pay a fee to park. Frequent parkers, including local residents, would be able to purchase an annual parking pass. Depending on their frequency of use, the pass could reduce their parking costs.

Concern ID: 15685

CONCERN STATEMENT: The increased transit options whether implemented by Golden Gate Transit, SF Muni or a private contractor in the case of the shuttles would increase access to this area, at least in the short term. The DEIS states that the transit options designed to increase non-auto use of the area are dependent upon the revenue generated by parking fees. Please explain how the parking fees would be structured such that future funding of the transit options would be secure, thereby protecting the public access afforded by transit to the project area. The information in Appendix B Cost Summary by Alternative estimates enough parking revenue to cover the costs of increased transit services in 2007 dollars. A likely future scenario is that transit costs will increase at a greater rate than parking fees. Please analyze the long-term plans for providing the increased transit at the level Alternative 3 proposes, considering the implications of increased transit costs.

Response: The National Park Service cannot guarantee a certain level of transit service to and within the Marin Headlands because the level of transit service is dependent upon the amount of revenue generated from parking fees and other new revenue streams. The National Park Service would diligently pursue revenue generation to provide the amount of service outlined in the analysis. The park's most optimistic new revenue generation source is the parking fee component of this analysis. It is very likely that transit costs may escalate; however, it is not a given that the park would rely on increasing parking fees to cover this increase,

as the park has committed to keep its fees commensurate with other similar parking areas. Although the National Park Service would diligently pursue revenues to provide consistent transit service to and within the project area, the park can only provide the amount of transit service commensurate to generated revenue.

SE5000 - Socioeconomics: Cumulative Impacts

Concern ID: 15048

CONCERN STATEMENT: Would the proposed modifications to the parking and roadway system accommodate any future land use changes that might occur in the Headlands as a result of the General Management Plan update?

Response: All of the alternatives would be consistent with the 1980 General Management Plan (GMP) for GGNRA. During the update to the GMP, the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan FEIS would be reviewed as part of the GMP planning process for consistency.

SE6000 - Socioeconomics: nonsubstantive

TE4000 - Threatened And Endangered Species: Impact Of Proposal And Alternatives

Concern ID: 15050

CONCERN STATEMENT: Also making the parking area across from the stables is likely to have a greater impact on water quality and riparian resources then the current parking lot near the beach. Non-point pollutants will enter the creek channel and be discharged into the pond. This pond has many sensitive species in it. Increased runoff will also change the runoff dynamics of the stream channel and lead to changes in the width, depth and sediment transport regime of the creek channel. This in turn could alter the flood frequency of the existing flood plain and cause significant changes to the riparian vegetation assemblage of the area, not to mention a reduction in creek biomass productivity and its flow into the surrounding ecosystem.

Response: Except for the car-free days, parking is allowed at the paved Rodeo Beach parking area. When the unpaved Rodeo Beach parking area is restored, infill parking in Fort Cronkhite would provide the replacement parking based on the need at that time. The proposed Smith Road parking area would replace the parking that occurs across from the stables in the riparian area and on the historic rifle range. As mentioned in the DEIS, Smith Road would be realigned farther from the riparian area. Increased wetland habitat acreages would occur over existing conditions at the lake, lagoon, and near Rodeo Beach, which would benefit sensitive species.

Concern ID: 15051

CONCERN STATEMENT: 9 out of the ten bobcat sightings I have had in the park in the last 5 years have been within 100 yards of the proposed new parking area by the riding stables.

Response: In the recent past, the Smith Road area has always had some level of human activity, including a time when the area was filled with structures associated with the Army occupation. Since the removal of the structures, this area has been an informal parking area. As noted, the Rodeo Valley riparian corridor and the open fields of the rifle range are excellent wildlife viewing areas. Under the preferred alternative, the informal parking that now occurs on the Bunker By-pass Road, the historic pistol range, and the edges of the rifle range - all of which are important wildlife areas - would be concentrated at the Smith Road parking area.
Less auto traffic in these informal parking areas may enhance wildlife viewing, and the park does not anticipate wildlife movements to be interrupted by this proposed change. To provide a better visitor experience, visitor amenities at the Smith Road parking area would include a restroom, kiosk, bench, and picnic area. The kiosks would be an excellent way to display information about the local wildlife.

Concern ID: 15052

CONCERN STATEMENT: How will the new parking area impact wildlife resources in the important riparian zone in the Park? Have surveys been done the verify the use of rare and endangered species use of this area.

Response: Surveys as needed were completed under the direction of park staff. The "Biological Assessment: Marin Headlands-Fort Baker Transportation Plan" (2007) is a supporting document that was prepared to identify the extent to which this plan may affect federally endangered, threatened, proposed, and candidate species. These findings were summarized in the environmental impact statement.

Concern ID: 15192

CONCERN STATEMENT: The assessment would benefit from the incorporation of scientific references, if available, to support conclusions, such as on page 217, "...after fill removal, impacts would be long-term, major, and beneficial from a potential increase in [Tidewater] gobies."

Response: Comment noted. Where appropriate, scientific references were incorporated into the EIS to support conclusions. For this particular quote, there is no specific scientific reference. The analysis was based on professional experience and judgment. The thresholds for determining level of impact are defined under the “Methodology for Analyzing Impacts” sections for each impact topic.

Concern ID: 15297

CONCERN STATEMENT: The plans I have seen are typical of knee jerk planning level concepts that are not science based and are more emotional in nature. Losing access to the beach needs to be scientifically justified not just some planner's idea of what would be nice.

Please state that how these impacts will mitigated and develop a statistically testable mitigation monitoring program for sensitive endangered species habitat.

Response: Mitigation measures to mitigate impacts to sensitive endangered species habitat

are provided in the FEIS.

Concern ID: 16812

CONCERN STATEMENT: Given the proposed construction period -June 15 through October 15 - and the life history of steelhead, only juvenile steelhead are likely present in the action area during construction.

Response: Comment noted.

Concern ID: 16813

CONCERN STATEMENT: The NPS effects determination in the biological assessment was based on the original proposal to dewater a portion of Rodeo Creek, to capture and relocate steelhead, if present, and to work in the stream channel either dismantling the current bridges or placing the new bridges. However, NPS plans have been modified and the current construction proposal is to build the bridges as free-spanning structures, negating the need to enter the channel, dewater the stream, or capture and relocate steelhead. Therefore, NMFS anticipates no direct effects to steelhead residing in the stream at the Rodeo Creek sites associated with the construction or demolition of the bridges.

Response: The comment is correct. As agreed to with National Marine Fisheries Service, free-spanning structures would be used to negate the need to enter the channel, dewater the stream, or capture and relocate steelhead. This information has been included in the EIS as mitigation.

Concern ID: 17765

CONCERN STATEMENT: Before the NPS captures and relocates tidewater goby from the lagoon excavation site, a fish excluder screen will be put in place to isolate the northern fill removal site from the main body of the lagoon. This exclusion device will prevent fish from entering the work area from elsewhere in the lagoon. Since steelhead have not been observed along the margins of Rodeo Lagoon and the shallow area at the northern work site, it is unlikely steelhead will be collected during the tidewater goby fish relocation efforts. Installation of a fish excluder screen on the margin of the northern lagoon work area will prevent fish from entering the site during construction. Silt fencing and other BMPs designed to minimize the mobilization of sediment into the waters of the lagoon are anticipated to adequately protect water quality.

Response: A fish excluder screen would be used as described in the comment. This information has been added to the EIS as mitigation.

Concern ID: 17766

CONCERN STATEMENT: At the second site (southern fill removal location) existing fill does not enter the water; rather it is perched on a seasonally-wetted flood plain. At this second site, construction equipment and operations will not enter the water. Since the historic fill on the southern margin of Rodeo Lagoon will not require any in-water work and the NPS will incorporate sediment and pollution BMPs, NMFS does not anticipate any impacts to steelhead during activities at the second site.

Response: In order to avoid impacts to steelhead, compensation actions to remove fill will

avoid having to place equipment in the water. This information has been added to the EIS as mitigation.

TR2000 - Transportation: Methodology and Assumptions

TR4000 - Transportation: Impact of Proposal and Alternatives

Concern ID: 15060

CONCERN STATEMENT: Also the one way traffic plan while inovative in nature does not take into account the many varied vehicles that must come in and out of the park. Delivery vehicles, horse trailers, trucks from the marine mammel center carrying wildlife, surfers and boaters carrying equipment? Not to mention the time delay if there was only a one way entrance to the park.

Response: Depending on the destination in the park, the one-way circulation system proposed in Alternative 2 would result in travel time delays and longer trips. It would also result in higher traffic volumes on some roadways and therefore was not the preferred alternative.

Concern ID: 15062

CONCERN STATEMENT: Conzelman Road: Shift road 12'-14' northward into sharp curve at Battery Spencer. This will widen parking area on S side, overlooking the GG Bridge. How would you limit the turn-off into the parking lot?
What about sharp turn into Kirby Cove gate?

Response: The use of the Battery Spencer parking lot would not be limited in the preferred alternative. The wider roadway and parking lot would improve sight distance and maneuverability for vehicles turning into this parking area. The turn from Conzelman Road into Kirby Cove would be reconfigured.

Concern ID: 15064

CONCERN STATEMENT: Results for Alternatives 1 and 3 are summarized as "no change" and "negligible", while Alternative 2 notes that Alexander/Danes "could be signalized" to avoid minor adverse impacts on LOS, and Alternative 4 notes the possibility of a signal despite negligible LOS impact. District requests that detailed traffic analysis data be presented in the EIS to support findings.

Response: Please see the response to concern 15203 for a summary of the requested information. The technical memorandum for the traffic analysis is included in Appendix C.

Concern ID: 15074

CONCERN STATEMENT: Regarding shuttle buses: Locals will easily discover public transportation; visitors will not and will not use it because of the threat of being stranded. Shuttles are worthwhile in small, high density parks but not GGNRA which is very large and diverse. Locals will not use the shuttle bus and shouldn't have to fund it. Buses will damage roads because they are bigger than cars, take more room, and are a hazard to bikers. Parking to board a bus would be difficult and would in-

fringe on the landscape. The hassle of riding a bus will decrease the number of volunteers. New shuttles will not help visitors coming from the East Bay or north. The EIS does not evaluate distance of shuttle routes to preferred destinations or the logicstics of obtaining and maintaining a sufficient shuttle fleet for sporadic use. The bus must include a comprehensive schedule and must be consistent. The shuttle would not serve all users, such as the USCG station, US Coast Guard Auxiliary, Presidio Yacht Club. The MUNI is unreliable.

Response: The Fort Baker Conference Center will be responsible for implementing the Conference Center shuttle and therefore locals will not fund it. The proposed shuttle system serving Fort Baker and the Marin Headlands, and the expanded transit service would have a set schedule. This service would be funded by parking fees or other potential revenue sources. Visitors could leave their cars home and take a public bus to the recreation area to use the new shuttle system to travel through the park. Parking areas were sized taking this into consideration. Visitors from the north or East Bay could park within the recreation area and use the shuttle system to travel through the park as well. Buses would have a negative impact on the roadway surface. However, the park is rehabilitating these roads to a standard that can handle the increased wear caused by increased bus traffic. Buses may seem to present an increased hazard to bicyclists, but the park is also widening the paved shoulders to better accommodate bikes.

Concern ID: 15075

CONCERN STATEMENT: We will require daily access to Hawk Hill's summit for our volunteer hawk counters, from mid August through December. Hawk counting teams need to be in place atop Hawk Hill from 930am to 330 pm. Banding teams will also need to access "Hawk Blind" located just about half way between the McCollough-Conzelman Road intersection and the "turnaround" for Hawk Hill. Like the other blinds, Hawk Blind will need to be "set up" in July and removed in January each year.

Response: If parking at Hawk Hill is not available when needed, the hawk counting teams can be shuttled from the visitor center, which should have sufficient parking.

Concern ID: 15083

CONCERN STATEMENT: The new trails along Conzelman have that have already been approved through the Trails Forever campaign will alleviate pedestrian problems - widening the sidewalk will be unnecessary. Rodeo trail is a problem during rainy season; have the water and mud issues been addressed? Why would the park want to encourage use of this area when it is damaged during the rainy season?

Response: In the preferred alternative (alternative 3), the rerouted coastal trail parallel to Conzelman Road would improve pedestrian connections and safety, therefore a sidewalk was not proposed in this location. The improvements proposed in Alternatives 2, 3, and 4 at Rodeo Valley trail are intended to address the existing drainage problems.

Concern ID: 15091

CONCERN STATEMENT: We will need parking for both GGRO volunteers and staff at Hawk Hill (+8 cars on weekdays, +15 cars on weekends) for the period August through early De-

cember.

Response: The preferred alternative was revised to include an additional 10 parallel parking spaces (inboard and outboard). We encourage GGRO to identify parking demand shortages during their period of increased volunteer help and come up with ways to minimize parking impacts at this site, which will continue to have parking shortages on high visitor use days. Suggestions include shuttling volunteers from other areas that have sufficient parking.

Concern ID: 15092

CONCERN STATEMENT: Volunteer banders would require daily access to the Slacker Hill region to attend to two banding blinds ("Slacker Blind" and "Poison Oak") beginning in July and running through December. These two sites are both critical to our long-term banding program success, ie, to providing a sufficient number of raptors banded each season. The wooden blinds and trapping arenas are set up in late July each year, and removed (for concern of vandalism, and damage from mold, rodents, humans, and rain) in January. I have great concerns about using "permanent" blinds in the Slacker Hill region, given that the blinds would be virtually unattended (and thus vulnerable) for six months of the year. I believe it would be best for GGRO banding if we could continue private vehicle access to the Slacker Hill Road (trail) if at all possible.

Response: The Slacker Hill Road (trail) is steep and has been a perpetual concern because of the active erosion that is occurring. The preferred alternative was modified for the FEIS. The majority of the existing trail to the top of the hill would be restored. The existing route to the top of Slacker Hill would be converted from a road to a trail and the majority of the existing route would be removed and the site restored. The new route would provide access to the two GGRO research sites, via a new foot trail, and to the viewpoint at the top of the hill for hikers and equestrians. Access to the east side of the launch site would be maintained for its views of the bay and city. The spur road leading from this trail that currently provides access to a raptor observatory research site would be closed and restored; access to this site would be provided through a new foot trail. The Golden Gate Raptor Observatory would still be able to access its research sites in the Slacker Hill region. Special accommodation would be given to GGRO for ATV access to carry their research sites for setup and breakdown. The NPS will work with the Golden Gate Raptor Observatory on access options to continue the banding program in the Slacker hill region.

Concern ID: 15095

CONCERN STATEMENT: Regarding the Golden Gate Bridge, the DEIS does not present an analysis or a discussion of possible impacts of the Alternatives on the Bridge, with the exception of the pedestrian underpass at the north end and traffic controls necessary for Fort Baker special events. It appears from the DEIS that the Alternatives will reduce, by varying degrees, vehicular traffic to/from and within the park by improving transit, bicycle and pedestrian portions of the transportation infrastructure and further influencing a shift of travel modes by reducing parking capacity and implementing parking fee and car-free programs. Would there be a significant impact on the Bridge if vehicular traffic decreases and pedestrian and bicycle traffic increases as estimated in the DEIS? What specific efforts will

GGNRA undertake to obtain funding for the District to improve the pedestrian underpass at the north end of the Bridge? Would the security of the Bridge be impacted by increased activity on, near or below the north end?

Response: The percentage of park traffic on US 101 is a very small component of overall park traffic and therefore any reduction in park traffic would not result in a significant vehicle reduction on the Golden Gate Bridge. The plan's proposed transportation enhancements (such as increased transit service or improved trail connections) may increase the number of pedestrians and bicyclists in the park. However, this increase is not expected to noticeably increase the 9 million pedestrians and cyclists that visit the bridge.

NPS recognizes that funding to improve the pedestrian underpass at the north end of the Golden Gate Bridge is not available. Similar to the efforts on Alexander Avenue, NPS will continue discussions with GGBHTD, Caltrans, and Marin County regarding potential funding sources. Although funding for the pedestrian underpass is not currently available, the park is actively working with the GGBHTD to open the portion of Lower Conzelman Road from Dan Bowers Vista Point that passes under the bridge and into Fort Baker. This section of Lower Conzelman Road would be open for pedestrian and bicycle use only. This section would become the signed trail route between the bridge and Fort Baker and Sausalito, and would connect with the San Francisco Bay Trail along East Road in Fort Baker. This route would encourage cyclists to avoid using Alexander Avenue and to travel through Fort Baker to their destinations. GGNRA is currently discussing the placement and style of the signage with GGBHTD, the county, and other jurisdictions to ensure route clarity. As noted on the GGBHTD website (under Golden Gate Bridge Construction Alerts and Bike Detours), security is a concern and GGBHTD would close this route under the bridge when Department of Homeland Security threat levels are "orange" or "red." The park will work with the GGBHTD on any security actions required as part of the plan to establish this convenient route.

Concern ID: 15099

CONCERN STATEMENT: Section 4.2.1, Transit, provides a comparative assessment of the alternatives. The market, quality and capacity assessments of Alternatives 2, 3 and 4 appear to overlook the Fort Baker shuttle service provided in the "no build" Alternative 1 because the shuttle is not a direct service in conjunction with transfers to and from Muni and GGT services. District disagrees with this assessment. Section 2.2.2 describes the Fort Baker shuttle, and this description does not preclude the shuttle as a means to connect with public transit services. Regarding internal shuttle service in general, indirect service via shuttle transfers appears to be discounted entirely in the market assessment. District disagrees with this conclusion and suggests that indirect vs. direct service be considered more significant in the service quality assessment.

Response: As stated in Section 2.2.1, "Elements from the Fort Baker Plan," the conference center shuttle is included in all alternatives, including the no-action alternative. The assessment of transit service quality for the no-action alternative in Section 4.2.1, "Transit," describes the conference shuttle and includes it in the existing conditions baseline. Because the conference center shuttle service operations have not been determined, this analysis assumed only the specific requirements identified in the Fort Baker FEIS/ROD, which included service to airport connections for conference center patrons and transit to other local attractions out-

side the study area. Therefore, a conference center-to-park shuttle was not included in the analysis because it was not identified in the Fort Baker FEIS/ROD. However, as mentioned in the comment, the conference center shuttle is not precluded from connecting to the public transit services and park shuttle, which would further enhance the service quality if it were to occur.

Concern ID: 15112

CONCERN STATEMENT: Overall, transit options in all alternatives appear to make no significant impact on traffic levels and parking demand. District questions this conclusion based on the recent experience of the Muir Woods shuttle bus service and suggests that GGNRA further consider the assessment presented in Section 4.2.2 and in Appendix C. Appendix C provides shuttle service assumptions and shows a 60-minute service frequency. Would GGNRA consider a more frequent shuttle service to encourage greater ridership? Also, parking fees are part of Alternatives 3 and 4 but the assessment appears to overlook or dismiss the impact of fees on traffic and parking. What amount of parking fee is assumed? Would GGNRA consider restricting parking availability to encourage greater use of transit to major traffic destinations within the park?

Response: The purpose of this plan is to provide improved access to and within the study area for a variety of users. The park is difficult to access by persons without, or wishing not to use, private automobiles. Although one of this plan's goals is to reduce traffic congestion, the main purpose is to promote increased mobility options. In developing this plan and assessing the alternatives, the park did look at transit examples at other national park units. Conclusions were derived using the best available information. The NPS is encouraged by your comment intimating that the potential benefits of reducing car traffic may be underrepresented.

The park appreciates the suggestions provided by GGBHTD regarding changing shuttle frequency and parking restrictions as methods to encourage greater transit use. As stated in the analysis, the shuttle program must operate within the funds generated from parking fees and other revenue sources. The NPS would certainly be willing to increasing shuttle frequency should its popularity warrant such a change and should sufficient revenue exist to make such a change.

Overall, parking availability would be reduced with implementation of the preferred alternative. Parking would be reduced considerably at key destination areas in the Marin Headlands, such as Rodeo Beach, Bird Island Overlook, and Hawk Hill. Utilization of paid parking areas would be evaluated in conjunction with fee revenues and transit use to identify correlations. The NPS would not rule out changing the parking fee program in the future to further encourage transit use to and within the park.

Concern ID: 15203

CONCERN STATEMENT: Section 4.2.2, Traffic, Figure 4.2 provides estimated 2023 traffic levels. LOS analysis of Alexander Avenue at Highway 101 and Danes Drive for the four alternatives is referenced without supporting data.

Response: The methodology for the level of service (LOS) analysis is summarized in Section 4.2.2. The results of the LOS analysis have also been included as a table in Section 4.2.2 of the FEIS. The technical memorandum is included in Appendix

C: Transportation Data of the FEIS.

Concern ID: 15284

CONCERN STATEMENT: Also, the Park's traffic consultant concluded that the internal shuttle service only has the potential of reducing auto traffic by 2.5%. Please clarify and address the merits behind the Park's proposed internal shuttle service in the Final EIS.

Response: The purpose of the proposed internal shuttle service is to serve people without cars, as well as those who arrive using other transportation modes so they can travel through the park. With the proposed improvement of transit service to access the park, an internal transit system would be needed to distribute visitors within the park so that they can get to different sites within the park. Improving transit service provides improved access to and within the park for those who are transit dependent or desire an alternative to private auto.

TR5000 - Transportation: Cumulative Impacts

Concern ID: 15109

CONCERN STATEMENT: Possible Fort Baker ferry service is cited in the assessment of Alternatives 3 and 4 parking utilization. District asks that the role of ferry service in the GGNRA transportation plan be clarified.

Response: Potential ferry service is being investigated in a separate study and is not part of this FEIS. The GGNRA Water Shuttle Access Study & Conceptual Plan Summary Final Report notes that parking demand and parking patterns will need to be studied in the future. The NEPA analysis for the water shuttle (ferry) will begin as funding becomes available.

Concern ID: 15114

CONCERN STATEMENT: Regarding Alexander Avenue, the DEIS identifies proposed improvements to several intersections of park roads as elements of the Alternatives. It is our understanding that GGNRA is developing plans for improvements at Danes Drive and East Road and is seeking federal parkland funds for construction. Also, the DEIS identifies, on page 140, a specific set of future improvements to Alexander Avenue, characterizing these as "reasonably foreseeable actions" within and outside the park. The DEIS also contains a statement that "...on January 27, 2005, the GGBHTD Board of Directors agreed to support the following improvement concepts for Alexander Avenue:" The recorded minutes of this January 27, 2005, meeting of the Building & Operating Committee of the Board of Directors shows that District staff provided the Committee with a description of GGNRA concepts for future Alexander Avenue and Merchant Road improvements as an informational report. No Board action was taken on the subject. In fact, the minutes show that the District's General Manager stated that District funds were not available for Alexander Avenue improvements. The District currently has no plans to improve Alexander Avenue as an approach to the Bridge. The District questions GGNRA characterization of the improvements identified on page 140 as "reasonably foreseeable actions". Does GGNRA intend to design and fund construction of the improvements identified on page 140? The District would be open to discussing means for GGNRA to improve Alexander Avenue as access to parklands.

Response: The FEIS was revised to reflect that the GGBHTD did not take any board action on Alexander Avenue improvements and that no funding is available. NPS will continue discussions with GGBHTD, Caltrans, and Marin County regarding potential funding sources. Please refer to the discussion about Alexander Avenue in the "Issues Identified" section at the beginning of chapter 6.

Concern ID: 15116

CONCERN STATEMENT: Section 4.2.3, Nonmotorized Use and Access, describes various improvements to bike and pedestrian access along Alexander Avenue associated with cumulative impacts of all alternatives. Please clarify GGNRA's intent to fund such improvements.

Response: Please refer to the discussion about Alexander Avenue in the "Issues Identified" section at the beginning of chapter 6 of the FEIS for a discussion of the multi-agency effort regarding potential funding sources.

Concern ID: 15117

CONCERN STATEMENT: Section 4.2.1 also makes reference to future Fort Baker ferry service as a cumulative project in Alternatives 3 and 4, but only summarizes its impact as minor and beneficial and not a factor in auto trip reduction. District experience with ferry service suggests that ferry service could have significant impacts on access to Fort Baker, in particular for special events.

Response: At the time this plan was developed, the ferry study was not underway. Now that the GGNRA Water Shuttle Access Study and Conceptual Plan Summary is available, the cumulative scenario was updated to reflect the assumptions and findings for the project referred to as the parklands ferry study. For example, the assumptions for ferry service were updated from peak hour to hourly service to reflect the alternatives described in the water shuttle access study. Based on the updated assumptions, cumulative impact factors, such as transit market opportunity, transit capacity and auto reduction in automobile trips, were revised to reflect a greater beneficial impact as you have suggested. Please see section 4.2.1 of the FEIS for additional information. Also, as you indicated, some of these benefits may be even greater during special events.

Concern ID: 15197

CONCERN STATEMENT: Section 4.2.3 proposes a new bus stop on the east side of Highway 101 in Alternatives 3 and 4 to improve safe pedestrian access to Vista Point, but does not mention a companion, opposite-direction bus stop on the west side of Highway 101. Pedestrian and bicycle access improvements between the east and west sides of Highway 101 are referenced in the cumulative impacts. Please clarify GGNRA 's intent to fund pedestrian access improvements between the east and west sides of Highway 101 at Vista Point.

Response: A transit interface at the existing bus stop on the east side of Highway 101 is proposed to improve regional and park transit connections. The FEIS text will be clarified to indicate that this is not a new bus stop. The NPS agrees that pedestrian improvements between the east and west sides of Highway 101 at Vista Point should be improved. Therefore, the NPS will continue discussions with GGBHTD, Caltrans, and Marin County regarding potential funding sources.

Please refer to the discussion about Alexander Avenue in the "Issues Identified" section at the beginning of chapter 6 for additional information.

Concern ID: 15660

CONCERN STATEMENT: Section 4.2.2's description of Alternative 3 cumulative impacts on vehicular safety makes reference to a proposed resurfacing of Alexander Avenue with upgrading of guard rails and shoulders. Please clarify GGNRA ' s intent to fund this proposal.

Response: Please refer to the discussion about Alexander Avenue in the "Issues Identified" section at the beginning of chapter 6. Since Alexander Avenue is under the joint jurisdiction and control of Golden Gate National Recreation Area, Caltrans, and the Golden Gate Bridge Highway and Transportation District, a multi-agency planning effort has been initiated to address transportation improvements to Alexander Avenue and the potential funding sources for the improvements. No funding is available to implement improvements at this time.

VI4000 - Visual Impacts

Concern ID: 15210

CONCERN STATEMENT: Bike lanes are also something that would be visually intrusive to the natural area, with the brightly painted dilineation lines, again, inturding on the natural surroundings. Not pretty. Not natural. Not Marin. If such proposed lots and lanes could be designed and constructed to blend and look natural, great. If not, then part of the initial purpose will have been for not.

Response: The locations that would be striped for bike lanes and parking are locations of existing roadways and parking areas. The visual impacts would be minimized by limiting striping to these current developed areas. The delineation of parking spaces results in more efficient use of parking areas and therefore overall parking supply can be reduced. Also, if striping assists in reducing overall improper parking along roadways, erosion would be reduced and would result in beneficial visual impacts.

VR4000 - Vegetation And Riparian Areas: Impact Of Proposal And Alternatives

Concern ID: 15121

CONCERN STATEMENT: The grassland-coastal scrub-willow area just north of the Horse Stables is one of the most ecologically delicate regions of the Marin Headlands. Why would we further push human traffic, or otherwise impose on that micro-region?

Response: Under the preferred alternative, Smith Road would be realigned to the south, moving it farther from Rodeo Creek and the riparian area along the creek. A new bridge and trail would be constructed to the Rodeo Valley Trail, which would eliminate the need for the bridges and trails to the west and east of the new bridge. Therefore, these two areas would be restored. The DEIS acknowledges that major adverse impacts would result from construction of the new bridge and trail, which would be short-term, lasting only as long as the construction activities. However, the DEIS also notes that restoring willow riparian habitat along the creek and creating riparian and/or emergent wetland habitat (from

realigning the road and restoring the existing bridges and trails to natural conditions) would result in a major beneficial impact in the long term. In addition, the new parking area at Smith Road would be beneficial because it would allow the removal of parking on the historic rifle range.

Concern ID: 15122

CONCERN STATEMENT: Care should be taken if widening Bunker Road, as there is a large viable population of poppies along the road border now. Seed collection could be done in a timely way to lessen loss of diversity in Fort Baker. Currently weed wacking happens about 3 times during the growing season but no seeds are collected prior to clipping. The location of a traffic barrier at the edge of the road has protected populations and the seed bank in the past.

Response: Bunker Road under the preferred alternative would be widened to provide a consistent 2' wide shoulder. The park is committed to restoring disturbed areas with native plants. The commenter's suggestion will be considered by our restoration specialists as they prepare specific plant pallets for native plant restoration.

Concern ID: 15123

CONCERN STATEMENT: Making the parking area across from the stables is likely to have a greater impact on water quality and riparian resources than the current parking lot near the beach. Non-point pollutants will enter the creek channel and be discharged into the pond. This pond has many sensitive species in it. Increased runoff will also change the runoff dynamics of the stream channel and lead to changes in the width, depth and sediment transport regime of the creek channel. This in turn could alter the flood frequency of the existing flood plain and cause significant changes to the riparian vegetation assemblage of the area, not to mention a reduction in creek biomass productivity and its flow into the surrounding ecosystem.

Response: Existing water quality conditions in both lake and lagoon are not ideal. Without mitigation, the new parking area could increase non-point source pollutants into sensitive habitats downstream. As noted, the lagoon and lake support threatened and endangered species, such as California red-legged frog, steelhead trout, and tidewater goby, and it is imperative the project minimize impacts to these species. The Final EIS includes BMPs to reduce the amount of runoff from the parking facility, as well as the level of pollutant loading, including directing stormwater runoff into a vegetated swale that would surround the parking area to prevent any direct pollutants into the creek. The parking area would not be paved and would be pervious. The size and location of the parking area in context to the watershed is inconsequential in terms of affecting the watershed's flood frequency or severity. Since all stormwater runoff for the parking area would be directed to the vegetated bioswale, hydrologic conditions for the floodplain from the construction of the parking area would not change. Because the construction of the parking area would not change surface or groundwater, changes in riparian vegetation structure or composition are not expected.

Concern ID: 15124

CONCERN STATEMENT: Please state how increased runoff volume from new parking areas will impact the flood stage height in the pond. Will changes in pond flood elevations and and their commensurate durations impact adjacent vegetation?

Response: Two features of the parking area are factors in the pond flood elevations - the amount of impervious surface, and size of the impervious surface. Although the parking area would not be paved and would be pervious, automobiles would compact the surface, making it less pervious. Since flows would not be directed to a culvert and directly and immediately released to the main stream drainage, flood flows or pond flood elevations are not expected to change from existing conditions. Also, the size and location of the parking area in context to the watershed is inconsequential in terms of affecting the watershed's flood frequency or severity, and no or only negligible changes in surface or groundwater is expected that would change adjacent riparian vegetation.

Concern ID: 15125

CONCERN STATEMENT: How would a new parking lot and creating two new long big bridges through marshland in Alternative 3 be a good thing for the environment? It seems like a lot of sensitive marshland would be disturbed and harmed by the installation of these new long bridges and large 200 car parking lot off of Smith Road, whereas now there is a small already established bridge.

Response: The proposed two new connector trails that will extend from Smith Road and from Capehart Housing to the Rodeo Valley Trail will be constructed largely on an elevated bridge structure that will span much of the flood plain. This design is considered less environmentally damaging than that of the two existing connector trails that are planned to be removed, because it does not disrupt they hydrology of the wetlands it crosses, and it would only minimally interrupt the dense wetland vegetation. Under Section 404 of the Clean Water Act, this design would likely be considered the least environmentally damaging practicable alternative. Because only the foot of the piers of the elevated trail encroach within the floodplain, this design is consistent with both Executive Order 119888 Floodplain Managements, and EO11990 protection of wetlands. By minimizing impacts to these two natural resources, NPS also will minimize impacts to habitat of listed species associated with these areas, such as the California red-legged frog, coho salmon, and steelhead trout. The existing connector trails that currently encroach into the wetland floodplain with associated fill material, will be removed, and the corridor restored to wetland.

The design of the Smith Road parking lot is still in progress but has been scaled back. The revised plan would accommodate closer to 150 cars, would be placed outside of the wetlands on the western portion of the site as much as possible, would not be paved but have an permeable surface, and be contoured such that runoff from the parking lot is collected in a bioswale, and does not drain directly into the Creek wetlands to the north. In this way, the proposed parking facilities are likely less environmentally damaging than what exists today.

Concern ID: 15127

CONCERN Appendix F, Wetlands Statement of Finding, Section 5.2 Best Management Practices, and Section 5.3, Resource Specific Measures, Hydrology and Water

STATEMENT: Quality, pages F-18 and F-19:

The discussion identifies a series of construction best management practices (BMPs) designed to minimize potential water-quality effects from stormwater runoff on receiving wetland systems. However, limited discussion is provided concerning the potential effects of stormwater runoff from the roadways and parking lots after construction. Operational BMPs for oil, grease, and suspended sediment are commonly incorporated into roadway and parking lot projects and may warrant further consideration.

Response: The DEIS contains discussions about groundwater and surface water protection measures in Section 4.3.3. The description of the NPDES II Program discusses the general effects oil and grease have on roadways, sediment, and other common pollutants. The discussion notes that Phase II of the stormwater program extends to all of Fort Baker and lands east of the ridgeline running through Battery Spencer, and describes the stormwater program's requirements that would apply in the area, including control of post-construction runoff. During the final design of the roadway and parking lots, operational BMPs for oil, grease, and suspended sediment will be further considered.

Concern ID: 15131

CONCERN STATEMENT: Please include a wetlands and submerged lands delineation of the project area for areas where wetlands and/or submerged areas may be affected. Please describe each wetland or submerged area in terms of the restoration activities proposed for that area and the benefits of restoration.

Response: The analysis depicts both Cowardin (Cowardin et al. 1979) and U.S Army Corps (USACE 1987) wetlands. Wetland impact analysis uses Cowardin wetlands because this methodology is the National Park Service standard. However, because the NPS anticipates impacts to US Army Corps jurisdictional wetlands, these impacts have also been disclosed so that the National Park Service can meet Clean Water Act regulations and receive project approval from US Army Corps of Engineers and the California Regional Water Quality Control Board.

Concern ID: 15133

CONCERN STATEMENT: Please demonstrate how each area of Environmentally Sensitive Habitat Area (ESHA) will be protected such that there is no loss of habitat values. Please describe ESHA in the proposed project area and describe the actions that may affect each area qualifying as ESHA.

Response: The requested information for Environmentally Sensitive Habitat Areas (ESHA) will be included in the park's submittal for a consistency determination.

Concern ID: 15139

CONCERN STATEMENT: Alternative 3 has two new bridges that would be constructed in sensitive wetlands. The Smith Road area has been designated as habitat for the endangered California Red-legged frog. Constructing a 200 car parking area and a 60 foot bridge in the middle of an endangered species habitat does not seem like a particularly good thing for the frog. A much better alternative is to remove Smith

Road and restore the habitat as detailed in Alternative 2.

Response: Alternative 2 does include two proposed actions that would restore wetlands: eliminating some parking in a portion of the unpaved Rodeo Beach parking lot, and removing Smith Road and its associated parking. However, the compensatory wetland mitigation proposed under both Alternatives 3 and 4, which would restore up to 0.6 acre of wetlands and remove roadway fill at Sites 17 and 18 (Figure 3 in the Wetland Statement of Findings in Appendix F), were not included in Alternative 2. Also, under Alternative 2 the existing creek crossings at Sites 4 and 7 would remain and would not be replaced by elevated structures that span the floodplain, as proposed in Alternatives 3 and 4. The preferred alternative would realign Smith Road to the south, moving it farther from Rodeo Creek and the riparian area along the creek. The new bridge and trail, which would be constructed to the Rodeo Valley Trail, would eliminate the need for the bridges and trails to the west and east of the new bridge. Therefore, these two areas would be restored. The DEIS acknowledges that major adverse impacts would result from construction of the new bridge and trail, which would be short-term, lasting only as long as the construction activities. However, the DEIS also notes that restoring willow riparian habitat along the creek and creating riparian and/or emergent wetland habitat (from realigning the road and restoring the existing bridges and trails to natural conditions) would result in a major beneficial impact in the long term. In addition, the new parking area at Smith Road would be beneficial because it would allow the removal of parking on the historic rifle range.

Concern ID: 15140

CONCERN STATEMENT: Adding concrete to the area is not a solution for nature - just a convienience for park personnel. The effects of widening trails can be seen with erosion and invasive plants.

Response: As identified in Section 2.3.5, "Best Management Practices," NPS will implement several measures to address invasive plant species control.

Concern ID: 16171

CONCERN STATEMENT: Please include the amount of soil in cubic yards proposed to be dredged from wetlands or submerged lands cumulatively for the entire project, and area-by-area.

Response: The requested information regarding dredged soil will be included in the park's submittal for a consistency determination.

VS4000 - Visitor Conflicts And Safety: Impact Of Proposal And Alternatives

Concern ID: 14871

CONCERN STATEMENT: "Hardened surfaces," especially paved surfaces, are dangerous to horseback riders as horses can slip easily and break legs with the rider getting injured. "Hardened surfaces" also promote speed for bicyclists and can create accidents between users, as it has been amply and repeatedly documented by the Marin Horse Council.

Allowing bicycles on the Rodeo Valley Trail will immediately present unneces-

sary safety hazards to both equestrians and hikers and will detract from the natural quality of the outdoor experience.

Response: The preferred alternative as described in the DEIS will remain unchanged, with the addition of signage for safety, such as sharing the trail with other users, slow speeds for cyclists, etc. It is the park's intent to maintain the same or similar trail surface to what is on the Rodeo Valley trail now and would not be paved. Since surfacing will be similar to what is there now, this should not be a safety issue for equestrians. The trail has good sight distance and slower bike speeds; therefore, there is less of a safety issue in mixing bikes and equestrians along this section. Also, road bikes will not be expected or directed to use this route. It is anticipated that road bike traffic would continue as it does now on Bunker Road. In addition, the bridge connecting the Capehart Housing area to the Rodeo Valley Trail provides a hiking and biking connection for people living at Capehart Housing who work in Fort Cronkhite, thereby encouraging alternate modes of transportation and reducing parking needs.

Concern ID: 14877

CONCERN STATEMENT: THE ONE SUGGESTION I WOULD MAKE: when you do add a bike lane, make it with a protective curb that would separate the bike riders from the cars. Simply painting a 4 inch white line on the pavement and declaring it a "bike lane" does nothing. People like me are afraid to use it. The bike lane, if only on one side of the road, should be wide enough for two direction bike traffic with a painted line separating the opposing directional bike riders. The curb mentioned here would separate the two lanes of bike riders from the traffic.

Response: In some locations a bike lane is proposed on the uphill side so vehicles can safely pass bicyclists. No bike lanes are proposed on the downhill side as bicyclists are traveling faster and ride with traffic.

Concern ID: 14886

CONCERN STATEMENT: In addition to the destruction of the current habitat, since much of Smith Road is obstructed from view of the main road by shrubbery, this area already attracts people who sit in their cars for hours doing "unpark-like activities," in addition to people who dump trash, beer bottles, furniture, etc. Creating a large 200 car parking lot obstructed from view by the road would encourage more improper use of this area.

Response: This new parking area would be regularly monitored by NPS rangers.

Concern ID: 14912

CONCERN STATEMENT: Not mentioned in any of the alternatives has been discussion of late by the NPS of their desire to close the Paramedic and Fire facility at Ft. Cronkite/Rodeo Beach. It does not seem reasonable or sensible to consider that decision given your desire to increase the visitorship to the Headlands area by way of your approval of various Park Partner expansion plans.

Response: The focus of this plan is transportation and therefore a discussion of the paramedic and fire facility at Fort Cronkhite/Rodeo Beach is not within the scope of this plan. Expansion of park partner operations in the Headlands is a separate

action that would be subject to its own environmental analysis.

Concern ID: 14917

CONCERN STATEMENT: Over-estimation of parking revenue: Whenever parking fee programs are implemented, there is a significant drop in parking demand. One has only to observe the parking patterns at local state parks, such as Pan Toll and Bootjack, to see the negative impact of parking fees. On weekends, there are cars precariously parked all along the steep embankments of the roads while the parking lots are empty.

Response: Establishing parking fees and implementing transit service improvements could result in a 2.5% reduction of internal automobile trips inside the park. Based on visitor demand at the park, it is assumed that the relatively small parking fees would not be a deterrent for visitors.

Parking would be enforced throughout the park, and new guard rails in some locations would also prevent unauthorized parking.

Concern ID: 14925

CONCERN STATEMENT: The proposed parking lot directly across from the stables with a trail entrance on the other side would create additional traffic congestion and dangers for people and horses maneuvering with bicycles and cars across the street to the new trailhead.

Response: The proposed parking along Smith Road would be organized and delineated to provide adequate room for pedestrians, bicyclists, and equestrians to safely move through this area. A designated crossing area would be provided at this location for trail users to safely cross Bunker Road while accessing the new trail.

Concern ID: 14930

CONCERN STATEMENT: In Alternative 3 it is suggested that the "Surfer lot" be removed and additional parking be spread throughout Fort Cronkite and the Headlands Institute campus footprint. This poses a potential threat to student safety on the Headlands Institute Campus. Some of the suggested parking areas in Alternative 3 place parking lots in and around program areas where we have 10,000 students a year playing and learning.

Response: The location of the infill parking within Fort Cronkhite has not been determined yet. NPS will consult with the park partners and consider the findings of the Cultural Landscape Report for Fort Cronkhite before determining the locations for the infill parking.

Concern ID: 14933

CONCERN STATEMENT: I would like to implore the GGNRA Planners to re-evaluate the Barry-Baker Tunnel to ensure the safe passage of cyclists. I ask because I have experienced first hand a rather short time span allotted to cyclists for passage in the west to east direction. (I think the safety parameters of cyclists passing east to west should also be looked at, but I have no thoughts to share on that.)

Some of the parameters involved in my view are: all cyclists, whether timid or not, will tend to pick up speed on the downhill heading east, thus adding to the danger of any encounter with moving vehicles; and many like myself will be cautious due to darkness, unfamilarity, wet sections and therefore go slower than what seems to be allowed for in the timing (even though they will pick up speed). In addition, now that I have some up to date experience in the tunnel I'm afraid that I'll be "running scared," trying to outwit the system in order to ensure that I don't get hit head on going out the other end. I don't want to have to ride like that through that tunnel!

Now that's only one rider passing through; if there are more - 3, 5, 7, etc. - the problem only can get worse and more unsafe.

I feel unsafe bicycling and sharing the narrow streets on the North side of the bridge in the Marin Headlands area, especially in the tunnels.

Response: This is a valid concern and the park will investigate further. The park will add signs warning cyclists about these issues.

Concern ID: 14941

CONCERN STATEMENT: Public comments suggested that law enforcement activities be increased, especially regarding bicycle speed limits on trails as well as roads.

Response: The park can inform cyclists of regulations but cannot commit to enforcement. However, the park can install more signage encouraging compliance with regulations, including speed limits. The wayfinding discussion in the FEIS was amended to include this.

Concern ID: 14942

CONCERN STATEMENT: The Bunker Road tunnel is closed not infrequently in the winter, and there is a need for alternate evacuation and access routes when the tunnel is closed if Alternative 2 is implemented with the one-way road system through the tunnel.

Response: If Alternative 2 is implemented, a plan would need to be developed to identify an alternate access route out of the park in event of the closure of the tunnel. Alternative 3, the preferred alternative, would maintain the existing circulation system and therefore visitors could exit the park via Conzelman Road if the tunnel is closed.

Concern ID: 14945

CONCERN STATEMENT: The Draft EIS cannot ignore the hazardous conditions on Alexander Avenue between the entrances to the park and should include cooperation with the Golden Gate Bridge Highway and Transportation District to improve safety to this corridor.

Response: Alexander Avenue is under the joint jurisdiction and control of Golden Gate National Recreation Area, Caltrans, and the Golden Gate Bridge Highway and Transportation District. The National Park Service is working with the district, Caltrans, the City of Sausalito, and Marin County to address transportation is-

sues, including safety, along Alexander Avenue.

Concern ID: 14947

CONCERN STATEMENT: In general, we support Alterative 2 as the most cost effective, safe and effective option. However, changing Bunker Road and McCullough road to one way vehicular traffic is neither safe nor reasonable. Many Park Partners require deliveries via large trucks, and equestrian visitors to the park utilize horse trailers. The one way traffic would force these large vehicles onto narrow roads and the densest traffic in the area. It would make these stretches of road much more dangerous for the frequent pedestrian and bicycle activity on the road.

Response: The one-way circulation on Bunker Road and McCullough Road would require all vehicles, including large trucks and trailers, to use McCullough Road, which is narrow and winding. Therefore, Alternative 2 would not accommodate these large vehicles as well as Bunker Road would in alternatives 1, 3, and 4. This information will be included in the FEIS.

Concern ID: 14949

CONCERN STATEMENT: Hopefully part of this charging for parking would also be taking control of the chaos of sightseers who drive up Conzelman and very dangerously try to park. I feel very unsafe on this stretch when biking (and would also if I drove there), with people crossing traffic at blind corners to park (particularly at Battery Spencer). I hope this plan is able to improve on that (and having trail access from closer to the GG Bridge for bikes would be one way to improve the situation for mountain bikers - it would get us off this unsafe stretch of road).

Response: A Class 2 bike lane would be added to Conzelman Road between U.S. 101 and McCullough Road, providing a dedicated uphill (westbound) bicycle lane in this area. Parking areas at Battery Spencer and Overlooks 1 and 2 on Conzelman Road would be reorganized to minimize the conflicts in these areas between parking movements and motorized and non-motorized traffic flows. Measures to eliminate the other unofficial parking areas along Conzelman Road would also minimize the left turns. The roundabout at Conzelman and McCullough Roads would also reduce the need for left turns.

Concern ID: 14956

CONCERN STATEMENT: This DEIS should address tourist car and tourist bus safety issues separately. Tourist safety and improvement issues (road widening, retaining walls, easy return from the vista outlook via a roundabout at McCullough and Conzelman). Critical Intersection Improvement at Conzelman and McCullough to get tourist cars and buses quickly and safely back to Highway #101 should be done immediately.

Response: The proposed project includes roadway, intersection, and parking improvements to improve safety at specific locations in the park. The composite effect of these safety improvements would be to address the existing vehicular safety (including tour buses and automobiles) issues throughout the park, including the locations where high rates of accidents have been reported. The intersection of Conzelman Road and McCullough Road would be replaced with a roundabout and the intersection of Conzelman Road and U.S. 101 would be improved to accommodate the turning radius of buses. The schedule for these improvements is

based on funding availability. The Conzelman Road and Highway 101 intersection is scheduled to be completed as part of the first phase, 2009 and beyond.

Concern ID: 14961

CONCERN STATEMENT: The major problem that must be addressed is car congestion and parking. Anyone starting up the hill from 101 on Conzelman, be it by car or on bike, is immediately confronted by the confusion of tourists attempting to park their cars at the first available spot near Battery Spencer. It is a dangerous situation for everyone.

Response: In order to improve vehicular congestion and safety at Battery Spencer, improvements at this location in the preferred alternative would include excavation of an existing rock cut in order to realign the roadway to provide adequate sight distance and increase head in parking spaces. These improvements would allow vehicles to back out of their parking stalls before entering the travel lanes at Battery Spencer. A wayfinding program would be implemented and intelligent transportation systems (ITS) technologies (such as electric changeable message signs and highway advisory radio alerts) would be applied to provide improved visitor information and safety, and to reduce congestion at key locations, such as Battery Spencer.

Concern ID: 14962

CONCERN STATEMENT: It seems GGNRA has accepted the fallacy that bikes and horses don't mix, and it looks like GGNRA has decided to keep cyclists away from the stables in general. Both cyclists and equestrians ride 5, 10, 25 miles at a time, so it seems naive to think that keeping bikes away from the stable will provide more positive trail use experiences. In fact, I believe keeping bikes away from the stables will only shelter horses from bikes and not get them accustomed to them when cyclists are going slow, or walking their bikes as it is now.

Response: The preferred alternative provides improvements to the Rodeo Valley Trail between Capehart housing area and Fort Cronkhite that would allow access for both bicycles and equestrians. Bicycle access would be directed away from the stable area. Bicycles would be able to access trails in the vicinity of the stables via a rehabilitated Julian Road (multi-use Coastal Trail segment).

Concern ID: 15287

CONCERN STATEMENT: Parking maneuvers and insufficient separation from the "door zone" represent a serious safety concern for cyclists and pedestrians alike. Please include a discussion of this topic in the FEIS.

Response: For Alternatives 2, 3, and 4, the parking improvements at the formal roadside parking areas such as Battery Spencer, Hawk Hill, and the overlooks on Conzelman Road will provide more separation between vehicles, and pedestrians/bicyclists, thereby improving safety.

Concern ID: 15598

CONCERN Providing a NaturalPave surface treatment to accommodate road bicyclists on

STATEMENT: existing primary Ridge Trail poses some issues. There is a concern that adding road bicycles could diminish the slower-paced recreational experience for the Ridge Trail users, and may contribute to user-conflict/safety concerns.

Response: The Bay Area Ridge Trail would not be surfaced with NaturalPave surface. For clarification, the Rodeo Valley Trail between Capehart housing area and Bunker Road at Rodeo Lagoon would be widened with a hardened, permeable surface (e.g., aggregate material) and would not be paved under Alternative 3. Since this is not a paved surface, road bikers are not as likely to use this trail.

VU4000 - Visitor Use: Impact Of Proposal And Alternatives

Concern ID: 15172

CONCERN STATEMENT: I remember you as one of the early supporters of the establishment of the Bay Water Trail for San Francisco Bay. Thus, I was disappointed to review the subject EIS, which included only cursory analysis of the impact on the Water Trail, and had no detailed analysis on either the impacts of the restrictions proposed on parking, or any realistic examination of alternatives that might protect and enhance access to the Bay.

Response: The San Francisco Bay Area Water Trail Act establishes a water trail in the "San Francisco Bay Area that includes the nine Bay Area counties and navigable waters and tributaries under tidal influence that are part of or feed into San Francisco Bay." The water trail shall, "to the extent feasible, link access to the waters of the San Francisco Bay that are available for navigation by human-powered boats and beachable sail craft..."

The Water Trail Act does not restrict landowners from imposing fees to access or launch at sites along the water trail, nor does it define how access should be provided. The act also does not identify the location of the water trail or access points. However, the Draft San Francisco Bay Area Water Trail Plan dated May 22, 2007, includes maps describing the trail. Figure 9.1.b of the Central Bay shows an existing launch at Horseshoe Bay, and an existing destination at Kirby Beach for overnight camping. Section 4.2, "Existing Access onto the Bay," says that access consists of over 130 launch and landing points, and that "some launch ramps require a fee to park or launch." There would be no changes to Kirby Beach for overnight camping. Access to launch at Horseshoe Bay would still be provided, but visitors would pay to park. Access to the bay would be enhanced for those visitors that use transit or didn't have access to private vehicles. The parking fee would pay for the transit that would provide that access.

VU4100 - Car Free Days

Concern ID: 14975

CONCERN STATEMENT: In addition, an NPS representative is quoted in the August 12th San Francisco Chronicle suggesting that the 'car-free' days plan for the Headlands that is included in Alternative 3, could go from 7 days per year to everyday.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. After the trial

period, GGNRA will evaluate the results and adjust the program based on results.

Concern ID: 14980

CONCERN STATEMENT: We are alarmed by the component of the Preferred Alternative 3 of the Transportation Infrastructure and Management Plan for Fort Baker that calls for car-free days along the waterfront at Horseshoe Bay. Kayakers, canoeists, windsurfers and trailered watercraft all need automobile access in order to gain access to the Bay. Transporting boats and boating equipment on foot or by shuttle is simply not feasible.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through roads would remain open. Three shuttle routes will be provided to transport visitors within the park. GGNRA will work with park partners and affected visitor groups and consider equipment drop-off issues to minimize the impacts and concerns expressed regarding transporting equipment to the park.

Concern ID: 14990

CONCERN STATEMENT: In looking at the map of Fort Baker it appears that automobile access to both the west and east ends of the waterfront could easily be maintained regardless of whether there was automobile access elsewhere in the park.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through roads would remain open. Three shuttle routes will be provided to transport visitors within the park.

Concern ID: 14994

CONCERN STATEMENT: As you are well aware, both the San Francisco Bay Area Water Trail Act of 2005 and the recent revisions to the recreation section of the Bay Plan support and encourage enhanced public access to the water of the Bay, particularly for non-motorized small watercraft. Restrictions such as are proposed do not support either the spirit or intent of the Water Trail legislation or the Bay Plan.

Response: The San Francisco Bay Area Water Trail Act establishes a water trail in the "San Francisco Bay Area that includes the nine Bay Area counties and navigable waters and tributaries under tidal influence that are part of or feed into San Francisco Bay." The water trail shall, "to the extent feasible, link access to the waters of the San Francisco Bay that are available for navigation by human-powered boats and beachable sail craft...." The water trail "shall be developed in a manner consistent with the right to access navigable waters of the state contained in Section 4 of Article X of the California Constitution." Please see Concern 15182 for a discussion on the NPS's interpretation of Section 4.

The Water Trail Act does not restrict landowners from imposing fees to access or launch at sites along the water trail, nor does it define how access should be

provided. The act also does not identify the location of the water trail or access points. However, the act calls for development of a San Francisco Bay Area Water Trail Plan, the draft of which, dated May 22, 2007, includes maps describing the trail. Figure 9.1.b of the Central Bay shows an existing launch at Horseshoe Bay, and an existing destination at Kirby Beach for overnight camping. Section 4.2, "Existing Access onto the Bay," says that access consists of over 130 launch and landing points, and that "some launch ramps require a fee to park or launch" (see Concern 15182 for additional discussion about fees.) Use of Horseshoe Bay as a launch site and Kirby Cove for overnight camping, as identified in the Water Trail Plan, is not changed under this plan.

Relevant aspects of the San Francisco Bay Plan will be added to the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan under "Other Plans, Programs, and Transportation Planning Efforts" in Chapter 1.

Concern ID: 14995

CONCERN STATEMENT: This area - Ft. Baker, Ft. Cronkite, Ft. Barry, Marin Headlands - is my back yard and I feel this area should remain accessible by vehicle to those who live in the immediate area of Sausalito as residents. I understand you included some rather weak words in the text about offering Sausalito residents some sort of sticker, maybe not unlike the Seventeen Mile Drive in Carmel. This could work, but to what advantage?

Response: Frequent users, including local residents, would be able to purchase an annual parking pass. Depending on their frequency of use, this could reduce residents' parking costs.

Concern ID: 14996

CONCERN STATEMENT: I need to voice my concern for closing off automobile traffic for our hostel in the Headlands, for our Hostel Adventure program participants and participants of other programs provided by Park Partners, and for staff and residents of those programs. I hope that you will keep all of these important programs in mind when the final decisions are made regarding cars in the park. The Marin Headlands Hostel provides accommodations to nearly 20,000 visitors per year. Because they are traveling with packs or luggage and bringing groceries for their food, a shuttle from a parking area would be highly inconvenient. The same holds true for the youth participants in our Hostel Adventure Program, where classes of students come for one or two days of environmental and outdoor programming in the park, using the hostel as a base. Similarly the staff and residents of the hostel and other programs in the headlands would be severely hampered were they not given vehicular access.

Response: When vehicle access to the Fort Cronkhite area is restricted on car-free days, a plan for access by residents, staff and park partners would be developed.

Concern ID: 15011

CONCERN STATEMENT: Changing the structure of the Marin Headlands roads: limiting cars and introducing buses is a very bad plan. I have been visiting the headlands for 30 years now. Putting buses on the road will be very damaging for two reasons. The amount of damage caused by a big vehicle like a bus is much more than a car. They take up

more room and would be more hazardous to bike riders. Also the amount of people being released to the hill would be greater since they don't have to worry about parking. Also parking to board the bus would be a nightmare and infringe on the landscape.

Response: The roadways would be designed and constructed to support the use of transit vehicles. Class 1 bicycle paths and Class 2 bicycle lanes would be added at several locations, along with widening of specific roadway locations in the study area to provide a wider biking area. If transit provides an opportunity for more people to visit areas of the park where visitation was limited due to parking, then accessibility and the park experience would be improved for these people. Prior to implementation of the car-free days, a traffic and bus operating plan would be developed to promote efficient parking and shuttle operations. The parking for the shuttle service would be at designated parking areas.

Concern ID: 15018

CONCERN STATEMENT: We require daily free access to Rodeo Beach Parking Lot for GGRO staff (up to 3 cars, year-round), interns (4 cars, July through Feb), and volunteers (up to 25 cars, August through December). This would provide access to Bldg 1064 (Ft Cronkhite), our main office and staging area. Also, free parking spaces and road access for visitors and delivery vehicles to Bldg 1064 would be needed as well. Ft Cronkhite activities include both daytimes, and weekends, and evenings for trainings (5 to 11 pm).

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through roads would remain open. Three shuttle routes will be provided to transport visitors within the park. GGNRA will work with affected visitor groups and consider equipment drop-off issues to minimize the impacts and concerns expressed regarding transporting equipment to the park. GGNRA will also consult with park partners regarding delivery issues prior to developing the car-free days program.

Concern ID: 15019

CONCERN STATEMENT: Please choose the car-free days to NOT coincide w/ strong current rips at Yellow Bluff (Cavallo Point). By doing so you will maintain the best kayak safety training site for learning how to paddle in rough water in Northern California perhaps the West Coast.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through roads would remain open. Three shuttle routes will be provided to transport visitors within the park. GGNRA will work with affected visitor groups and consider equipment drop-off issues to minimize the impacts and concerns expressed regarding transporting equipment to the park.

Concern ID: 15032

CONCERN STATEMENT: The launch at Fort Baker is one of only ten launches on the San Francisco Bay that will draw 30 or more users when conditions are ideal. This makes the launch an invaluable resource for windsurfers and a regional asset given that there are very limited alternatives to these ten popular sites along the 200 miles of bay shoreline that the Bay Conservation & Development Commission estimates are now publicly accessible.

The launch at Point Cavallo is the only practical launching area for windsurfers along a 5-6 mile stretch of shoreline running from Rodeo Cove to downtown Sausalito. The nearest sites along the Marin shoreline that are used with any regularity by windsurfers would be Stinson Beach and Larkspur/San Quentin.

Response: Information on the Point Cavallo and Fort Baker launches will be added to Section 4.5, "Impacts on Visitor Use and Experience."

Concern ID: 15034

CONCERN STATEMENT: With current conditions, surfers can take an hour before work and come out to the beach and enjoy their sport. On car free days, when you figure in shuttle wait time and loading time, many of these people will likely not have time to enjoy the park in this fashion. In addition, many people with small kids or disabilities can drive right to the beach in our semi-urban park. I fear that by introducing road closures and shuttles, many of these people will find it too difficult to enjoy the beach.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through roads would remain open. Three shuttle routes will be provided to transport visitors within the park. GGNRA will work with park partners and affected visitor groups and consider equipment drop-off issues to minimize the impacts and concerns expressed regarding transporting equipment to the park.

Concern ID: 15038

CONCERN STATEMENT: I would also like to comment on the car free days in Alternative 3 and 4. The documents mention 7 car free days a year in the tables, but in the document it says that the number and timing of car free days is at the discretion of administrators. I think some car free days are a good idea, but cars are essential to many park activities. So having the number of car free days be open ended is a bad idea. The maximum number of car free days should be set firm with a complete re-approval process required to increase or decrease the maximum days.

Response: Car-free days would be implemented on a trial basis for a maximum of seven days per year. After completion of the trial program, it would be reviewed to determine if the program should be continued and refined. For consistency, a specific day of the month would be identified, such as the first Sunday of each month from April to October.

Concern ID: 15040

CONCERN STATEMENT: On car free days, many spots would only be accessible by bike or long hike. These forms of transport make many forms of recreation impossible that rely on the use of any sort of equipment. You cannot easily transport folding chairs, fishing poles, coolers, volley ball/badminton nets etc. on a bike, or carry them on a long hike. These issues have not been addressed at all in the document and I believe that they should be included in the discussion.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through roads would remain open. Three shuttle routes will be provided to transport visitors within the park. GGNRA will work with park partners and affected visitor groups and consider equipment drop-off issues to minimize the impacts and concerns expressed regarding transporting equipment to the park.

Concern ID: 15042

CONCERN STATEMENT: In addition, the success of our mission is dependent on outreach to the community. During car-free days, restricting car access to The Marine Mammal Center will reduce the number of visitors to our site at our busiest period, during weekend summer months. This will have a significant negative impact to our education, retail and fundraising activities at a period when The Center needs to expand its outreach to be successful.

Response: Car-free days would be implemented on a trial basis a maximum of seven days per year, such as the first Sunday of each month from April to October. On those particular days, autos would be restricted in specific locations, but those locations, including the Marine Mammal Center, would remain open with access provided by other modes, such as transit, walking or biking.

Concern ID: 15047

CONCERN STATEMENT: Besides all the private boaters there are a few of us commercial sea kayaking businesses that rely on that small beach for access to the Gate. We have been using the Cove for the past 25 years. As you know our days per year are limited due to the tides.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through roads would remain open. Three shuttle routes will be provided to transport visitors within the park. GGNRA will work with park partners and affected visitor groups and consider equipment drop-off issues to minimize the impacts and concerns expressed regarding transporting equipment to the park.

Concern ID: 15059

CONCERN Public comments were received stating that car free days would prevent dog

STATEMENT: walkers from using the park because dogs would not be allowed on shuttles.

Response: Dogs on leash would be allowed in the car-free areas consistent with the leash policies of the area, but would have to be driven in a personal vehicle to a parking area closest to the car-free boundary.

Concern ID: 15061

CONCERN STATEMENT: The car free zones and days would be a major problem for the museum unless they are done on days when the site is closed. Our visitors have very young children, ages 1-6 walking or in strollers with diaper bags and cannot easily get to the museum without a car. We would like more clarification on the impacts this may have on the museum in order to give more input.

Response: The museum is not located in the car-free zone of Fort Baker. Museum visitors would be able to access the museum by private vehicles on designated car-free days.

Concern ID: 15063

CONCERN STATEMENT: As an experiment, if you decide to break faith with the concept underlying the creation of this peoples' urban park, using your daily attendance data, transit provisions necessary for this number of persons should be in place before any experimental closure - or the evaluation will be insufficient.

The DEIS does not indicate complications of visitor's need for bike rentals / access for seniors and disabled or families with small children on these car free days.

Response: An analysis of transit requirements during car-free days is provided in Appendix B of the EIS. As part of this trial car-free program, transit provisions would be implemented.

Concern ID: 15066

CONCERN STATEMENT: Public comments were received stating that car free days would have a negative impact on park use by families with small children because of the difficulty of using shuttles or having to walk long distances especially with all their gear.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through roads would remain open. Three shuttle routes will be provided to transport visitors within the park. GGNRA will work with park partners and affected visitor groups and consider equipment drop-off issues to minimize the impacts and concerns expressed regarding transporting equipment to the park.

Concern ID: 15073

CONCERN STATEMENT: Car free days, again not welcoming or encouraging use, puts limitations and then people may associate even more restrictions with the park and be discouraged to come, especially if unsure of schedule.

Response: Car-free days would be implemented a maximum of seven days per year. For consistency, a specific day of the month would be identified, such as the first Sunday of each month from April to October. Implementation of the car-free days would be coordinated with an extensive public information campaign both to provide notice to the visiting public and to explain the rationale and benefits of a car-free experience.

Concern ID: 15076

CONCERN STATEMENT: Park Partners have stated that car free days will interfer with their operations by preventing employees, volunteers, visitors, and supply deliveries (among others) from getting to the facility that day.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through roads would remain open. Three shuttle routes will be provided to transport visitors within the park. GGNRA will work with park partners and affected groups and consider equipment delivery issues to minimize the impacts and concerns expressed regarding transporting equipment to the park. GGNRA will consult with park partners concerning their operations and delivery needs when developing the car-free day program.

Concern ID: 15077

CONCERN STATEMENT: The Park proposes restricting all car traffic into the Headlands with the creation of a "car free day" one weekend each month. In this plan as it currently reads, access to The Center is completely blocked to car traffic and no provisions are made for staff and/or volunteers to drive cars or rescue vehicles to The Marine Mammal Center and Fort Cronkhite.

There must be a provision in this plan for staff vehicles to gain access to The Center and Fort Cronkhite. The Center's operation is seven days a week and frequently involves animal response vehicles coming and going at all hours of the day. Restricting traffic to our site is not workable at any time. We can't imagine the NPS would prevent park partners from gaining access to their sites, but it is not mentioned in this plan and it should be made a point of clarification in the final draft.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through roads would remain open. Three shuttle routes will be provided to transport visitors within the park. GGNRA will work with park partners and affected groups and consider equipment delivery issues to minimize the impacts and concerns expressed regarding transporting equipment to the park. GGNRA will consult with park partners concerning their operations and delivery needs when developing the car-free day program.

Concern ID: 15081

CONCERN STATEMENT: Visitors from all over come with their horses to enjoy riding the Headland trails, and if the area becomes "car-free" that eliminates their ability to access the area with their horse trailers.

Response: The preferred alternative remains unchanged in the FEIS. Access would not be "eliminated." Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. The Smith Road parking area, which provides parking for large vehicles, would remain open during car-free days.

Concern ID: 15082

CONCERN STATEMENT: A great number of people using the park, if not the majority of them, are tourists that feed our economy. These people come from around the world to see the "famous view" and to experience what there is to experience. To most people walking or cycling is not appropriate. To deny these tourists access to such an important local site would be a shame. These people often have only one day in their travel plans to come, and even if they had more than one day, there would probably be insufficient means of notifying them of the schedule for car free days. I see a lot of disappointed people.

Response: On those particular days, autos would be restricted in specific locations, but those locations would remain open with access provided by other modes such as transit, in addition to other modes such as walking or biking. As mentioned in Section 3.4, the park's most popular scenic viewing areas are along Conzelman Road. Access to the parking lot for the view from Battery Spencer would not be affected by car-free days.

Concern ID: 15084

CONCERN STATEMENT: Car free days (in the areas depicted, viz., most of the road that ends at Rodeo Beach) would pose a major inconvenience for many regular users: people who work or attend conferences in the buildings, surfers, people with dogs, families with beach equipment, artists, and others all carry a fair amount of equipment that would be difficult to maneuver on and off shuttles. If many exceptions are made so that car traffic is still flowing, it would defeat the purpose of no-cars and create resentment about who can and cannot drive. Also, most of the acreage has no roads anyway, so the car-free experience is already available.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through roads would remain open. Three shuttle routes will be provided to transport visitors within the park. GGNRA will work with park partners and affected visitor groups and consider equipment drop-off issues to minimize the impacts and concerns expressed regarding transporting equipment to the park.

Concern ID: 15085

CONCERN STATEMENT: Car Free Days are a wonderful opportunity for the Park to create a safe pedestrian and family friendly atmosphere. While we are very supportive of car free days they can also have a negative impact on our participants, who typically attend Headlands Institute overnight and with luggage.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through roads would remain open. Three shuttle routes will be provided to transport visitors within the park. GGNRA will work with affected park partners and visitor groups and consider equipment drop-off issues to minimize the impacts and concerns expressed regarding transporting equipment to the park.

Concern ID: 15086

CONCERN STATEMENT: Rodeo Beach is the only area within the Headlands under consideration for offleash recreation in the pending Negotiated Rulemaking. This magnifies the negative impact on people with dogs and offleash dogwalking recreational dog users. Transportation limitations will further deter and limit the ability of these users in the only area in Marin to which they may be limited under Negotiated Rulemaking.

Response: Decision on off-leash dog use (ROLA) at Rodeo Beach is being made as part of the Dog Management Plan.

Concern ID: 15088

CONCERN STATEMENT: I have spent much time enjoying Fort Baker and the Marin Headlands and am well aware of the occasional traffic congestion and conflict between motorists and bikers. I am appalled at the plan, however, to ban cars to these areas. While I understand that there is a visceral loathing by many San Franciscans of automobile drivers, the fact is that driving remains the main way that both residents and visitors enjoy these areas. This move is plainly punitive of the much-loathed motorist, a feel-good move by the self-righteous, and will simply eliminate the pleasure of enjoying these areas for many people. Few will brave the rigors of riding Muni as an alternative and most will simply decide it isn't worth the hassle and we'll lose a few more people to the lure of TV and video games instead of their enjoying the outdoors.

Response: A "variety of users" also includes those that wish to access and enjoy the park via walking, hiking, and biking. The plan would not close the park during seven car-free days on a trial basis. On those particular days, autos would be restricted in specific locations, but those locations would remain open with access provided by other modes, such as transit, walking or biking.

Concern ID: 15186

CONCERN STATEMENT: While the subject EIS indicates a consistency determination will be submitted to BCDC, it does not include any analysis of the policy framework that has been established in the California Coastal Program, or any substantive analysis of the

actual impacts. Instead, the document includes scant information, and characterizes the impact of car-free days as:

Visitors engaging in surfing or boating activities would find access more difficult. Resulting impacts to aquatic access would be long-term, moderate and adverse.

In fact, aquatic access would be eliminated on such days. Nothing in the document reveals the number of days on which this would occur, or makes any attempt to quantify the number of users affected. This impact utterly fails the tests established in the California Coastal Management Program; the Legislature having established that access to the water is inadequate and should be increased, any activity that eliminates access cannot be supported.

Response: The California Coastal Commission manages development along the California coast except for San Francisco Bay, where the San Francisco Bay Conservation and Development Commission oversees development. The primary authority for the Coastal Program that applies to this EIS is the McAteer-Petris Act. As discussed under Concern Statement 15183, Section 66602 of the McAteer-Petris Act states:

The Legislature further finds and declares that certain water-oriented land uses along the bay shoreline are essential to the public welfare of the bay area, and that these uses include ports, water-related industries, airports, wildlife refuges, water-oriented recreation and public assembly, desalinization plants, upland dredged material disposal sites, and powerplants requiring large amounts of water for cooling purposes; that the San Francisco Bay Plan should make provision for adequate and suitable locations for all these uses, thereby minimizing the necessity for future bay fill to create new sites for these uses; that existing public access to the shoreline and waters of the San Francisco Bay is inadequate and that maximum feasible public access, consistent with a proposed project, should be provided.

Aquatic access would not be eliminated; access to the shoreline from the land, as well as from the water, would still be allowed. The preferred alternative includes expansion of existing transit services to improve access to and within the study area. Service would be provided seven days per week, with more frequent service on weekends than weekdays. In addition to this expanded service, three special shuttle service routes would be implemented on car-free days.

As defined in the EIS under Section 4.5.2, a moderate impact is one that would change the range of park experiences a "perceptible amount for 15% to 30% of current park visitors." Under the heading "Types of Park Experiences" in section 3.4.2, the EIS states that 28% of park visitors listed "going to the beach" as their primary park experience in a survey conducted in 2000. This survey was conducted over the three-day Labor Day holiday weekend, during which 546 completed surveys were collected. The survey form was comprised of a checklist of activities that included swimming and surfing in the "going to the beach" category. Boating was a separate activity that could be selected; however, it was not selected by any visitors during this time period. It is possible that boating visitors selected "going to the beach" as their primary activity instead. Because 28% of park visitors listed "going to the beach" as their primary reason for visiting,

as stated in the EIS, the National Park Service believes that a moderate adverse impact level for visitors engaging in surfing or boating activities is substantiated. By assigning a moderate adverse impact level, the National Park Service acknowledges that up to 30% of park recreationists could experience a perceptible change.

As stated in the EIS under Section 2.5.6, the National Park Service would implement a car-free days program on a trial basis: "After reviewing the program the National Park Service could adjust the number of car-free days or times and operations." After completion of the trial program, which would initially be implemented by providing car-free days one weekend day per month from late spring to early fall, it would be reviewed to determine if the program should be continued and refined.

Concern ID: 15339

CONCERN STATEMENT: For car-free days, the plan does not adequately address disabled/senior access, Park Partner access (marine mammal rescue for example), transportation for surfers and other beach goers who frequently bring gear with them. It does not seem to be a workable concept in its present form at this time.

Response: During car-free days, access for people with physical limitations would be provided with ADA-accessible shuttle buses. A plan for park partners would be developed for car-free days when vehicle access is restricted.

Concern ID: 15341

CONCERN STATEMENT: We require driving access to the Intern Barracks, Bldg 1042, Ft Cronkhite, where as many as four GGRO Interns may be living throughout the year.

Response: A plan for access by residents and park partners would be developed for car-free days when vehicle access to the Fort Cronkhite area is restricted.

Concern ID: 15534

CONCERN STATEMENT: If option #3 is selected then the road closures should be predictable. As the plan reads it seems like it would be hard to know if roads are closed on a given day - I'd prefer a scheme like the Golden Gate Park where you know that there are road closures every Sunday.

Response: The car-free days plan would identify a consistent set of days for closure.

Concern ID: 15581

CONCERN STATEMENT: The safest and most convenient launching site for boaters wishing to camp at Angel Island or Kirby Cove is Horseshoe Cove. By effectively closing the waterfront at Horseshoe Cove for one weekend day campers, who need to launch on one day and return the next, would experience a significant (25%) reduction in weekends that they could consider for camping.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through

roads would remain open. Three shuttle routes will be provided to transport visitors within the park. GGNRA will work with affected park partners and visitor groups and consider equipment drop-off issues to minimize the impacts and concerns expressed regarding transporting equipment to the park.

Concern ID: 15609

CONCERN STATEMENT: It is our understanding that initially car-free days would include one weekend day per month. Since most local recreational boaters have jobs, this means that instead of eight weekend days per month their recreational opportunity would be cut to seven. This, coupled with the fact that tides are not always amenable for non-motorized boats at this location would, in reality, make the access restrictions even more severe than what is proposed.

Response: The preferred alternative remains unchanged in the FEIS. Car-free zones and days would be implemented on a trial basis up to seven times per year, which averages less than once per month. In Marin Headlands, generally all roads west of Smith Road would be closed during car-free days. In Fort Baker, most internal roads would be closed but major through roads would remain open. Three shuttle routes will be provided to transport visitors within the park. GGNRA will work with park partners and affected visitor groups and consider equipment drop-off issues to minimize the impacts and concerns expressed regarding transporting equipment to the park.

VU4200 - Biking

Concern ID: 15096

CONCERN STATEMENT: The road up to Slacker Hill will be closed under the Preferred Alternative. It is a popular destination point for cyclists as well as other users. The plan envisions leaving the lower part of the area open to folks who study raptors. Please keep in focus that Slacker Hill has enjoyed long historical use by cyclists and other users without problems. Slacker Hill provides spectacular views of the Golden Gate, the city, and other Headlands locations that are unique, and unavailable at any other place. It is said to be the best view area within the Headlands. Closure of Slacker Hill Road will deny hikers and equestrians the ability to travel between the SCA/Ridge Trail and the top of Julian Road, creating a serious gap in access to the western part of the park. Please leave it open to all users.

Response: The preferred alternative in the DEIS would have closed this trail to the public. The preferred alternative for the FEIS was modified. The majority of the existing trail to the top of the hill would be restored. The existing route to the top of Slacker Hill would be converted from a road to a trail and the majority of the existing route would be removed and the site restored. The new route would provide access to the two GGRO research sites, via a new foot trail, and to the viewpoint at the top of the hill for hikers and equestrians. Access to the east side of the launch site would be maintained for its views of the bay and city. The spur road leading from this trail that currently provides access to a raptor observatory research site would be closed and restored; access to this site would be provided through a new foot trail. The Golden Gate Raptor Observatory would still be able to access its research sites in the Slacker Hill region. Due to the erosion control issues and the sensitive habitat -- Mission Blue Butterfly habitat, a narrower trail for hikers only will be provided; equestrian and bike use would

not be allowed.

Concern ID: 15097

CONCERN STATEMENT: The Preferred Alternative fails the purpose of providing improved trail conditions and connectivity for mountain bikers. One key example is the proposal to rehabilitate the existing Dubois Road between the new pedestrian/bike bridge to be built at the intersection of McCullough and Bunker Roads, and the Julian Road, (which allows bikes.) After this rehabilitation, the plan is to open this important new connector to hikers and equestrians, but not bikes. This would be an important way for cyclists to descend down into Rodeo Valley, in a north-south direction. There is absolutely no credible reason not to allow bikes. In fact, it is already a road.

Response: GGNRA considered opening Dubois Road (trail) to bikes. However, the existing alignment is not be adequate for converting to bike use due to its steepness and sharp turns; the road would need to be realigned to accommodate bikes and prevent erosion. As noted in the DEIS under "Cultural Resources: Individual Roads and Character-Defining Features Sensitive to Change," Dubois Road's (trail's) alignment is a character-defining feature that is sensitive to change. Under "Road Types and Functions," the DEIS states "The historic integrity of individual roads is not the same as their importance in terms of contribution to the overall integrity of the historic district [which is listed on the National Register of Historic Places]. . . . All of these roads, including Dubois Road (trail), contribute to the historic district." As noted above, bike use would require realigning Dubois Road (trail) in some sections; therefore to avoid impacts to its historic integrity, the park decided not to open Dubois Road (trail) to bikes.

Concern ID: 15098

CONCERN STATEMENT: There is an important trail that will go between the visitor center at Rodeo Lagoon, and the riding stable. As the Alternative 3 map shows, it bends to the south, approaching Conzelman Road. Part of that trail will involve new construction. There will be a connector from that trail to the new Coastal Trail alignment on the south side of Conzelman, just east of Battery McIndoe. It is unclear how much of this important trail will be open to bikes. It is not discussed in the plan specifically, but it is on the map. It is clear the GGNRA does not want bikes near the stable. Since there is no name yet for this segment, we must ask for access, using descriptive terms.

Response: The National Park Service had considered developing a trail from Conzelman Road to the stables on an existing alignment. Although different from the trail suggested by the comment, this trail would have provided a similar function by providing bicycle access to Rodeo Valley. However, the trail was not included in the DEIS because of erosion issues related to the steep grade in this area.

Concern ID: 15100

CONCERN STATEMENT: The plan includes significant changes, lane widening, and bike path improvements, but we believe the dedicated bike lanes in Alternative 4 are more appropriate, particularly on Field road where there is significant two way car and bike traffic and lane sharing has become a safety issue.

Response: Adding dedicated bike lanes on both sides of Field Road would require widening the road. As noted in the DEIS under "Cultural Resources: Individual Roads and Character-Defining Features Sensitive to Change," Field Road's alignment and width is a character-defining feature that is sensitive to change. In addition, the grass shoulders and ditches, and World War II era concrete drainage structures along the roadbed are also character-defining features sensitive to change, which would therefore preclude widening where those shoulders and structures exist. Under "Road Types and Functions," the DEIS states "The historic integrity of individual roads is not the same as their importance in terms of contribution to the overall integrity of the historic district [which is listed on the National Register of Historic Places]. . . . All of these roads . . . contribute to the historic district." For these reasons, the park decided not to widen Field Road to add bike lanes.

Concern ID: 15101

CONCERN STATEMENT: Regarding Alternative 3:
-The Marin County Unincorporated Area Bicycle and Pedestrian Master Plan shows both Alexander Avenue and East Road as connecting routes between Sausalito and the Golden Gate Bridge. It is recognized that Alexander Avenue is under the purview of the Bridge District. Nonetheless, how park roads interface with Alexander Avenue in terms of bicycle and pedestrian usage should be carefully considered.
-Alexander Avenue is used primarily by commuters and 'regular' riders through the corridor. East Road is a better alternative for visitors and inexperienced riders because of its much lower traffic volumes and vehicle speeds. With the increasing popularity of cycling, especially with the bicycle rental agencies in San Francisco directing tourists to Sausalito, a significant number of cyclists are utilizing these two routes.
-It has been demonstrated that narrowing vehicle travel lanes, even if only by striping, can have a traffic calming effect. In the interest of encouraging slower driving speeds on East Road and providing dedicated space for cyclists, we request that the proposed road section drawing for East Road provide Class II bike lanes on both sides of the roadway. This can be accomplished by reducing the travel lane width or minor widening. This would also include appropriate striping; stencils, and signage.
-The four foot minimum bike lane width is a commonly accepted standard, including in the Caltrans Highway Design Manual. We would request that this also be applied to any roadways planned for bike accommodation on the east side of Highway 101 because of the number of cyclists in this area.

Response: The park agrees with your assessment regarding the importance of East Road for the non-commuter bicycle rider. Therefore, the proposed design for East Road was reevaluated. To accommodate both traffic lanes and bike lanes, the existing road bench would need to be widened resulting in cuts into the hillside and/or fills in some locations. Widening the road bench would have adverse impacts on the natural, scenic, and cultural resources (East Road is a contributing element of the historic district comprised of Forts Baker, Barry, and Cronkhite). Therefore, the current refined design strikes a balance between protecting the resources and improving the recreational bicyclists' safety and experience. For ease of explaining the revised design, East Road roadway characteristics and improvements are described in three distinct sections (see typical sections in Appendix A). For all sections, the travel lanes are 11-feet wide.

* Section 1 - southernmost (0.17 mile from Murray Circle north to the second curve where the trail meets the road) would have a 4-foot wide northbound shoulder and a 2-foot wide southbound paved shoulder, allowing for a wider uphill shoulder for the approximately 5-7% grade in this section and a narrower shoulder for the downhill section. This configuration is necessary because of the constrained road bench width that exists in this area.
* Section 2 - middle (0.45 mile between the trail and the curve south of the Sausalito-Marin Sanitary District entrance) generally has more road bench room to facilitate wider shoulder improvements for bicycles. This section would be widened by one foot (0.3 m) to a total width of 29 feet with a 4-foot wide northbound shoulder and a 3-foot wide southbound shoulder (this is a change from DEIS, which identified two 3-foot wide shoulders and total width of 28 feet).
* Section 3 - northernmost (0.27 mile between the curve south of the Sausalito-Marin City Sanitary District entrance and the Alexander Avenue intersection) has a constrained roadway bench. Widening the road bench beyond 28 feet would require extensive retaining wall construction at a considerable impact and cost (this option was proposed and evaluated in Alternative 4). The preferred alternative was changed to include two 3-foot shoulder widths for northbound and southbound bicycle travel.

In summary, a 4-foot wide shoulder would be provided northbound from Fort Baker until the curve before the Sausalito-Marin City Sanitary District Entrance, changing to a 3-foot wide shoulder to the Alexander Avenue intersection. Southbound bicyclists from Alexander Avenue and Sausalito would have a consistent 3-foot wide southbound shoulder until reaching the downhill grade of Section 1, where the shoulder would become 2 feet wide. East Road wayfinding signage would be provided, and the park would work with local jurisdictions on placement and content.

Concern ID: 15103

CONCERN STATEMENT: About the the idea of adding a bike lane on Conzelman above McCullough; this isn't the right solution.

I ride my bike to the top of Hawk Hill 450 to 500 times a year. A vehicle passing me at 15 MPH is not a risk to me or to other vehicles.

The risk to me as a cyclist comes from fast moving traffic and and it comes from drivers doing boneheaded things like making U-turns on blind corners.

Widening the road (even if it's to add a bike lane) increases the speed of the traffic and gives boneheads more room to make insanely dangerous illegal U-turns.

Response: Alternative 3 (preferred alternative) does not add a bike lane on Conzelman above McCullough. With the proposed roundabout at the Conzelman/McCullough intersection in Alternative 3, vehicles would be able to turn around easily and there would be no need for a u-turn in this area.

Concern ID: 15104

CONCERN STATEMENT: I would like to implore the GGNRA Planners to re-evaluate the Barry-Baker Tunnel to ensure the safe passage of cyclists. I ask because I have experienced first hand a rather short time span allotted to cyclists for passage in the west to east direction. (I think the safety parameters of cyclists passing east to west should also be looked at, but I have no thoughts to share on that.)

Some of the parameters involved in my view are: all cyclists whether timid or not will tend to pick up speed on the downhill heading east thus adding to the danger of any encounter with moving vehicles; and many like myself will be cautious due to darkness, unfamilarity, wet sections and therefore going slower than what seems to be allowed for in the timing (even though they will pick up speed). In addition, now that I have some up to date experience in the tunnel I'm afraid that I'll be "running scared," trying to outwit the system in order to ensure that I don't get hit head on going out the other end. I don't want to have to ride like that through that tunnel!

Now that's only one rider passing through; if there are more - 3, 5, 7, etc. - the problem only can get worse and more unsafe.

That's why I am asking for a re-evaluation. Safety first!

Response: This is a valid concern and the park will investigate further. The park will add signs warning cyclists about these issues.

Concern ID: 15105

CONCERN STATEMENT: To me, it is important to have dirt trail access from the bottom of Coastal Trail (at the rifle range) to Bobcat Trail/Miwok trail. It is not clear if Alternate 3 or 4 has this, or has us riding on the road over to the new pedestrian/foot bridge near the stables.

Response: Both Alternatives 3 and 4 use Julian Road (unpaved multi-use Coastal Trail segment) to a short segment on Bunker Road to cross over to the new bridge to Rodeo Valley Trail to the Bobcat Trail/Miwok Trail.

Concern ID: 15107

CONCERN STATEMENT: The Draft EIS should be modified to include improved bicycle access from Alexander Avenue, which is the main bicycle route to and from the park. Both of these approaches to the park are heavily trafficked and potentially hazardous.

Response: As mentioned in the "Issues Identified" section, a new bicycle/pedestrian tunnel under Alexander Avenue parallel to Bunker Road was proposed under the preferred alternative to help connect Fort Baker with the Marin Headlands, therefore avoiding Alexander Avenue. The roadways included in this plan are under the jurisdiction of Golden Gate National Recreation Area. Alexander Avenue is not included in this plan because it is under the joint jurisdiction and control of Golden Gate National Recreation Area, Caltrans, and the Golden Gate Bridge, Highway and Transportation District. The NPS will continue to work with these entities, the City of Sausalito, and Marin County to establish bike lanes on this roadway.
Since the publication of the DEIS, the NPS has initiated coordination with these

agencies, as well as the City of Sausalito and Marin County, to participate in a planning study to address issues specific to Alexander Avenue. A substantial amount of planning activities and funding have already been invested in evaluating and implementing improvements to Alexander Avenue, particularly for improvements to the intersection with Conzelman Road on the west of Hwy 101 and East Road just outside the Sausalito city limits. A planning study has also been agreed to for studying several additional improvements, including safety enhancements and improved non-motorized access for park visitors. Please see the discussion on Alexander Avenue in the "Issues Identified" section of this chapter.

Concern ID: 15108

CONCERN STATEMENT: Section 2.1.2 Elements of Alternatives currently indicates that "Class 2 (bike lanes) striped bicycle lanes for one-way bicycle travel adjacent to vehicular travel lanes, must be a minimum width of 4 feet (1.2 m) wide, and 5 feet (1.5 m) wide on steep roads."

MCBC recommends that these widths be increased to a minimum width of 5 feet (1.5 m), and 6 feet (1.83 m) on steep roads. Section 3.1.5 Bicycle Access clearly delineates some potential hazards to cyclists, including, "narrow winding curves, steep road segments, and limited sight distances." Increased lane width will help to alleviate some of the potential conflicts between motor vehicles and bicyclists

Response: As noted in the DEIS under Cultural Resources, the roadways contribute to the overall integrity of the historic district. From a cultural resources standpoint, the character-defining features of these roadways that are important are usually the width or alignment. To avoid or minimize cultural resource impacts, the proposed bike lanes were added within the existing road bench. Wider bike lanes would result in a greater impact to the integrity of the cultural resource where the additional width could not be accommodated within the existing road bench; therefore the bike lanes will remain at the proposed 4 ft width.

Concern ID: 15111

CONCERN STATEMENT: The preferred alternative rehabilitates the existing Dubois Road between the new pedestrian bike bridge at the intersection of McCullough and Bunker Roads, and Julian Road, (which allows bikes.) After rehabilitation, it will open this important connector to hikers and equestrians, but not bikes. Please permit bike access on Dubois Road.

Response: GGNRA considered opening Dubois Road (trail) to bikes. However, the existing alignment is not be adequate for converting to bike use due to its steepness and sharp turns; the road would need to be realigned to accommodate bikes and prevent erosion. As noted in the DEIS under "Cultural Resources: Individual Roads and Character-Defining Features Sensitive to Change," Dubois Road's (trail's) alignment is a character-defining feature that is sensitive to change. Under "Road Types and Functions," the DEIS states "The historic integrity of individual roads is not the same as their importance in terms of contribution to the overall integrity of the historic district [which is listed on the National Register of Historic Places]. . . . All of these roads, including Dubois Road (trail), con-

tribute to the historic district." As noted above, bike use would require realigning Dubois Road (trail) in some sections; therefore to avoid impacts to its historic integrity, the park decided not to open Dubois Road (trail) to bikes.

VU4300 - Trails

Concern ID: 15120

CONCERN STATEMENT: I am concerned about what the environmental impact would be should the NPS decide to widen and harden the Rodeo Valley Trail. Marin Headlands is very congested with traffic, which creates pollution. Reworking this trail obviously would add to that congestion and the subsequent pollution. Not to mention the trash that is often left behind by bicyclists.

Response: For the preferred alternative, beneficial impacts from improvements to the Rodeo Valley Trail include improving drainage east of the Coastal Trail and realigning approximately 900' of trail west of rifle range to improve drainage and allow for restoration of the riparian area. The trail would be "surfaced" to accommodate bicycle use west of McCullough Road. Currently, bicyclists are not permitted on this trail, so changing this trail to multi-use (allowing bicyclists) will increase the number of users.

Concern ID: 15126

CONCERN STATEMENT: Public comments stated that Rodeo Valley Trail is a favorite among many equestrians and hikers who enjoy the peace and tranquility of the trail. Adding a hardened surface and redesignating it as a bike trail would encourage fast use by bicyclists, create more traffic, and would increase the risk of accidents with horses. This trail has many blind corners and in some areas difficult ground that would potentially cause problems to bicycles. In addition a paved surface would stress a horses legs and might lead to slipping and falling.

Response: The preferred alternative as described in the DEIS will remain unchanged, with the addition of signage for safety, such as sharing the trail with other users, slow speeds for cyclists, etc. The hardened, permeable surface would not be paved, which should not be a safety issue for equestrians. The trail has good sight distance and slower bike speeds; therefore, there is less of a safety issue in mixing bikes and equestrians along this section. In addition, the bridge connecting the Capehart Housing area to the Rodeo Valley Trail provides a hiking and biking connection for people living at Capehart Housing who work in Fort Cronkhite, thereby encouraging alternate modes of transportation and reducing parking needs.

Concern ID: 15129

CONCERN STATEMENT: There are several references in the DEIS text and on the maps to the San Francisco Bay Trail and the Coastal Trail. However, the Bay Area Ridge Trail is only briefly referenced, and the alignment is only partially shown on the maps. Please reflect the Bay Area Ridge Trail alignment as per the map we recently provided to your planning staff on August 8, 2007. If you need further consultation regarding our alignment, please contact us.

Response: The Bay Area Ridge Trail will be shown in the Final DEIS.

Concern ID: 15130

CONCERN STATEMENT: The Ridge Trail mission is to create a continuous long distance trail for mountain bicyclists, equestrians, and hikers that provides Bay Area citizens and visitors a trail experiences that highlights natural, scenic, cultural, and historic features. The width and surface of recreational trails are important elements in providing these experiences to the public.

A key design objective is to have a natural trail surface/tread wherever possible. The guidelines also provide that, depending on the location, it might be appropriate to have an adjacent paved surface to facilitate some users.

While improving the drainage problems is important, we would like to communicate a preference that the existing natural trail surface be retained to the full extent possible. One possible trail design solution might include providing a narrower width of NaturalPave treatment, while retaining a natural surface path for some trail users, both within the planned 12-foot wide corridor.

Response: Rodeo Valley Trail would retain the same or similar trail surface to what currently exists on the trail. It is the park's understanding that this would be consistent with BARTC's policies. Where the trail is proposed to be improved for drainage, a drainage lens would be installed under the present trail tread, and the same or similar trail surface would be placed on top of the drainage lens. Tread would be similar; only the winter mud holes would be gone. NaturalPave (the product) would not be used. Road bikes would not be expected or directed to use this route. It is anticipated that road bike traffic would continue as it does now on Bunker Road.

Concern ID: 15132

CONCERN STATEMENT: Section 3.1.5, pg. 93 of the DEIS states "Bicyclists are prohibited from all segments of the San Francisco Bay Trail within Fort Baker". This statement is concerning on two fronts. The Bay Trail is'by definition'a multi-use pathway, and within the system, segments that do not provide facilities for bicycles and pedestrians are considered incomplete as referenced above. The Bay Trail Project fully understands that in some instances it is prudent to separate user groups, and the shoreline trail at Horseshoe Bay may in fact be an example of an appropriate prohibition of bicycles. However, we strongly object to the characterization that bicycles are prohibited on the Bay Trail in Fort Baker and request that this reference be removed in the Final EIS.

Additionally, as shown on the attached map depicting the planned and existing Bay Trail alignment in Fort Baker, the pathway around the Vista Point parking lot is currently accessible to bicycles, as is East Road from the waterfront to Alexander Avenue. While East Road is currently considered "incomplete" Bay Trail, it is nevertheless open and usable to the public-cyclists and pedestrians alike.

Response: The San Francisco Bay Trail Plan is a result of Senate Bill 100, which directed the Association of Bay Area Governments to develop a plan ". . . for a continuous recreational corridor which will extend around the perimeter of San Francisco and San Pablo Bays. The plan shall include a specific route of a bicycling

and hiking trail . . . ." As mentioned in the EIS under Section 2.2, "Elements Common to All Alternatives," the San Francisco Bay Trail "will be extended along the east shoulder of East Road in Fort Baker . . ." as called for in the Fort Baker Plan. Section 2.2 further notes that "additional actions would be required under the action alternatives" in the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan.
The sentence from page 93 of the DEIS that states, "Bicyclists are prohibited from all segments of the San Francisco Bay Trail within Fort Baker" was reworded to say: "Bicyclists typically use East Road because the San Francisco Bay Trail is incomplete within Fort Baker."

Concern ID: 15135

CONCERN STATEMENT: " We have also been told that Slacker Hill Road will be removed in order to prevent cyclists from getting access to the SCA trail, which is closed to them. Again, this is an unfair reason to close this trail. Keep in mind that throughout the GGNRA, there are trails that lead to closed ones. It is inappropriate to close trails simply because they might provide access to closed areas.

Response: The purpose of removing most of the Slacker Hill Road (trail) is for natural resource restoration and protection.

Concern ID: 15136

CONCERN STATEMENT: To me, it is important to have dirt trail access from the bottom of Coastal Trail (at the rifle range) to Bobcat Trail/Miwok trail. It is not clear if Alternate 3 or 4 has this, or has us riding on the road over to the new pedestrian/foot bridge near the stables.

Response: Under Alternatives 3 and 4, bicyclists would be routed over the new bridge near the stables.

Concern ID: 15137

CONCERN STATEMENT: " Closure of Slacker Hill Road will have another significant effect. It creates a huge gap for hikers and equestrians, who will no longer be able to access Rodeo Valley from the Bay Area Ridge Trail, without traveling north to the intersection of the SCA trail with Bobcat and Rodeo Valley, or in the alternative, traveling down to the bottom, near the Golden Gate. There is no reason to remove this access and create this gap.

Response: The purpose of removing most of the Slacker Hill Road (trail) is for natural resource restoration and protection. The majority of the existing trail to the top of the hill would be restored. The existing route to the top of Slacker Hill would be converted from a road to a trail and the majority of the existing route would be removed and the site restored. The new route would provide access to the two GGRO research sites, via a new foot trail, and to the viewpoint at the top of the hill for hikers and equestrians. Access to the east side of the launch site would be maintained for its views of the bay and city. The spur road leading from this trail that currently provides access to a raptor observatory research site would be closed and restored; access to this site would be provided through a new foot trail. Access to Rodeo Valley for pedestrians and equestrians would be provided via SCA Trail and Bobcat and Rodeo Valley, or via the Coastal Trail and Julian

Road (multi-use Coastal Trail segment).

Concern ID: 15293

CONCERN STATEMENT: There is no demonstrated "need" for any bicycles to go on Rodeo Valley Trail. Bunker Road gets very little vehicular traffic and it is a fairly level road with good sight lines. It is a perfectly adequate road for road bicycles and mountain bicycles.

Response: The purpose of the project is to provide improved access to and within the study area for a variety of users, including bicyclists. Bunker Road is narrow and lacks adequate shoulder space or bicycle lanes. As proposed in the preferred alternative, surfacing and allowing bicyclists on the Rodeo Valley Trail would substantially improve access for bicycles between Capehart housing area and Fort Cronkhite. A separated Class 1 bike path would reduce the potential for conflicts between bicyclists and motor vehicles on this section of Bunker Road.

VU4400 - Parking Supply

Concern ID: 15138

CONCERN STATEMENT: Expanding the parking on Hawk Hill or along Conzelman further degrades the 'Open Space' feel to this section of the park. Right now, the feeling that you get in this part of the park is that of relative openness and relative lack of development.

I agree that much of the parking along Conzelman is inappropriate. The solution is not to EXPAND the parking, the solution is to remove it and repair the damage. We can't completely remove the parking on the east segment of Conzelman, but retaining that area does not mean that we need to retain all of the parking on Conzelman.

Response: As shown in Appendix C (Golden Gate National Recreation Area Parking Analysis), the parking on Hawk Hill and Conzelman Road would be less in Alternatives 2, 3, and 4 than Alternative 1, which represents the existing conditions. The intent of Alternatives 2, 3, and 4 is to remove much of the improper roadside parking to repair the damage along the roadsides.

Concern ID: 15145

CONCERN STATEMENT: Should you remove the unpaved, dirt parking lot at Rodeo Beach, I would assume that there would absolutely be no employee parking, nor any car from a planned special event ever be allowed to use the existing paved lot. The unpaved lot overflows with cars when special events are held out near Rodeo Beach.

Response: During special events parking, a shuttle from Smith Road overflow parking may be required. The specific requirements of the special events will be developed in consultation between NPS and affected parties.

Concern ID: 15149

CONCERN STATEMENT: The road and parking area on Point Cavallo are currently unpaved. This leaves the point with a rustic feel that I believe most users appreciate and prefer. Because the parking areas are not delineated, there are sufficient open spaces where windsurfers and small boat users can rig their equipment and set up their gear. The lack of a paved road tends to reduce the number of cars using the area.

Response: Surfacing or formalizing parking in and around the Point Cavallo area are not part of this plan. For information regarding future actions involving the waterfront at Fort Baker see Master Responses at the beginning of chapter 6 of the FEIS.

Concern ID: 15151

CONCERN STATEMENT: The museum respectfully requests clarification on the parking plans for the new conference center at Ft. Baker and what impacts the operations of the conference center will have on Ft. Baker in general and on the museum in particular.

Response: Parking will be behind the Conference Center Lodge and a shuttle bus will be implemented to reduce the number of automobiles and traffic associated with the Conference Center. No changes to the Bay Area Discovery Museum are anticipated from the Conference Center. The impacts associated with the Conference Center were addressed in a different project, the Fort Baker EIS.

Concern ID: 15152

CONCERN STATEMENT: I am an avid saltwater fisherman and the headlands have many great fishing spots, many of which are not located where the majority of users wish to go. By banning the use of automobiles and restricting parking, many fishing spots would become virtually inaccessible. The two conflicts with some of your alternatives and fishing are the fact that fishing gear is not compatible with public transportation, and the fact that most fishing spots aren't located at the same spots where the majority of users want to sight see.

Response: The proposed actions in the plan do not ban automobiles, but would formalize parking areas and implement paid fee parking. During a car-free day event, automobiles would be restricted during the event. As proposed, car-free days would be implemented as a pilot program for up to 7 days per year (less than 2% of a 365 day year). Although the park would work with users and user groups to plan and implement the event, the car-free day areas would be open to regular use for 98% of a normal 365 day year.

Concern ID: 15153

CONCERN STATEMENT: Redefining and consolidating other parking areas is unwarranted. Cars park in a fairly orderly fashion in the existing areas and cause no long-term harm to the environment. Combining car park areas into larger ones will be a visual blight.

Horse trailers need their own parking area to safely manuever their rigs; don't force a mix in recreational user cars with the trailers.

Response: Adverse impacts to resources (vegetation impacts resulting in erosion; deterioration of historic features) occur in areas not designated for parking use or from

haphazard parking around parking areas. By formalizing and defining the parking areas, these impacts can be reduced. The proposed Smith Road parking is the main area for parking consolidation. The parking that currently occurs on the historic rifle range and in the riparian area across from the stables would be relocated to the Smith Road parking area. Some other existing parking areas would be reduced slightly in size because the parking supply is greater than the parking demand, so the spaces are not needed and the area can be restored. With regard to the proposed Smith Road parking area, an adequate design for parking large vehicles such as horse trailers would be provided.

Concern ID: 15154

CONCERN STATEMENT: The preferred plan proposes that the unpaved parking adjacent to the paved lot at Fort Cronkhite be eliminated. While we understand and support your goal to restore natural resources in the park, this would result in a significant reduction in overflow parking at Rodeo Beach on busy days. Because many users of Rodeo Beach come with surfboards, picnics, and/or beach gear, we think the lack of parking will be a deterrent to visitors and will not enhance the visitor experience.

Response: Some of the parking supply represented by the unpaved parking lot at Rodeo Beach would be replaced by infill parking within Fort Cronkhite, which provides nearby overflow parking during busy days.

Concern ID: 15156

CONCERN STATEMENT: In all of the alternatives, the park proposes rerouting our main access road and gate to the east side of the lay-down area with a turnaround and bus parking. A new sidewalk and parallel parking spaces are shown to be provided along our access road.

A redesigned entrance has been discussed in the past and it's good that it's included in this plan, and we were glad to see the inclusion of a bus turnaround and parking in this plan. But we do have some concerns with regard to the numbers of parking spaces provided as this proposal does not meet the numbers of spaces designated in The Marine Mammal Center's environmental assessment. Under that agreement The Center is allowed a total of 78 parking spaces in the following manner; 43 in the new lot we have created at our site, 19 along the access road to our site and another 16 spaces outside of our gate.

Response: The commitment to provide 16 parking spaces was made as part of the Marine Mammal Site and Facilities Improvement EA. These 16 parking spaces would be included in the infill parking that would be developed within Ft. Cronkhite as part of this planning effort. An area proposed as infill parking is very close to the Marine Mammal Center's gate and access road - an area known as the "boneyard." The suitability for using this area will depend on whether it is compatible with the historic cultural landscape. This determination cannot be made until the cultural landscape assessment (Cultural Landscape Report (CLR)) is completed and approved by the California State Historical Preservation Office. The park will continue to work closely with the Marine Mammal Center as the planning for Ft. Cronkhite infill parking design proceeds.

Concern ID: 15158

CONCERN STATEMENT: The museum would like clarification on overflow parking for our use at Fort Baker. We would like to know the number of parking spaces and where they will be for our large attendance times. I believe the plan calls for our overflow parking to be at the top of East Road as you enter Fort Baker. This would be workable, as long as there is a stroller/kid friendly path put in from the parking down to the front entrance to the museum.

Response: The proposed actions in the Marin Headlands Fort Baker Transportation Infrastructure and Management Plan would not change how overflow parking would be handled for large BADM events. Proposed East Road enhancements would widen the paved road shoulder under alternatives 3 and 4, as well as create a separate pedestrian trail for most of the length of East Road. Both of these features would make for easier walking along East Road.

Concern ID: 15159

CONCERN STATEMENT: Please do not change the parking or easy access at Fort Baker to the Discovery Museum. As a mother with small children, easy and close parking is vital. Parking far away and taking a shuttle or a long walk to get to the museum just will not work with wiggly kids, stroller and diaper bag.

Response: This plan does not propose any changes to the parking or access at the Bay Area Discovery Museum.

Concern ID: 15188

CONCERN STATEMENT: We understand the physical constraints along much of the Marin Highlands, and agree that in many areas it is impossible to provide increased parking without diminishing the values of the Park. In such areas, NPS policies that protect the natural environment mean that visitor use can only be increased by encouraging alternative means of transportation. However, the Horseshoe Cove area can readily be distinguished in a number of ways. First, this area bas been dramatically altered, and historically been used as a marina; thus protection of the historic character of the area is fully within the NPS's mission. Second, there are existing areas that have been used for parking by water access users, so we are merely asking for protection of existing access resources, rather than new construction that would sacrifice natural resources.

Response: Access to Horseshoe Cove by water users would not be eliminated. As part of the proposed car-free day pilot program, parking at the waterfront may be restricted and users would park along East Road. In developing the car-free day program, NPS will consult with user groups that access the waterfront area with recreational equipment.

Concern ID: 15384

CONCERN STATEMENT: Regarding the area near the large meadow on Bunker road: Adding the Smith Road parking area is absolutley the wrong solution. This area is relatively undeveloped. Adding a parking lot into an undeveloped area (and on top of a wet land) is completely inappropriate.

Response: Under the preferred alternative, Smith Road would be realigned to the south, moving it farther from Rodeo Creek and the riparian area along the creek. A new bridge and trail would be constructed to the Rodeo Valley Trail, which would eliminate the need for the bridges and trails to the west and east of the new bridge. Therefore, these two areas would be restored. The DEIS acknowledges that major adverse impacts would result from construction of the new bridge and trail, which would be short-term, lasting only as long as the construction activities. However, the DEIS also notes that restoring willow riparian habitat along the creek and creating riparian and/or emergent wetland habitat (from realigning the road and restoring the existing bridges and trails to natural conditions) would result in a major beneficial impact in the long term.

VU6000 - Visitor use: nonsubstantive

WH2000 - Wildlife And Wildlife Habitat: Methodology And Assumptions

Concern ID: 15162

CONCERN STATEMENT: In the methodology section regarding an analysis of impacts on wildlife (pages 211-212), consideration should be given to including a discussion of the methodology to assess potential impacts on aquatic species.

Response: Comment noted. The "Methodology for Analyzing Impacts on Wildlife and Aquatic Wildlife" was revised in the Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan EIS to include methodology specific to aquatic species. The "Wildlife and Aquatic Life" impact analysis sections for Alternatives 2-4 were revised in the EIS to clarify impacts specific to aquatic life. As appropriate, relevant sections of the EIS were also revised for clarification (e.g., "Summary" and "Summary of Impacts and Mitigation").

WH4000 - Wildlife And Wildlife Habitat: Impact Of Proposal And Alternatives

Concern ID: 15163

CONCERN STATEMENT: The National Park Service is commended for recognizing that the (page 216, 1st column, 2nd to last paragraph) "project construction could result in direct and indirect adverse effects to individual wildlife species, beyond the more general effects to their habitat. Vegetation removal and the use of construction equipment could result in direct loss of individuals that were unable to escape and the destruction of active bird nests. Disturbance associated with project construction...could disturb individual animals. Potential effects include, but are not limited to, disrupting movement patterns, utilization of nearby habitat, and breeding activities. Some animals could die if breeding activities were disrupted to the extent that active nests were abandoned." However, upon making these comments, the DEIS goes on to say that (page 216, 1st column, bottom paragraph), "In the long term Alternative 3 [the preferred alternative] could have more beneficial effects to wildlife habitat quality, connectivity, and integrity than adverse effects, depending on the design and success of revegetation activities. Overall, revegetation efforts would create more habitat than would be

permanently lost." It seems that the assessment is heavily relying on the "success of revegetation activities" to minimize impacts to wildlife and aquatic species, instead of a more complete analysis that includes other important components for avoiding/mitigating impact on species. It is advisable to not only consider revegetation success, but also consider a more complete (holistic) analysis that involves species (terrestrial and aquatic) specific requirements, including species specific foraging, site fidelity, and vegetative stage/age requirements, or an analysis involving indicator species requirements.

Response: The study area covers more than 2,800 acres; within this area, impacts would total less than 6.4 acres and would be localized in that they generally would occur adjacent to previously disturbed areas. Given the park's limited financial resources and the limited nature of the project impacts, a more expanded analysis was not undertaken. Based on this analysis in the EIS and the Biological Assessment, mitigation has been developed in consultation with US Fish and Wildlife Service and state agencies.

Concern ID: 15166

CONCERN STATEMENT: Widening trails and roads and calling it non impactful is not what I have observed or believe. The native plants and widlife are directly affected. The areas of proposed parking lots and roundabouts are places of natural habitat. We have seen bobcats, deer, birds, voles, snakes, etc.

Response: The impacts to biological resources, including wildlife and vegetation, are described in Section 4.3.2, "Biological Resources of the DEIS."

WQ2000 - Water Resources: Methodology And Assumptions

Concern ID: 15167

CONCERN STATEMENT: Appendix F, Wetlands Statement of Finding, Section 5.2 Best Management Practices, and Section 5.3, Resource Specific Measures, Hydrology and Water Quality, pages F-18 and F-19:

The discussion identifies a series of construction best management practices (BMPs) designed to minimize potential water-quality effects from stormwater runoff on receiving wetland systems. However, limited discussion is provided concerning the potential effects of stormwater runoff from the roadways and parking lots after construction. Operational BMPs for oil, grease, and suspended sediment are commonly incorporated into roadway and parking lot projects and may warrant further consideration.

Response: The DEIS contains discussions about groundwater and surface water protection measures in Section 4.3.3. The description of the NPDES II Program discusses the general effects oil and grease have on roadways, sediment, and other common pollutants. The discussion notes that Phase II of the stormwater program extends to all of Fort Baker and lands east of the ridgeline running through Battery Spencer, and describes the stormwater program's requirements that would apply in the area, including control of post-construction runoff. During the final design of the roadway and parking lots, operational BMPs for oil, grease, and suspended sediment will be further considered.

WQ4000 - Water Resources: Impact Of Proposal And Alternatives

Concern ID: 15143

CONCERN STATEMENT: Making the parking area across from the stables is likely to have a greater impact on water quality and riparian resources than the current parking lot near the beach. Non-point pollutants will enter the creek channel and be discharged into the pond. This pond has many sensitive species in it. Increased runoff will also change the runoff dynamics of the stream channel and lead to changes in the width, depth and sediment transport regime of the creek channel. This in turn could alter the flood frequency of the existing flood plain and cause significant changes to the riparian vegetation assemblage of the area, not to mention a reduction in creek biomass productivity and its flow into the surrounding ecosystem.

Response: Except for the car-free days, parking is allowed at the paved Rodeo Beach parking area. When the unpaved Rodeo Beach parking area is restored, infill parking in Fort Cronkhite would provide the replacement parking based on the need at that time. The proposed Smith Road parking area would replace the parking that occurs across from the stables in the riparian area and on the historic rifle range. As mentioned in the DEIS, Smith Road would be realigned farther from the riparian area.

Concern ID: 15144

CONCERN STATEMENT: Best Management Practices (BMPs) that may be used to "mitigate" the impact of increased impervious surface and increases in non-point pollutant loads will have little or no impact on the alterations of some important hydrologic factors. Increased runoff means increases in the volume of runoff and duration of peak creek flows. This in turn will alter the sediment transport regime and will likely increase channel bed and bank erosion.

Please quantify the changes to flood frequency, flow duration, and floodplain inundation along the creek corridor from the proposed new parking area to the pond.

Will increased nitrogen loading into the pond change the algal assemblage in the pond? Was nitrogen loading calculated for the new parking areas?

The existing parking lot drains into the beach and then into the ocean. What analysis has been done to show that the existing parking areas are impacting aquatic or other resources in the park?.

Response: The amount of impervious surface and size of the impervious surface can impact floodplains. Since flows would not be directed to a culvert and directly and immediately released to the main stream drainage, flood flows or pond flood elevations are not expected to change from existing conditions. Also, the size and location of the parking area in context to the watershed is inconsequential in terms of affecting the watershed's flood frequency or severity, and no or only negligible changes in surface or groundwater are expected.

Nitrogen loading was not calculated at this level of design for the parking lot. Nitrogen loading would be taken into consideration during construction design

of the parking lot's vegetated swale. As a general premise, vegetated swales are proven to reduce pollutants, including nitrogen, that result from stormwater runoff. Therefore, vegetated swales would be included as a required element of the parking lot design.

The existing unpaved parking lot is located on a historic wetland as confirmed through old photographs and field investigations with Colorado State University researchers. It is the NPS interest to restore natural areas and their processes to the extent practicable.

Concern ID: 15146

CONCERN STATEMENT: Please quantify the geomorphic and sediment transport impacts to the creek system based on alterations of the parking areas within the park.

Response: Unfortunately, Rodeo Creek is an incised channel over much of its distance (Bass and Choy 2004). The proposed parking area at Smith Road is perched on a fill terrace above the wetted channel. The main factors affecting natural channel processes are associated with past land uses, such as grazing and residential development, which placed a fill pad next to the creek for housing. The proposed actions should have a beneficial effect through rehabilitation of the riding stables parking lot to drain into a vegetation swale. At other sites, drop inlets would either be installed with filters or discharged into vegetated swales to reduce sediment transport to streams.

Concern ID: 15148

CONCERN STATEMENT: Please state how increases in runoff volume from new parking areas will impact the flood stage height in the pond. Will changes in pond flood elevations and and their commensurate durations impact adjacent vegetation?

Response: Two features of the parking area could impact pond flood elevations - the amount of impervious surface, and size of the impervious surface. Although the parking area would not be paved and would be pervious, automobiles would compact the surface, making it less pervious. Since flows would not be directed to a culvert and directly and immediately released to the main stream drainage, flood flows or pond flood elevations are not expected to change from existing conditions. Also, the size and location of the parking area in context to the watershed is inconsequential in terms of affecting the watershed's flood frequency or severity, and no or only negligible changes in surface or groundwater is expected that would change adjacent riparian vegetation.

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GLOSSARY

NOTE: Parenthetical citations refer to the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act, which are contained in Title 40 of the Code of federal Regulations (40 CFR).

100-year floodplain — The land adjacent to a river corridor that would be covered by water during a 100-year flood event. A 100-year flood event has a 1 percent probability of occurring during any given year.

Affected environment — The existing biological, physical, cultural, social, and economic conditions that are subject to both direct and indirect changes as a result of actions described within alternatives under consideration.

Alternatives — A reasonable range of options that can accomplish an agency's objectives.

Best Management Practices — Effective, feasible (including technological, economic, and institutional considerations) conservation practices and land- and water-management measures that avoid or minimize adverse impacts to natural and cultural resources. Best Management Practices may include schedules for activities, prohibitions, maintenance guidelines, and other management practices.

Conformity — A process in which transportation plans and spending programs are reviewed to ensure they are consistent with federal clean air requirements; transportation projects collectively must not worsen air quality.

Connected actions (40 CFR 1508.25) — Actions that are closely related. They automatically trigger other actions that have environmental impacts, they cannot or will not proceed unless other actions have been taken previously or simultaneously, or they are interdependent parts of a larger action and/or depend on the larger action for their justification.

Conservation planning and impact assessment — Within NPS, this process is synonymous with the NEPA process. This process evaluates alternative courses of action and impacts so that decisions are made in accord with the conservation and preservation mandate of the NPS Organic Act.

Cooperating agency (40 CFR 1508.5) — A federal agency other than the one preparing the NEPA document (lead agency) that has jurisdiction over the proposal by virtue of law or special expertise and that has been deemed a cooperating agency by the lead agency. State or local governments, and/or Indian tribes, may be designated cooperating agencies as appropriate (see 1508.5 and 1502.6).

Corridor — Land between two termini within which traffic, transit, land use, topography, environment, and other characteristics are evaluated for transportation purposes.

Cultural resources — Aspects of a cultural system that are valued by or significantly representative of a culture or that contain significant information about a culture. A cultural resource may be a tangible entity or a cultural practice. Tangible cultural resources are categorized as districts, sites, buildings, structures, and objects for the National Register of Historic Places, and as archeological resources, cultural landscapes, structures, museum objects, and ethnographic resources for NPS management purposes.

Cumulative actions (40 CFR 1508.25) — Actions that, when viewed with other actions in the past, the present, or the reasonably foreseeable future, regardless of who has undertaken or will undertake them, have an additive impact on the resource the proposal would affect.

Cumulative impact (40 CFR 1508.7) — The impacts of cumulative actions.

Cut — Excavation into a slope. A road constructed on a hillside, for example, must be constructed partially in a cut area in order to provide a flat surface for the road.

Direct effect (40 CFR 1508.8) — An impact that occurs as a result of the proposal or alternative in the same place and at the same time as the action.

Environmental assessment (40 CFR 1508.9) — A brief NEPA document that is prepared to (a) help determine whether the impact of a proposal or alternatives could be significant; (b) aid NPS in compliance with NEPA by evaluating a proposal that will have no significant impacts, but that may have measurable adverse impacts; or (c) evaluate a proposal that either is not described on the list of categorically excluded actions, or is on the list but exceptional circumstances apply.

Environmental impact statement (EIS) (1508.11) — A detailed NEPA document that is prepared when a proposal or alternatives have the potential for significant impact on the human environment.

Environmental justice — Executive Order 12898 requires the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EPA has this goal for all communities and persons across the United States. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.

Environmental screening process — The analysis that precedes a determination of the appropriate level of NEPA documentation. The minimum requirements of the environmental screening process are a site visit, consultation with any agency that has jurisdiction by law or special expertise, and the completion of a screening checklist. The process must be complete for all NPS actions that have the potential for environmental impact.

Environmentally preferred alternative (40 CFR 1505.2, Q6a) — Of the alternatives analyzed, the one that would best promote the policies in NEPA section 101. This is usually selected by the park's interdisciplinary team mem-

bers. It is presented in the NPS NEPA document (draft and final environmental impact statement or environmental assessment) for public review and comment.

Fill — Material used to raise the level of the land. A road constructed on a hillside, for example, must be constructed partially on fill (and partially within an excavated area, known as "cut") in order to provide a flat surface for the road.

Finding of no significant impact (FONSI) (1508.13) — A determination based on an EA and other factors in the public planning record for a proposal that, if implemented, would have no significant impact on the human environment.

Floodplain — Land on either side of a stream or river that is submerged during floods.

Fugitive dust — The dust released from activities associated with construction, manufacturing, or transportation.

Hazardous waste — Hazardous materials that no longer have practical use, such as substances that have been discarded, spilled, or contaminated, or that are being stored temporarily prior to disposal.

Human environment (40 CFR 1508.14) — Defined by CEQ as the natural and physical environment, and the relationship of people with that environment. Although the socioeconomic environment receives less emphasis than the physical or natural environment in the CEQ regulations, NPS considers it to be an integral part of the human environment.

Hydrology — The science dealing with the properties, distribution, and circulation of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere.

Impact topics — Specific natural, cultural, or socioeconomic resources that would be affected by the proposed action or alternatives (including no action). The magnitude, duration, and timing of the effect to each of these resources are evaluated in the impact section of an EA or an EIS.

Impervious Surface — A hard surface that either prevents or retards the entry of water into the soil.

Inboard — The side of the road adjacent to the upward slope of a hill. Typically, the inboard side of the road is excavated, or cut, into the hillside in order to create a flat surface for the road.

Indirect impact (40 CFR 1508.8) — Reasonably foreseeable impacts that occur removed in time or space from the proposed action. These are "downstream" impacts, future impacts, or the impacts of reasonably expected connected actions (e.g., growth of an area after a highway to it is complete).

Issues — In NEPA, issues are environmental, social, and economic problems or effects that may occur if the proposed action or alternatives (including no action) are implemented or continue to be implemented.

Jurisdictional wetlands — Those wetlands that are regulated by the United States Army Corps of Engineers under Section 404 of the Clean Water Act.

Lead agency (40 CFR 1508.16) — The agency either preparing or taking primary responsibility for preparing the NEPA document.

Major federal action (40 CFR 1508.18) — Actions that have a large federal presence and that have the potential for significant impacts to the human environment. They include adopting policy, implementing rules or regulations; adopting plans, programs, or projects; ongoing activities; issuing permits; or financing projects completed by another entity.

Mitigation (40 CFR 1508.20) — A modification of the proposal or alternative that lessens the intensity of its impact on a particular resource.

Mitigation measures — Specific commitments made during the environmental evaluation and study process that serve to moderate or lessen impacts deriving from the proposed action. These measures may include planning and development commitments, environmental measures, and agreements with resource or other agencies to effect construction or post construction action.

National Environmental Policy Act (NEPA) process — The objective analysis of a proposal to determine the degree of its environmental and interrelated social and economic impacts on the human environment, alternatives and mitigation that reduce that impact, and the full and candid presentation of the analysis to, and involvement of, the interested and affected public.

National Register of Historic Places — The comprehensive list of districts, sites, buildings, structures, and objects of national, regional, state, and local significance in American history, architecture, archeology, engineering, and culture. This list is maintained by the National Park Service under authority of the National Historic Preservation Act of 1966.

No-Action Alternative — An alternative in an environmental impact statement that continues current management direction. A no action alternative is a benchmark against which action alternatives are compared.

Noise abatement measure — An action that reduces traffic noise impacts.

Noise-sensitive receptor — A location where noise can interrupt on-going activities, which can result in community annoyance, especially in residential areas. Examples of noise-sensitive receptors include schools, libraries, hospitals, residences, retirement communities and nursing homes.

Non-attainment areas — Cities, counties or states that do not meet federal standards for clean air for one or more pollutants.

Notices of availability — Separate notices submitted to the Federal Register that the draft EIS and the final EIS are ready for distribution.

Notice of intent (40 CFR 1508.22) — The notice submitted to the *Federal Register* that an EIS will be prepared.

It describes the proposed action and alternatives, identifies a contact person in NPS, and gives time, place, and descriptive details of the agency's proposed scoping process.

Noxious weeds — Plant species that are generally aggressive, difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and are nonnative, new, or uncommon to the United States. These species are designated as noxious weeds by the Secretary of Agriculture or by the responsible state official.

Outboard — The side of the road adjacent to the downward slope of a hill. Typically, the outboard side of the road is constructed on fill material in order to create a flat surface for the road.

Particulate Matter (PM_{10}) — Any material that exists as solid or liquid in the atmosphere that is less than 10 microns. Particulate matter may be in the form of ash, soot, dust, fog, fumes etc.

Pollutant — Unwanted chemicals or other materials found in the air. Pollutants can harm health, the environment and property. Many air pollutants occur as gases or vapors, but some are tiny solid particles such as dust, smoke or soot.

Preferred alternative (40 CFR 1502.14 (e)) — The alternative an NPS decision-maker has identified as preferred at the draft environmental impact statement stage or in an environmental assessment. Identification of the preferred alternative helps the public focus its comments during review of the NEPA document.

Programmatic documents — Broader scope environmental assessment or environmental impact statements that describe the impacts of proposed policy changes, programs, or plans.

Proposal (40 CFR 1508.23) — The stage at which NPS has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal. The goal can be a project, plan, policy, program, and so forth. NEPA begins when the effects can be meaningfully evaluated.

Public meeting — An announced meeting conducted by officials designed to facilitate participation in the decision-making process and to assist the public in gaining an informed view of a proposed project at any level of the project development process. Also, such a gathering may be referred to as a public information meeting or public open house.

Record of decision (ROD) (40 CFR 1505.2) — The document that is prepared to substantiate a decision based on an EIS. It includes a statement of the decision made, a detailed discussion of decision rationale, and the reasons for not adopting all mitigation measures analyzed, if applicable.

Retaining wall — A wall constructed to hold earth secure. Retaining walls are typically constructed on sloping grades in order to provide a flat area for a building, road, or trail. A retaining wall can be constructed below the flat area in order to hold earth in place and keep the flat area intact. A retaining wall can also be constructed above the flat area in order to keep earth from sliding into the flat area.

Revegetation — Replacement or augmentation of native plants in an area largely or entirely denuded of vegetation.

Riparian area — The vegetated land near water bodies such as streams, rivers, wetlands and lakes that provides important benefits to wildlife and humans including clean water, reduced flooding and healthy habitat.

Road bench — The flat area on which a road is constructed.

Scoping (40 CFR 1508.25) — Internal NPS decision-making on issues, alternatives, mitigation measures, the analysis boundary, appropriate level of documentation, lead and cooperating agency roles, available references and guidance, defining purpose and need, and so forth. External scoping is the early involvement of the interested and affected public.

Sight distance — The length of the view available to a vehicle. For example, a road winding around a sharp curve provides a limited view of the road ahead.

Signage — A system of signs used to provide information and directions to visitors.

Soundscape — The natural soundscape is the aggregate of all the natural sounds that occur in parks, together with the physical capacity for transmitting sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive, and can be transmitted through air, water, or solid materials.

Study area — A geographic area selected and defined at the outset of engineering or environmental evaluations, which is sufficiently adequate in size to address all pertinent project matters occurring within it. For this EIS, study area is defined as the Marin Headlands and Fort Baker area of Golden Gate National Recreation Area.

Study (or project) limits — The physical end points of a proposed project or study, usually designated at geographic or municipal boundaries.

Threatened and Endangered Species — Species of plants and animals that receive special protection under federal and/or state laws.

Travel lane — A lane of a roadway allowing for use by traffic.

Watershed — Geographic area in which all sources of water, including lakes, rivers, estuaries, wetlands and streams, as well as ground water, drain to a common surface water body.

Wayfinding — A system of posted signs, road markings, or other devices used to provide directional information to visitors.

Wetlands — Those areas that are inundated or saturated by surface water or ground water at a frequency or duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

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BAAQMD	Bay Area Air Quality Management District
BLM	Bureau of Land Management
CARB	California Air Resources Board
CDFG	California Department of Fish and Game
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
GGBHTD	Golden Gate Bridge Highway and Transportation District
GGNRA	Golden Gate National Recreation Area
n.d.	no date
NOAA	National Oceanic and Atmospheric Administration, U.S. Department of Commerce
NPS	National Park Service
NRCS	Natural Resources and Conservation Service, U.S. Department of Agriculture
PRBO	Point Reyes Bird Observatory
SFBTP	San Francisco Bay Trail Project
SFRWQCB	San Francisco Regional Water Quality Control Board
TRB	Transportation Research Board
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

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As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environment and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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