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4.0 ENVIRONMENTAL CONSEQUENCES



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4.1 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This section describes the potential environmental effects associated with implementation of the Proposed Action or alternative actions. The environmental analysis evaluates three types of effects: direct, indirect, and cumulative effects. Direct effects are those that would be caused by the actions and would occur at the time the actions are implemented and the site is used and operated. Indirect effects also would be caused by the actions but may be more removed in time or distance. Cumulative effects are the effects of the actions added to the effects of other past, present and reasonably foreseeable projects and activities.

Table 4-1 summarizes the impacts associated with the Proposed Action and alternative actions evaluated in this EIS (after mitigation). The analysis is presented by alternative as follows:

- Section 4.2 discloses the potential environmental effects of the Proposed Action.
- Section 4.3 discloses the potential environmental effects of the GMP Alternative.
- Section 4.4 discloses the potential environmental effects of the Office and Cultural Center Alternative.
- Section 4.5 is a discussion of the environmental effects of the No Action Alternative.

Within these sections, environmental effects are organized into resource topics, as follows:

- geology and soils;
- coastal processes;
- water resources;
- biological resources;
- cultural resources;
- traffic and circulation;
- air quality;
- noise;
- land uses and community resources;
- visual and aesthetic resources;
- recreation and visitor enjoyment;
- infrastructure; and
- human health, safety and the environment.

The results of the analysis conclude that the Proposed Action would result in few significant unavoidable adverse environmental effects. Overall, the Proposed Action would result in substantial improvement to the environment. Many of the environmental effects associated with biological resources, cultural resources, land use, visual and aesthetic resources, recreation and visitor enjoyment and infrastructure would be beneficial. Mitigation measures that would minimize or avoid the environmental consequences of the Proposed Action are presented in Section 2.6 and discussed throughout Chapter 4.

As required by the National Environmental Policy Act (NEPA), consideration of the cumulative effects is provided in this EIS. The Council on Environmental Quality (CEQ) regulations implementing NEPA define a cumulative impact as "...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably

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foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” (CEQ Section 1508.7)

The other past, present or reasonably foreseeable future actions that could have an incremental environmental effect when considered within the context of the Proposed Action and alternatives are summarized in Table 4-A. For additional detail on these projects, refer to Appendix D. As shown, these actions include a wide range of projects and plans. A discussion of the cumulative impacts is provided at the end of each subsection in Chapter 4.

Table 4-A Summary of Cumulative Projects¹			
Project Title	Project Summary	Lead Agency(ies)	Status
Long Term Management Strategy for Disposal of Dredged Material in the San Francisco Bay Region	Multi-agency program focused on comprehensive management of disposal practices in SF Bay Region. Preferred Alternative would substantially reduce current in-Bay disposal, and create a balance of ocean and upland and beneficial reuse practices.	ACOE, EPA, BCDC, RWQCB, and SWRCB	Final EIS/EIS approved Preferred Alternative identified. Implementation is next step.
Golden Gate Bridge Seismic and Wind Retrofit Project	Necessary public health and safety project A portion of construction activities occurring on or adjacent to Fort Baker	GGBHTD	EA/FONSI completed in 1996. Construction began in 1997/estimated completion date is 2007
Ferry Service at Fort Baker	Identified as part of regional water transit initiative. Currently being evaluated in detail by the NPS (and will be subject to future NEPA review)	NPS	Feasibility Analysis/Planning Ongoing – NEPA and formal consultation forthcoming
Battery Cavallo Preservation and Interpretation Plan	Site is located within Fort Baker, and has cultural and natural resource values. A comprehensive preservation and interpretation is being prepared as part of a separate planning process (and future NEPA review).	NPS	Planning Ongoing– NEPA and formal consultation forthcoming

¹ For additional information on these projects, refer to Appendix D.

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Table 4-A Summary of Cumulative Projects¹			
Project Title	Project Summary	Lead Agency(ies)	Status
Golden Gate Safety Roadside Rest Area and Vista Point Rehabilitation and Upgrade Project	Vista Point located at northern terminus of Golden Bridge, off US Highway 101 (adjacent/above Fort Baker). Proposal is to rehabilitate and upgrade existing facilities to meet current demands, provide more efficient circulation and traffic management, and make aesthetic improvements.	Caltrans	Design/NEPA underway
BRAC Clean Up – Fort Baker	Required by law as part of the closure and reuse process. Cleanup activities will be implemented over next 1-2 years, and completed prior to transfer.	US Army	Ongoing (majority of known work to be done July-October 2000)
<p>KEY</p> <p>ACOE – United States Army Corps of Engineers BCDC – San Francisco Bay Conservation and Development Commission BRAC – Base Realignment and Closure Caltrans – California Department of Transportation EPA – United States Environmental Protection Agency GGBHTD – Golden Gate Bridge Highway and Transportation District NPS – National Park Service RWQCB – San Francisco Bay Regional Water Quality Control Board SWRCB – State Water Resources Control Board</p>			

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**Table 4-1
Summary of Environmental Impacts After Mitigation²**

Proposed Action (Proposed Plan)	1980 GMP Alternative	Office and Cultural Center Alternative	No Action Alternative
Geology and Soils Impacts			
Soil erosion and runoff due to site disturbance: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	Minimal soil erosion and runoff due to site disturbance
Soil disturbance resulting from riprap removal and beach restoration: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No bulkhead to be removed or beach to be restored
Potential geologic hazards due to landslide deposits in the Capehart area and ground shaking: less than significant	Impact comparable to Proposed Action	No new construction, not applicable	No new construction, not applicable
Potential presence of weak surficial deposits: less than significant	Impact comparable to Proposed Action	No new construction, not applicable	No new construction, not applicable
Coastal Processes Impacts			
Changes in shoreline configuration resulting from removal of bulkhead and restoration of beach: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No change in shoreline configuration
Water Resources Impacts			
Short-term water quality impacts associated with construction activities: less than significant	Impact comparable to Proposed Action	Fewer actions to result in short-term water quality impacts: less than significant	No new construction, not applicable
Short-term water quality impacts associated with maintenance dredging activities: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	Short-term water quality impacts associated with dredging activities for Coast Guard Station operations only: less than significant
Exposure of aquatic organisms to hazardous substances from bulkhead removal/beach restoration: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No bulkhead to be removed or beach to be restored
Long-term water quality impacts associated with urban runoff resulting from increased visitor use: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No change from current conditions

² The impact conclusions presented in this summary table represent post-mitigation conditions. The mitigation measures incorporated into the Proposed Action are described in Section 2.6. See Chapter 4 for a description of cumulative effects.

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**Table 4-1
Summary of Environmental Impacts After Mitigation²**

Proposed Action (Proposed Plan)	1980 GMP Alternative	Office and Cultural Center Alternative	No Action Alternative
Biological Resources Impacts			
Increased risk of impacts to natural habitats, wildlife and endangered species due to increased visitation: less than significant	Greater risk of impacts due to increased visitation levels and the Environmental Study Area and Overnight Group Campsite: potentially adverse subject to USFWS consultation	Greater risk of impacts due to increased visitation levels: potentially adverse subject to USFWS consultation	Resources protected to meet existing requirements
Temporary disturbance to native ecological communities including mission blue butterfly habitat: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No additional actions beyond existing programs
Long-term enhancement of native ecological communities including mission blue butterfly habitat: beneficial	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No additional actions beyond existing programs
Effects on native ecological communities due to vegetation removal from construction activities: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No removal of native ecological communities
Temporary disturbance to waterfront and long-term enhancement of beach habitat areas: less than significant/beneficial	Temporary disturbance to waterfront and conversion of urban/disturbed area to developed landscape areas: less than significant	Impact comparable to Proposed Action	No disturbance to waterfront or enhancement of habitat
Temporary disturbance to and long-term enhancement of eelgrass beds: less than significant/beneficial	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No disturbance to or enhancement of eelgrass beds
Disturbance to marine mammals and waterbirds and seabirds due to waterfront construction activities and increased visitor use: less than significant	Greater potential for adverse effects due to more intensive use along waterfront	Impact comparable to Proposed Action	No disturbance to waterfront, enhancement of habitat or increase in visitor use
Disturbance to fish and other aquatic species due to construction and dredging activities: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	Disturbance limited to dredging activities for Coast Guard Station operations only: less than significant
Disturbance to land birds due to construction, vegetation removal, and habitat restoration activities: less than significant	Impact comparable to Proposed Action	Fewer actions to disturb land birds	No new construction

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**Table 4-1
Summary of Environmental Impacts After Mitigation²**

Proposed Action (Proposed Plan)	1980 GMP Alternative	Office and Cultural Center Alternative	No Action Alternative
Removal of nonnative trees and shrubs for native plant restoration: beneficial	No removal of nonnative trees and shrubs for native plant restoration	Impact comparable to Proposed Action	No additional actions beyond existing programs
Disturbance to bats due to building rehabilitation and removal: less than significant	Impact comparable to Proposed Action	Fewer actions to disturb bats	No new construction
Effects on marine organisms due to urban runoff and boating: less than significant	Greater potential for adverse effects due to more intensive use along waterfront	Impact comparable to Proposed Action	No change from current conditions
Management of invasive species already present: beneficial	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No management of invasive species beyond existing programs
Cultural Resources Impact			
Restoration of Parade Ground: beneficial	Minimal change from current conditions	Minimal change from current conditions	No change from current conditions
Restoration of beach: no adverse effect/less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No change from current conditions
Preservation of historic fortifications: beneficial	Disturbance to historic fortifications: no adverse effect	No additional actions beyond existing programs	No additional actions beyond existing programs
Rehabilitation of buildings surrounding Parade Ground: beneficial	Impact comparable to Proposed Action	Minimal rehabilitation: no effect	Minimal rehabilitation
Rehabilitation of Capehart housing or replacement with compatible construction: beneficial	Removal of Capehart housing for 700-car parking lot: adverse	Impact comparable to Proposed Action	No change from current conditions
Removal and/or rehabilitation of various contributing structures: adverse effect to National Register property but not to National Register status/less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No removal and minimal rehabilitation
Compatibility of new construction with historic character: no adverse impact/less than significant	Impact comparable to Proposed Action	Minimal new construction and no new structures: potentially significant	No new construction
Realignment, improvements, or removal of roads: no adverse effect/less than significant	Minimal change to roads	Impact comparable to Proposed Action	No change to roads

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**Table 4-1
Summary of Environmental Impacts After Mitigation²**

Proposed Action (Proposed Plan)	1980 GMP Alternative	Office and Cultural Center Alternative	No Action Alternative
Reestablishment or rehabilitation of cultural landscape vegetation and furnishings: beneficial	Minimal re-establishment or rehabilitation of cultural landscape vegetation	Impact comparable to Proposed Action	No re-establishment or rehabilitation of cultural landscape vegetation
Potential disturbance to archaeological resources: significant effects avoided	Impact comparable to Proposed Action	Fewer actions to disturb archaeological resources: no adverse effect	No actions to disturb archaeological resources
Traffic and Circulation Impacts			
Addition of traffic to local and adjacent roadways as a result of construction-related trips: less than significant	Impact comparable to Proposed Action	Fewer actions to add traffic to local and adjacent roadways as a result of construction-related trips: minor	No new construction; not applicable
Addition of traffic to local and adjacent roadways and intersections as a result of visitors: less than significant	Addition of traffic to local and adjacent roadways and intersections as a result of visitors and 700-car parking lot (4,783 daily trips)	Addition of traffic to local and adjacent roadways and intersections as a result of visitors (3,473 daily trips)	No change to local and adjacent roadways and intersections as a result of visitors (1,102 daily trips)
Conflicts between pedestrian/bicycle and vehicular traffic due to on/offsite vehicle access and circulation: less than significant	Potential conflicts between pedestrian/bicycle and vehicular traffic due to 700-car parking lot: potentially adverse	Potential conflicts between pedestrian/bicycle and vehicular traffic due to parking: potentially adverse	No change from current conditions
Improvements to pedestrian and bicycle facilities: beneficial	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No change from current conditions
Increased demand for public transportation: beneficial	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No change from current conditions
Increased parking demand (895 spaces) due to increased visitor use: less than significant	Increased parking demand (1,632 spaces) due to increased visitor use	Increased parking demand (1,300 spaces) due to increased visitor use	No change from current conditions (818 spaces)
Increased parking demand due to special events: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No change from current conditions
Water shuttle part of separate project: not applicable	Improvements to waterfront to provide a water shuttle landing: beneficial	No water shuttle landing proposed: not applicable	No water shuttle landing proposed: not applicable
Air Quality Impacts			
Increased emissions from construction activities: less than significant	Impact comparable to Proposed Action	Fewer actions resulting in increased emissions from construction activities: less than significant	No change from current conditions

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**Table 4-1
Summary of Environmental Impacts After Mitigation²**

Proposed Action (Proposed Plan)	1980 GMP Alternative	Office and Cultural Center Alternative	No Action Alternative
Regional emissions (approximately 18.5 lbs/day of ROG, 18.9 lbs/day of NO _x , and 2.4 lbs/day of PM ₁₀) associated with increased vehicle use and energy consumption: less than significant	Regional emissions (approximately 45 lbs/day of ROG, 47 lbs/day of NO _x , and 6 lbs/day of PM ₁₀) associated with increased vehicle use and energy consumption: less than significant	Regional emissions (approximately 32.6 lbs/day of ROG, 32.9 lbs/day of NO _x , and 4.3 lbs/day of PM ₁₀) associated with increased vehicle use and energy consumption: less than significant	No change from current conditions
CO emissions (approximately 233.7 lbs/day) associated with mobile sources: less than significant	CO emissions (approximately 535.7 lbs/day) associated with mobile sources: less than significant	CO emissions (approximately 416.7 lbs/day) associated with mobile sources: less than significant	No change from current conditions
Noise Impacts			
Increased noise levels during construction: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No new construction
Stationary source noise increases associated with new uses: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No change from current conditions
Traffic noise increases associated with increased visitation: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No change from current conditions
Land Use and Community Resources Impacts			
Consistent with relevant land use plans and policies	700-car parking lot inconsistent with relevant land use plans and policies	Less consistent with relevant land use plans and policies	Not consistent with relevant land use plans and policies
Potential impacts due to building removal and new construction (combined total 156,000 sf): less than significant	Potential impacts due to building removal and new construction (combined total 8,000 sf): less than significant	Potential impacts due to building removal and new construction (combined total 26,500 sf): less than significant	No building removal or new construction
Potential economic benefits due to employment opportunities and visitor spending: beneficial	Impact comparable to Proposed Action	Impact comparable to Proposed Action	Minimal economic benefits due to employment opportunities and visitor spending
Potential effect on minority and low-income populations: beneficial	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No change from current conditions
Potential effect on surrounding hotels: beneficial	Impact comparable to Proposed Action	Fewer overnight visitors to effect surrounding hotels	No change from current conditions

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**Table 4-1
Summary of Environmental Impacts After Mitigation²**

Proposed Action (Proposed Plan)	1980 GMP Alternative	Office and Cultural Center Alternative	No Action Alternative
Effects on community services (fire, police, emergency medical): less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No change from current conditions
Visual and Aesthetic Resources Impacts			
Preservation of character of Fort Baker (maximum protection): beneficial	Character of site diminished by 700-car parking lot: potentially adverse	Character of site diminished by parking: mitigation would reduce adverse impact	Minimal change from current conditions
Enhancement of existing views and provision of new high-quality views: beneficial	Existing views and provision of new high-quality diminished by 700-car parking lot: adverse	Existing views and provision of new high-quality views diminished by parking: mitigation would reduce adverse impact	No change from current conditions
Impacts on natural darkness due to increased lighting: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No change from current conditions
Recreation and Visitor Enjoyment Impacts			
Construction and improvement of visitor facilities/expansion of BADM: beneficial/beneficial	Construction and improvement of visitor facilities/no expansion of BADM: beneficial/no change from existing conditions	Minimal construction and improvement of visitor facilities/expansion of BADM: beneficial/beneficial	No construction and improvement of visitor facilities/no expansion of BADM: no change from existing conditions
Displacement of current users due to removal of the marina and replacement with public moorings: adverse (to displaced users)	Displacement of current users due to marina use for short-term moorings: adverse (to displaced users)	Impact on current users less than Proposed Action	Displacement of current users due to closure of marina: adverse (to displaced users)
Effects of increased numbers of visitors (estimated 2,700 daily visitors during peak times) on visitor experience: less than significant	Effects of increased numbers of visitors (total of 4,000 daily visitors during peak times) on visitor experience: potentially significant	Effects of increased numbers of visitors (total of 3,500 daily visitors during peak times) on visitor experience: potentially significant	Effects of decreased numbers of visitors (total of 1,400 daily visitors during peak times) on visitor experience: none
Temporary loss of recreational use/access during construction: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No new construction, not applicable
Infrastructure Impacts			
Repair and rehabilitation of utility infrastructure systems (water supply and distribution, stormwater drainage, energy systems): beneficial	Impact comparable to Proposed Action	Impact comparable to Proposed Action	No repair and rehabilitation of utility infrastructure systems

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Table 4-1
Summary of Environmental Impacts After Mitigation²

Proposed Action (Proposed Plan)	1980 GMP Alternative	Office and Cultural Center Alternative	No Action Alternative
Impacts on Human Health, Safety and the Environment			
Exposure to hazardous substances associated with use resulting from site improvements: less than significant	Impact comparable to Proposed Action	Impact comparable to Proposed Action	Impact comparable to Proposed Action

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4.2 ENVIRONMENTAL CONSEQUENCES OF PROPOSED ACTION

4.2.1 GEOLOGY AND SOILS

This section discusses the impacts of the Proposed Action related to soil erosion and potential geologic hazards. Information for the impact analysis was obtained primarily from the *Geotechnical Feasibility Investigation* (Harlan Tait Associates, 1998) and the California Department of Conservation (Draft EIS comment letter, December 6, 1998). The following methods were used to predict impacts:

- Review of published literature.
- Interpretation of stereo pairs of aerial photographs, including 1936 photos and the 1997 photos used for preparation of the current site topographic base map.
- Field reconnaissance mapping and checking of site geologic conditions. No subsurface exploration was performed.
- Calculations of disturbance were estimated from aerial photographs and drawings.
- Seismic hazard analysis (prepared by the California Department of Conservation).

The following criteria were used to assess the degree of impact. An impact would be considered major (significant) if it resulted in one or more of the following:

- Exposure of people or structures to potential substantial risks due to geologic hazards.
- Unacceptable or long-term resource damage resulting from substantial soil erosion.

4.2.1.1 Soil Erosion and Runoff due to Site Disturbance

Under the Proposed Action, a maximum of approximately 93 acres of soils would be disturbed during infrastructure repair and rehabilitation, building removal, native habitat and beach restoration, asphalt removal, new parking and road development, trail rehabilitation and development, and site and historic landscape restoration (Table 4-2). The majority of soils that would be affected have been previously disturbed by development. The disturbance of soils will be distributed over time as discreet sites are developed. Some development under the plan would disturb large sites and the disturbance of the soil potentially result in substantial erosion of loose soils until they are vegetated or covered over. The erosion hazard would increase where soil disturbance would occur on slopes with steep gradients (10% or higher gradient).

Runoff and soil erosion would likely increase on stretches of trail that are heavily used. Existing trails formed by visitors (volunteer social trails) would be closed and the site restored and visitors would be directed to existing and new (proposed) trails. As described in Section 2.6.1 (Mitigation), a stormwater pollution prevention plan (SWPPP) would be developed and implemented that prescribes best management practices (BMPs) to control erosion, including structural, management, and vegetation measures, for grading associated with site improvements and new construction.

Habitat restoration activities necessary to restore native ecological communities may require site disturbance, primarily from the use of mechanical brush cutters, mulching devices, equipment installing erosion control measures and heavy equipment transporting tree material. Regardless of the care and environmental oversight taken during these activities, soil erosion and temporary

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deterioration of surface water quality could occur before revegetation. Use of BMPs and the other biological mitigation measures described in Sections 2.6.1 and 2.6.3 would be implemented and monitored to minimize erosion during initial construction activities. The impacts would be minor and in most instances temporary, and the restoration of open space and native vegetation would have long-term positive effects on soil stabilization and erosion. Implementation of these measures would reduce the Proposed Action's impact on soil erosion and runoff due to site disturbance to a less-than-significant level.

Table 4-2
Land Disturbance¹ (acres)

	Land Area	Parking	Roads
Landscape Restoration ²	11.9	1.7	0.6
Historic Landscape Restoration (Parade Ground)	13.5		
Development (Includes Utility Infrastructure)	10.6	6.0	5.1
Trails	1.2		
Habitat Restoration	19.5		
Maintenance/Enhancement of Existing Native Habitats	22.5		
Total	79.2	7.7	5.7

¹ Includes potential habitat areas for mission blue butterfly. Removal of eucalyptus trees would be a separate action subject to additional environmental analysis.

² For purposes of this analysis, calculations of disturbance were estimated from aerial photographs and drawings. Space for parking areas was calculated at 350 square feet per parking space, to account for space required for vehicle movement within a parking lot. Hiking/biking trails were assumed to be 10 feet wide. Roads were assumed to be 20 feet wide.

4.2.1.2 Soil Disturbance Resulting from Riprap Removal and Beach Restoration

Riprap and bulkhead removal/beach restoration would alter the shoreline configuration of Horseshoe Bay. The primary effect would be to expand the extent of natural beach along the shoreline through removal of the bulkhead and riprap, and excavation and removal of material behind the bulkhead wall. This removal would allow the shoreline to adopt a flatter slope and become wider. Transitional shore protection such as riprap revetments at the boundaries of the beach may be needed.

Restoration of the beach would require soil disturbance, primarily from the use of heavy equipment to recreate near-natural contours, remove or relocate unwanted drainage culverts and utilities, and re-establish native habitat. Measures have been incorporated into the plan to ensure that significant soil erosion by surface runoff or wave action would not occur. The BMPs for control of surface runoff induced soil erosion are presented in Section 2.6.1. Measures to control wave erosion would include establishment of a vegetation cover and installation of permeable temporary barriers/silt fences to retard erosion until the vegetation cover becomes established. As described in Section 2.6.1, seasonal monitoring of the restored beach area and its surroundings would be implemented to determine if additional protective measures are needed. The NPS would use the results of the monitoring program to implement adaptive management of this area. The impact of soil disturbance resulting from riprap removal and beach restoration would be minor.

4.2.1.3 Potential for Adverse Geotechnical Conditions Related to Site Redevelopment

The primary geotechnical conditions that would affect site redevelopment are:

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1. the presence of landslide deposits in the Capehart area where improvements are proposed; and
2. the presence of numerous small fills associated with existing development.

Mitigation of landslide hazards and removal of existing undocumented fill would be performed in areas where new improvements are proposed. Many potentially adverse conditions would be eliminated or mitigated by project layout/siting, and appropriate design, construction, and maintenance would mitigate others. In areas where the potential hazards are not well understood, site specific geotechnical investigations would be carried out prior to the final construction design for that site is approved. The investigations would specify performance standards to reduce hazards to an acceptable level of risk and would identify required and recommended engineering and design measures to ensure compliance with the requirements. Refer to Section 2.6.1 for additional information on mitigation.

Ground Shaking. As with the rest of the seismically active San Francisco Bay Area, future major earthquakes on the nearby San Andreas, Hayward, and Rodgers Creek faults or other active faults would likely produce adverse impacts related to ground shaking at the site. Site ground motion characteristics resulting from future earthquakes would depend on the distance between the site and source of energy release, the magnitude of the earthquake, and the response of the local geologic conditions.

The California Department of Conservation prepared a probabilistic seismic hazard analysis to compute the potential earthquake ground-motion levels at Fort Baker. A summary of the analysis, conclusions and recommended mitigation are provided below. For additional detail, refer directly to CDMG's analysis as presented in letter #6 in Volume II (Response to Comments) of this FEIS.

The seismic hazard analysis was conducted using the CDMG/USGS statewide model, as published in Peterson et al 1996 (CDMG Open-File Report 96-08). Two geologic subgrade classifications which are representative of the conditions at Fort Baker were modeled. The "stiff soil" classification was used as representative for the subgrade underlying approximately 90 percent of the buildings including the BADM and proposed conference center. The "rock" classification was used for the area of north of the Capehart Housing area.

The results of the analysis indicate that the calculated ground motion for the areas underlain by "stiff soil" (unlithified Quaternary sediments including Qu, Qsr, Qm, Qal), would exceed the safety envelope of the Uniform Building Code. The majority of the existing or proposed buildings at Fort Baker occur within this area. Structures subjected to the high peak ground accelerations and intensities identified in the existing conditions section could undergo extreme deformation and possible collapse in a major earthquake. The hazard is particularly high for older structures constructed of unreinforced masonry. As these buildings would be occupied by visitors and workers, a significant hazard to public safety would exist. Therefore additional mitigation to protect human health and safety, as well as building integrity, would be implemented by the NPS as described below, and in Section 2.6.1.

Detailed design-level geotechnical investigations would be performed that would address specific geologic conditions and development features. All substandard buildings would be upgraded over time and new construction would meet applicable seismic codes, laws and NPS policies, including the 1997 Uniform Building Code with California amendments (or more recent, as applicable), 1998 California Building Code and Seismic Retrofit laws. Because the calculated ground motion exceeds

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the safety envelope of the 1997 Uniform Building Code in areas underlain by soft Quaternary sediments, new design in these areas will rely on custom earthquake ground motion development to ensure that adequate safety provisions are achieved. The CDMG's Special Publication 117, Guidelines for Evaluation and Mitigation of Seismic Hazards in California has been adopted by the State Mining and Geology Board and represents the state-of-art practice for mitigating seismic hazards. As described in Section 2.6.1 (Mitigation), Special Publication 117 will be used in guiding the preparation of such studies and future design work. Implementation of this and other measures described below would reduce the direct and indirect impact of groundshaking, including seismically induced landsliding, liquefaction, lateral spreading, ground subsidence and fill settlement to within acceptable design and engineering standards. Each of these effects are described in detail below.

Seismically Induced Landsliding. Strong ground shaking could temporarily reduce slope stability in the Capehart area and may cause:

1. the reactivation of existing landslides or the initiation of new landslides;
2. rock falls from near-vertical cut slopes;
3. failure of cut and fill slopes; and
4. settlement, including differential settlement.

Landslides potentially may damage structures directly by debris flow into the buildings, by causing movement and deformation of the building foundation, by lateral or vertical displacement of the foundation and by breaking utility infrastructure serving the building. These hazards could pose significant safety hazards to building occupants, drivers on roadways and pedestrians.

Rockfalls pose direct hazards of impacts to structures and could injure people.

Failure of cut slopes could result in injuries and cause structural damage similar to that from landslides. Loss of the integrity of fill slopes could result in loss of support for a structure, in turn, resulting in damage to it and at worst collapse, thereby posing significant threats to life safety. Settlement induced by earthquakes could have similar hazards.

Constructed slopes at the site would be properly designed and constructed such that they would meet seismic requirements. Building setbacks or debris barriers would also reduce the potential effects of seismically induced landsliding. Site-specific compliance with code requirements and state of the art design engineering would be implemented.

The existing fill embankments along Alexander Avenue are approximately 1.5:1 (horizontal:vertical) in inclination, which is steeper than current engineering practice typically recommends. In the absence of construction documentation and/or subsurface data and analysis, the effect of seismic shaking on these fill embankments and underlying materials is not known and would be considered potentially hazardous. Slope failures within the fill embankments potentially could reach the area of existing improvements near the western end of the site. Apart from the fill embankments, fill slopes at the outboard edges of building pads appear to be of low height, and slope failures would likely be minor. As described in Section 2.6.1 (Mitigation), detailed design-level landslide investigations would be performed prior to construction design approval in areas of active and dormant landslide hazards, as mapped by Harlan Tait Associates to confirm the nature and extent of landslides within the areas to be developed. These investigations would provide site-specific evaluation of the stability

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of these landslides with respect to proposed grading. The results of these studies would be used to develop and implement design criteria for location of facilities and/or the stabilization of landslides as required. Implementation of this mitigation measure would reduce the adverse impact of seismically induced landslide hazards to people and structures to an acceptable level of risk; therefore the impact after mitigation implementation would be less-than-significant.

Liquefaction. The presence of extensive loose, saturated, granular materials is highly unlikely given the geologic materials of the site; therefore, the liquefaction potential is considered to be low, and no mitigation measures are necessary.

Lateral Spreading/Lurching. The potential for lateral spreading is judged by Harlan Tait Associates to be low, based on the low liquefaction potential, and on the general lack of free faces toward which such movement would occur. There is a potential for localized lurching of undocumented fill slopes. As described in Section 2.6.1 (Mitigation), detailed design-level geotechnical and landslide investigations would be performed prior to construction activities for infrastructure or building foundations, as well as any grading activities. These investigations would address site-specific geologic conditions and development features and be used to develop and implement design criteria to minimize and/or avoid potential impacts associated with lateral spreading/lurching. Implementation of the mitigation presented in Section 2.6.1 would minimize the adverse impact of lateral spreading/lurching.

Ground Subsidence and Fill Settlement. The potential for ground subsidence in areas underlain by natural deposits is not known in the absence of subsurface information but is probably low because of the age of the deposits which has allowed time for natural compaction. The potential for settlement of undocumented fill is also unknown. Most fills are old and were not constructed using engineering methods that are currently required. However, because of their age, most fill compression has likely occurred already, as evidenced by a relative lack of apparent distress in areas likely underlain by fill. However, new construction would need to be developed on engineered fill to meet existing engineering standards for soil compaction. This may entail excavation of some or all of the old fill material at a given site, replacement with a suitable soil material and compaction. Geotechnical engineering investigations would be performed prior to final construction design to determine if any hazards exist on natural and fill slopes.

Effects due to Slope Instability. Slope stability is an important consideration for natural slopes underlain by surficial deposits, graded slopes underlain by surficial deposits and/or fill, and for steep cut slopes in bedrock. Based on its probable age based on geomorphic expression, the potential for reactivation of the landslide extending beneath Seiter Road and Alexander Avenue is judged to be very low.

The active earthflow in the colluvial swale on the northeast hillslope has a high potential to affect existing V-ditches near the landslide toe, and encroach into the building area near the toe. With sufficient movement, such encroachment could damage adjacent structures. A sudden catastrophic soil movement would be unlikely, but slow movement of the soil over time could damage building footings and foundations. The landslide underlying the Merrill Street cul-de-sac and extending upslope has apparently been the subject of past repair attempts, based on an existing crib wall; its stability is unknown. The extent to which landslide deposits underlying the site were removed by grading subsequent to 1936 is unknown. Detailed investigation of the landslide deposits in both of these previously developed areas would be performed prior to final construction design and approval.

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Specific landslide mitigations would be developed to reduce the impact of slope instability and mitigation would depend on site and project particulars, but may include:

- siting improvements off, or set back from, landslide deposits and potential flow paths;
- removal of landslide deposits and replacement with engineered fill;
- increasing slope stability through construction of a compacted fill buttress;
- retention of landslide debris by construction of retaining wall(s) and/or debris walls;
- increasing slope stability through surface and subdrainage improvements; and
- reduction in rockfall potential through slope flattening, slope reinforcement, setbacks, or debris barriers.

Effects due to Site Grading. There would be no unsupported cuts or new fills on landslide deposits. No adverse impacts are expected.

Effects due to Engineered Fill. Subsurface exploration and testing has not been conducted to determine the suitability of onsite soils for use as engineered fill. Based on experience with similar natural deposits in Marin County, essentially all onsite natural soil are anticipated to be acceptable for use in engineered fill. In general, existing, undocumented fills in areas that would support new construction would be removed and replaced with engineered fill. With this measure, no adverse impacts are expected.

Effects Resulting from Drainage Improvements. Normal surface drainage improvements would be required in areas to be developed. Some surface or subsurface drainage mitigation may be required in colluvium-filled swales. In appropriate cases, drainage improvements would follow the natural water flow patterns on the site such as following contours or valleys so that water would not be diverted from natural habitat areas. No adverse impacts are expected.

4.2.1.4 Potential Presence of Weak Surficial Deposits

Expansive Soils. The primary foundation condition considerations are the potential presence of weak surficial deposits, including landslide deposits, and undocumented fill. Soils formed on greenstone are commonly expansive, although no evidence of extensive distress indicative of expansive soil and/or bedrock was observed. The potential for expansive soils would be addressed at the design level prior to site redevelopment. No significant adverse impacts are expected.

Foundation Support. Special foundation supports are not proposed for new construction, and therefore shallow spread footings bottomed on firm natural soil, bedrock or compacted fill would provide satisfactory support for the structures of the type under consideration. In areas with slopes steeper than 3:1 (horizontal:vertical), drilled cast-in-place concrete piers might be more economical. Building areas with cut/fill transitions, or abrupt transitions in fill thickness would be avoided by appropriate grading plan design. No significant adverse impacts are expected.

4.2.1.5 Cumulative Impacts

As described above, implementation of the Proposed Action and the mitigation measures presented in Sections 2.6.1 and 2.6.3 would not create significant adverse impacts to soils or induce or expose people to hazards associated with the site's geologic and seismic setting. Other projects at or in the vicinity of Fort Baker that could have a cumulative effect on soils, geology or seismicity include the Army's required clean up of hazardous substances at Fort Baker, and the ongoing seismic and wind

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retrofit project for the Golden Gate Bridge. For background information on these and other cumulative projects evaluated in this EIS, refer to Table 4-A and Appendix D.

To date, the Army has identified six areas that will require remedial action and it is possible that additional areas will be identified in the future. Known remedial actions would include the excavation and off-site disposal of chemically-impacted soil or other facilities (i.e., catch basins). The estimated volume of soil that will require excavation at each site ranges from 40 to 900 cubic yards (cy). Most of this work is expected to occur during the dry months of July through October 2000, with remediation of the stormwater system (which began in June 1999) continuing beyond November 2000. All excavation and removal activities would incorporate use of best management practices (BMPs) or other measures to avoid potential soil erosion and/or transport or movement of contaminated soils.

The Golden Gate Bridge seismic and wind retrofit project began in 1997. The purpose of the project is to strengthen the bridge to withstand the maximum credible earthquake and sustain wind conditions of up to 100 miles per hour. The northern anchorage of the bridge is located directly adjacent to and above Fort Baker. An analysis of the environmental consequences associated with the construction of the project was provided in an Environmental Assessment/Initial Study (EA/IS) in 1995. To minimize and avoid potential soil erosion and other geologic impacts, a series of mitigation measures were incorporated into the project including a requirement that drainage and erosion control measures were designed and included in the construction drawings for the project. Examples of these measures are re-grading areas to control run-on and run-off, installing culvert and “v” ditches, sowing “seed free” hay bales, and treating areas with spray-on erosion control products.

In addition to these projects, the California Department of Transportation (Caltrans) is proposing to rehabilitate and upgrade the existing Golden Gate Safety Roadside Rest Area and Vista Point (Vista Point) which is located on the northern end of the Golden Gate Bridge, approximately 500 feet above Fort Baker. The purpose of the project is to rehabilitate and upgrade the Vista Point to meet current demands. At the present, Caltrans is preparing a detailed description of the proposed improvements and evaluating associated environmental effects. Although a detailed analysis of the project and its effects is not currently available, no major construction or other activities that would cause significant adverse impacts to soils, geologic or seismic hazards are anticipated. Any construction activities proposed would be subject to mitigation measures similar to those implemented by the GGBHTD and those listed in Section 2.6.1 for the Proposed Action. Implementation of the Proposed Action and other relevant cumulative projects and corresponding mitigation, would not result in a significant adverse cumulative impact on soils or expose people to new geologic or seismic hazards. Potential soil disruption would be temporary for all of these projects and would be mitigated through the use of BMPs, implementation of stormwater prevention pollution plans (SWPPP), and other measures. In the long-term, these projects would have a less-than-significant or potentially beneficial effect by improving seismic stability of public structures (buildings and the bridge), restoring natural habitat areas which would provide long-term soil stability, and remediating hazardous soils and existing landslide areas.

4.2.2 COASTAL PROCESSES

This section discloses the impacts of the Proposed Action related to configuration of a beach along the shoreline of Horseshoe Bay, including long-term stability, the need for future maintenance, and effects on existing facilities. Information for the impact analysis was obtained primarily from the

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Beach and Wetlands Feasibility Study (Moffatt & Nichol Engineers, 1998). The following methods were used to predict impacts:

- Review of available maps, photographs and surveys to determine historic site conditions.
- Use of published data and preliminary calculations to develop the hydrographic climate for the site.
- Review of tide levels for the Presidio Station, San Francisco (the closest long-term tide station).

The following criteria were considered to assess the degree of impact. An impact would be considered major (significant) if it would:

- Adversely impact the structures that will remain in the waterfront area,
- Result in erosion that would require extensive future maintenance of the beach, backshore or require significant infrastructure that would remain in the waterfront area.

4.2.2.1 Potential Changes in Shoreline Configuration Resulting from Removal of Bulkhead and Restoration of Beach

Based on an evaluation of existing site and hydrographic conditions, a segment of the Horseshoe Bay shoreline between the existing boat ramp on the west to the Presidio Yacht Club on the east would be affected by bulkhead removal/beach restoration (Moffatt & Nichol Engineers, 1998). The restoration of the beach would require removal of the existing timber bulkhead between the launch ramp and the boatlift pier, removal of riprap, and excavation of material landward of the timber bulkhead. A total of about 20,000 cubic yards of material would be excavated and removed from the site. Shoreline structures built prior to the current timber bulkhead may need to be removed if still existing. The beach would be approximately 800 feet long. The Mean High Water shoreline would be about 30 feet landward of the existing shoreline. The grade would be built to a slope of 8:1 (horizontal:vertical) or flatter.

These actions would result in alteration of the shoreline configuration as shown in Figure 4-1. The primary affect would be to expand the extent of beach along the Horseshoe Bay shoreline through removal of the bulkhead and excavated material. Near the launch ramp to the west, and the boatlift to the east, some material may migrate as the beach reaches equilibrium with wave-induced currents.³ The physical characteristics of the historic fill material comprising the present shoreline are unknown at this time. A long-term stable beach profile may evolve quickly if the material is coarse-grained. If the material is fine-grained, it may take substantially longer to stabilize, with significant seasonal variations occurring annually.

³ Naturally formed beaches tend to orient themselves perpendicular to the direction of wave approach. They attain dynamic equilibrium with the predominant incident waves, and vary seasonally with the changes in wave climate. During winter storms, the beach within the wave overwash zone erodes causing sand to be transported offshore. The shoreline recedes closer to the toe of the dunes, resulting in a narrower beach. During summer, the sand transported offshore is returned to the beach. The shoreline advances, resulting in a wider beach.

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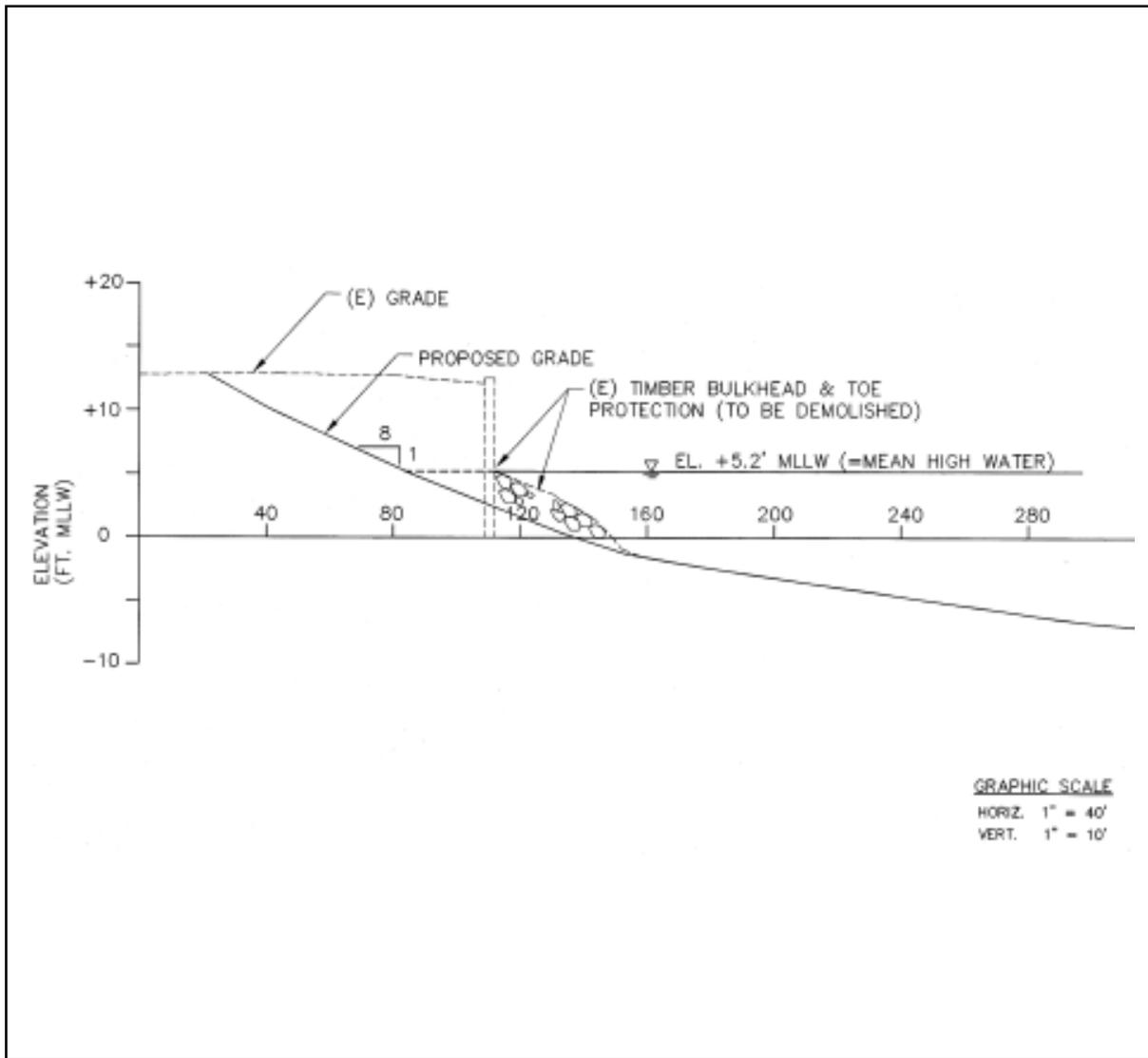
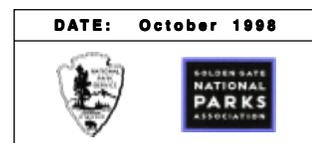


Figure 4-1 Proposed Beach Concept

Source: Moffatt and Nichol



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Removal of the bulkhead would reduce the amplification caused by reflected waves within the harbor, especially the long period swell arriving through Golden Gate. This may have a beneficial impact on the marina. Restoration of the shoreline and planting is expected to further attenuate the surge problem that presently exists in the harbor. Additional analysis, including a detailed wave study and boring logs, would be conducted before the action is taken to further evaluate the long-term stability of the proposed shoreline. The analyses would provide more definitive information about the beach material and geometry, and possible need for transitional shore protection such as riprap revetments at the boundaries of the beach to minimize impact to existing facilities. Because any needed maintenance or extension of engineered structures are included to minimize impact of seasonal variations in shoreline location to existing facilities, no significant adverse impacts are expected.

4.2.2.2 Cumulative Impacts

The San Francisco Bay shoreline provides many important functions and uses, and is subject to substantial demands based on its proximity to a large metropolitan urban area. Uses and pressures associated with development, fill, important maritime trade functions, protection and restoration of natural habitat, and public use and enjoyment all converge along more than 1,000 miles of shoreline.

Implementation of the proposed beach restoration would have a small, but cumulative beneficial effect on the Bay shoreline resources. The Crissy Field restoration project (currently under construction) will also contribute to this beneficial cumulative effect. At the same time, other development projects including potential expansion of the San Francisco International Airport, may propose to fill areas of the Bay. These projects could have adverse effects on the Bay and shoreline resources. Such projects will be subject to the review and approval of the BCDC and consistency with the approved San Francisco Bay Plan and would require mitigation for fill, such as restoration of other bay shoreline sites. The magnitude and effect of projects involving fill would depend on their size, and could potentially offset the beneficial effects associated with the Proposed Action, Crissy Field and other restoration projects. The Proposed Action, however, would not contribute to the cumulative adverse effect of fill projects as no fill is being proposed at Horseshoe Bay. For additional discussion of cumulative effects within Horseshoe Bay, refer to Section 4.2.3.5 (Water Resources).

4.2.3 WATER RESOURCES

Potential impacts of the Proposed Action related to water quality, drainage, and hydrology are disclosed in this section. The following methods were used to predict impacts:

- Calculations of disturbance were estimated from aerial photographs and drawings.
- Construction practices, maintenance dredging activities, historical waste discharges, and other potential pollution sources and routes of transport to water were reviewed.

The following criteria were considered to assess the degree of impact. An impact would be considered major (significant) if it resulted in one of the following:

- Violation of Regional Water Quality Control Board water quality standards or waste discharge requirements.
- Substantial alteration of existing drainage pattern or shoreline of the site in a manner that would result in substantial erosion or siltation.

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- Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater systems.

4.2.3.1 Short-Term Water Quality Impacts Associated with Construction Activities

Construction activities would have the potential to cause short-term water quality impacts on Horseshoe Bay, natural drainageways, and the stormwater system as a result of increased soil erosion and discharges of construction-related materials (e.g., fuels, lubricants, solvents, and cleaners) to surface waters. Activities that could disturb and expose soil to forces of erosion include: earthmoving and grading operations for site improvements at the waterfront and BADM complex; construction of new buildings at the Parade Ground and in the Capehart area; infrastructure repair and replacement, habitat restoration; and new road, parking lot and trail construction. Approximately 93 acres would be disturbed by these activities over time. Erosion and related construction impacts could result from various cut, fill, and grading activities; removal of asphalt; and beach restoration and riprap removal along Horseshoe Bay.

Waterfront site improvements and construction activities required for the beach restoration and other shoreline modifications would be subject to federal regulation under Section 10 of the Rivers and Harbors Act. The U.S. Army Corps of Engineers (Corps) would require evaluation of water quality considerations associated with modification of the bay shoreline. A Section 401 certification waiver from the Regional Water Quality Control Board (RWQCB) would also be required for the Section 10 permit to be obtained.

Beach restoration construction activities would also be subject to an National Pollutant Discharge Elimination System (NPDES) permit. The permit requires development, implementation, and compliance monitoring of a SWPPP that prescribes BMPs to control erosion and contaminated runoff from the construction site, including structural, management, and vegetation measures (refer to Sections 2.6.1 and 2.6.3 for additional detail). The NPS would minimize the discharge of soil and pollutants during excavation by requiring contractors to employ measures to contain disturbances within localized areas, including use of turbidity barriers, silt curtains, or equivalent measures. Routine monitoring and reporting of BMP performance would be conducted pursuant to the NPDES permits. Compliance with the BMPs included in the plans would result in a minimal amount of soil erosion, and discharges of construction-related pollutants would be minimized.

The San Francisco RWQCB would ensure that the beneficial uses of water resources are protected from potential adverse impacts of the Proposed Action. Water quality objectives and numerical water quality standards established in the RWQCB water quality control plan (Basin Plan) would protect established beneficial uses of the bay, including contact and noncontact recreation, commercial sport fishing, and shellfish harvesting. Additionally, the State of California can regulate water quality through the Water Quality Control Plan for Inland Surface Waters and the Enclosed Bays and Estuaries Plan, which established numerical objectives for “priority pollutants” such as trace metals and synthetic organic compounds discharged to inland waters and estuarine environments, respectively. This would be considered a less-than-significant impact.

4.2.3.2 Short-Term Water Quality Impacts Associated with Maintenance Dredging Activities

Past waste disposal practices have resulted in the introduction of contaminants into localized areas of Horseshoe Bay, some of which have may degraded bay sediments. Periodic maintenance dredging may be needed to serve water-oriented uses and other important public purposes, such as the Coast Guard pier, launch ramp and the boatlift. Dredging and subsequent aquatic disposal of contaminated

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sediments in Horseshoe Bay can resuspend and redistribute pollutants in the water column, making them accessible to bay organisms. Dredging also has the potential to cause short-term adverse water quality impacts (increase in turbidity and decrease in dissolved oxygen) in Horseshoe Bay. Should aquatic disposal of dredged materials occur, potentially adverse water quality and biological impacts would be expected and would be mitigated as described in Section 2.6.3, and through compliance with existing regulatory requirements as described below.

Any practices are deemed necessary for the future operation of the marina/Coast Guard uses, the NPS would consult with and obtain necessary approvals from, the EPA, the US Army Corps of Engineers (COE), the State Water Resources Control Board (SWRCB), the San Francisco Regional Water Quality Control Board (RWQCB), State Lands Commission (SLC), and the San Francisco Bay Conservation and Development Commission (BCDC). These agencies are responsible for evaluating dredging need, beneficial re-use of dredged material, effects on water quality, and other environmental issues related to dredging activities. Conditions of approval, including limitations on dredging activities, location of disposal, and timing and amount of proposed disposal are assigned by these agencies to ensure consistency with the adopted environmental plans and policies, including the Long Term Management Strategy (LTMS) program. Coordination with the Dredged Material Management Office (DMMO), an interagency group consistency of the aforementioned agencies as well as the California Department of Fish and Game, would also be completed as part of any future dredging operations in Horseshoe Bay. Compliance with these findings and policies would reduce the potential for significant adverse water quality impacts due to maintenance dredging.

4.2.3.3 Exposure of Aquatic Organisms to Hazardous Substances from Beach Restoration

Construction activities associated with bulkhead removal and beach restoration could disturb sediments in storm drains and surface soils adjacent to Horseshoe Bay. These sediments may contain hazardous substances from historical waste discharges. Sediments and surface soils would likely be transported into Horseshoe Bay and could potentially expose aquatic flora and fauna to toxic substances. Beach construction activities would not begin until any Army cleanup activities determined to be necessary are complete. Construction phasing to follow the Army's cleanup would reduce the potential for significant adverse impacts.

4.2.3.4 Contribution to Long-Term Water Quality Improvement/Degradation from Urban Runoff

Incremental increases in potential impacts from urban runoff could occur over the long term at Fort Baker as a result of increased impervious surfaces and increased use by the public. The NPS would implement a stormwater management plan to minimize pollution sources and routes of transport to water, and provide structural and management BMPs for pollution control. The NPS would incorporate BMPs that reduce pollution from urban runoff, including oil/water separators and sediment traps in stormwater drainage systems, and pervious paving in parking areas. Strategies to reduce the amount of impervious surfaces on the site as identified in the *Presidio Stormwater Management Plan* (Dames & Moore, 1994) and the *Fort Baker Sustainable Infrastructure Plan* (Esherick Homsey Dodge & Davis, 1998) would be investigated and implemented where appropriate. The current parking area and roadway along the bulkhead would be relocated away from the water's edge and would be separated by a 6-acre vegetated buffer. Implementation of these measures would result in less direct runoff into nearshore areas of the bay and improve the ability of the area to handle more runoff. Periodic monitoring of urban and stormwater runoff would be conducted. Appropriate monitoring protocols would identify parameters and maximum levels allowed. If these levels are exceeded, water quality improvement features would be added if needed (refer to Section 2.6.3 for

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additional information). Incorporation of these measures would reduce the potential impact of urban runoff on water quality to a less-than-significant level.

4.2.3.5 Cumulative Impacts

As described above, implementation of the Proposed Action and mitigation measures incorporated into the project (as presented in Section 2.6), would not significantly effect on surface water quality. In addition to the Proposed Action, there are several other past, current or reasonably foreseeable projects that could potentially effect the water quality of Horseshoe Bay. An analysis of these projects, and the cumulative effect when considered within the context of the Proposed Action, are addressed below.

In addition to localized water quality effects, the Proposed Action has the potential to effect (but not significantly) water quality beyond Horseshoe Bay. Specifically, existing dredging and disposal practices at Fort Baker would continue under the Proposed Action. The current designated disposal site for dredged material from Fort Baker is located in San Francisco Bay, near Alcatraz Island. As a result, the cumulative effects associated with this action are also evaluated below. Each cumulative project is described individually, followed by a summary of the anticipated cumulative effects (under the "Conclusion" subsection).

Ferry Service at Fort Baker. The NPS is currently evaluating potential provision of ferry service at several locations within the GGNRA, including Fort Baker. (Refer to Appendix D for a more complete description of this cumulative project.) Because ferry service is being evaluated as part of a separate planning process which is ongoing, a detailed description of the physical facilities and operational characteristics (i.e., frequency of trips, size of boats, land-side facilities, etc.) of ferry service at Fort Baker has not yet been developed. As a result, a detailed analysis of its environmental effects is not possible. For the purposes of this cumulative analysis, a qualitative assessment of potential water quality effects was prepared. Specific future proposals for implementation of this use at Fort Baker would be subject to environmental review under NEPA, as well as consultation with relevant resource agencies. Through the required NEPA review, a detailed evaluation of the environmental effects associated with ferry service at Fort Baker would be completed by the NPS, including development of mitigation measures to avoid or reduce adverse effects.

Provision of ferry service to Fort Baker could increase turbidity and the amounts of petroleum pollutants present in Horseshoe Bay resulting in a potential adverse impact to water quality. The intensity of the effect would depend on the size, frequency and location of the water shuttle/ferry service. Such effects could be small compared to the overall self-cleansing capability of the bay through tides, currents and winds or may be greater if large and frequent boat wakes penetrate the Bay and shoreline. Productivity of marine organisms could decrease as a result of petroleum leakage and increased turbidity, including potential reduction in eelgrass productivity. All boats and/or associated fuel facilities (if any on-site) would be required to comply with relevant oil spill prevention and contingency planning regulations. Increased wave action within Horseshoe Bay could also increase shoreline erosion and further reduce water quality. Although the NPS would manage the design and operational characteristics of potential ferry use to minimize or avoid adverse water quality effects, the residual effect of this action on water quality is uncertain. It is unknown if a potentially significant impact would occur.

Golden Gate Bridge Retrofit. The Golden Gate Bridge, Highway and Transportation District (GGBHTD) is currently implementing a seismic and wind retrofit project for the Golden Gate Bridge.

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The northern anchorage of the Bridge is directly adjacent to, and up-slope of, Fort Baker, Horseshoe Bay and the San Francisco Bay. The GGBHTD evaluated the environmental effects associated with the Bridge retrofit project. The analysis indicated that surface water could potentially be impacted by storm water runoff transporting soil and sediment from the construction site down-slope into the Bay. As result, a series of mitigation measures were identified and implemented, including a requirement that all construction activities be completed in a manner consistent with the RWQCB and SWRCB regulations for water quality. A Finding of No Significant Impact (FONSI) and mitigated Negative Declaration were adopted for the project, and no significant adverse effects on water quality are anticipated.

BRAC Clean Up. The only other known cumulative project that could potentially have an adverse effect on stormwater runoff and/or water quality within the Horseshoe Bay watershed is the Army's required clean up of hazardous materials at Fort Baker. To date, the Army has identified six areas that will require remedial action. Remedial actions would include the excavation and off-site disposal of chemically-impacted soil or other facilities (e.g., catch basins). The estimated volume of soil which will require excavation at each of these sites ranges from 40 to 900 cubic yards (cy). Most of this work is expected to occur from July through October 2000, with remediation of the stormwater system (which began in June 1999) continuing beyond November 2000. In addition to these six sites, there are several other areas, including Horseshoe Bay, which may be subject to remedial work. Remedial actions within Horseshoe Bay could include dredging of all or portions of the Bay. If determined to be necessary, this action is not anticipated to occur until sometime after March 2001.

All excavation and removal activities would incorporate use of best management practices (BMPs) or other measures to minimize or avoid potential runoff and indirect impact to the water quality within Horseshoe Bay. Potential dredging and remedial actions within Horseshoe Bay would similarly be designed to minimize impacts on water quality. However, dredging and other in-Bay actions could have a temporary adverse effect on water quality. Implementation of remedial actions in Horseshoe Bay, including the magnitude and extent of remedial work needed, is unknown at this time. Whatever the action, the purpose would be to provide required clean up of existing hazardous materials. Although dredging or other in-Bay remediation activities could have a temporary effect on water quality within Horseshoe Bay, the long-term effect would be improved environmental conditions.

LTMS Program. As described in Appendix D, an interagency task force responsible for overseeing dredging and disposal operations in the SF Bay Region has identified a preferred alternative for the implementation of the Long-Term Management Strategy (LTMS) for disposal of dredged material. The preferred alternative would address all practices in tin the SF Bay Region, including dredging practices at Fort Baker. The EIR/EIS prepared for the LTMS program indicates that the preferred alternative would have an overall benefit on the in-Bay environment by emphasizing a balance between ocean disposal and beneficial reuse at upland/wetland sites with limited in-Bay disposal. Under the preferred LTMS alternative, in-Bay disposal would be substantially reduced (by more than 70% over current practices). In-Bay disposal occurs at three designated sites, including one located just off of Alcatraz Island. Currently, approximately 6 million cubic yards (mcy) of dredged material is disposed of in the SF Bay Region each year.

As described in Section 3.2, maintenance dredging at Fort Baker has historically occurred every 5 to 10 years. The USCG operations typically require dredging of approximately 15,000 cubic yards (cy) every 5 to 7 years. The Presidio Yacht Club has historically dredged on a less frequent basis, normally every 10 years when roughly 800 cy of material is removed. Under the Proposed Action,

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these uses and corresponding maintenance dredging operations would continue. Under a worst case scenario dredging activities associated with both the USCG and marina operations occurring in the same year, the combined maximum total of dredged material would be approximately 15,800 cy. This worst case amount would represent less than 1% (approximately 0.26%) of the total cumulative amount of annual dredged material in the SF Bay Region in any one year, and it would occur once during a 10-year period. With implementation of the LTMS preferred alternative, and the mitigation measures described in Section 2.6.3, the total amount of in-Bay disposal would be reduced even further. Under the worst case scenario, the Proposed Action's contribution to annual dredging and disposal operations within the SF Bay Region would have a negligible cumulative effect.

Conclusion. The Proposed Action's individual effects on water quality would be less-than-significant. There is a potential for significant cumulative impacts to occur, and the Proposed Action would contribute incrementally to this potential effect as explained below.

The cumulative projects influencing water quality within Horseshoe Bay would have a less-than-significant, temporal or long-term beneficial effect on water quality, with the exception of potential ferry service. Implementation of potential ferry service at Fort Baker has the potential to adversely effect water quality. Detailed information on the type of service and subsequent impact is unknown at this time. However, because there is a potential for adverse effects from the ferry service, the impact is considered potentially significant. Future plans to provide ferry service at Fort Baker will be subject to NEPA review and consultation with relevant regulatory agencies. Through this process, a thorough evaluation of the impacts of ferry service, including additional consideration of the cumulative effects on water quality, would be provided. However, because the impact of ferry service has the potential to be significant on an individual basis, all other projects affecting Horseshoe Bay, including the Proposed Action, would cumulatively contribute to this effect. The Proposed Action's incremental contribution to this cumulative effect would not be substantial.

Outside of Horseshoe Bay, the Proposed Action has the potential to effect water quality through ongoing disposal of dredged material at the designated in-Bay Alcatraz disposal site. As explained above, the recent approval and pending implementation of a preferred alternative for the LTMS program will reduce the amount of authorized in-Bay disposal and have a long-term cumulative beneficial effect on water quality in San Francisco Bay. The Proposed Action's contribution to this effect would be negligible.

4.2.4 BIOLOGICAL RESOURCES

The Proposed Action has both potential benefits and potential adverse impacts. Potential damage to biological resources could result from increased visitor use and temporary construction impacts. It is the intention of the Proposed Action to protect, enhance, restore and maintain native habitats, including habitat for the mission blue butterfly. Through proposed habitat improvements, the plan intends to achieve a net benefit. Wherever possible, proposed development is confined to the existing developed footprint, and previously disturbed sites. Areas of intense visitor activity are designated to portions of the site where they exist today.

NPS began informal consultation with USFWS during the planning process to discuss potential impacts and appropriate mitigation to avoid impacts to the mission blue butterfly. With the release of the Draft EIS for public review, NPS initiated formal consultation with USFWS pursuant to Section 7 of the ESA. On September 29, 1999, the USFWS issued a biological opinion and concluded that the implementation

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of the Proposed Action would not likely result in jeopardy to the mission blue butterfly. In concluding the formal consultation, the USFWS set forth terms and conditions. These terms and conditions have been incorporated into Section 2.6.4 of this Final EIS.

In their comment letter on the Draft EIS, the National Marine Fisheries Service (NMFS) recommended that two additional mitigation measures be incorporated into the EIS. The NPS has revised this Final EIS to include these additional measures. With this modification, NMFS has indicated that it concurs with the NPS concluding that the Proposed Action is not likely to have an adverse impact to listed species or critical habitat.

The following section discusses the impacts of the Proposed Action on biological resources at the site. The impact analysis is based on information compiled in the *Natural Resources Inventory* (EDAW, 1998) and the *Assessment of Baseline Vegetation Potential* (May Consulting Services, 1998) conducted for Fort Baker. The following methods were used to predict impacts:

- Completion of a literature review and consultation with experts on vegetation and wildlife at Fort Baker.
- Identification and mapping of existing plant communities using aerial photography and ground truthing surveys.
- Identification of wildlife species based on the use of the California Wildlife Habitat Relationship Model and an evaluation of lists of special status species provided by the USFWS and the NMFS.
- Mapping of important natural values within the site or resources which would be potentially affected by development and use of the site.
- Field observations regarding special status species identified by the USFWS and NMFS, bird use of open water in Horseshoe Bay, and marine biological resources in area of impact related to removal of bulkhead.

The following criteria were considered to assess the degree of impact. The Proposed Action would have a major (significant) impact on biological resources if:

- The action adversely affects, either directly or through habitat modifications, endangered, rare, or threatened species.
- The action has a substantial adverse impact, either directly or through habitat modifications, on any other special status species.
- The action interferes substantially with the movement of any resident or migratory fish or wildlife species.
- The action substantially diminishes habitat quantity or quality for dependent wildlife, plant, or fish species.
- The action has a substantial adverse impact on any sensitive natural community identified by the USFWS, the NMFS, or the California Department of Fish and Game (CDFG).
- The action adversely impacts coastal waters or resources, either individually or in combination with the known or probable impacts of other activities through direct removal, filling, hydrological interruption or other means.

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4.2.4.1 Increased Risk of Impacts to Natural Habitats, Wildlife and Endangered Species, Including the Mission Blue Butterfly as a Result of an Increase in Visitor Use

Because of the increase in visitor use at Fort Baker as a result of the Proposed Action, there is an increased risk of impact to the ecological values of the site, including the federally listed endangered mission blue butterfly. Visitor use that could damage habitat, such as off-trail use through sensitive areas, would be managed by use of barrier fencing, signs, visitor education, monitoring, patrols and enforcement. Protective fencing or vegetation would be installed at the rear of the conference and retreat center to prevent visitors from taking shortcuts through habitat to reach trails and open space. In addition, an existing trail through butterfly habitat would be closed and the site restored, and a new trail would be constructed to provide a loop trail experience for visitors using the Barrier Duncan Trail. This would discourage off-trail use by providing an attractive alternative route.

Appropriate uses and use areas would be designated, and visitor impacts would be monitored to determine the need for modification of visitor use to protect sensitive species. Information would be provided by the NPS, the conference and retreat center operator, the BADM and in other visitor areas through interpretive wayside signs installed to educate visitors about appropriate recreational uses and use areas. Special event guidelines would control the location, frequency, duration, and nature of events to avoid impacts to natural habitats and wildlife. In addition, exotic plant management and habitat restoration would be implemented as part of the Proposed Action. The NPS considers habitat degradation resulting from invasion by exotic plants to be the primary threat to the host plant (silver lupine) for the mission blue butterfly habitat within the GGNRA. For additional information on mitigation measures, refer to Sections 2.6.4 and 2.6.9.

It is anticipated that mitigation proposed to avoid major adverse impacts to natural habitats and wildlife, including the mission blue butterfly, would be effective, as it has been in similar situations within the park. The intention of the Proposed Action is to produce a net benefit through improved protection of existing habitats and restoration of additional habitat at Fort Baker. Planning and development of mitigation to avoid adverse impacts to the mission blue butterfly has been accomplished through informal and formal consultation with USFWS. This would be a less-than-significant impact.

4.2.4.2 Temporary Disturbance to Native Ecological Communities including Mission Blue Butterfly Habitat Areas during Construction and Habitat Restoration

New construction associated with implementation of the Proposed Action would generate dust. Dust from grading activities could affect lupine growth and survival, render the lupines unpalatable to foraging mission blue larvae, or disrupt normal adult butterfly behavior if disruptive activities occur during the mission blue butterfly's flight season (usually from about early March through early June). Similarly, dust could also potentially harm adult mission blue butterflies if they are present at the time of increased dust. As described in Section 2.6.4 (Mitigation), appropriate buffer zones (minimum of 50 feet where possible) around suitable habitat would be established and flagged in the field. During construction, appropriate fencing would also be installed at the edge of the buffer zone to prevent accidental damage to host plants for the mission blue butterfly.

Damage to habitat, including mission blue butterfly habitat, could also occur from construction equipment entering off-limit areas during grading activities and during habitat restoration activities within or adjacent to butterfly habitat. Preventive measures to be taken would include surveying for and flagging of any lupines near construction sites, and educating all workers as to the existence of endangered species habitat in the area. Other preventive measures to be taken include the use of

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signing, implementation of a monitoring program, establishment of contingency plans, and implementation of BAAQMD control measures discussed in Section 2.6.7. Similar measures have proved effective elsewhere in the park. Implementation of measures identified by the NPS and USFWS in Section 2.6 would reduce this impact to a less-than-significant level.

4.2.4.3 Long-Term Enhancement of Native Ecological Communities including Mission Blue Butterfly Habitat Areas

Currently, the GGNRA is improving mission blue butterfly habitat along Wolf Back Ridge. The Golden Gate Bridge, Highway and Transportation District is also improving habitat within Fort Baker and at another site in the Marin Headlands as mitigation for construction impacts resulting from its Golden Gate Bridge seismic retrofit project. The Proposed Action includes enhancing and maintaining 14.25 acres of existing potential mission blue butterfly habitat and restoring 8.75 acres of new mission blue butterfly habitat. These areas are identified in Figure 4-2. Ongoing and proposed habitat improvement and mitigation efforts would connect existing habitats to allow greater dispersal of individual butterflies between breeding areas. Long-term enhancement and restoration of coastal grassland habitat necessary to support mission blue butterfly populations, and enhancement and restoration of coastal scrub and oak woodland habitat is considered a beneficial impact of the Proposed Action.

4.2.4.4 Effects on Native Ecological Communities due to Vegetation Removal during Construction Activities

Activities such as infrastructure improvements, road realignments, habitat restoration, exotic plant removal, and building rehabilitation might negatively affect native ecological communities in work areas during construction. To minimize impacts, site-specific revegetation plans would be prepared for each construction project following NPS policies and guidelines. Fencing and signing sensitive vegetation areas would also reduce impacts. Any native plants to be disturbed may be salvaged from the work areas prior to construction and transported to a native plant nursery or stored onsite for restoration sites.

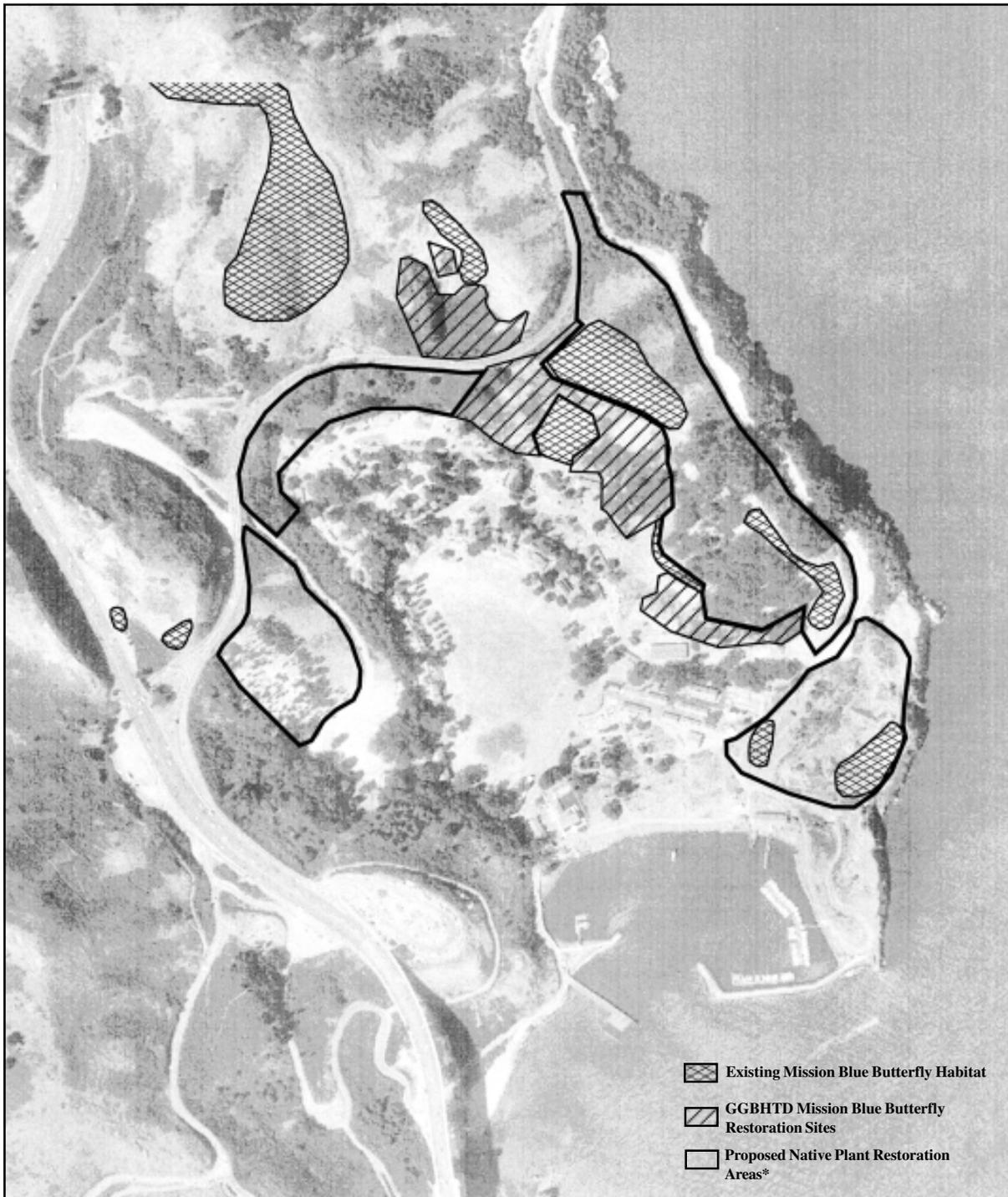
Infrastructure corridors would be confined to roadways and existing utility corridors to the greatest extent possible, focusing new construction within the developed footprint of the site to keep this disturbance to a minimum. Revegetation of disturbed areas after construction would proceed as quickly as possible to reduce recolonization by invasive species. Techniques to control invasion would include removal of exotics by hand, with mechanical equipment or with herbicides. The use of herbicides would be limited and would be in accordance with the NPS integrated pest management policies. Nonaggressive and noninvasive plants would be selected as landscape plants in the developed areas. For additional information on mitigation measures that would be implemented by the NPS to minimize disturbance to native ecological communities, refer to Section 2.6.4. This would be a less-than-significant impact of the Proposed Action.

4.2.4.5 Temporary Disturbance to Waterfront and Long-Term Enhancement of Beach Habitat Areas

Under the Proposed Action, existing riprap and bulkhead removal and beach restoration would be performed along the Fort Baker shoreline to promote natural beach and coastal strand formation processes. This action is expected to have a long-term beneficial effect on native beach and strand habitats by creating sites for native plant intertidal habitat establishment, and increasing the biological diversity of the site. Under the Proposed Action, 800 linear feet of the shoreline would be converted

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* Eucalyptus tree removal is a separate action subject to additional environmental analysis.

Figure 4-2 Native Habitat Restoration Areas



Not to Scale

Source: Thomas Reid Associates



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from an artificial rocky intertidal habitat to a sandy intertidal habitat that was historically present at the site. A long-term shift in the intertidal community would be expected. Also, the existing disturbed area above the bulkhead has low wildlife value. The Proposed Action would replace this nonnative habitat with a native habitat that is important and relatively limited locally, regionally, and statewide. Restoration of the area would promote the natural functions of the beach ecosystem and increase the attractiveness of the area to native species. Long-term enhancement of beach habitat areas is considered a beneficial impact of the Proposed Action.

4.2.4.6 Temporary Disturbance to and Long-Term Enhancement of Eelgrass Beds

Short-term impacts may occur to eelgrass beds located along the bulkhead during the proposed removal of riprap and restoration of the beach. Short-term impacts may also occur to eelgrass plants during construction activities or through temporarily increased turbidity during or immediately after construction, or potentially during periodic dredging activities. Long-term effects would be associated with marina and in-Bay activities, as well as potential indirect water quality effects from stormwater runoff.

Approximately 90 plants are in the area along the north shore that could be impacted by the proposed bulkhead removal. Figure 3-6 (Vegetation and Habitat Map) provides the location of eelgrass plants within Horseshoe Bay. In the recent past, dredging activities have occurred on the other side of Horseshoe Bay, away from the northwestern perimeters where eelgrass is located. Locations for future dredging are dependent upon movement and buildup experienced on the Bay floor, as a result of wave-generated surge and erosion. The total number of plants in Horseshoe Bay is approximately 260. This is less than 1% of the San Francisco Bay population of eelgrass (Chris Kitting pers. comm.).

As described in Section 2.6.4, mitigation incorporated into the Proposed Action includes removing riprap through a land based operation, timing of beach restoration to occur as much as possible during the period of plant dormancy, removing riprap during low tide periods to minimize turbidity, and compliance with the NMFSS adopted “Northern California Eelgrass Mitigation Policy.” Other mitigation such as silt fences and relocating plants and associated animals to other areas of the bay would be considered. Although the loss of eelgrass adjacent to the bulkhead as a result of construction would be an adverse effect, the long-term restoration of the beach and associated intertidal area would provide an improved substrate for potential establishment of shallower eelgrass. Long-term mitigation measures to protect eelgrass include an education program, signs/restriction of boats from eelgrass zones, removal of large floating debris, restrictions on use of pesticides/fertilizers, and use of best management practices (BMPs) for stormwater management. This and other actions to protect eelgrass in Horseshoe Bay during future dredging activities, as well as through education, signs and identification of areas where boats are prohibited would enhance eelgrass beds in Horseshoe Bay and reduce potential adverse effects. Overall, the restoration activities are considered a beneficial impact.

4.2.4.7 Disturbance to Marine Mammals and Waterbirds and Seabirds due to Waterfront Construction Activities and Increased Visitor Use

Marine mammals are protected under the Marine Mammal Protection Act that prohibits disturbance to all marine mammals. Construction activities at the fishing pier and marina could temporarily disrupt marine animals, including harbor seals, California sea lions, and feeding, resting and nesting waterbirds and seabirds, in the proximity of work sites and in the water. However, there would be no long-term adverse impact on marine species due to construction activities in these areas.

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Impacts on marine animals would also result from increased visitor use along the waterfront and in the water. Marine animals would make less frequent use of the area, including the piers and breakwaters in the bay, due to the presence of people.

Increased visitor use along the San Francisco Bay Trail to Lime Point might result in disturbance to nesting and roosting marine birds on the Needles just offshore and on the cliffs at Lime Point. Increased recreational boating in the area and use of the boat ramp might disrupt marine mammals, and wintering water birds that congregate in the area. Designation of appropriate recreational uses, interpretive signage and materials informing boaters and other visitors of appropriate actions to prevent disturbance, limitations on use areas and the boat ramp and the other measures presented in Section 2.6.4 would avoid or mitigate visitor impacts. Monitoring would verify effectiveness of mitigation and/or identify needs for any additional management actions.

4.2.4.8 Disturbance to Fish and Other Aquatic Species due to Construction and Dredging Activities

Bulkhead removal, beach restoration, and on-going (periodic) maintenance dredging (to restore navigational benefit) in Horseshoe Bay would temporarily affect shallow water habitat for breeding and rearing of juvenile fish, such as Pacific herring, and Dungeness crab. Additional studies underway by the CDFG focus on the use of eelgrass by the herring and would include sampling the eelgrass to determine the quantity of eggs deposited. Partnership with the CDFG would allow comparison between Horseshoe Bay and other sites monitored by CDFG and would result in specific recommendations for Horseshoe Bay.

To minimize impacts to listed and proposed-for-listing species, as well as herring spawning habitat, bulkhead/riprap removal, beach restoration, marina conversion, and future dredging activities (if deemed necessary) shall occur during the months of June through September and would therefore be scheduled outside the normal herring spawning period (October through April). These activities would also be conducted outside the period of the downstream migration of juvenile salmon, which begins in the northern portions of the Sacramento River system in July through December, with peak migration in September and October. This migration can continue until mid-March in drier years. Per the recommendation of NMFS, implementation of the adopted “Northern California Eelgrass Mitigation Policy” was also incorporated into the Proposed Action as a required mitigation measure. Consultation with resource and permitting agencies through the Corps permit process could identify additional requirements to protect aquatic organisms. In combination with other mitigation identified in Section 2.6.4, this would avoid or mitigate short-term adverse impacts to aquatic organisms and fish as a result of beach restoration and dredging activities.

4.2.4.9 Disturbance to Land Birds due to Construction, Vegetation Removal and Habitat Restoration Activities

The noise and disturbance associated with construction, vegetation removal, and habitat restoration activities might temporarily disturb nesting birds. Other animals less tolerant of disturbance might also temporarily abandon work sites. However, the majority of species with Fort Baker are adapted to the noises of the urban environment. This impact is considered less than significant.

4.2.4.10 Removal of Nonnative Trees and Shrubs for Native Plant Restoration

The Proposed Action calls for the phased removal of Monterey pine/cypress, acacia and other nonnative trees for native plant restoration. The Proposed Action would include removing vegetation near the former hospital complex and near Battery Duncan. Only individual trees that have escaped

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from their historic boundaries would be removed, and native plants would be re-established in their place. Other existing nonnative trees would be retained. Restoration of eucalyptus trees to native plant habitats requires special management considerations. Therefore, site restoration involving eucalyptus trees would be a separate action subject to additional environmental analysis.

Vegetation with potential nesting habitat would be avoided to the extent feasible during the nesting season, which is defined as between March 1 to July 31. Monarch butterfly overwintering and autumnal sites would be monitored, protected and interpreted. Restoration work in monarch overwintering and autumnal sites would be avoided, as described in Section 2.6.4.

Native plant species to be retained would be identified (flagged or fenced) in the field and protected during tree removal. Where avoidance is not feasible, native plant materials would be salvaged onsite and used in the resulting site restoration efforts, as feasible. To help prevent inadvertent impacts on native vegetation, work areas (including access paths, staging and parking areas) would be fenced or flagged prior to commencement of work. Tree removal would be monitored by a NPS biologist or other knowledgeable individual.

The removal of nonnative trees and restoration of native ecological communities, including grasslands, coastal scrub and oak woodland, would have a beneficial impact on the number and diversity of native ecological communities.

4.2.4.11 Disturbance to Bats due to Building Rehabilitation and Removal

Building rehabilitation and removal has the potential to affect bats which are likely to be present at Fort Baker (numbers and species unknown). Prior to any building removal or rehabilitation of abandoned or minimally occupied buildings, attic spaces, roofing or replacement of tile roofs, bat surveys would be performed to determine presence, species identification, roosting locations, type of roosting habitat (i.e., day, night, maternity, winter, etc.) and to document intensity of use. The results of the surveys(s) would be used to develop appropriate measures to avoid or mitigate impacts.

4.2.4.12 Effects on Marine Organisms due to Urban Runoff and Boating

Surface water runoff and boating have the potential to affect marine organisms and habitat along the shoreline and in Horseshoe Bay. Runoff of urban pollutants such as oils and grease, heavy metals, and pesticides could enter the restored beach from the local watershed. Boating impacts include fuel and waste discharge, and runoff from new pavement areas. Best management practices and structural improvements identified in a stormwater pollution prevention plan (SWPPP) would be implemented as described in Sections 2.6.1 and 2.6.3. Measures such as those presented in the *Presidio Stormwater Management Plan* and the *Fort Baker Sustainable Infrastructure Plan* would be implemented to reduce stormwater discharge and any pollution in stormwater. Activities to mitigate boating impacts include education of boaters, and monitoring use of the boat ramp and water quality. The potential impact on marine organisms and habitat due to the runoff of urban pollutants and boating is considered less than significant.

4.2.4.13 Management of Invasive Species Already Present

Competition from nonnative species would continue to jeopardize native ecological communities, including mission blue butterfly habitat. The threat of this encroachment would gradually decrease under the proactive exotic plant management program currently underway and which would continue under the Proposed Action. Increased management of populations of invasive species is considered a beneficial impact.

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4.2.4.14 Cumulative Impacts

The Proposed Action (plan) is intended to guide the conversion of Fort Baker from a military installation to a unit of the national park system in a manner that protects, enhances, restores and maintains natural habitats. The mitigation measures incorporated into the Proposed Action (see Section 2.6) would avoid or minimize the potential effects associated with increased visitor use and proposed construction to a less-than-significant level. Overall, the Proposed Action would result in the restoration or enhancement of more than 40 acres of natural habitat, and no significant unavoidable impacts are anticipated.

This section provides an analysis of other past, current or reasonably foreseeable projects that when considered within the context of the Proposed Action could have a cumulative impact on biological resources. The discussion is separated into two primary sections: the marine environment; and the terrestrial environment, followed by a summary of the overall cumulative effect. For additional background on the cumulative projects presented below, refer to Appendix D of this EIS.

Marine Environment. From a cumulative perspective, the only other project that is currently known that could have impact the biological resources within Horseshoe Bay (beyond the Proposed Action) is potential ferry service at Fort Baker. An analysis of the cumulative effects associated with this potential future use is provided below. In addition, it is possible that the Army's BRAC Cleanup Plan may involve in-water remedial actions. These actions would be temporary and a discussion of the cumulative effects associated with the BRAC Cleanup Plan is presented under Water Resources (Section 4.2.3.5).

Ferry Service at Fort Baker. The NPS is currently evaluating potential provision of ferry service at several locations within the GGNRA, including Fort Baker. This evaluation is being done as part of a separate planning process, and detailed information on the physical and operational characteristics (i.e., frequency of trips, size of boats, etc.) of potential ferry service at Fort Baker is not currently known. Without this information, a detailed analysis of the environmental effects of this project is not possible at this time. Any future plans to implement ferry service will be subject to environmental review in accordance with NEPA, and consultation with relevant regulatory agencies. For the purposes of this cumulative analysis, a qualitative assessment based on our current understanding of potential ferry service is provided below.

Implementation of ferry service at Fort Baker could directly affect marine animals, including harbor seals and California sea lions. Disturbance from direct noise and wave action could also impact feeding, resting and nesting waterbirds. Indirect effects on the productivity of marine organisms including eelgrass could occur as a result of a reduction in water quality (refer to Section 4.2.3.5). Although the NPS would manage the design and operational characteristics of potential ferry use to minimize or avoid adverse water quality and biological effects, the residual effect is unknown.

Terrestrial Environment. Construction activities and increased visitor use associated with the Proposed Action have the potential to impact terrestrial biological resources including habitat for the federally endangered mission blue butterfly. The mitigation measures presented in Section 2.6.4 would reduce these effects to a less-than-significant level, and implementation of the Proposed Action would result in the restoration or enhancement of 40 acres of natural habitat including up to 20 acres of mission blue butterfly habitat. Because no adverse (and some beneficial) effects on non-listed plants and wildlife would occur, this cumulative analysis is focused on impacts to the federally endangered mission blue butterfly habitat.

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Habitat for the federally endangered mission blue butterfly occurs in four primary locations: two areas within the GGNRA, one in the City and County of San Francisco (Twin Peaks), and one in San Mateo County (San Bruno Mountain). It is estimated that the GGNRA could support between 1,500 and 2,000 acres of potential habitat.⁴ The Twin Peaks site is approximately 40 acres in total, with an estimated 5-10 acres supporting potential mission blue butterfly habitat. The San Bruno Mountains population provides approximately 2,500 acres of potential habitat.

GGNRA Habitat. Within the GGNRA, ongoing maintenance activities, tree removal (associated with habitat restoration), visitor activities, and infestation from various non-native, invasive plants have impacted the host plant for the mission blue butterfly (*Lupinus albifrons* - the silver lupine). The NPS activities described above are regulated and mitigated by implementation of conditions set forth in two separate Biological Opinions issued by the USFWS (August 16, 1991 and November 10, 1997). At present, infestation by non-native, invasive plants is considered the primary threat to mission blue butterfly habitat within the GGNRA. The NPS has implemented restoration activities for approximately 75 acres of mission blue butterfly habitat since 1989. In addition to the restoration activities, and general maintenance and visitor use impacts described above, several other projects within the GGNRA have impacted or have the potential to impact mission blue butterfly habitat. A summary of these cumulative projects is presented below.

The Golden Gate Bridge retrofit project (currently under construction) resulted in the removal of 3.7 acres of habitat for the mission blue butterfly. Through the required consultation with the USFWS, the GGBHTD identified and implemented mitigation for the loss of mission blue butterfly habitat by restoring approximately 18.5 acres of habitat (a net increase of 14.8 acres). Construction activities associated with the proposed Golden Gate Vista Point project could directly or indirectly impact mission blue habitat. A detailed evaluation of the project's potential impacts is currently underway. If potential impacts to mission blue butterfly are identified, Caltrans (the project proponent) will be required to consult with the USFWS and fully mitigate potential impacts. The NPS has also started work on a draft Preservation and Interpretation Plan for Battery Cavallo (as recommended during the Fort Baker planning process.). The purpose of the Plan is to provide for the protection and enhancement of cultural and natural resources, and provision of public access. Although no adverse impacts to mission blue butterfly habitat is anticipated, the NPS will continue to consult USFWS as the Plan is prepared.

Habitat Outside the GGNRA. As previously discussed, the two other locations known to support habitat for the mission blue butterfly are located in the City and County of San Francisco (Twin Peaks) and San Mateo County (San Bruno Mountains). No projects are anticipated at the Twin Peaks site that could have a potential adverse impact on mission blue butterfly habitat. A trails management program may be developed and implemented in the future. The focus of that program would be to keep visitors on trails, and avoid potential disturbance to mission blue butterfly habitat. Other future management actions at Twin Peaks may include the control of non-native/invasive vegetation (Lisa Wayne, City and County of San Francisco, pers. comm.). Both of these potential future actions are anticipated to have a beneficial effect on mission blue butterfly habitat.

The San Bruno Mountain population was the subject of a comprehensive Habitat and Conservation Plan (HCP). The HCP was prepared and approved by the County of San Mateo and the USFWS in

⁴ "Potential habitat" includes *lupinus albifrons* and other host plants, nectar plants, and flyaway areas for the butterfly. To date, NPS has only quantified the size of habitat supporting *lupinus albifrons* populations equaling 180 acres.

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1991. The HCP provides for the long-term preservation and protection of the single largest habitat area for the mission blue butterfly. No projects, beyond those identified and evaluated in the HCP, are anticipated to adversely effect mission blue habitat in this area.

Conclusion

Marine Environment. The combined effect of ferry service and increased visitor use associated with the conversion of Fort Baker to a unit of the national park system (Proposed Action) could contribute incrementally to an impact on marine mammals, seabirds and/or the aquatic environment. The magnitude of the cumulative impact associated with ferry service is unknown and would vary depending on the operational and physical characteristics of that project. The NPS would fully evaluate these effects as part of separate planning and environmental review process, and develop mitigation measures to reduce or avoid impacts associated with ferry service. However, the residual effect of this impact is not known and could be potentially significant. Therefore, any project that incrementally contributes to this impact, would be considered to have a cumulative effect. Individually, the Proposed Action's impact on the marine environment would be less-than-significant. On a cumulative basis, the Proposed Action would incrementally but not substantially contribute to this potentially significant cumulative impact.

Mission Blue Butterfly Habitat. The GGNRA could contain slightly less than ½ of the potential habitat for the mission blue butterfly. Presently, infestation by non-native, invasive plants poses the single most significant threat to the health of mission blue butterfly habitat within the GGNRA. Implementation of the recently funded⁵ restoration program aimed at containing and controlling the spread of invasive plants would have a beneficial effect. Other actions, such as ongoing maintenance activities, visitor use, and various construction projects as described above, have the potential to impact mission blue habitat. These actions, however, are (or would be) regulated and mitigated by conditions required by the USFWS. No cumulative actions, other than those potentially having a beneficial effect, are expected at the Twin Peaks and San Bruno Mountain sites. Together, these two sites represent the remaining areas of potential habitat for the mission blue butterfly habitat.

Individually, the Proposed Action would have a less-than-significant effect on the mission blue butterfly. Cumulatively, the Proposed Action would incrementally contribute up to 20 acres of additional habitat for the mission blue butterfly. This effect, in combination with ongoing restoration programs, is anticipated to have a cumulative beneficial impact on mission blue butterfly.

4.2.5 CULTURAL RESOURCES

This section assesses the impacts of the Proposed Action on significant cultural resources at Fort Baker. Information for the impact analysis was obtained primarily from the *Fort Baker Cultural Landscape Report* (NPS, 1997). The following methods were used to predict impacts:

- Background historic research and data collection. Various repositories were consulted to identify and research primary written and visual materials. Analysis and evaluation formed the basis for establishing the site's significance and integrity. Types of primary and secondary materials consulted included historic ground level photographs; historic aerial photographs; historic maps and plans; and written historic records and accounts.

⁵ Funding is contingent upon final confirmation of congressional appropriation.

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- Historic base map preparation. Historic base maps were prepared following the collection of primary and secondary materials. The maps accompany the text describing cultural landscape impacts.
- Current condition map preparation. A map featuring information that currently exists at the site was prepared to serve as a base to evaluate impacts to the site's cultural landscape significance, integrity, and condition. A separate map on archaeology and sensitive areas was also prepared to assess impacts to archaeological resources.
- Field data collection. Digital images, color slides in addition to black and white photographs of the site were taken for archival purposes and for comparison with historic photographs. Field data collection also corroborated information obtained from historic materials. This corroboration allowed for cross-checking of historic maps.

The revised regulations of the Advisory Council on Historic Preservation (Section 800, Title 36, of the *Code of Federal Regulations*) provided the methodology for assessing impacts on cultural resources. In assessing the impacts of the Proposed Action, several steps were taken:

- Initiate Section 106 (NHPA) process including establishing the undertaking and the Area of Potential Effect, identifying the appropriate SHPO, developing a plan to involve the public, and identifying consulting parties in the process.
- Identify historic properties within the planning area and evaluating the historic significance of these properties.
- Assessing the extent and type of impact that the undertaking will have on the historic properties.
- Resolve any Adverse Effects by development of a Memorandum of Agreement with the SHPO.

A proposed undertaking is considered to have an *effect* on a cultural resource if it may in any way change the characteristics that qualify that property for inclusion on the National Register of Historic Places. If the undertaking would diminish the integrity of the property, it is considered to have an *adverse effect*. An effect that may occur later than or at a distance from the undertaking is termed an *indirect effect*. A major (significant) impact would be one that would affect the National Register status of the property or have substantial unmitigated impacts to archeological resources.

4.2.5.1 Compliance with Section 106 of the National Historic Preservation Act

Memorandum of Agreement. Section 106 of the National Historic Preservation Act of 1966 and the Advisory Council on Historic Preservation's *Recommended Approach for Consultation on Recovery of Significant Information from Archaeological Sites* (36 CFR Part 800), requires federal agencies to consider the effects of their actions on historic properties and to consult with the appropriate State Historic Preservation Office (SHPO) in determining those effects and any measures designed to reduce the level of those effects. The Advisory Council on Historic Preservation may become involved in the consultation between the Agency and the SHPO in certain circumstances. The purpose of Section 106 is to avoid unnecessary harm to historic properties. A Memorandum of Agreement (MOA) between the California SHPO and the NPS has been developed and is being routed for signature by all parties to the agreement. The MOA will be fully executed prior to signing the Record of Decision (ROD). The MOA takes into account the effects of the Proposed Action on historic properties at Fort Baker. All but 12 of the contributing structures at Fort Baker will be preserved and maintained under the MOA (see Section 4.2.5.3).

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4.2.5.2 Cultural Landscape

Restoration of Parade Ground. The Parade Ground has historically been used for a variety of activities from very structured events such as military ceremonies and drill practices to unprogrammed activities such as field sports, dog walking, and picnicking. The open expanse of lawn allows for flexible programming and would be preserved and maintained for this purpose. Trees and Parade Ground turf would be restored, parking would be relocated and prohibited, and the garage building would be removed to restore the Parade Ground. This is considered a beneficial impact.

Restoration of Beach. The waterfront at Fort Baker has undergone the most dramatic changes and uses since the fort was established. As the fort was being developed, the waterfront consisted of a marsh. Following the filling of the marsh, the site was used primarily for recreational purposes: a baseball diamond appears in historic photos as well as equipment for target practice along the shore. In 1942 this relatively open waterfront was additionally filled and leveled to accommodate the hospital complex. The wood and riprap bulkhead was also built to support and protect the hospital structures. The hospital buildings were removed in the early 1980s and since this time the waterfront has reverted to recreational uses.

Since the bulkhead has lost its integrity of association with the hospital complex no longer existing, its removal to accommodate a beach would not have a significant effect on cultural resources. However, to restore the beach along Horseshoe Bay, shoreline structures built prior to the current timber bulkhead may need to be removed if still existing. Prior to excavation work, archeological testing would be initiated according to protocols developed in accordance with the MOA to determine the nature and extent of archaeological sites that may exist in the area. After testing, excavation work would be closely monitored. Should preliminary investigations indicate that prehistoric sites or shoreline structures exist landward of the timber bulkhead and are significant, these sites or structures would either be preserved *in situ* or mitigated.

This concept would require a steeper beach profile to be constructed, which would also minimize the extension of the shoreline bayward and encroachment into the navigable portion of the bay. No adverse effect on the historic shoreline structures is anticipated, and no additional mitigation is necessary. This would be a less-than-significant impact.

4.2.5.3 Buildings and Structures

Preservation of Historic Fortifications. The historic fortifications associated with Fort Baker would be preserved. The batteries provide an opportunity for interpretation of a long history of the development of defense technology in the United States. They also provide exciting discovery sites for hikers and others just wishing to get away from scheduled activities they may be attending at Fort Baker. Spectacular views of San Francisco Bay afforded at the two batteries perched on the cliff above the bay south of the fort are attractive to visitors. Of these fortifications, Battery Yates would remain open to provide park users with the opportunity to experience the Bay Area views as well as to experience first hand the history of coastal defense. Battery Cavallo would remain closed until a detailed multidisciplinary plan is developed as part of a future planning effort with separate environmental analysis for the stabilization, preservation and interpretation of the battery and all natural and cultural resources. The plan would integrate requirements for historic preservation, natural resource protection, visitor use and interpretation. Upon approval of the plan, the battery could be opened to visitor programs led by trained group leaders in a manner similar to the Point Bonita Lighthouse operation. Continued adverse effects to the integrity to the battery from graffiti and vandalism that began with its closure would be mitigated during continued closure with stepped-up

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law enforcement activities and an attempt to sensitively remove the graffiti. Preservation of the historic fortifications is considered a beneficial impact.

Rehabilitation of Buildings Surrounding the Parade Ground. Rehabilitation of the historic buildings surrounding the Parade Ground would be compatible with the qualities that currently qualify each structure for inclusion in the National Register of Historic Places. Care would be taken with the character-defining features of the buildings: those distinctive aspects, qualities or characteristics that contribute significantly to their physical character. These include form, structure, materials, particular features such as roofs, windows, entrances and porches, interior spaces and finishes, and mechanical and electrical systems. Accessibility would be a particular consideration, as most buildings at Fort Baker do not comply with current standards. The NPS requires that full program accessibility be achieved as part of the rehabilitation process. In adapting the buildings to new uses, encouragement would be given to reconstructing the porches that previously existed on the three barracks buildings along Murray Circle east of the Commander's House (Figure 4-3).

Two locations around the Parade Ground, where buildings were either planned but never built or were built and later demolished, are being considered as locations for future structures totaling approximately 28,000 square feet. Any new building construction would be undertaken in a manner that is compatible with the existing structures around Murray Circle and the historic district. Figure 4-4 shows the Officers' Club and Theater that had been removed on the southeast side of the Parade Ground. Rehabilitation of the historic buildings surrounding the Parade Ground is considered a beneficial impact.

Rehabilitation of Capehart Housing or Replacement with Compatible New Construction. Six nonhistoric Capehart structures (buildings 521, 525, 535, 539, 555 and 563) would be removed to restore the historic setting. (Refer to Figure A-1, in Appendix A.) These buildings would be replaced with new buildings and 21 additional nonhistoric units would either be removed or rehabilitated to provide accommodations or other conference facilities. The chapel would be rehabilitated and made available for special activities and programs, managed by the conference and retreat center operator. Rehabilitation or replacement of the Capehart housing with compatible new construction would allow restoration of the historic landscape setting by minimizing modern intrusions. This is considered a beneficial impact.

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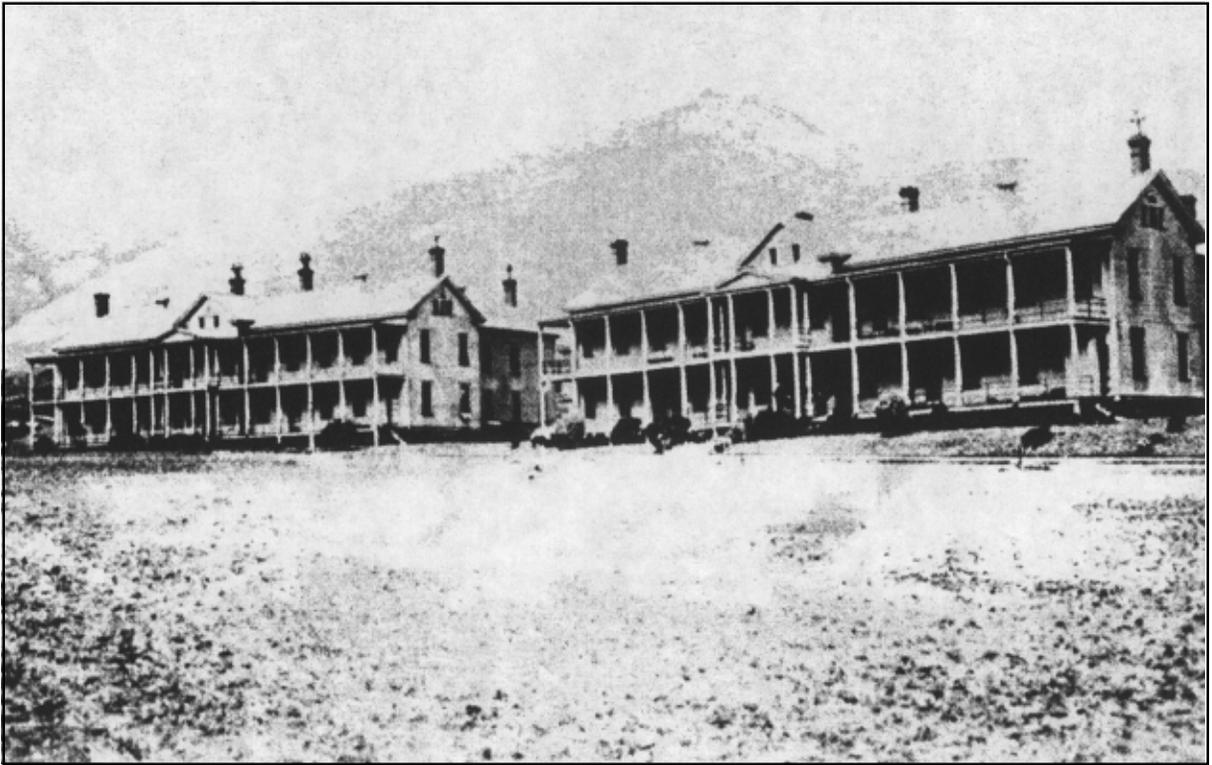


Figure 4-3 Barracks around the Parade Ground with Porches Still in Place, Circa 1902-1903

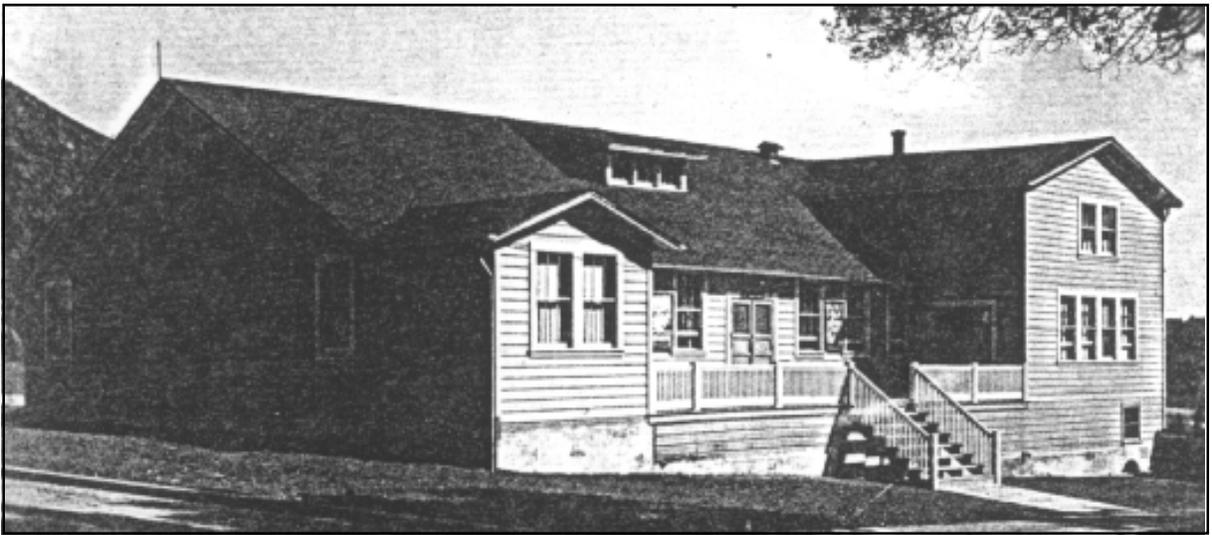
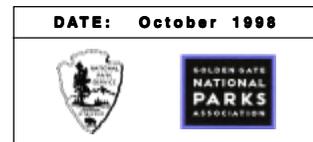


Figure 4-4 Officer's Club and Theater has been Removed from the Parade Ground

Source: GGNRA



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Removal or Rehabilitation of Various Contributing Structures. Careful consideration was given to retention of all historic structures. All but 12 of the contributing structures at Fort Baker would be preserved and maintained under the MOA. Eleven contributing structures would be removed under the Proposed Action:

- FB-0414 heating fuel storage tank
- FB-0511 library branch
- FB-0513 maintenance shop
- FB-0515 gas station disposal facility
- FB-0538, 0541 and 0556 garages
- FB-0659 storage shed
- FB-0665 maintenance shop
- FB-0689 motor repair shop
- FB 0691 mobile searchlight storage

The twelfth contributing structure, the fueling dock and marine railway (FB-0668) would be extensively rehabilitated to the extent that the material replacement would constitute an adverse effect to this resource. Removal or rehabilitation of these structures would either restore the setting of the historic period of significance or would achieve other important values or park operational needs. Although these actions would constitute an adverse effect to the National Register property, it would not affect its National Register status and is therefore not considered to be a significant adverse impact.

New Construction. New construction is proposed where existing buildings and improvements would not meet essential management needs. Up to 30,400 square feet of new construction would be accommodated under the Proposed Action. Every reasonable consideration would be given to using existing buildings for park purposes compatible with their preservation and public appreciation. Alterations and additions would need to be made to historic buildings to accommodate new uses. Any new construction at Fort Baker, including individual buildings and additions, would be designed in a manner that is compatible with but clearly differentiated from buildings of the historic district. Design direction would be guided by compatibility criteria established from character-defining elements of the historic district. Scale, texture, color, rhythm of openings, massing, and materials would be some of the elements of the compatibility criteria that would help provide continuity between the new construction and its historic surroundings. It is expected that new designs would neither be abject repeats of historic style nor isolated statements without reference to the history within which they rest. Compatibly designed new construction would be certified by NPS preservation staff through the memorandum of agreement that constitutes the section 106 compliance. Therefore, no adverse effect on the cultural landscape due to new construction is expected. This would be a less-than-significant impact.

4.2.5.4 Circulation and Parking

Realignment of Breitung Road. Breitung Road which ran between what is now the BADM and building 689 would be realigned to connect Canter Road with Satterlee Road. The new alignment would be slightly to the south of building 689. Parking for the BADM would be provided north of the road to partially replace BADM parking removed for the restoration of the Parade Ground. Parking to the south of the road would serve the new beachfront meadow. The realigned road would provide access to the waterfront and the restored historic boat shop and marina. Realignment of Breitung Road is considered a beneficial impact.

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Removal of Sommerville Road. In order to create a beach at the waterfront, Sommerville Road would be removed. Since its integrity of association has been lost now that the hospital complex is gone, removal of Sommerville Road would have no adverse effect on the historic setting, and would be considered a less-than-significant impact.

Simplifying Satterlee Road and Revegetating Cavallo Point. Satterlee Road is currently a loop road that provides access to the boat piers and connects to a road that leads to Battery Yates. Satterlee Road was constructed in three phases over the course of 60 years. In 1902 a two-way directional road was constructed to connect to Battery Yates from Canter Road. By 1942 this road was extended to Cavallo Point. In 1960 the road was extended to provide access to the piers. The construction of the last two segments of the road severely changed the look of Cavallo Point. The existing road down to the piers is wide enough to convert to a two-way road. Making this segment two-way as proposed would eliminate the need for the 1942 addition and would allow for recontouring and revegetating Cavallo Point. These improvements would have no adverse effect on the historic setting, and would be considered a less-than-significant impact.

Improving Use on East Road. East Road was originally built to provide the residents of Sausalito with a scenic pleasure drive. The road offers spectacular views of the bay from numerous locations. This use is significant, as it was the first overt gesture made to include the public in recreational activities during peacetime. The road would continue to be used for passive and active recreational activities. Existing wide shoulders would provide room for parking, picnic tables, and benches. Public access amenities would be improved in this area. Improvements made to East Road would have no adverse effect on the historic setting, and would be considered a less-than-significant impact.

4.2.5.5 Cultural Landscape Vegetation and Furnishings

Re-establishment of Trees around Parade Ground. Murray Circle once was lined on both sides with elm, pepper, eucalyptus and acacia trees. Evidence of these trees first appear in an aerial photograph taken in 1915 (Figure 4-5). Figure 4-6, taken in 1937, depicts the maturing trees lining Moore Road and Murray Circle. A photograph taken in 1952 (Figure 4-7) shows that the trees along Canter Road have been removed and the Parade Ground trees still remain. By 1980, most of the trees were removed. The majority of the remaining trees around the Parade Ground were destroyed in the winter storm of 1995. Today, the trees that remain around the Parade Ground are mostly eucalyptus and acacia trees. Historic photographs indicate that some of the existing eucalyptus trees may have been a part of the original planting. Research would be conducted to confirm their locations. Trees similar in form and habit to the original plantings would be re-established around the Parade Ground, which is considered a beneficial impact.

Re-establishment of Historic Vistas/Clearings. Selective clearing and removal of nonnative plant materials that currently obstruct historic vistas to and from the site would be initiated. Specific areas of nonnative vegetation that would be cleared are the former hospital complex, and selective clearing around Batteries Duncan and Yates. Selective pruning or removal of nonnative trees along the entire length of Seiter Road and Merrill Street would be used to open historic vistas between the Parade Ground and San Francisco Bay that have been obscured. This is considered a beneficial impact.

Rehabilitation of Historic Windbreaks. The historic extent of the Monterey cypress and eucalyptus windbreaks around the Parade Ground would be determined to achieve the degree of mass that was originally planned for. Nonhistoric understory growth would be cleared. Dead and diseased trees between Bunker Road and McReynolds Road would be replaced. This impact is considered beneficial.

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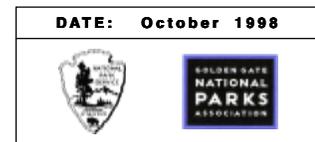


Figure 4-5 Parade Ground, Circa 1915



Figure 4-6 Evidence of Trees, Circa 1925

Source: GGNRA



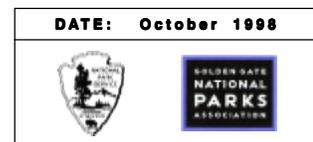
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Figure 4-7 Trees along Canter Road have been Removed and the Parade Ground Trees Still Remain, Circa 1952

Source: GGNRA



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Retain Historically Significant Site Furnishings. Historically significant site furnishings include the flagstaff on the Parade Ground (circa 1905), the tennis court (circa 1912) and the seawall along the western shore of Horseshoe Bay (circa 1929). In compliance with the secretary's Standards (NPS, 1992), these and other furnishings that have taken on a significance through time would be retained in the restoration of the site. This is considered a beneficial impact.

4.2.5.6 Archaeological Resources

Potential to Disturb Archaeological Resources. Based on archival and other historical research, several areas of high archaeological sensitivity have been identified that could be affected by implementation of the Proposed Action. These areas have been generally located and plotted on maps. The Proposed Action has been designed to avoid affecting specific areas known to contain archaeological resources. Documentary research and test excavations would be conducted to assist in identifying and avoiding significant remains at these sites during implementation of the Proposed Action. Unexpected discoveries may occur outside of these areas, and routine archaeological assessments would be conducted for all areas within Fort Baker during construction that involves ground disturbance. An archaeological monitoring program designed in accordance with the MOA would be used to evaluate and record historic features that may be discovered during the Proposed Action, as noted above. In the event of discovery of either prehistoric sites or burials, consultation would be initiated with the Federated Indians of Graton Rancheria in accordance with the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act. Please refer to Section 2.6.5 for additional information on the mitigation measures incorporated into the Proposed Action. Implementation of these measures would avoid significant adverse impacts to archeological resources.

4.2.5.7 Cumulative Impacts

Under the Base Realignment and Closure Act, most of the military posts within the Bay Area have closed and are transferring out of federal ownership. Treatment and disposition of the historic components of these posts vary from site to site. The National Park Service, as mandated by the National Historic Preservation Act, has a responsibility to preserve and protect these important historic properties. Golden Gate National Recreation Area, through the General Management Plan, has ensured the preservation of these resources through adaptive use by park partners providing continued life and maintenance of the structures and landscapes.

The lands included within the Golden Gate National Recreation Area and Point Reyes National Seashore also contain a substantial portion of the undeveloped land within the San Francisco Bay Area. As such, they are likely to contain a considerable amount of the remaining (undisturbed) archeological resources in the Bay Area. Under the stewardship of the National Park Service, these lands and resources contained therein, will be protected and preserved for current and future generations.

Under the Proposed Action, the historic structures, landscapes, and archeological features of the Fort Baker Historic District would not only remain within federal protection but would be rehabilitated, preserved, and, where possible, enhanced to return missing character defining elements. Because of this, the actions described within this EIS would have beneficial cumulative effects on regional efforts to preserve such resources and settings.

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4.2.6 TRAFFIC AND CIRCULATION

This section describes the transportation impacts attributable to the Proposed Action on the local network. Information for the impact analysis was obtained primarily from the *Fort Baker EIS Transportation Report* (Wilbur Smith Associates, 1998), *Supplemental Traffic Analysis for Fort Baker* (Robert Bernstein, P.E., 1999), *Fort Baker EIS—Addendum to Final Transportation Report of August 7, 1998* (Wilbur Smith Associates, 1999), *Fort Baker Roadway Level of Service Technical Memorandum* (Wilbur Smith Associates, 1999), *Fort Baker Queuing Study* (Fehr & Peers, 1999) and various traffic studies and data provided by the City of Sausalito, the California Department of Transportation and the Golden Gate Bridge Highway and Transportation District (as cited in the text below). Transportation-related impacts focus on the following issues:

- Local/adjacent roadways and intersections, including downtown Sausalito
- Vehicle access and circulation (on/offsite)
- On/offsite pedestrian/bicycle facilities
- Public transportation
- Parking

The following methods were used to predict impacts:

- Traffic counts were taken for trips accessing Fort Baker during winter weekday and weekend peak hours, and a seasonality factor was applied to account for summer/fall peak conditions (refer to Section 3.6.3 for additional detail). Supplemental traffic data was also collected during summer 1999. Existing data from the City of Sausalito, California Department of Transportation and the Golden Gate Bridge Highway and Transportation District was reviewed and incorporated into the analysis. Traffic identified with land uses that would not be present in the future (i.e., Army) was subtracted out when analyzing future conditions.
- Traffic and parking demand based on new or expanded land uses was estimated using standard trip generation factors developed nationwide by the Institute for Transportation Engineers (ITE). Where uses were not contained in the ITE Handbook or where more relevant local data was available, traffic and parking demands were based on data obtained for similar land uses.
- Levels of projected congestion were based on adding existing traffic to new traffic forecasts and comparing the results to the capacity of the local roadways and intersections.
- Pedestrian and bicycle movements were observed as part of the traffic data collection effort, and their primary routes on- and off-site were identified.

In order to evaluate the effects of the Proposed Action, a series of trip generation and trip distribution factors were assumed. A brief overview of these assumptions is presented below. For additional detail, refer to the *Fort Baker EIS Transportation Report* (Wilbur Smith Associates, 1998 as amended).

The primary source for projecting future trips for new land uses was the Institute of Transportation Engineers, *Trip Generation*, 6th Edition. For those uses that currently exist, information on current visitation was reviewed and projections were developed based on proposed changes in future use. For the proposed conference and retreat center (the primary new use), a conservative assessment of the

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maximum possible scenario was developed. This scenario assumed that the maximum 350-room facility would be developed, and that there would be 1 employee/room, 436 overnight visitors, and 145 daily visitors. This scenario also assumed that 98% of the guests and 95% of the employees would arrive in individual automobiles.

In order to assess the effect of the Proposed Action on adjacent roadways and intersections, assumptions related to the origin and route used by visitors had to be developed. To achieve this, several sources were used including San Francisco Bay Area Regional Travel Characteristics, subregional data for Marin County included in The San Francisco Bay Area Projections Report for 2015, and travel data specific to existing conference centers was used. Based on this information, the following assumptions were developed and used in assessing the Proposed Action's traffic impacts:

- 60% of daily visitors are expected to come from North Bay locations, the remaining 40% would come from locations south of the Golden Gate Bridge; and
- 62% of employees are expected to come from the North Bay, 33% from San Francisco, South Bay and East Bay locations, and 5% from Sausalito and Marin City.

The following criteria were used to determine project-related traffic and transportation impacts. The Proposed Action was assumed to cause a major (significant) impact based on the following indicators:

- The action would exceed, either individually or cumulatively, a level of service (LOS) "E" or "F" at a study intersection or local roadway segment.
- The action would exceed, either individually or cumulatively, a level of service (LOS) "F" on the regional freeway segment.
- The action would result in the lengthening of traffic queuing that would block other vehicles, bicycles or pedestrians on a regular basis (*regular* was defined as greater than 5% of the time during the daily peak hour for traffic).
- The action would substantially increase safety hazards related to pedestrians, bicyclists, and motorists.
- The action would result in an increase in average daily parking demand that could not be accommodated by the proposed action parking supply.

4.2.6.1 Construction Activities

Implementation of the Proposed Action would result in a temporary increase in construction traffic, including workers, the movement of heavy equipment and trucks on Highway 101, Alexander Avenue, Bunker Road, and Conzelman Road. There could be up to 400 daily worker trips accessing the site and an estimated 150 to 200 truckloads of materials delivered to the site over the twelve to 18 month construction period. During the same construction period, an estimated 3,000 truckloads of material (assuming removal of Capehart housing and restoration of the shoreline) would be transported offsite for disposal. The majority of the 3,150 to 3,200 total truck trips would occur in the earlier stages of the construction period. However, the impact of all construction activities is assumed to occur simultaneously in order to provide a conservative analysis. The increase in daily vehicular trips from construction workers and the movement of equipment and materials on Highway 101 counts for less than a 1% increase above weekday daily traffic volumes. Weekday traffic on Alexander Avenue is generally free flowing, and traffic on lower Conzelman Road is currently restricted to construction traffic associated with the Golden Gate Bridge seismic retrofit project.

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Construction workers generally work shifts that begin and end slightly earlier than the majority of commuters. Therefore, construction worker trips typically do not coincide with either the morning or afternoon peak commute hours. However, the Proposed Action could exacerbate congested traffic conditions in the vicinity of Fort Baker during the morning commute period if a large number of truck deliveries occur or if heavy equipment is accessing or exiting the site during this traffic period. Because the vehicle trips traveling to and from the site would be dispersed through the Bay Area, the vehicle trips generated by the Proposed Action on other regional roadways would not be substantial and would fall within the normal fluctuations of traffic.

The existing patterns of circulation on narrow roads such as Bunker Road, East Road and Conzelman Road during the movement of construction equipment and materials to staging areas and construction work areas could be temporarily detoured to minimize safety hazards for automobiles, bicyclists, and pedestrians. The existing restriction to public access on lower Conzelman Road would continue throughout GGBHTD construction activities. Prior to start of construction activities, a Construction Traffic Management Plan (TMP) would be prepared by the contractor(s) and submitted to the NPS as part of the requirements of their contract with the NPS and the construction contractor. The contract would require that the construction TMP include specifications on construction traffic scheduling, proposed haul routes, worker parking, staging area management, visitor safety, and detour routes. The contractor(s) would be required to limit the transport of construction equipment and materials to off-peak traffic periods to the maximum extent feasible. During the flight season of the mission blue butterfly, Conzelman Road would have a posted and enforced speed limit of 20 mph (to avoid impacts to the butterfly from construction traffic and dust). Any alterations to the Construction Traffic Management Plan would be subject to written approval by the NPS.

Because the increase in daily traffic on adjacent and local roadways and intersections due to construction activities is expected to be temporary and would be mitigated by implementation of a construction traffic management plan (refer to Section 2.6.6 for detail), the project-related construction activities would not cause a significant adverse impact.

4.2.6.2 Local and Adjacent Roadway Segments

After construction activities and the associated construction truck and worker trips associated with them have ceased, implementation of the Proposed Action would result in an increase in the number of visitors and employees at Fort Baker as a result of the increased attractiveness and improved facilities at the site. The following section describes the existing traffic condition along relevant roadways segments. (Intersections LOS is addressed in Section 4.2.6.3 below).

Highway 101. Peak hour traffic conditions on Highway 101 are characterized by heavy volumes, and it is used as a commuter route by traffic moving from San Francisco to North Bay locations. The Proposed Action is forecast to increase the amount of traffic on Highway 101 (segment adjacent to Fort Baker) by approximately 251 vehicles per hour during the weekday a.m. peak hour and 1,529 vehicles on a daily basis during the week. Refer to Tables 4-3 and 4-4 for additional information. These increases (before mitigation) are 2.4% to 1.3% above existing weekday a.m. peak hour and weekday daily vehicle volumes, respectively. Implementation of the traffic mitigation measures described in Section 2.6.6 would reduce the Proposed Action trip generation by at least 5-10%. The Proposed Action's contribution to US Highway 101 represent a small absolute amount, and would not cause a significant adverse traffic impact.

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Alexander Avenue. On Alexander Avenue, between Highway 101 and Danes Drive, the Proposed Action is forecast to increase the highest amount of vehicle trips during both weekday and weekend peak periods. Under the maximum scenario, the Proposed Action (before mitigation) would contribute 251 and 292 vehicle trips to the weekday (7:30 – 8:30 a.m.) and weekend (5:00 – 6:00 p.m.) peak hours, respectively. Along this segment of Alexander (between Danes Drive and US 101), the estimated vehicle trips represent a 25% and 27% increase above existing weekday and weekend peak periods. North of Danes Drive, the estimated increase for both weekday and weekend traffic would be 4% or less (refer to Figure 4-8).

Although the segment of Alexander Avenue south of Danes Drive would experience a 25 to 27% increase (before mitigation), this increase would be well within the capacity of the existing roadway as shown in the levels of services (LOS) presented in Tables 4-3 and 4-4. The tables show that the Proposed Action would have a moderate effect and reduce peak hour LOS. This reduction, however, would not result in an unacceptable LOS and would therefore not be considered a significant impact. Implementation of the mitigation measures presented in Section 2.6.6 would measurably reduce this effect.

When congestion along the southbound US 101 approach to the Golden Gate Bridge is severe, it can cause a queue to form along Alexander Avenue as vehicles wait to access the southbound on-ramp. As described in Section 3.6, no existing documentation or analyses of the frequency, duration and length of this regional effect is available. However, informal reports indicate that the queuing event occurs during peak summer weekend afternoon/evenings.

Implementation of the Proposed Action would contribute additional cars to a queue when such conditions occur. To minimize the Proposed Action's contribution to this effect the NPS developed a series of mitigation measures, which are described in detail in Section 2.6.6. Implementation of the mitigation measure that provides use of Conzelman Road as a one-way exit during peak traffic conditions would minimize the direct effect of the Proposed Action on the Alexander Avenue backup. Vehicles at Fort Baker would be directed to use Conzelman Road during peak traffic conditions, which would provide additional storage and redistribution of cars away from Alexander Avenue. The mitigation measure requiring designation of a "Keep Clear" area at the Alexander/Danes intersection, and reconfiguring the intersection would also help maintain operation of the intersection during a queuing event.

In addition, implementation of a Transportation Demand Management Program (TDM) program for Fort Baker would directly reduce the total number of cars present at the site and exiting during peak times. Requirements to stagger workshifts and check-in and check-out times at the conference and retreat center to avoid peak traffic hours, use of ridesharing programs, and provision of a shuttle system would also provide effective methods to reduce the Proposed Action's contribution to existing congestion. In general, TDM programs can reduce individual automobile trips by 5 to 15%, with an average of 10% reduction. Based on the trip generation factors used to project the Proposed Action's peak hour trips, the measures identified in Section 2.6.6 could have a substantially greater effect on trip reduction and could potentially reduce peak hour trips by up to 50%. A 50% reduction in peak hour trips would be possible if all conference and retreat center employee workshifts were staggered to avoid the peak hour.

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Table 4-3
Employee & Visitor Vehicle Trip Distribution—Roadway Segments¹
Weekday Conditions (Before Mitigation)

Roadway Study Segment/Location	Existing A.M. Peak Hour Volumes (LOS)	A.M. Peak Hour Project Trips	A.M. Peak Hour Vehicle Volumes Existing + Preferred Action (LOS)
Highway 101	10,400 ²	251	10,651
Alexander Avenue (south of Danes Drive)	1,025 ³ (D)	251	1,276(D)
Alexander Avenue (north of Danes Drive)	788 ³ (C)	19	807(C)
Onsite Roadways			
Bunker Road	65 ³ (A)	251	316(B)
East Road	32 ³ (A)	19	51(A)

¹Existing volumes presented in the Draft EIS for Alexander Avenue were for the segment between Danes Drive and East Road. The Final EIS have been revised to present total roadway volumes between US 101 and East Road as shown above, as well as to correct a mathematical error.

²Based on 1996 Caltrans Traffic Volume Counts. The peak hour traffic represents volumes in both directions and reflects typical peak hour traffic normally occurring every day of the week (including weekends).

³Based on machine counts performed by Wilbur Smith Associates, January 1998, with a seasonal adjustment factor of 1.2 applied.

Table 4-4
Employee & Visitor Vehicle Trip Distribution—Roadway Segments¹
Weekend Conditions (Before Mitigation)

Roadway Study Segment/Location	Existing P.M. Peak Hour Volumes(LOS)	P.M. Peak Hour Project Trips	P.M. Peak Hour Vehicle Volumes Existing + Proposed Action(LOS)
Highway 101	10,400 ²	292	10,692
Alexander Avenue (south of Danes Drive)	1,091 ³ (D)	292	1,383(D)
Alexander Avenue (north of Danes Drive)	822 ³ (C)	33	855(C)
Onsite Roadways			
Bunker Road	120 ³ (A)	292	412(C)
East Road	N/A	33	N/A

¹Existing volumes presented in the Draft EIS for Alexander Avenue were for the segment between Danes Drive and East Road. The Final EIS have been revised to present total roadway volumes between US 101 and East Road as shown above, as well as to correct a mathematical error.

²Based on 1996 Caltrans Traffic Volume Counts. The peak hour traffic represents volumes in both directions and reflects typical peak hour traffic normally occurring every day of the week (including weekends).

³Based on machine counts performed by Wilbur Smith Associates, January 1998, with seasonal adjustment factor of 1.2 applied. N/A - Traffic volumes not available.

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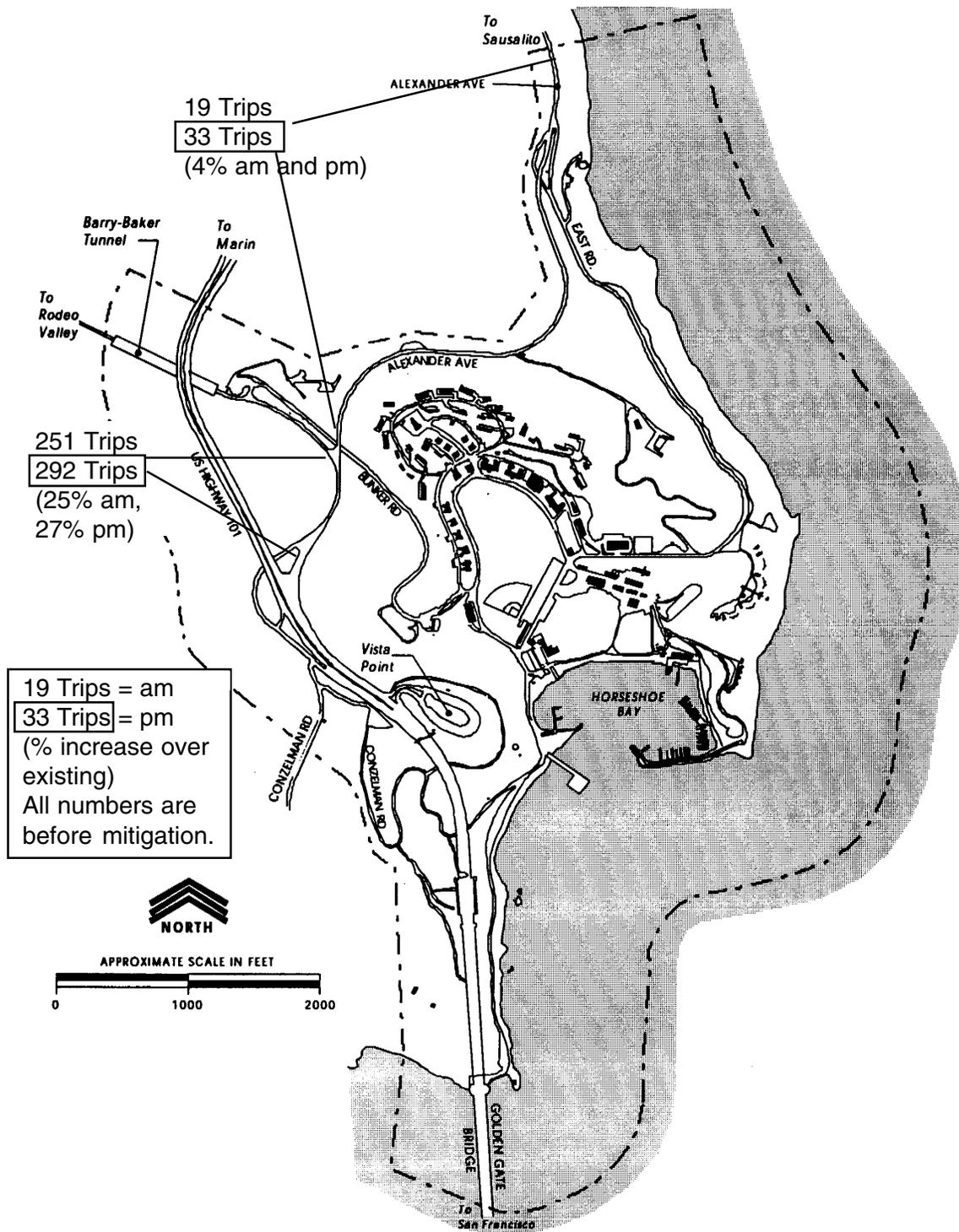


Figure 4-8 Projected Increase in Peak Hour Trips Along Alexander Avenue Before Mitigation (Proposed Action—Maximum Scenario)

DATE: October 1998

Source: Wilbur Smith Associates

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Use of Conzelman Road as a one-way exit, intersection improvements and the trip reduction measures described in Section 2.6.6 would reduce the effect of the Proposed Action on potential queuing. No significant adverse impacts would occur.

Bunker and East Roads. Traffic generated by the Proposed Action would affect Bunker Road and East Road. Although both roadway segments provide access to Fort Baker, Bunker Road is expected to remain as the primary access roadway into Fort Baker because it is a much shorter route from Highway 101. As shown in Tables 4-3 and 4-4, weekday peak hour traffic volumes on Bunker Road and East Road are relatively low indicating very little incoming traffic during the a.m. peak hour.

Bunker Road would serve 223 inbound and 28 outbound project vehicle trips during the weekday a.m. peak hour (before mitigation). During the p.m. weekday peak, the Proposed Action would generate slightly more vehicle trips, but fewer vehicles would be traveling to Fort Baker, and more vehicles would be leaving the site. On weekends, project generated traffic on Bunker Road would add 148 inbound and 144 outbound vehicle trips to existing p.m. peak hour volumes. East Road would serve the remaining a.m. peak hour vehicle trips generated by the Proposed Action; with 17 inbound and 2 outbound trips would be added to existing traffic. East Road would also serve the remaining p.m. peak hour project related vehicle trips; 17 inbound and 16 outbound trips would be added to existing traffic. As shown in Tables 4-3 and 4-4 this would cause a reduction in LOS that would be considered minor to moderate. However, the addition of project-related traffic would not cause existing LOS to deteriorate to substandard levels (LOS E or F), and the Proposed Action would therefore not cause a significant adverse impact.

Downtown Sausalito. Existing traffic in Sausalito would experience small traffic increases during the a.m. and p.m. peak hours as a result of the Proposed Action. If all vehicles entering Fort Baker via East Road on a typical day were assigned to local streets in Sausalito, an increase of 19 and 33 vehicle trips (before mitigation) during the weekday a.m. and weekend p.m. peak hour study periods, respectively, would occur in downtown Sausalito. At the request of the City of Sausalito, an additional analysis of the downtown intersections during an alternative peak hour is provided in Section 4.2.6.3 below.

4.2.6.3 Local Intersections

The analysis of the Proposed Action's effect on local intersections was focused on two primary locations: Alexander Avenue/Danes Intersection; and Downtown Sausalito, as explained below.

Alexander Avenue/Danes Drive Intersection. Traffic was analyzed at the intersection of Alexander Avenue/Danes Drive because this is where traffic impacts associated with the Proposed Action would be greatest. The largest increase in traffic would occur at the left-turn movement of the eastbound approach of Alexander Avenue (with 224 and 148 vehicles per hour being added during weekday and weekend conditions, respectively, under the Proposed Action), and at the right-turn movement from Danes Drive. There may be some concern with the left-turn movement from Alexander Avenue since there is limited space for only four vehicles to queue for left turns without blocking the eastbound through movements.

The results of the left-turn queuing analysis for turns from Alexander Avenue onto Danes Drive indicates that the queuing of more than four vehicles is expected to occur 2.5% of the time during the weekday a.m. peak hour thus indicating minor impacts. For weekend analysis, existing traffic

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volumes were adjusted to reflect the heaviest traffic conditions in Fort Baker ⁶. With the adjusted volumes, the results of the queuing analysis indicate that before mitigation queuing of more than four vehicles is expected to occur 4.7% of the time during the weekend p.m. peak hour. Implementation of the mitigation measures proposed in Section 2.6.6 including the reconfiguration of this intersection to provide better channelization and additional capacity for the left-turn (southbound) lane, as well as transportation demand management measures focused on reducing peak hour (and overall) vehicle trips to the site would minimize this effect.

The unsignalized Alexander Avenue/Danes Drive intersection currently operates at LOS A in the weekday a.m. peak hour, with an overall average delay of 1 second per vehicle. During the weekend p.m. peak hour, it operates at LOS B with an overall average delay of 2.5 seconds per vehicle (Table 4-5). As shown, implementation of the Proposed Action (before mitigation) would cause the intersection LOS to deteriorate to LOS B and C during the weekday and weekend peak hours, respectively. Although this represents a reduction in LOS and increase in delay, the intersection would continue to operate at acceptable levels during both peak hours and no significant adverse impacts would occur. Implementation of the mitigation measures presented in Section 2.6.6 would substantially reduce the effect of the Proposed Action on this intersection.

**Table 4-5
Proposed Action Intersection LOS
(Before Mitigation)**

Intersection	Weekday + Project		Weekend + Project	
	LOS	Delay	LOS	Delay
Alexander Avenue/Danes Drive	B	2.5	C	4.3

Delay - Overall intersection average delay (seconds per vehicle)

Source: Wilbur Smith Associates, 1998

Downtown Sausalito Intersections. Based on input received from the City of Sausalito, an analysis of the Proposed Action’s potential to effect downtown intersections was conducted focusing on the City’s peak period of congestion (12 noon to 3 p.m. on weekends). A conservative worst case estimate for this time period showed that approximately 42 trips (17 southbound, 25 northbound) traveling to, from, or through Sausalito in the peak hour of the 12 noon to 3 p.m. weekend period could occur as a result of the Proposed Action. The estimate assumes maximum trip generation factors for all on-site uses, and relies on the regional traffic pattern assumptions provided in the *Final Fort Baker EIS Transportation Report* (Wilbur Smith Associates, 1998). Table 4-6 presents existing traffic volumes along the major intersections in downtown and shows the increase anticipated under the Proposed Action.

Traffic congestion in downtown Sausalito is caused by a combination of factors including limited intersection capacity, modest traffic volumes, and large numbers of pedestrians crossing streets. At present, the City of Sausalito does not have plans to make street and traffic control improvements to improve downtown LOS conditions. City of Sausalito staff and consultants have indicated that on weekend afternoons downtown Sausalito intersections currently operate at substandard LOS (City of Sausalito and R. Harrison, pers. comm.). The intersection of Bridgeway with Bay Street operates at LOS D, while the intersections of Bridgeway with Princess Street and with Johnson Street operate at

⁶ Based on traffic counts collected by GGNRA between December 1996 and January 1998.

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LOS B (Harrison, 1999). Level of service C is the standard for maximum acceptable delay established in the Sausalito General Plan, except in the downtown area. The City General Plan permits exception to the LOS standard in downtown because street capacity improvements are not practical in this area (Harrison, 1999).

**Table 4-6
Proposed Action Traffic (Before Mitigation) - Downtown Sausalito Intersections
Weekend Midday (12 noon to 3 p.m.)**

Intersection	Existing Traffic Volume ^a	Proposed Action ^b (% increase)
Bridgeway/Johnson Street	1491	+42 (+3%)
Bridgeway/Bay Street	1495	+42 (+3%)
Bridgeway/Princess Street	1124	+42 (+4%)
Bridgeway/Harbor Drive	N/A	+42
Bridgeway/Marinship Way	N/A	+42

Note: "N/A" = weekend data not available; Source: R. Bernstein, 1999.

^a Sources: Traffic Studies for Village Fair Hotel Conversion, Marinship Improvement District, and 30 Libertyship Way, prepared by Robert L. Harrison Transportation Planning for the City of Sausalito.

^b For the purposes of this analysis it was assumed that all midday traffic traveling to Sausalito associated with the Proposed Action would travel through all of the intersections shown above.

Implementation of the Proposed Action (before mitigation) would increase existing traffic at downtown Sausalito intersections by approximately 3 to 4% during the midday weekend period (12 noon – 3 p.m. period). In the absence of planned improvements for downtown congestion, all mitigation measures developed to reduce the effect of the Proposed Action on downtown Sausalito are necessarily focused on trip reduction from Fort Baker to Sausalito. As described in Section 2.6.6, these measures include the provision of shuttle service between Fort Baker and Sausalito, requirements for ridesharing programs, educating patrons of Fort Baker about existing congestion and parking conditions in downtown Sausalito, restricting use of East Road, and other techniques focused on reducing vehicle trips to Sausalito. Following implementation of these measures, the Proposed Action's 3-4% contribution to downtown trips would be reduced by at least 5-10% and would be considered within the range of normal daily variations in traffic. The Proposed Action would have a small incremental contribution to the existing substandard peak hour traffic conditions in downtown Sausalito.

4.2.6.4 Improvements to On/Offsite Vehicle Access and Circulation

Under the Proposed Action, onsite circulation would provide for efficient vehicle, pedestrian and bicycle movement. All proposed facilities would be located well away from the major onsite roadways, thus minimizing potential conflicts between pedestrian/bicycle and vehicular traffic. Temporary use of Conzelman Road as a one-way exit during peak traffic conditions would require use of safety measures to protect bicyclists and pedestrians. Further, the existing connections between the existing land uses and areas where new uses are proposed, particularly in the conference and retreat center and BADM areas, would be enhanced to minimize potential safety problems and allow for efficient vehicle access. To avoid confusion to drivers, channelization/signage would be provided at key points (Bunker Road/Danes Drive, East Road/Alexander Avenue, and Danes Drive/Alexander Avenue intersections). Drivers/vehicles would be directed to their destinations and/or available parking locations. On-street parking would be limited to allow for adequate access and egress for

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emergency and service vehicles. An onsite shuttle service would be provided as needed, for travel locations between parking and onsite facilities. Improvements for on/offsite vehicle access and circulation are considered a beneficial impact.

4.2.6.5 Improvements to Pedestrian and Bicycle Facilities

It is expected that Fort Baker would continue to be a desired location for bicycling, jogging, and hiking and would experience an increase in such uses. Improvements to be implemented as part of the Proposed Action would enhance safety for bicyclists and hikers, including closure of Conzelman Road to vehicular traffic except for emergency and service vehicles and for temporary use as a one-way exit during peak traffic conditions. East Road would be re-striped to slow traffic and improve channelization. Proposed trail improvements include the Battery Duncan loop trail, conversion of the road between Point Cavallo and Battery Yates to a trail, and the improved Bay Trail. Informal social trails would be closed and restored to native habitat. This may adversely impact current mountain bikers and hikers that use the Battery Duncan area, however this effect would be offset by other on-site trail improvements proposed. Secure bicycle parking facilities would be provided by all Fort Baker tenants and at key destinations throughout the site. Also, at mid-block locations on East Road or intersections near the BADM, median pedestrian refuges would be installed to facilitate pedestrian crossings. These could be designed as raised crosswalks to improve their visibility. “Traffic calming” features intended to reduce the speed of vehicular traffic could also be installed in this area. Such measures may include reducing lane widths, lowering speed limits, addition of stop signs and/or advance pedestrian crosswalk signs, pedestrian refuge areas, raised medians or other techniques to improve the safety of visitors and reduce the speed of cars. As described in Section 2.6.6, NPS would also pursue off-site improvements as part of a regional task force. Improvements to pedestrian and bicycle facilities are considered a beneficial impact.

4.2.6.6 Increased Demand for Public Transportation

The Proposed Action should create sufficient demand to re-establish Golden Gate Transit’s #63 bus service. Public transit could decrease parking demand and traffic volumes, especially if combined with a shuttle service to and from Fort Baker and Sausalito. The majority of buses used for Golden Gate Transit Route 63 were 30-foot-long buses. According to Golden Gate Transit officials, these 30-foot buses were able to maneuver into and within Fort Baker without difficulty. However, standard buses for Golden Gate Transit, MUNI and most tour companies are usually 40 to 43 feet long. The NPS would coordinate with public transit officials and tour companies to determine where standard-sized buses can be accommodated given the road geometry of Fort Baker. This impact is considered beneficial.

4.2.6.7 Increased Parking Demand due to Increased Visitor Use

Conference and Retreat Center. Weekday parking demand for the conference and retreat center would require up to 455 spaces. There is sufficient parking space within the general area of the conference and retreat center to match this demand. Mitigation measures identified in the Plan could reduce the parking demand by 57 spaces.

Bay Area Discovery Museum. The Proposed Action would allocate 240 spaces for BADM parking. Assuming that current travel characteristics remain relatively constant, without demand reduction strategies or additional parking supply, future BADM parking needs would be met in a typical week but would be exceeded during peak conditions (typically the school vacation week in Spring) when

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18 additional spaces would be required.⁷ The parking mitigation measures identified in the Plan would reduce the parking demand by 30 spaces, thus providing sufficient parking at all times.

Other Fort Baker Uses. Parking requirements for the waterfront, marina and other open space areas would be met on most days in the three waterfront lots (170 spaces) and in 30 spaces north of the BADM.

City of Sausalito Parking. Potential increases in parking demand in the City of Sausalito caused by the Proposed Action (before mitigation) would represent between one and three percent of the existing public parking supply. It is estimated that somewhere between 19 and 42 vehicles would travel through Sausalito during the weekday a.m. peak, weekend midday, or weekend p.m. peak hour. Under the most conservative assumption all of these vehicles would park in Sausalito. According to the *Sausalito Downtown Parking Survey and Shared Parking Model* (Hanson, 1997), weekday and weekend peak hour total parking supply (1,204) is approximately 75% and 85% occupied, respectively. During the weekend peak, public parking was found to be 91% occupied and is considered to have reached its “practical capacity” when supply is between 90-100% occupied (Harrison, 1997).

The Proposed Action’s projected demand for parking (before mitigation) would represent a small fraction of the total public parking spaces in Sausalito (1,204). This demand would be comparable to the normal daily variations in parking demand. Implementation of the mitigation measures described in Section 2.6.6, including the provision of a shuttle service between Fort Baker and Sausalito and provision of information regarding congestion and parking availability to Fort Baker visitors, would substantially reduce the potential number of trips destined to park in Sausalito. Because of the availability of onsite parking supply and incorporation of transportation demand management mitigation measures into the Proposed Action, potential increases in parking demand in Sausalito would be less-than-significant.

4.2.6.8 Cumulative Impacts

This section describes cumulative traffic impacts associated with the Proposed Action on a regional and local level. Information related to past, current or reasonably foreseeable projects, as well as information from approved plans and other cumulative projections are used. A description of the cumulative setting is provided first, followed by a conclusion of the cumulative effect. For additional information on the cumulative projects or plans presented below, refer to Appendix D and Table 4-A (for a summary).

Regional Setting

ABAG Projections ‘98/MTC Travel Demand Forecasting Model. The Metropolitan Transportation Commission (MTC) has developed and regularly updates a travel demand forecasting model that encompasses the entire nine-county San Francisco Bay Area. MTC’s travel demand forecasts are based on anticipated land use/demographic patterns developed by the Association of Bay Area Governments (ABAG) and the planned and funded transportation improvements identified by the nine counties, Caltrans, and MTC.

⁷ To see how often typical week attendance would be exceeded, BADM staff tabulated daily attendance at the museum for an entire year from July 1997 to June 1998. The numbers indicated that the typical weekly demand would be exceeded during 18% of the days the museum is open.

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The latest future land use and demographic estimates available were developed by ABAG in 1998 and are typically known as Projections '98. These estimates were developed by ABAG for the current year as well as for the year 2000, and the next twenty years at five years increments. Projections' 98 assumes that Fort Baker would be converted from a military installation to a national park, however, detailed information on the total number of trips assigned to the new use is not available (P. Fassinger, ABAG pers. comm.).

MTC uses ABAG projections to estimate future travel paths, mode choice patterns, and highway and transit demand in the San Francisco Bay Area transportation system. Other local agencies, such as the County of Marin, use ABAG projections as the basis for transportation planning purposes (and typically geographically reallocate the data to reflect local conditions). Projections' 98 show a projected increase in total population within the SF Bay Area over the next 22 years of approximately 17%.

1998 Regional Transportation Plan (RTP), Metropolitan Transportation Commission. The 1998 RTP identifies the long-range planned transportation improvements within the fourteen travel corridors and subareas that make up the San Francisco Bay Area. Fort Baker falls within the Golden Gate Corridor, which connects San Francisco, Marin and Sonoma counties via Highway 101. The Golden Gate Corridor extends from northern Sonoma County to the Golden Gate Bridge and includes both north and southbound travel directions. The 1998 RTP does not identify any projects to be implemented in Marin County south of Tiburon Boulevard (S.R. 113), with the exception of the Golden Gate Bridge Seismic retrofit project discussed above. The RTP estimates that growth and traffic within the Golden Gate Corridor as a whole will increase substantially over the next 20 years.

Local Setting

This section describes relevant plans, as well as projects located in the vicinity of Fort Baker that have the potential to effect traffic.

1997 Congestion Management Program (CMP), Marin Congestion Management Agency. The 1997 CMP is the most recent program adopted by Marin County. (The County is in the process of finalizing and adopting its biennial update, the 1999 Marin County CMP.) The CMP has a 7-year planning horizon, and defines a roadway system that includes all state highways and principal arterials in Marin County. The CMP records and reports monitoring of performance with respect to established LOS standards within this system. In the vicinity of Fort Baker, the CMP includes two routes:

- Highway 101 (State Highway) – from the San Francisco County line to the Sonoma County line, and
- Bridgeway, Richardson Street, Second Street and Alexander Avenue (Principal Arterial) – from Highway 101 to Highway 101.

The CMP evaluates the performance of the designated highway and roadway system based on level of service (LOS) conditions evaluated during the average p.m. peak hour. The CMP establishes LOS D as the minimum required for arterials (i.e., Alexander Avenue), while E is the minimum for freeways (i.e., Highway 101) and rural expressways. The 1997 CMP estimates that in the year 2005 (the upper limit of the current plan) there will be an increase in traffic along Highway 101 and Alexander Avenue, but LOS will not worsen beyond the established LOS standards.

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Sausalito General Plan. The Sausalito General Plan, adopted in September 1995 and amended in 1997, expresses the planning policies that guide the City of Sausalito regarding decisions on future development of the City. The General Plan looks at the full density entitlement buildout, without necessarily tying it to a specific horizon year. The Circulation and Parking Element of the General Plan establishes policies and implementation programs for the transportation system which will accommodate and support land use and economic activities planned for Sausalito for the future maximum development potential specified in the Plan.

The *Sausalito General Plan Circulation Element Technical Analysis, Transportation Impacts of the Proposed General Plan Development Policies* (Harrison, 1992) provide an analysis of the anticipated traffic conditions under the cumulative development scenario in Sausalito. According to the study, several downtown intersections would operate at substandard conditions under full Plan buildout (including some that are currently at substandard conditions). The General Plan identifies LOS C or better as the standard for signalized intersections along Bridgeway for the p.m. weekday peak hour, except for Johnson, Bay and Princess Street. These streets are exempt from this General Plan policy because it is not physically possible to increase the capacity of these intersections without significant impacts on the built and natural environments. Following implementation of the proposed improvements identified in the General Plan, the LOS would be improved at most intersections, however, substandard conditions would continue during the peak hours along Bridgeway at the intersections of Bay, Johnson and Princess Streets.

Relevant Projects

Golden Gate Bridge Seismic and Wind Retrofit Project. This project was initiated in 1997 and is expected to finish in 2007. Traffic on the Golden Gate Bridge will not be affected by the retrofit project, with the exception of some lane restrictions that may occur at night, when traffic is lightest, during the second phase of construction. Increase in daily vehicular trips from construction workers and the movement of equipment and materials on U.S. 101 counts for less than one percent increase above daily traffic volumes, and they will fall within the normal fluctuations of traffic. In order to minimize the potential negative effects of construction traffic during the morning and afternoon peak commute periods, transport of construction equipment and materials is limited to off-peak periods, where feasible, and contractors are required to develop and implement a rideshare/transit program for workers accessing the site during construction. The traffic impact of the retrofit project is considered less-than-significant.

Provision of Ferry Service to Fort Baker. As described in Table 4-A and Appendix D, the NPS is currently evaluating potential ferry service at several locations within the GGNRA including Fort Baker. Ferry service at Fort Baker was originally identified in the 1980 General Management Plan as a potential use. Recent regional efforts to develop a comprehensive water transit strategy for the SF Bay Area have reinforced this recommendation and led to the current analysis of this potential use. At this time, detailed information related to the frequency of trips, size of boats, and other operational characteristics of potential ferry service at Fort Baker is unknown. Additional analysis of the potential demand for this service is underway, and a complete analysis of the environmental effects associated with this use will be completed (in accordance with the requirements of the National Environmental Policy Act). If implemented at Fort Baker, ferry service would potentially reduce the number of vehicle trips to the site.

Traffic Safety Study for the Golden Gate National Recreation Area (GGNRA). In April 1999, the NPS directed a study with the purpose of analyzing the road system of the GGNRA and identifying traffic

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safety problems. Only one of the sites evaluated in the study is located in the vicinity of Fort Baker, the Bunker Road Tunnel, a one-half mile, single-lane facility with bicycle lanes on both sides under Highway 101. The study identified several improvements aimed at optimizing traffic signal operation at the tunnel, improving the lane alignment and sight distances, and meeting Manual on Uniform Traffic Control Devices requirements for signs and signals. The study recommended shortening of traffic signal cycle in order to increase utilization of the green time on both approaches and shorter queue lengths. Up to 40 vehicles can enter the tunnel in the allotted green time, which is the maximum queue length possible on the eastside of the tunnel (Danes Drive), without blocking the Alexander Avenue intersection. The NPS implemented this recommendation in the September 1999, and preliminary reports indicate that it has succeeded in improving traffic flow in this area.

Golden Gate Vista Point Rehabilitation Project. The California Department of Transportation is currently evaluating plans to improve and partially expand the vista point area located on the west side of Highway 101, immediately to the north of the Golden Gate Bridge. The project proposes the rehabilitation and upgrade of the site and on-site facilities, as well as minor changes to the traffic circulation patterns within the parking lot area. The existing number of parking spaces (95) would be increased by 25 spaces. In addition, a vehicle detection system is proposed for installation at the vista point entrance and exit points to detect when the parking lot has reached capacity. The system would trigger a message sign located at the south end of the Golden Gate Bridge, to indicate to drivers that the parking lot is temporarily full. The project is expected to improve overall traffic circulation on the Bridge and minimize queue spillover onto Highway 101.

Conclusions

Regional Effects. In general, cumulative traffic conditions within the region are anticipated to worsen as the population increases. Several planned improvements may reduce the potential traffic impacts, however, population growth is expected to continue with a projected increase of 17% for the Bay Area by the year 2020. This growth is anticipated to place additional pressure on the existing transportation network. The Proposed Action's contribution to the cumulative conditions expected on US Highway 101 in the vicinity of Fort Baker would represent a small fraction of the total volume (approximately 1-2%) in the year 2020. As described for the individual effects of the project, this level of contribution would fall within the normal daily variation of traffic volumes. Because the future conditions are expected to be more congested, the Proposed Action would contribute incrementally to this cumulative effect. The magnitude of the Proposed Action's contribution to this cumulative effect, however, would not be substantial.

Local Effects. The Proposed Action would have the greatest cumulative traffic effect along Alexander Avenue between Highway 101 and the Alexander/Danes Drive intersection. The majority of the trips to and from Fort Baker would use this segment of roadway. Individually the Proposed Action would not have a significant adverse impact on this roadway. Following implementation of the mitigation measures presented in Section 2.6.6 (i.e., required transportation demand measures, use of Conzelman Road as a one-way exit during peak traffic, intersection improvements, etc.), the effect of the Proposed Action would be measurably reduced. As previously discussed, the proposed mitigation measures are expected to reduce the total number trips (including peak hour trips) by as much as 50%, with an average reduction of 5-10%. Regardless of the reduction achieved, the Proposed Action would contribute additional trips to this area. The incremental contribution of the Proposed Action on the cumulative traffic conditions along Alexander Avenue would be considered minor to moderate.

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Based on the cumulative traffic conditions projected for downtown Sausalito (R. Bernstein, 1999, City of Sausalito and R. Harrison, various), the Proposed Action's contribution would represent an increase between 1 and 4% before mitigation. Following implementation of the mitigation measures described in Section 2.6.6 (i.e., provision of a shuttle service to and from downtown Sausalito, educating patrons of Fort Baker about downtown congestion, etc.), the number of vehicle trips downtown would be reduced. Although the magnitude of increase is small and would be considered within the normal daily variation of traffic, some trips would still occur. Any project that contributes to the peak hour substandard conditions would have a cumulative effect. The Proposed Action would have a small incremental effect on this cumulatively significant impact.

Implementation of the Proposed Action in combination with the Golden Gate Bridge retrofit project, ferry service at Fort Baker, and the other cumulative projects in the immediate vicinity would not cause a significant adverse impact on traffic and circulation. In some instances, the cumulative projects may offset and reduce congestion (i.e., ferry service) and could potentially have a beneficial effect. The effect of the Proposed Action on the more broad, plan-based level is presented below.

4.2.7 AIR QUALITY

This section discloses both the short- and long-term impacts of the Proposed Action on air quality. The following methods were used to predict impacts:

- Review of existing air quality data and regulatory framework based on information from the California Air Resources Board (CARB) and the Bay Area Air Quality Management District (BAAQMD).
- Qualitative discussion of construction emissions based on the BAAQMD California Environmental Quality Act (CEQA) Guidelines: Assessing the Air Quality Impacts of Projects and Plans (1996).
- Quantitative discussion of regional and local operational mobile source emissions based on the CARB's URBEMIS5 computer model in accordance with the methodology provided in BAAQMD CEQA Guidelines.
- Analysis of state implementation plan (SIP) conformity based on the methodology provided in BAAQMD CEQA Guidelines and in 40 CFR §51.853.

The following criteria were considered to assess the degree of impact. The Proposed Action would have a major (significant) impact if:

- Construction emissions occur without implementation of BAAQMD's feasible control measures.
- Operational emissions exceed the BAAQMD's operational emission thresholds for Reactive Organic Gas (ROG), nitrogen oxides (NO_x), PM₁₀, and carbon monoxide (CO).
- Operational emissions exceed the SIP conformity determination thresholds provided in 40 CFR §51.853.

4.2.7.1 Short-Term Construction Impacts

Construction-related emissions are generally short-term in duration, but may still cause adverse air quality impacts. PM₁₀ is the pollutant of greatest concern with respect to construction activities. (While construction equipment emits CO and ozone precursors, these emissions are included in the

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emissions inventory that is the basis for regional air quality plans, and are not expected to impede attainment of ozone or maintenance of CO standards in the Bay Area.) PM₁₀ emissions can result from a variety of construction activities, including excavation, grading, building removal, vehicle travel on paved and unpaved surfaces, and vehicle and equipment exhaust (BAAQMD, 1996).

The BAAQMD does not require that construction emissions be quantified. Rather, the significance of construction emissions should be determined based on whether BAAQMD's feasible control measures would be implemented with construction activities associated with the Proposed Action. If all of the applicable BAAQMD control measures would be implemented, then construction emissions would be considered a less-than-significant impact. If all of the applicable BAAQMD control measures would not be implemented, then construction impacts would be considered a significant impact. In the case of the Proposed Action, the NPS would promote and pursue the use of the applicable BAAQMD mitigation measures discussed in Section 2.6.7. Consequently, construction emissions would be considered a less-than-significant, short-term impact.

4.2.7.2 Long-Term Regional Impacts

The Proposed Action would generate regional emissions associated with increased vehicle use and energy consumption. The BAAQMD provides the following thresholds of significance for operational emissions:

- ROG 80 pounds per day (lbs/day)
- NO_x 80 lbs/day
- PM₁₀ 80 lbs/day (BAAQMD 1996).

The Proposed Action would result in an increase of 2,266 vehicle trips per day. The BAAQMD-recommended URBEMIS5 computer model (CARB, 1995) was used to predict the quantities of ROG, NO_x, and PM₁₀ emissions associated with increased traffic that would be generated by operation of the Proposed Action. Based on URBEMIS5 modeling results, increased vehicle trips associated with the Proposed Action would generate approximately 18.5 lbs/day of ROG, 18.9 lbs/day of NO_x, and 2.4 lbs/day of PM₁₀. These amounts would not exceed the applicable BAAQMD thresholds.

The Proposed Action would also result in nominal emissions from the use of electricity and natural gas at the site. Emissions are produced directly with the burning of natural gas by water heaters, space heating and gas appliances. Emissions are produced indirectly through increased electrical usage for space heating, lighting and operation of electrical appliances. However, these emissions are not quantified, because they would likely be less than 1 lb/day for each criteria pollutant. Furthermore, emissions associated with electricity generation either occur at plants that are outside of the San Francisco Bay Area Air Basin or are offset through the use of pollution credits.

Because the Proposed Action would not result in regional operational emissions that would exceed the BAAQMD's significance thresholds for ozone precursors or for PM₁₀, regional operational emissions would be considered a less-than-significant impact of the Proposed Action.

4.2.7.3 Long-Term Local Mobile Source Impacts

The primary mobile source pollutant of local concern is CO. Carbon monoxide concentration is a direct function of vehicle idling time and, thus, traffic flow conditions. Carbon monoxide transport is extremely limited; it disperses rapidly with distance from the source under normal meteorological conditions. Under certain meteorological conditions, however, CO concentrations close to a

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congested roadway or intersection may reach unhealthy levels, affecting local sensitive receptors (residents, school children, hospital patients, the elderly, etc.). Typically, areas of high CO concentrations, or “hot spots” are associated with congested intersections. In areas with a high ambient background CO concentration, modeling of CO concentrations is recommended in determining a project's effect on local CO levels.

The BAAQMD recommends that localized CO concentrations be estimated for projects that would result in increased vehicle CO emissions of more than 550 lbs/day (BAAQMD 1996). Based on URBEMIS5 modeling, the Proposed Action would result in the generation of approximately 233.7 lbs/day of CO emissions. Because projected daily CO emissions would not exceed 550 lbs/day, no modeling of localized CO concentrations would be required. Local mobile source impacts would be considered a less-than-significant impact.

4.2.7.4 Conformity with State Implementation Plans

The Clean Air Act Amendments of 1990 require federal agencies to ensure that their actions are consistent with the Clean Air Act and with federally enforceable air quality management plans (e.g. State Implementation Plan). The conformity assessment process is intended to ensure that federal agency actions occurring within nonattainment or maintenance areas: 1) will not cause or contribute to new violations of National Ambient Air Quality Standards (NAAQS); 2) will not increase the frequency or severity of any existing violations of ambient air quality standards; and 3) will not delay the timely attainment of ambient air quality standards. Pursuant to 40 CFR 51.853, no conformity determination is required for projects that do not exceed the following emissions levels: 50 tons per year (tpy) for ROG, 100 tpy for NO_x, and 100 tpy for CO.

As previously discussed, implementation of the Proposed Action would result in annual emissions of CO, NO_x, and VOC of less than 50 tons per year (tpy) for ROG, less than 100 tpy for NO_x, and less than 100 tpy for CO. Therefore, in accordance with 40 CFR Part 51, a conformity determination is not required for the Proposed Action. Consequently, total direct and indirect increases in emissions associated with the proposed action, including long-term operational emissions, are not anticipated to result in new violations of ambient air quality standards, contribute substantially to future violations of ambient air quality standards within the region, nor interfere with the future maintenance of ambient air quality standards.

4.2.7.5 Cumulative Impacts

The BAAQMD recommends that an analysis of a project's cumulative air quality impacts be based on the project's consistency with the projected emissions inventory contained in the air quality plan. The emissions inventory contained in the BAAQMD is based, in part, on projected increases in population and motor vehicle use derived from adopted land uses plans within the region. In accordance with the BAAQMD guidelines, a project would be deemed to have a significant cumulative impact if the proposed use, in comparison to previously adopted land use plans, would result in a long-term increase in regional operational emissions that would interfere with the maintenance or attainment of air quality standards. The *Golden Gate National Recreation Area and Point Reyes National Seashore General Management Plan* (GMP) is the comprehensive land use plan for the GGRNA, and contains the most recently approved plan pertaining to the management of Fort Baker.

In comparison to the approved GMP, the Proposed Action would result in approximately ½ of the daily projected vehicle trips, and ½ the number of parking spaces. Reduction in parking supply is considered an effective measure for reducing motor vehicle trips and related mobile sources air

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emissions (BAAQMD 1996). Consequently, the Proposed Action would result in minor increases in air pollutant emissions associated with the increased operation of motor vehicles as compared to the previously approved GMP (referred to as the “1980 GMP Alternative” in this EIS). Should future ferry service (a cumulative project) be provided, an additional reduction in motor vehicle trips and associated emissions would likely occur (GMP, 1980).

In addition, a cumulative impact could also occur if the proposed project would contribute to impacts to nearby sensitive receptors due to odorous, toxic, or hazardous emissions. (BAAQMD 1996). Because implementation of the Proposed Action would not include the construction or operation of any major sources of odorous, toxic, or hazardous pollutants, long-term cumulative impacts to nearby sensitive receptors would not be anticipated.

Implementation of the Proposed Action is anticipated to result in an overall decrease in projected long-term regional mobile-source emissions compared to the 1980 GMP, and, as such, the Proposed Action is not anticipated to conflict with the emissions inventory contained in the BAAQMD CAP. As described above in Section 4.2.7.1, construction emissions of ROG, NO_x, and CO are included in the emissions inventory that is the basis for regional air quality plans and, as a result, are not expected to conflict with the BAAQMD CAP. Furthermore, no long-term cumulative impacts to nearby sensitive receptors would result from implementation of the Proposed Action.

4.2.8 NOISE

This section discusses impacts related to both short- and long-term noise increases associated with the Proposed Action. The following methods were used to predict impacts:

- Review of existing land use data and noise regulations.
- Analysis of construction noise impacts based on compliance with applicable local noise ordinances.
- Analysis of traffic noise impacts using the FHWA Highway Noise Prediction Model.
- Analysis of stationary source noise impacts based on review of proposed uses and nearby sensitive receptors.

The following criteria were considered to assess the degree of impact. The Proposed Action would have a major (significant) impact if it would result in one or more of the following:

- The action would result in traffic noise exposure at noise sensitive receptors in excess of standards contained in 23 CFR 772 or, in those areas where traffic noise already exceeds applicable standards, the degree to which the Proposed Action would result in a noticeable traffic noise increase (i.e., 3 dBA or greater).
- The action would result in stationary source noise exposure at noise sensitive receptors in excess of applicable federal standards.

4.2.8.1 Short-Term Construction Noise Impacts

Construction activities associated with the Proposed Action would result in short-term noise increases associated with the operation of noise-generating construction equipment on the site. The U.S. Environmental Protection Agency has found that the noisiest equipment types operating at

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construction sites typically range from 88 dBA to 101 dBA at a distance of 50 feet. Table 4-7 presents noise levels typically generated by construction equipment.

Noise from localized point sources, such as construction equipment, typically decreases at a rate of about 6 dBA with each doubling of distance from the source. Assuming that pile driving, the loudest of all construction activities, occurs at the northernmost portion of the site, resultant short-term noise levels at the nearest offsite sensitive receptors would be less than 63 dBA. Noise levels from other types of construction equipment would be substantially lower—approximately 43 to 48 dBA—at the nearest offsite sensitive receptors. Noise levels at existing onsite sensitive receptors would be higher, with resultant noise levels varying depending upon where construction occurs on the site and the types of equipment used. Noise levels from most types of construction activities would not exceed background levels at the nearest onsite or offsite sensitive receptors and would likely be masked by existing traffic noise from Highway 101.

**Table 4-7
Construction Equipment Noise Levels**

Equipment Type	Noise Level At 50 Feet (dB)	
	Without Feasible Noise Control	With Feasible Noise Control
Earthmoving		
Front Loaders	79	75
Backhoes	85	75
Dozers	80	75
Tractors	80	75
Scrapers	88	80
Graders	85	75
Truck	91	75
Pavers	89	80
Material Handling		
Concrete Mixers	85	75
Concrete Pumps	82	75
Cranes	83	75
Stationary		
Pumps	76	75
Generators	78	75
Compressors	81	75
Impact		
Pile Drivers	101	95
Jack Hammers	88	75
Pneumatic Tools	86	80
Other		
Saws	78	75
Vibrators	76	75

¹ Estimated levels obtainable by selecting procedures or machines and implementing noise control features requiring no major redesign or extreme cost.

Source: U.S. Environmental Protection Agency, 1971.

During construction, contractors and other equipment operators would be required to comply with local noise ordinances. Noise-generating construction activities associated with the Proposed Action would not occur during times of the day in which such construction activities are prohibited under

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Marin County construction noise standards. Compliance with these measures would reduce short-term construction noise impacts to a less-than-significant level.

4.2.8.2 Long-Term Stationary Source Noise Impacts

No major stationary sources of noise would be associated with the Proposed Action. The Proposed Action would result in a minor increase in stationary source noise from the site (such as food services at the waterfront), because the number of visitors to the site would increase from existing conditions. However, noise levels at the nearest receptors due to proposed conference and retreat center uses are not expected to change perceptibly from existing levels. Event guidelines would be established to assure that events are small- to medium-sized, and that the location, frequency, duration and nature of events at Fort Baker are compatible with the quiet character of the site. Traffic on Highway 101 would remain the dominant noise source on and in the vicinity of the site. Therefore, no significant long-term stationary source impacts are expected.

4.2.8.3 Long-Term Traffic Noise Increases

The Proposed Action would result in increased traffic along roadways in the project vicinity. However, typically a doubling of traffic is required for there to be a noticeable (3 dBA or greater) increase in noise. As discussed in Section 4.2.6.2, in the Traffic and Circulation section, the vast majority (approximately 95%) of vehicular traffic associated with the Proposed Action would access the site from Alexander Avenue. To determine if traffic increases would result in significant mobile source noise impacts on land uses along Alexander Avenue, the Federal Highway Administration Highway Traffic Noise Prediction Model was used. As indicated in Table 4-8, the daily traffic volumes increases associated with the Proposed Action would not result in noticeable noise level increases (i.e., 3 dBA or greater) along Alexander Avenue.

**Table 4-8
Projected Traffic Noise—Existing Plus Proposed Action**

Roadway Segment	Distance From Roadway Centerline to CNEL (feet) ¹			L _{dn} at 50 Feet From Centerline of Near Travel Lane	Increase Over Existing Levels (dBA)
	70 dBA	65 dBA	60 dBA		
Alexander Avenue	<50 ²	<50	101	63.9	+1.0

¹ Does not consider any natural or manmade shielding effects between sources and receptors.

² Traffic noise levels within 50 feet of the roadway centerline require site-specific study.

Source: EDAW, 1998

Traffic volume increases on the internal road network might produce noise levels above background volumes. However, these increases would not substantially exceed existing noise levels. Therefore, the Proposed Action would result in less-than-significant traffic noise impacts.

4.2.8.4 Cumulative Impacts

Although located adjacent to US Highway 101 with noticeable highway traffic noise, Fort Baker provides areas with a secluded and quiet atmosphere. Fort Baker's natural quiet is provided in part by a decline in the activity at the site (following the 1995 base closure announcement), as well as the site's topography which provides shelter and noise attenuation. The heart of Fort Baker's developed area is located along the bottom of the valley, with US Highway 101 extending approximately 500 feet above.

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Implementation of the Proposed Action, by itself, is not anticipated to generate significant adverse noise impacts. Other projects that could contribute to cumulative noise effects at Fort Baker are described below.

The NPS is currently evaluating the potential to provide ferry service at Fort Baker. At this time, detailed information related to the physical design and operational characteristics of ferry service is not known and therefore a detailed analysis of the noise effects is not currently possible. For the purposes of this analysis, a general discussion of noise impacts is provided. A complete evaluation of these effects will be provided in accordance with NEPA, as detailed plans for ferry service at Fort Baker are proposed. (Refer to Appendix D for additional background.)

Noise generated by the provision of ferry service at Fort Baker would vary depending upon the frequency of trips and size of boats. All service would be provided from the existing fishing pier, which is located adjacent to the mouth of Horseshoe Bay. The pier is located approximately 2,000 feet from the waterfront area and Coast Guard Station, 2,800 feet from the BADM, and 4,000+ feet from the proposed retreat and conference center area. Noise associated with the arrival and departure of boats would be temporary, and would likely dissipate over the 2,000-4,000 feet between the pier and other uses at Fort Baker. Implementation of this use is not anticipated to expose sensitive receptors to noise levels that exceed applicable federal standard.

Ongoing construction activities associated with the Golden Gate Bridge seismic and wind retrofit project are anticipated to generate an increase in the existing Leq of approximately 3 to 12 dBA (when measured during peak traffic periods). This impact was fully evaluated, and mitigated, by the GGBHTD in their EA/IS and corresponding FONSI/ND for the project. No significant adverse noise impacts to sensitive receptors would occur as a result of this project. In addition, completion of the retrofit project should occur well before potential construction activities associated with the Proposed Action.

The California Department of Transportation (Caltrans) is proposing to upgrade and rehabilitate the existing Vista Point located at the northern terminus of the Golden Bridge, off of US Highway 101. The Vista Point is located above and adjacent to Fort Baker. Caltrans is currently preparing a detailed description of the project, and evaluating its effects in an EA/IS. The project is intended to facilitate existing demand and improve on-site aesthetics, and potential noise generated from this project would be associated with construction activities. All construction activities would be subject to mitigation measures similar to those used for the Golden Gate Bridge retrofit project, and would likely be complete before any potential construction at Fort Baker.

Cumulative traffic along US Highway 101 is expected to increase over the next 20 years. As a result, the traffic noise currently audible at Fort Baker would also continue to increase. Although the Proposed Action would not cause a significant adverse noise impact, it would contribute incrementally to the cumulative noise environment.

4.2.9 LAND USE AND COMMUNITY SERVICES

This section describes the impacts of the Proposed Action on land use, employment, minority and low-income communities, and public safety services in the Fort Baker area. The following methods were used to predict impacts:

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- Identification of proposed building and land uses at the site, the makeup of services to be provided, and the effects of new uses on population and employment.
- Quantification of changes in building use based on a building database identifying the 1998 use and square footage of each structure.
- Development of land use maps on a broader scale to represent overall use of the planning areas and to calculate acreage figures for the potential land uses.
- Review of relevant land use plans for possible conflicts between the Proposed Action and existing policies or controls.
- Calculating projections of employment opportunities and visitor spending.
- Evaluating the potential for disproportionate environmental, social, or economic effects on minority and low-income communities
- Estimating the impact on surrounding hotels.
- Review of preliminary analysis reports, engineering studies, and conceptual design documents.

The following criteria were considered to assess the degree of impact. An impact would be considered major (significant) if it would result in one of the following:

- The action is determined to be substantially inconsistent with relevant land use plans and policies developed for the protection of the environment.
- The action would require new construction or building removal that would substantially compromise the nature and character of the site.
- The action would generate a major negative economic impact on the surrounding community or hotels.
- The action would create disproportionately high or adverse human health or environmental effects on minority and low-income populations of the surrounding community
- The action would have a substantial adverse effect upon, existing fire protection services, security and police protection, or emergency medical services.

4.2.9.1 Consistency with Relevant Land Use Plans and Policies

NPS Management Policies. The Management Policies (NPS, 1988) is the basic servicewide policy document for the NPS. The following general NPS Management Policies related to natural and cultural resources, park planning and visitor use are particularly relevant to the Proposed Action:

The NPS would manage the natural resources of the national park system to maintain, rehabilitate, and perpetuate their inherent integrity (Natural Resource Management).

The NPS would seek to perpetuate native plant life as part of natural ecosystems (Landscapes and Plants).

Active management programs would be conducted as necessary to perpetuate the natural distribution and abundance of threatened or endangered species and the ecosystems on which they depend (Threatened or Endangered Plants and Animals).

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The NPS would preserve and foster appreciation of the cultural resources in its custody through appropriate programs of research, treatment, protection, and interpretation (Cultural Resources).

The NPS would conduct interpretive programs in all parks to instill an understanding and appreciation of the value of parks and their resources; to develop public support for preserving park resources; to provide the information necessary to ensure the successful adaptation of visitors to park environments; and to encourage and facilitate appropriate, safe, minimum-impact use of park resources (Park System Planning).

The NPS would encourage recreational activities that are consistent with applicable legislation, that promote visitor enjoyment of park resources through a direct association or relation to those resources, that are also consistent with the protection of resources, and that are compatible with other visitor uses (Recreational Activities).

Parking areas . . . would be located so as not to intrude, by sight or sound, on significant features (Parking Areas).

The Proposed Action is both consistent with and achieves the NPS Management Policies.

1980 GMP. The Proposed Action is consistent with the objectives of the 1980 GMP and provides more detail regarding plan implementation. The Proposed Action is also very similar to the approved concepts envisioned in the 1980 GMP, which was refined to reflect current knowledge of the resource values of the site. The primary differences include:

- Allowing reuse or replacement of the nonhistoric residences north of the Parade Ground for the conference center or other residential use rather than as a parking area for up to 700 cars (to minimize traffic and parking impacts at the site).
- Providing a more natural landscape treatment of the waterfront, emphasizing native vegetation with low maintenance requirements (to restore natural resources and achieve sustainability).

A comparison of the Proposed Action with the 1980 GMP as amended is provided in Table 4-9.

The 1980 GMP identified the Capehart area as a site for a 700-car parking lot to stage a shuttle to the Marin Headland, prohibiting cars from Rodeo Valley when the shuttle was in operation. Implementation of the Proposed Action would eliminate the possibility of creating such a system based from Fort Baker. Other possible locations for a parking lot exist, including the Capehart area on the west side of the Baker-Barry tunnel. The 1980 GMP proposed the removal of these structures to restore natural habitats. The housing area on the south side of Bunker Road has sufficient space to provide parking for a Marin Headlands shuttle in the future. The GGNRA is also working with Marin County to identify shuttle staging locations close to the Highway 1/101 Tam junction. This location, if implemented, would serve several Marin park destinations and could include service to the Marin Headlands. Because other options exist for future shuttle service to the Marin Headlands, potential adverse impacts of foreclosing the Capehart area as a 700-car parking lot are minimal.

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Presidio General Management Plan Amendment. The GMPA for the Presidio (NPS, 1994) amended the 1980 GMP for the GGNRA to include the Presidio. The GMPA is a planning guide that sets forth the basic management philosophy for the Presidio and identified strategies for addressing issues and achieving management objectives. Fort Scott is one of the 13 planning areas of the Presidio. The concepts for Fort Scott as a conference, training and applied research center and associated actions are similar to those of the Proposed Action:

Because of its impressive architecture, strong sense of unity, and tranquil setting, Fort Scott is uniquely suited for conference, training, and applied research activities. Activities here would focus on learning and sharing knowledge about major environmental and societal challenges and their solutions.

**Table 4-9
Comparison of the Proposed Action with the 1980 GMP by Planning Area**

Planning Area	Proposed Action	1980 GMP as Amended
Parade Ground and Capehart Area	Conference and retreat center with up to 350 rooms created in a combination of rehabilitated historic buildings and Capehart buildings and new construction. Developed and operated by private entity.	Adaptive use of 19 historic buildings as conference center, hostel and arts facility. Capehart structures removed, 700-car parking lot constructed.
Bay Area Discovery Museum and Coast Guard Station	BADM expanded into several adjacent historic buildings and new building constructed, small addition to Coast Guard facility, additional parking provided.	No expansion.
Marina/Historic Boat Shop	Historic boat shop converted to public activity center, with food service, marina available for short-term/overnight public use.	Historic boat shop converted to food service facility, marina used for short term public moorings.
Other Historic Buildings	NPS visitor center, maintenance facility and other NPS or park partner needs.	NPS visitor center and other NPS needs.
Waterfront/Fishing Pier	Similar to 1980 GMP except for more natural, less urban treatment of waterfront.	Bulkhead and riprap removed, beach created, road along bulkhead removed, area landscaped, picnic area added, fishing pier improved, boat ramp retained.
Open Space, Natural Habitats, Roads and Trails	Expansion of mission blue butterfly habitat.	Environmental Study Area.
Total Peak Daily Visitation/ Parking Spaces/Daily Traffic	2,700 / 895 / 2,266	4,000 / 1,632 / 4,783

The economic analyses for Fort Baker concluded that reuse of the site for a conference and retreat center would complement Fort Scott since the Bay Area, in addition to the west coast as a whole, is sufficiently underserved in meeting facilities to warrant the development of conference centers at both sites.

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San Francisco Bay Plan. The BCDC is a permitting authority established by the state in 1965 to review proposals within its jurisdiction, which is eastward from the Golden Gate and 100 feet inland from the highest tide. The agency is concerned with actions that affect public access, potential wetland reclamation, dredging, or other actions associated with shoreline development at Fort Baker. The *San Francisco Bay Plan*, amended in 1986 by the BCDC, calls for the shoreline and undeveloped areas of Fort Baker to be retained for park uses. Commission policies suggest preservation and protection of its rugged character, and limitations on access to water (at Horseshoe Bay) to foot trails only. The Bay Plan further recommends no commercial uses along the site's water area and shoreline except for convenience needs of park visitors. The Proposed Action was developed to be consistent with the *San Francisco Bay Plan*.

Marin Countywide Plan. Although under exclusive federal jurisdiction, the NPS has sought to reduce possible conflicts between NPS mandates and California State and Marin County policies and would continue to consult with interested agencies to achieve consistency wherever possible. In general, policies and objectives for proposed uses and site improvements are consistent with the policies in the *Marin Countywide Plan* (adopted January 1994). No site-specific plans have been developed by the County for the Fort Baker site. The Countywide Plan recommends that the GGNRA be retained in its natural state to the greatest extent possible, and that recreational uses are low intensity (Program EQ-4.7a). Fort Baker is located in the "City-Centered Corridor" along Highway 101 and adjacent to the bay. The corridor is designated for concentrated urban development and for protection of designated environmental resources. Policies for the corridor encourage land uses that preserve the dramatic viewsheds and coastal habitats, and conform to applicable federal and state regulations.

Sausalito General Plan. The Proposed Action is consistent with the *Sausalito General Plan* (1995) policy to "promote the continued recreational and education uses and preservation of existing facilities in Fort Baker" (Policy LU-6.10). As encouraged by its land use program (LU-6.10.3), the NPS would continue to coordinate with the city in developing and enacting land use policies as identified in the 1980 GMP for the site.

4.2.9.2 Potential Impacts due to Building Removal and New Construction

Under the Proposed Action, building removal and new construction would provide increased opportunities for public engagement and programming. Intensive uses would remain within the existing developed area. Currently, total square footage in all buildings at Fort Baker totals 320,000 square feet (sf). Maximum total building removal would amount to 71,000 sf. Maximum net new construction would total 85,000 sf. A breakdown of the total proposed maximum building square footage by planning area is shown in Table 4-10.

The proposed rehabilitation, demolition and new construction would be accommodated within the existing developed footprint of Fort Baker and be required to maintain the site's character. Refer to Sections 4.2.5 and 4.2.10.1 for further discussion of the effects on the cultural landscape and visual resources, and Sections 2.6.5 and 2.6.8 for relevant mitigation measures. No adverse land use impacts due to building removal or new construction are expected.

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Table 4-10
Maximum Building Space by Planning Area¹
(square feet)

Use Category	Area 1: Parade Ground/ Other Historic Buildings	Area 2: Capehart Area	Area 3: Waterfront/ Fishing Pier	Area 3: BADM and Coast Guard Station	Area 4: Marina/ Historic Boat Shop	Area 5: Open Space, Natural Habitats, Roads and Trails	Total
Reuse	163,000	4,300	0	51,000	9,100	25,600	253,000
Demolition	2,000	47,000	4,100	0	1,200	16,600	71,000
New Construction							
Conference	20,000	0	0	0	0	0	20,000
Restaurant	8,000	0	0	0	0	0	8,000
Rooms	2,400	99,000	0	0	0	0	101,400
BADM	0	0	0	25,000	0	0	25,000
USCG	0	0	0	1,500	0	0	1,500
Net Change							+ 85,000

¹Refer to Figure 2-1 for a map of planning areas.

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4.2.9.3 Potential Economic Benefits due to Employment Opportunities and Visitor Spending

The following impacts are further described in a letter report summarizing the potential economic benefits of the Proposed Action at the maximum size of the conference and retreat center (Sedway Group, 1998). These benefits include the direct economic benefit of both one-time construction-related and permanent employment opportunities, and the indirect economic benefit of visitor spending in Marin County.

One-time Employment Generation. The building and construction activities of the conference and retreat center and infrastructure would generate beneficial employment impacts during implementation of the Proposed Action, which is estimated to take place over a 12-month period. Construction activities are anticipated to generate between 370 to 430 direct, full-time equivalent jobs. In addition, employment opportunities generated directly by project construction would in turn spur indirect and induced employment opportunities to support the increased economic activities. This multiplier effect is anticipated to continue generating new jobs throughout the renovation and development of the conference and retreat center.

Permanent Employment Generation. The conference and retreat center would require a maximum of approximately 350 full-time employees. Employment opportunities would be available to Marin County residents, including neighboring Marin City residents. In addition to the direct employment benefits, economic activity and employment generated by the Proposed Action would stimulate demand for additional businesses and employment in the Bay Area. Based on figures developed by the Association of Bay Area Governments, it is estimated that an additional 350 full-time jobs would be generated in the Bay Area. These jobs are indirect jobs, and would be attributable to the recycling of employee wages in the local economy.

Aggregate Wages. Annual aggregate wages earned by employees of the conference and retreat center are projected to total \$8.2 million. Aggregate one-time construction wages are estimated at \$28.6 million to \$33.8 million.

Visitor Spending. The visitors to the conference and retreat center would generate beneficial economic activity in the surrounding area, providing opportunities for southern Marin County retailers and restaurants to capture a major share of expenditures. Based on average tourist spending in San Francisco as reported by the San Francisco Convention & Visitors Bureau, patrons of the retreat and conference center are projected to spend approximately \$12 million annually on retail purchases, food and beverages, and sightseeing and tourist activities. A significant portion of this retail spending could potentially be captured by southern Marin County restaurants and retail establishments, especially those in close proximity to Fort Baker, such as Sausalito and Tiburon. A portion of this tourist spending would likely also be captured by the many tourist-oriented attractions and establishments in San Francisco.

The direct economic benefit of both one-time construction-related and permanent employment opportunities, and the indirect economic benefit of visitor spending in Marin County are considered to be beneficial impacts.

4.2.9.4 Potential Effects on Minority and Low-Income Communities

Under Executive Order No. 12898 (Environmental Justice), federal agency analysis of actions under NEPA must include evaluation of the potential for disproportionate environmental, social, or economic effects on minority and low-income communities. Implementation of the Proposed Action

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would not create disproportionately high or adverse human health or environmental effects on minority and low-income populations of the surrounding community, but rather, would expand recreational and educational opportunities for these communities as well as for the general population. Changes to employment and income are expected to affect all segments of the population equally and would not disproportionately affect minority and low-income populations. (Refer to Section 3.9.2 for background information on demographics.)

4.2.9.5 Potential Effects on Surrounding Hotels

The following discussion is based on an examination of the Proposed Action's potential impact on surrounding hotels (Sedway Group, 1998).

Development of the conference and retreat center could potentially generate a positive economic impact, specifically for Sausalito hotels. It is likely that the conference and retreat center would attract several large-scale conferences per year, where the number of attendees would exceed the number of available rooms at Fort Baker. During these conferences, the conference and retreat center would refer attendees to neighboring hotels. Because of their proximity, Sausalito and other southern Marin hotels would likely benefit from the increased demand generated by the conference and retreat center. In addition, the conference and retreat center's significant meeting capacity could potentially benefit southern Marin area hotels seeking to expand their business-related market. Smaller groups seeking the intimate venue of a smaller inn could lodge at the Sausalito hotels, and book meetings at Fort Baker.

The spin-off effects attributable to potential overflow demand for accommodations generated by large conferences, and opportunities for hotels to expand their business-related markets due to potential day use meeting facilities at Fort Baker are considered to be beneficial impacts.

4.2.9.6 Effects on Fire Services

Fire protection services at Fort Baker would be provided by the NPS. The NPS Fire Department would be responsible for providing fire inspection, enforcement of national fire codes, tenant consultation on fire safety issues, and fire education programs. Personnel at Fire Station 2 at Fort Cronkhite in the Marin Headlands would be organized to efficiently combat fires, including saving lives, controlling fires and limiting their spread, and protecting property from fire-related hazards. The NPS Fire Department would also be responsible for managing hazardous material emergencies and for limiting the risks to surrounding areas from the storage, use, transportation, and disposal of hazardous material. The NPS Fire Department would maintain its formal mutual aid agreement with the City of Sausalito Fire Department.

The NPS Fire Department would inspect all buildings within Fort Baker. The fire inspectors would review and approve design and construction documents, inspect construction in progress, and provide life safety inspection of subsequent occupancy. Occupancy loads for public assembly areas would be established and standards would be enforced.

All new construction, and existing historic and nonhistoric buildings undergoing major rehabilitations or alterations would require sprinkler and/or fire alarm systems. No negative effects are anticipated.

4.2.9.7 Effects on Security and Police Protection

Proposed law enforcement services at Fort Baker and in the park are expected to be sufficient to control criminal activity. Fort Baker would be staffed with full-time law enforcement personnel to

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provide traffic control and enforcement, criminal investigation, crowd control, targeted patrol, speed enforcement, and routine uniformed patrol. Security would be provided primarily by the U.S. Park Police. NPS Rangers would be available as additional support for the basic urban police commitment by the Park Police.

The park's physical security manager would review all rehabilitation plans. All exterior plans would be approved by the physical security specialist. Areas of concern are lighting and landscaping. All facilities would be accessible to responding emergency crews 24 hours a day.

For special events, NPS Western Region has an all-risk management team and three specially trained special event teams, of 10 members each, which would be available to assist Fort Baker for any special events or unusual law enforcement situations. Other regions within the NPS have similar capabilities, and Fort Baker would utilize those resources as well. No negative effects are anticipated.

4.2.9.8 Effects on Emergency Medical Services

The NPS Fire Department would provide primary search and rescue services and emergency medical services, including basic and advanced life support and hospital transportation for victims. Fire station personnel would provide ambulance service to local hospitals for additional care, if needed, with backup furnished by the Southern Marin Emergency Medical Paramedic System. Mutual aid response agreements would continue with the City of Sausalito Fire Department for disaster preparedness activities and responses. No negative effects are anticipated.

4.2.9.9 Cumulative Impacts

Because of the potential for increased attractiveness and new land uses at the site to visitors, the Proposed Action would have a minor but positive cumulative effect on local and regional employment and income. Resident, employee, and visitor expenditures at Fort Baker would contribute a small percentage to the local and regional economies. Improvements at Fort Baker combined with other park facility improvements could potentially increase demand for local hotels.

As exclusive federal jurisdiction, the National Park Service will be responsible for all community services at Fort Baker including fire, security and police and emergency and medical services. The NPS is currently working with the Marin County Department of Communications to ensure that first response for emergency and fire calls are dispatched directly to the NPS. Historically, calls have been directly dispatched to non-NPS entities (i.e., Sausalito Fire Department). Implementation of this change in the communication dispatch is expected to occur within the next year, and would be in effect well before the anticipated transfer date of July 2001. Although the NPS intends to maintain existing mutual aid agreements with outside service purveyors, the modification to the Marin County Communication dispatch procedures should result in a cumulative reduction in the total number of response calls to non-NPS entities.

4.2.10 VISUAL AND AESTHETIC RESOURCES

This section discusses the impacts of the Proposed Action on important visual and aesthetic resources in the Fort Baker area, on viewers that use or pass through the site, and on natural darkness and related qualities. The following methods were used to predict impacts:

- Identification of the existing visual character and quality of the site and surrounding region from key viewing locations.

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- Assessment of alterations in views of or from the site, and in natural quiet, darkness and related qualities.

The following criteria were considered to assess the degree of impact. An impact would be considered major (significant) if one of the following occur:

- The Proposed Action would alter the character and views of the site, both from within and outside the site, as well as views of the surrounding area from the site.
- The Proposed Action would create a new source of substantial light which would adversely affect nighttime darkness.

4.2.10.1 Preservation of Character of Fort Baker

Increased activity levels, especially in the conference and retreat center and the waterfront, including the BADM complex could change the feeling of Fort Baker as an undiscovered site. However, the Proposed Action would provide for maximum protection of the site's cultural and natural resources to protect the intangible qualities that contribute to its special character. Many of its deteriorated landscape features would be enhanced or restored. In general, landscape and building changes would be in keeping with the historic character of the site. Intensive uses would remain in areas where they currently occur (waterfront, BADM and Parade Ground/Capehart areas) or would take place indoors (conference and retreat center). Guidelines would control compatibility of events held at Fort Baker. Preservation of the character of Fort Baker is considered a beneficial impact.

4.2.10.2 Enhancement of Views within Fort Baker

The Proposed Action includes the removal of visually distractive elements, such as deteriorated surfaces, nonhistoric structures, and asphalt paving. These site changes, as well as the creation of the beach and the restoration of the Parade Ground, would substantially enhance existing views by improving the park- and campus-like character and revealing the historic nature of the site. At the same time, it would open up new and historic views within the site. The potential removal of up to 27 nonhistoric structures within the Capehart housing area, which contrasts sharply with its surroundings, would improve views from several vantage points within Fort Baker. Short-term visual impacts would occur during structure removal and before vegetation. Replacement construction would be reviewed for compatibility with the cultural landscape. All new buildings, additions, and landscape features would be designed and sited to harmonize with their visual and cultural settings.

Historic vistas would be re-established by selective clearing and removal of nonnative plant materials that currently obstruct views within the site. Areas of vegetation that might be cleared are the former hospital complex and near Battery Duncan. In large areas where exotic vegetation is removed for native habitat restoration, there would be a temporary reduction in visual quality. Habitat restoration involving tree removal would be carried out in phases to minimize adverse visual impacts.

The historic extent of the tree plantings around the Parade Ground would be determined to achieve the design that was originally planned. The historic extent of Monterey cypress and eucalyptus windbreaks would be determined to achieve the degree of mass originally intended. Nonhistoric understory growth would be cleared. Murray Circle, which was once lined on both sides with trees that have long since been removed, would be reestablished with trees similar in form and habit to the original plantings to enhance the visual qualities of this area. Removing parking along Canter Road would restore the historic view between the Parade Ground and the waterfront. Improving the shoreline, and providing new facilities, such as picnic areas, the boardwalk, and interpretive areas

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within the restored beach area would substantially enhance the visual character of and viewing opportunities within the site for visitors.

Scenic viewing locations would be provided or improved along East Road, the cliffs and batteries, and Lime Point Trail. Directional signs and trail signs, Fort Baker orientation maps and outdoor wayside exhibits would be appropriately placed to help direct and inform visitors to the site. Site design detailing and landscaping would improve the site's scenic qualities.

This impact is considered beneficial because new high-quality views within the site would be provided.

4.2.10.3 Enhancement of Views towards Fort Baker

The Proposed Action would also substantially enhance views of Fort Baker from surrounding offsite viewing locations, including the Golden Gate Bridge and the overlook between the bridge and the site. Tree removal and revegetation with native plants, and building removal would cause short-term visual impacts. In the long term, however, scenic vistas would be re-established and scenic viewing of Fort Baker would improve. Careful design and siting would integrate new construction to ensure compatibility with the cultural and visual setting and preservation of scenic views. New parking would be screened from view by adjacent landforms, buildings, and vegetation. Removal of Sommerville Road, nonhistoric buildings, and the wooden bulkhead and re-establishment of a beach would help to visually link Fort Baker and the bay by creating a smooth and more natural transition of open space. This impact is considered beneficial because regional views toward Fort Baker would be restored.

4.2.10.4 Enhancement of Views from Fort Baker

The Proposed Action would also substantially enhance the expansive quality of views from Fort Baker of the surrounding areas, including such regional landmarks as the Golden Gate Bridge, the Presidio, the bay, and much of San Francisco's skyline. Views toward the shoreline from locations in the interior of the site, such as the Parade Ground, would be enhanced and opened up through removal of vegetation and nonhistoric buildings that currently obstruct views. Reconfiguration of and improvements to the shoreline would increase visitor opportunities to view the bay and its scenic resources from Fort Baker. This impact is considered beneficial because views out to the surrounding areas would be enhanced.

4.2.10.5 Impacts on Natural Darkness due to Increased Lighting

Increased lighting for safety of visitors at night would have an impact on natural darkness and related qualities. Mitigation measures would be incorporated into the Plan to protect natural darkness making this a minor impact. These measures would include limiting new outdoor lighting to areas required for safety, and keeping lighting low to the ground and as muted as possible.

4.2.10.6 Cumulative Impacts

Fort Baker and the adjacent Marin Headlands provide a striking and rugged backdrop against the highly urbanized San Francisco peninsula and surrounding Bay Area. The visual prominence and importance of this area to the regional landscape is substantial. Implementation of the Proposed Action would provide for the long-term protection and enhancement of Fort Baker's character by preserving and restoring historic buildings and the cultural landscape. Removal of existing parking at the waterfront, and restoration of this area to beach and grassy area would improve views from the Parade Ground towards the Bay as well as views from off-site. Ongoing resource management

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actions such as habitat restoration projects and other site stewardship programs within the Headlands, and in other visually prominent areas (i.e., Crissy Field restoration) would have a positive effect on scenic vistas and views within the region. Implementation of the Proposed Action, in combination with these other programs and actions would have a cumulative beneficial effect.

4.2.11 RECREATION AND VISITOR ENJOYMENT

This section discusses the impacts of the Proposed Action on visitor facilities, recreational use patterns and visitation levels at Fort Baker. The following methods were used to predict impacts:

- Field study of visitor and recreational use patterns at the site.
- Review of visitation levels for Fort Baker as estimated in the 1980 GMP.
- Quantification of maximum visitation levels based on estimated visitor attendance at existing and proposed facilities.

The following criteria were considered to assess the degree of impact. An impact would be considered major (significant) if it would:

- Increase recreational opportunities, use patterns and visitation levels to the extent of compromising the nature and character of the site or causing substantial physical damage to it, and/or
- Substantially remove, displace, or compromise existing opportunities for public recreation.

4.2.11.1 Construction/Improvement of Visitor Facilities

The wide range of planned activities associated with the Proposed Action would substantially increase the recreational, cultural, and educational opportunities available to visitors (Table 4-11). The new recreational activities, educational and interpretive programs, and visitor services would be provided primarily through use of existing facilities and structures. Visitor facility improvements would include removing excess pavement; providing additional picnic facilities; and constructing new restrooms, drinking fountains, bicycle racks, and benches. All facilities would meet ADA accessibility standards.

A network of pathways would link buildings and outdoor spaces. Improvements to trails, including the San Francisco Bay Trail, and road closures, such as Conzelman Road, would be designed and constructed to improve bicycle and pedestrian circulation, and connect the Fort Baker trail system to the existing regional network. Additional interpretation would be provided at appropriate locations for hikers and visitors interested in nature study.

Table 4-11
Retained, Expanded and New Activities at Fort Baker under the Proposed Action

Activity	Present Use	Retained	Expanded	New Activity
Informal field sports	✓	✓		
Bicycling	✓		✓	
Dog walking	✓	✓		
Jogging/running	✓		✓	
Hiking/walking	✓		✓	

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**Table 4-11
Retained, Expanded and New Activities at Fort Baker under the Proposed Action**

Activity	Present Use	Retained	Expanded	New Activity
Picnicking	✓		✓	
Fishing/crabbing	✓		✓	
Marina's long-term member boat mooring	✓			
Marina's short-term public boat mooring				✓
Kayaking/outrigger canoeing	✓	✓		
Boat launching	✓	✓		
Wind surfing	✓	✓		
Beach access	✓		✓	
Food service				✓
Conferences/seminars/retreats				✓
Environmental stewardship	✓		✓	
Environmental education	✓		✓	
Special events	✓		✓	
Interpretation/information	✓		✓	

The shoreline would be enhanced by providing facilities at the fishing pier and by restoring a riprap-free beach area. A boardwalk would be constructed to direct pedestrian access and provide handicapped access to the restored beach. Picnic facilities would be constructed in a wind-sheltered area along the southern end of the site. The boat launch and launching areas for kayaks and outrigger canoes would be retained, and short-term staging for unloading boats and equipment would be provided close to the ramp.

Parking which occurs in a somewhat random manner at the waterfront would be more controlled in the future. This would benefit users by creating larger pedestrian zones and improving safety especially in the waterfront area. Proposed parking would be less convenient for waterfront users who are accustomed to ample parking immediately adjacent to the bulkhead.

First-time visitors and tourists would benefit from the establishment of the visitor information center, which would provide orientation to the diverse recreational opportunities on the site and in the park. Provision of these amenities is considered a beneficial effect because it would improve the quality of facilities at Fort Baker for recreationists.

4.2.11.2 Displacement of Current Users due to Changes at the Marina

The existing marina would be converted from a private, long-term (membership-based) facility to a public, short-term (day use/overnight) facility. The public facility would accommodate up to 60 general recreation craft through a combination of slips and moorings. Slips would be made available for use by the NPS and Coast Guard programs. Short-term moorings and slips would provide recreational opportunities for both out-of-town and local visitors. However, current Presidio Yacht Club members who depend on the marina for long-term storage of their boats would be required to find alternative facilities.

Alternative facilities at comparable rates to those currently sponsored by Travis Air Force Base (AFB) and member volunteer maintenance efforts (which keep rates low) will likely be difficult to find in a

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similar location. Many of the long-term facilities in desirable locations are full. There is, however, a surplus of space located at outlying locations, including Vallejo, Richmond, and San Leandro.

The displacement of current users would represent a loss of the long-term, private marina boat facilities, the membership privileges of the PYC members and other military users who benefit from the current lease with the Army, and the intangible value of the community of Presidio Yacht Club members that has grown over the years that the club has existed at Fort Baker under military sponsorship. Under the management of the National Park Service, the marina would be converted to a public (non-membership-based) facility. As discussed in Section 2.2.3, the NPS will continue to work with the Presidio Yacht Club and their military sponsor (Travis AFB) to identify opportunities for the club and its members to remain involved in the public marina. Although the Proposed Action would create a new public marina, removal of the private marina and its impact on displaced Presidio Yacht Club users is considered adverse.

4.2.11.3 Effects of Increased Numbers of Visitors on Visitor Experience

Visitor use numbers would increase under the Proposed Action due to site improvements, new public facilities and increased awareness of Fort Baker as a national park area following implementation of the Plan. Peak visitation levels for the Proposed Action are compared with those based on the 1980 GMP in Table 4-12. These numbers represent the maximum numbers projected for every facility and planning area, including open space areas, if all reached this level at the same time.

**Table 4-12
Comparison of Maximum Daily Visitation during Peak Periods under
the Proposed Action with the 1980 GMP^a**

Planning Area	Projected in Proposed Action (Number of Daily Visitors)	Projected in 1980 GMP (Number of Daily Visitors)
Parade Ground and Capehart Area / Other Historic Buildings	581	1,958
BADM and Coast Guard Station	1,003	683
Marina / Historic Boat Shop	125	125
Waterfront / Fishing Pier	1,000	1,248
Total	2,709	4,014

^aMaximum visitation levels are based on the estimated attendance at the existing and proposed facilities during peak weekends; does not include employees (Wilbur Smith Associates, 1998).

Based on current visitation patterns elsewhere in the park, peak park use would occur primarily on good weather weekend days. Feelings of overcrowding may occur at peak use times, especially in the BADM/waterfront zone, as a result of the Proposed Action. Visitors seeking solitude or lower density recreation would continue to be able to find these experiences at Fort Baker in the less developed areas of the site or by avoiding peak use times. Projected peak visitation under the Proposed Action is less than that in the 1980 GMP and is protective of the character of the site. As the Proposed Action is implemented, management actions could be taken if onsite monitoring determines that visitation levels exceed desired conditions.

4.2.11.4 Temporary Loss of Recreational Use/Access during Construction

During the construction period, access to and use of the site would be disrupted by grading activities, construction of facilities, and revegetation. Because detours and temporary parking areas would be

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provided to ensure that as much of the site as possible would remain accessible, this is a minor and temporary inconvenience.

4.2.11.5 Cumulative Impacts

Fort Baker is a site of historic, natural, recreational and aesthetic importance at the heart of the Golden Gate National Recreation Area. Conversion of Fort Baker from a military installation to a unit of the National Park System would have an important beneficial effect on existing recreational resources for both Bay Area residents and visitors alike. The Proposed Action would provide open space, interpretive, educational, and recreational facilities including a new public marina, restored beach and picnic area, extension of the San Francisco Bay Trail, additional programs at the Bay Area Discovery Museum, and other opportunities for the public to enjoy Fort Baker. The Proposed Action would also create a new public (short-term use) marina, and displace the existing private (long-term storage) marina. A discussion of other projects that may have a cumulative impact on recreation is provided below.

In a future planning effort with separate environmental analysis, the NPS plans to develop a detailed multidisciplinary plan for the preservation and interpretation of Battery Cavallo. The site has been closed to the public for a number of years in order to protect both the historic and natural resources. Among the plan objectives is to provide for public use and enjoyment of the area. Other objectives relate to the preservation of historic and natural resources. Although the Plan has not been completed, any recreational and interpretative opportunities provided at the Battery would represent an improvement over existing conditions and would likely be considered beneficial.

As part of the Golden Gate Bridge seismic and wind retrofit project currently under construction (refer to Appendix D for additional detail), restricted use of Conzelman Road by bicyclists, pedestrian, and vehicles has been implemented to protect public safety. These restrictions are temporary, and Conzelman would be returned for use by bicyclists and pedestrians (and vehicles during peak traffic conditions) under the Proposed Action.

In addition to the above cumulative projects, the Marin Headlands provide a wealth of passive and active recreational opportunities for the public. Opportunities for biking, hiking, nature walks, beach access, and formal programs including those offered by the YMCA, Headlands Institute, Headlands Art Center, Marine Mammal Center, American Youth Hostel, and other park partners, provide important public benefits.

Implementation of the Proposed Action, the Battery Cavallo preservation and interpretation plan, and ongoing recreational opportunities and programs at the Headlands and Fort Baker (existing BADM) would have a beneficial cumulative effect on existing recreational resources.

4.2.12 INFRASTRUCTURE

This section describes the impacts of the Proposed Action on utility systems at Fort Baker, including water supply and distribution, wastewater collection and treatment, stormwater drainage and energy systems. Information for the impact analysis was obtained primarily from the *Fort Baker Sustainable Infrastructure Plan* (Esherick Homsey Dodge & Davis, 1998). The following methods were used to predict impacts:

- Review of preliminary analysis reports, engineering studies, and conceptual design documents.

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- Discussions with the NPS Fort Baker planning team.
- Completion of a site survey. No detailed engineering studies, computer model simulations, field calibrations, or sampling programs were undertaken.

The following criteria were considered to assess the degree of impact. An impact would be considered major (significant) if one or more of the following occurs:

- The action would result in a need for new systems, supplies or substantial alterations, the construction of which could cause significant environmental effects.
- The action would result in insufficient supplies or inadequate capacities to serve projected demands or needs.

4.2.12.1 Water Supply and Distribution

The anticipated demands of the Proposed Action would not exceed the future design capacity of the water distribution system. Repairs may be required to the existing system to replace deteriorated or damaged portions of the system. Historic buildings at Fort Baker would be sprinklered. Backflow preventers, post-indicator valves and fire department connections on the new fire lines connecting the building fire protection systems to the existing water distribution mains would also be installed. Conservation strategies would be employed as discussed in Section 2.

It is anticipated that due to the historical character of the Parade Ground, it would most likely require irrigation. Other areas to be irrigated would be minimized through careful selection of drought-tolerant species. Where irrigation systems would be installed, they would be drip systems with soil moisture sensors to prevent use when there is adequate water present.

Leak detection surveys would be conducted every five years to ensure there are no significant losses occurring. New meters would be installed at the various buildings; each tenant at the site would have their water metered separately. This would encourage conservation by implementing a pay-per-use system.

Repair and rehabilitation of the water supply and distribution is considered to be a beneficial impact.

4.2.12.2 Wastewater Collection and Treatment

Additional wastewater flow would be generated by the Proposed Action as a result of the addition of the conference and retreat center and the expansion of the Bay Area Discovery Museum (BADM). The U.S. Coast Guard (USCG) would also have a small 1,500 square foot expansion. The average dry weather wastewater flow calculated for these uses would range between 48,400 and 59,000 gallons per day, based upon a maximum of 350 rooms at the conference/retreat center. In order to calculate the additional wastewater flow, standard wastewater flow factors were used. Estimates were generated applying the flow factors to the planned new and expanded facilities, including the maximum proposed number of hotel/retreat rooms, expanded conference/meeting room space at the retreat center, and expanded space proposed at the BADM and USCG. The following table reflects the breakdown of flows for the various uses. As described in Section 3.12.2, wastewater treatment and disposal services at Fort Baker are provided by the Sausalito-Marin City Sanitary District (SMCSD) at the existing plant. Currently, the wastewater treatment plant has approximately 300,000 gpd (ADWF) of excess capacity. Based on consultation with the SMCSD, the demand generated by the Proposed Action would be well within the capacity of the existing treatment plant (Douglas

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Humphrey, General Manager, personal communication 2/2/99), and would be considered a minor impact.

Infiltration and inflow of rainwater and groundwater into the sewer system would be reduced through improvements identified in Section 2.6.10, including the replacement of approximately 1,300 feet of existing sewer lines. Alternative strategies for wastewater management at Fort Baker would also be explored. The repair and rehabilitation of the wastewater collection system is considered to be a beneficial impact.

**Table 4-13
Projected Wastewater Flows, Proposed Action (Average Dry Weather Flows)**

Type of Use	Wastewater Factor	Gallons per Day (gpd)
Conference/Retreat Center		
Hotel rooms (350)	50 gpd per room	17,000
Meeting rooms (10,000 s.f.)	50 gpd per 100 s.f.	10,000
Dining rooms (8,000 s.f.)	50 gpd per 50 s.f.	8,000
Bay Area Discovery Museum		
Exhibit/offices (35,000 s.f.)	50 gpd per 100 s.f.	17,500
U.S.C.G.		
Offices/storage	20 gpd per 100 s.f.	750
Total		53,750
Range (+10%/-10%)		48,400 - 59,100

4.2.12.3 Stormwater Drainage

The Proposed Action would address deficiencies in the existing stormwater system. Wherever possible, pavement would be removed and replaced with landscaping to increase pervious surfaces and groundwater recharge. However, to the degree that new development creates runoff (from new impervious surfaces associated with parking areas and structures), additional capacity or onsite storage would be required.

Strategies of reducing impervious area and treating runoff in the landscape would be investigated to reduce peak flow to minimize upgrades and new construction. Any new construction would not de-water natural areas. Minimizing impervious areas would reduce overall runoff, and other strategies would treat what runoff remains.

Removal of the bulkhead would require modification of the storm drain outfalls, as well as all other infrastructure that would conflict with the proposed restoration of the beach. Storm drain outfalls would be directed around the beach. The meadow behind the beach would be graded in such a way as to act as a temporary stormwater retention area to decrease the flow of runoff during storms into the system.

The repair and rehabilitation of the stormwater drainage system is considered to be a beneficial impact.

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4.2.12.4 Energy Systems

In accordance with the energy conservation requirements of Executive Orders 11912 and 12003, the Proposed Action would provide for an aggressive energy conservation program. Many of the strategies contained in the *Fort Baker Sustainable Infrastructure Plan* related to energy efficiency would be adopted. Electrical loads would be reduced by making improvements to the building envelopes, mechanical and electrical systems. Roof and floor insulation, and radiant barriers would reduce heating energy use by 10%. New buildings would be designed with energy-efficient building materials, lighting and mechanical systems to reduce projected annual energy use to 35% below standard Title 24 building requirements.

Electricity would be obtained from a grid connection. Negotiations would be conducted with various power suppliers to provide optimal rates, appropriate services, and a percentage of renewable energy. Feasibility of an onsite photovoltaic system to supplement grid-supplied electricity during peak periods would be assessed. Panels could be placed so they are shielded from view or aesthetically acceptable (on acceptable roofs, on carport structures in the parking lots, pole-mounted in acceptable locations or as an integral glazing in atriums).

Lighting would account for a large percentage of energy use and has a significant potential for savings. Daylighting strategies with photosensors would be employed. Occupancy sensors and other lighting control systems would be utilized. Efficient lighting sources would be used, which would limit incandescent sources.

The smaller loads would result in a downsized, lower cost infrastructure as well as reduced energy costs. In addition, the ongoing energy costs savings would lower life cycle costs.

The repair and rehabilitation of energy systems is considered to be a beneficial impact.

4.2.12.5 Cumulative Impacts

As described above, the Proposed Action would not create a significant adverse impact on existing water, sewer, stormwater, or energy systems and would primarily have beneficial effects on existing infrastructure. The only effect identified as having an impact (which is considered minor) is associated with wastewater treatment services. The focus of the cumulative analysis is therefore on wastewater treatment.

Wastewater treatment service at Fort Baker is provided by the Sausalito-Marin City Sanitary District (SMCSD). The SMCSD serves the cities of Sausalito and Marin City, the Tamalpais Community Services District, and lands within the GGRNA including Fort Baker and the Marin Headlands. Based on consultation with the SMCSD, there are two foreseeable projects that could have a cumulative effect, when considered with the Proposed Action, on the wastewater treatment plant. Both projects are residential developments: one pre-application (Marin Woods project – 23 dwelling units); and one proposed master plan (Waldo Point Harbor – 38 new houseboats) (Douglas Humphrey, General Manager, personal communication 9/15/99).

The projected cumulative increase in demand for wastewater treatment services would be approximately 70,000 gpd, including the Proposed Action. As previously discussed, there is roughly 300,000 gpd of existing excess average dry weather flow (ADWF) capacity at the plant. If all of the cumulative projects, including the Proposed Action, are approved and implemented a surplus capacity of approximately 230,000 gpd would remain at the plant.

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In addition to these projects, the California Department of Transportation (Caltrans) is proposing to rehabilitate and upgrade the Golden Gate Safety Roadside Rest Area and Vista Point (Vista Point). The Vista Point is located at the northern terminus of the Golden Gate Bridge, off US Highway 101, and adjacent to Fort Baker. Upgrade and expansion of the existing public restrooms is being proposed as part of the Vista Point project. Caltrans operates the Vista Point under a long-term easement from the GGNRA, and on-site water and wastewater infrastructure is connected to Fort Baker's system. Caltrans is currently preparing a detailed description of the project and conducting the required environmental review. Information on the project's potential impact on wastewater treatment services is not yet available, however, the potential increase in demand for services is not anticipated to substantially reduce the available treatment capacity of the plant. A Draft Initial Study/Environmental Assessment (IS/EA) is expected in this Fall (1999).

Implementation of the Proposed Action and other reasonably foreseeable projects would result in an increased demand for wastewater treatment services from the SMCS D treatment plant. The projected increase would be well within the existing capacity of the plant, and no cumulative significant adverse impacts are expected.

4.2.13 HUMAN HEALTH, SAFETY AND THE ENVIRONMENT

This section discusses the impacts on human health and the environment related to exposure to hazardous substances at Fort Baker associated with use resulting from site improvements made under the Proposed Action. The primary sources of information used for this impact analysis are reports generated by Army consultants for hazardous substance investigation and cleanup at Fort Baker (Corps, 1998; Corps, 1997a; Reidel, 1995; RCI, 1998a, 1998b, 1998c, 1996) and material provided by NPS consultants (Erlor & Kalinowski, Inc., 1998).

The Army's cleanup of contaminated sites is a separate project, addressed in separate environmental data collection, analyses and documentation. This cleanup is ongoing and regulated by the State of California and the EPA. The cleanup program involves extensive investigation, analysis, reporting, and remedial design activities. This process has not concluded, and cleanup levels and strategies have not been finally approved. The following section relies primarily on information for which analysis has been performed in the Army's studies. New information regarding the Army's cleanup program would be evaluated as it becomes available. Additional environmental analysis and public review would be performed, if necessary.

4.2.13.1 Exposure to Hazardous Substances Associated with Use Resulting from Site Improvements

As required by CERCLA, the Army's remedial response measures would ensure the protection of human health and the environment. The Army has completed numerous investigations, and additional investigations and remedial measures would be performed to remove contaminants to levels consistent with the intended use and protection of human health and the environment. In addition, the NPS continues to coordinate with the Army and state and federal regulators to ensure that the investigations and subsequent remedial measures are designed and implemented in a manner consistent with the reuse activities envisioned in the proposed Plan. Based on NPS recommendations, the Army would establish cleanup goals and select remedial alternatives that are consistent with intended future uses at Fort Baker. The NPS would not implement elements of the Proposed Action in areas affected by contamination until the Army has undertaken necessary remediation in accordance with applicable laws regarding health, safety and the environment. Contingency plans

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would be developed to address any hazardous substances encountered during the construction phase. Although the Army's cleanup program is ongoing, potential impacts to human health, safety and the environment following cleanup and implementation of the Proposed Action are not anticipated to be major.

4.2.13.2 Cumulative Impacts

Implementation of the Proposed Action would not expose people or the environment to hazardous substances causing a significant adverse impact. Other projects or actions that may have a cumulative effect include the US Army's required cleanup program at Fort Baker. An overview of the actions associated with the Base Realignment and Closure (BRAC) Cleanup Plan that are currently known, are presented below. For additional background on the BRAC Cleanup Plan and other cumulative projects, refer to Appendix D of this EIS.

The Army has identified chemically-impacted soil, sediment, and groundwater at various locations within Fort Baker. To date, specific remedial actions to address chemically-impacted soil and sediment has been identified by the Army in six areas. Other areas may also require remediation, however, such areas have not been proposed and would likely not be identified until after February 2000. The majority of the remedial work currently identified is proposed for implementation and completion during the months of July through October 2000, with some extending beyond November 2000.

Most of the remedial actions that have been identified will include excavation and disposal offsite of chemically-impacted soil or facilities (i.e., paint shed, catch basins, etc.). Other potential areas, not yet designated for remediation, may include Horseshoe Bay, the former fuel distribution pipeline encircling the Parade Ground, the former firing range (west of Building 533), transformers (at 11 different locations), and various underground and above ground storage tanks (ASTs and USTs).

Implementation of the Army's required cleanup would remediate existing hazardous conditions at Fort Baker. This effect, when considered within the context of the Proposed Action, would have a long-term beneficial effect on human health, safety and the environment.

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4.3 ENVIRONMENTAL CONSEQUENCES OF THE GMP ALTERNATIVE

The GMP Alternative would have many of the same environmental consequences as described for the Proposed Action. The primary differences between the two alternatives are the removal of Capehart structures for construction of a 700-car parking lot to stage bus shuttles into Rodeo Valley, treatment of the waterfront, and development of a water shuttle landing. In addition, no additional native plant restoration would occur. Impacts that would be comparable to the Proposed Action are listed below for each impact topic, along with a discussion of impacts that would be different (specific to the GMP Alternative).

4.3.1 GEOLOGY AND SOILS

The following impacts related to geology and soils under the GMP Alternative would be comparable to the Proposed Action. Refer to Section 4.2.1 for a discussion of these impacts. There are no additional impacts related to geology and soils that are specific to the GMP Alternative.

- Soil erosion and runoff due to site disturbances prior to completion of construction activities and immediate post-restoration site stabilization.
- Soil disturbance due to heavy equipment associated with riprap and bulkhead removal/beach restoration along Horseshoe Bay.
- Potential geologic hazards due to the presence of landslide deposits in the area of the proposed improvements; and the presence of numerous small fills associated with existing development.

4.3.2 COASTAL PROCESSES

The following impact related to coastal processes under the GMP Alternative would be comparable to the Proposed Action. Refer to Section 4.2.2 for a discussion of this impact. There are no additional impacts related to coastal processes that are specific to the GMP Alternative:

- Potential changes in shoreline configuration resulting from removal of bulkhead and restoration of beach.

4.3.3 WATER RESOURCES

The following impacts related to water quality, drainage, and hydrology under the GMP Alternative would be comparable to the Proposed Action. Refer to Section 4.2.3 for a discussion of these impacts.

- Short-term water quality impacts due to increased soil erosion and discharges of construction-related materials to surface waters.
- Short-term water quality impacts associated with maintenance dredging activities.
- Potential exposure of aquatic organisms to hazardous substances from beach restoration.
- Potential long-term water quality impacts due to incremental increases in urban runoff resulting from increased visitor use.

The following discussion discloses the water resources impact that is specific to the GMP Alternative.

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4.3.3.1 Potential Decline in Water Quality due to Development of a Water Shuttle Landing

If implemented, the use of a water shuttle could increase the amounts of petroleum pollutants resulting in a potential adverse impact to water quality. Localized adverse effects would be small compared to the overall self-cleansing capability of the bay through tides, currents and winds. However, the productivity of marine organisms might decrease slightly in the landing area as a result of petroleum leakage. Water shuttle use would need to be regulated to ensure that impacts from noise, pollution, and general disturbance were minimized to the extent possible. Additional environmental analysis would be conducted before this water shuttle service is implemented.

4.3.4 BIOLOGICAL RESOURCES

The following impacts related to biological resources under the GMP Alternative would be comparable to the Proposed Action. Refer to Section 4.2.4 for a discussion of these impacts.

- Effects on native ecological communities due to vegetation removal.
- Temporary disturbance to waterfront and long-term enhancement of beach habitat areas.
- Temporary disturbance to and long-term enhancement of eelgrass beds.
- Disturbance to marine mammals and waterbirds due to waterfront construction activities and increased visitor use.
- Disturbance to fish and other aquatic species due to construction and dredging activities.
- Disturbance to land birds due to construction, vegetation removal, and habitat restoration activities.
- Disturbance to bats due to building rehabilitation and removal.
- Effects on marine organisms due to urban runoff and boating.
- Management of invasive species already present.

The following discussion discloses the biological resources impacts specific to the GMP Alternative.

4.3.4.1 Increased Risk of Impacts to Natural Habitats and Wildlife as a Result of an Increase in Visitor Use

Compared to the Proposed Action, because of the greater potential increase in visitor use at Fort Baker as a result of the GMP Alternative, there is a higher risk of impact to the ecological values of the site. Mitigation measures similar to those identified in the Proposed Action would prevent significant impacts to native habitats and wildlife, including the mission blue butterfly and its habitats. However, the effectiveness of the mitigation and the compliance of visitors with use restrictions cannot be predicted with absolute certainty. Therefore, impacts of increased visitor use on native habitats and wildlife due to the GMP Alternative would be greater than the Proposed Action.

4.3.4.2 Potential Disturbance to Natural Habitats due to Development of an Environmental Study Area and Overnight Group Campsite

Increased visitors associated with this use near the Battery Cavallo area would have the potential to cause significant impacts to ecological communities and resident wildlife species, including the mission blue butterfly. Designation of appropriate recreational uses and use areas within the site would mitigate those impacts but not to a level of insignificance. Additional environmental analysis would be conducted in consultation with the USFWS before this use was implemented to accurately determine impacts to the mission blue butterfly.

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No habitat restoration other than that already planned by the Golden Gate Bridge Highway and Transportation District would be implemented. Temporary disturbance of native ecological communities would be the same or greater than the Proposed Action, although there would be far less enhancement of ecological communities, including mission blue butterfly habitat.

4.3.4.3 Potential Disturbance to Marine Mammals and Waterbirds due to Development of a Water Shuttle Landing

If implemented, a water shuttle service to and from Fort Baker could directly affect marine animals, including harbor seals and California sea lions. Disturbance from direct noise and wave action could also impact feeding, resting and nesting waterbirds, including the brown pelican and least tern. Water shuttle use would need to be regulated to ensure that impacts from noise, pollution, and general disturbance were minimized to the extent possible. Additional environmental analysis would be conducted before the service was initiated to ascertain whether adverse impacts to wildlife could occur. NPS would consult with the USFWS and NMFS as appropriate.

4.3.5 CULTURAL RESOURCES

The following impacts related to cultural resources under the GMP Alternative would be comparable to the Proposed Action. Refer to Section 4.2.5 for a discussion of these impacts.

- Restoration of beach.
- Preservation of historic fortifications.
- Removal and/or rehabilitation of various contributing structures.
- New construction.
- Potential to disturb archaeological resources.

The following discussion discloses the cultural resources impacts specific to the GMP Alternative.

4.3.5.1 Disturbance to Historic Fortifications

An environmental study area and overnight group campsite would be created near Battery Cavallo. The battery would be stabilized, preserved, and made available for interpretation. Stabilization, as defined in *the Standards for the Treatment of Historic Properties*, would re-establish structural stability and weather-resistance. The environmental study area and campsite would be developed in such a way that detracted as little as possible from the battery's appearance and significance, and integrated requirements for historic preservation, natural resource protection, visitor use and interpretation. The battery would be regularly monitored and inspected by the NPS to ensure long-term preservation and safe conditions for visitors. Mitigating measures as identified through subsequent environmental analysis, including temporary closure of areas, protective barriers, and regulatory and informational signs, would reduce the adverse effect on the resource caused by site visitors.

4.3.5.2 Removal of All Capehart Housing for 700-Car Parking Lot

Removal of all nonhistoric Capehart housing units to accommodate parking would have greater impacts in this location than the Proposed Action. Adding parking for 700 cars in place of the Capehart housing would increase the impact upon the historic setting. This would be considered an adverse effect on the historic district.

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4.3.6 TRAFFIC AND CIRCULATION

The following impacts related to traffic and circulation under the GMP Alternative would be comparable to the Proposed Action. Refer to Section 4.2.6 for a discussion of these impacts.

- Addition of traffic to local and adjacent roadways as a result of construction-related trips.
- Increased demand for public transportation.
- Increased parking demand due to peak visitor use.
- Increased parking demand due to special events.

The following discussion discloses the traffic and circulation impacts specific to the GMP Alternative.

4.3.6.1 Addition of Traffic to Local and Adjacent Roadways and Intersections as a Result of Visitor Trips and 700-Car Parking Lot

This alternative would generate 4,783 daily vehicle trips. Of this total, the proposed parking lot would account for 2,800 daily vehicle trips. Overall, trips generated by the 1980 GMP Alternative would represent a 210% increase over the Proposed Action.

4.3.6.2 Potential Conflicts between Pedestrian/Bicycle and Vehicular Traffic due to the 700-Car Parking Lot

Internal vehicular traffic associated with the 700-car parking lot could result in hazards to pedestrians and bicyclists, particularly during peak use weekends.

4.3.6.3 Improvements to Pedestrian and Bicycle Facilities

Improvements to pedestrian and bicycle facilities would not be as beneficial as the Proposed Action since this alternative would not close Conzelman Road or the road between Point Cavallo and Battery Yates to provide for pedestrian/bicycle access.

4.3.6.4 Increased Parking Demand due to Increased Visitor Use

This alternative would generate a parking demand for 1,632 spaces compared to the 895 spaces required for the Proposed Action.

4.3.6.5 Improvements to the Waterfront to Provide a Water shuttle Landing

These improvements for visitors or employees wishing to go to San Francisco or other bay points would be considered a beneficial impact. Additional environmental analysis would be conducted before the service was initiated.

4.3.7 AIR QUALITY

The following air quality impacts under the GMP Alternative would be comparable to the Proposed Action. Refer to Section 4.2.7 for a discussion of these impacts. No additional air quality impacts are specific to the GMP Alternative.

- Increased construction-related emissions from construction activities.
- Regional emissions (approximately 45 lbs/day of ROG, 47 lbs/day of NO_x, and 6 lbs/day of PM₁₀) associated with increased vehicle use and energy consumption.

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- CO emissions (approximately 535.7 lbs/day) associated with mobile sources.

The discussion of federal Clean Air Act conformity for the Proposed Action also applies to the GMP Alternative.

4.3.8 NOISE

The following impacts on noise under the GMP Alternative would be comparable to the Proposed Action. Refer to Section 4.2.8 for a discussion of these impacts. No additional impacts on noise are specific to the GMP Alternative:

- Short-term construction noise generation during hours in which such activities are allowed under local noise ordinances.
- Stationary source noise increases associated with new uses.
- Traffic noise increases associated with increased visitation.

4.3.9 LAND USE AND COMMUNITY SERVICES

The following impacts related to land use and community services under the GMP Alternative would be comparable to the Proposed Action. Refer to Section 4.2.9 for a discussion of these impacts:

- Potential changes due to building removal and new construction (increase of 8,000 square feet to a total of 261,154 square feet).
- Potential effects on minority and low-income communities.
- Effects on fire services.
- Effects on security and police protection.
- Effects on emergency medical services.

The following discussion discloses the land use and community services impact specific to the GMP Alternative.

4.3.9.1 Consistency with Relevant Land Use Policies

As discussed in Section 4.3.5, the addition of a 700-car parking lot would have the potential to impact the historic site. This action would be inconsistent with the NPS Management Policy encouraging parking to be located “so as not to intrude, by sight or sound, on significant features.” The inconsistency of the 1980 GMP Alternative with this NPS Management Policy is considered an adverse effect.

4.3.9.2 Potential Economic Benefits due to Employment Opportunities

One-Time Employment Generation. Construction activities are anticipated to generate 170 construction jobs during a 12-month period compared to 370 to 430 jobs associated with the Proposed Action.

Permanent Employment Generation. The conference center and hostel would generate 62 full-time jobs compared to 260 to 300 jobs associated with the Proposed Action.

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Aggregate Wages. Annual aggregate wages earned by employees of the conference center and hostel are projected to total \$1.5 million throughout the life of the project compared to the Proposed Action's \$8.2 million. Aggregate one-time construction wages are estimated at \$13.7 million compared to \$28.6 to \$33.8 million that would be generated by the Proposed Action.

Similar to the Proposed Action, the direct economic benefit of both one-time construction-related and permanent employment opportunities associated with the 1980 GMP Alternative are considered to be beneficial impacts.

4.3.10 VISUAL AND AESTHETIC RESOURCES

The following impacts related to visual and aesthetic resources under the GMP Alternative would be comparable to the Proposed Action. Refer to Section 4.2.10 for a discussion of these impacts.

- Enhancement of existing views of the site from surrounding areas.
- Enhancement of existing views and provision of new high-quality views of the surrounding area from Fort Baker.

The following discussion discloses the visual and aesthetic resources impacts specific to the GMP Alternative.

4.3.10.1 Change in Character of Site due to Removal of Capehart Housing for Parking Lot and Activity Levels Associated With New Uses

While the Capehart housing area is not high in scenic quality, development of a staging area and 700-car parking lot in this area would not be in keeping with the overall existing character of Fort Baker and would diminish the visual integrity of the site. While some of the parking could be dispersed and would be designed and sited to reduce impacts, the increased number of visitors, cars and intrusion of the large parking lot would have a negative effect on the character of the site. The numbers of visitors, and level of activity, including traffic associated with the shuttle staging lot, is substantially higher than under the Proposed Action. This impact is considered to be potentially adverse.

4.3.10.2 Enhancement of Existing Views from within the Site and Short-Term Reduction in Visual Quality

Compared to the Proposed Action, enhancement of views would not be as beneficial and short-term reduction in visual quality would be less, since no habitat restoration would occur.

4.3.11 RECREATION AND VISITOR ENJOYMENT

The following impacts related to recreation and visitor enjoyment under the GMP Alternative would be comparable to the Proposed Action. Refer to Section 4.2.11 for a discussion of these impacts.

- Displacement of current Presidio Yacht Club users due to changes at the marina.
- Temporary loss of recreational use/access during construction.

The following discussion discloses the recreation and visitor enjoyment impact specific to the GMP Alternative.

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4.3.11.1 Changes in Areas and Opportunities for Recreation

An environmental study area and overnight group campsite within the Battery Cavallo area and a landscaped picnic and play area along the waterfront would open up and improve these areas to accommodate a variety of recreational activities compared with present conditions. This impact would be considered beneficial for recreationists. However, this alternative does not provide for expansion of the BADM.

4.3.11.2 Effects of Increased Numbers of Visitors on Visitor Experience

Following implementation of this alternative, there would be a maximum of about 4,014 visitors at Fort Baker during peak times. This represents an increase of 2,456 over existing visitation (1,588) and an increase of 1,305 compared to the Proposed Action. Compared to the Proposed Action, this alternative would have a higher level of activity overall in addition to the greater number of visitors. Congestion on peak use weekends may result in visitor inconvenience and dissatisfaction, and may compromise the nature and character of the site. This impact is considered potentially significant.

4.3.12 INFRASTRUCTURE

The following impacts related to utility systems under the GMP Alternative would be comparable to the Proposed Action. Refer to Section 4.2.12 for a discussion of these impacts. There are no additional impacts related to utility systems that are specific to the GMP Alternative.

- Repair and rehabilitation of water supply and distribution.
- Repair and rehabilitation of stormwater drainage.
- Repair and rehabilitation of energy systems.

4.3.13 HUMAN HEALTH, SAFETY AND THE ENVIRONMENT

The following human health and environment issue under the GMP Alternative would be comparable to the Proposed Action. Refer to Section 4.2.13 for a discussion of this issue. There are no additional impacts related to human health, safety and the environment that are specific to the GMP Alternative.

- Exposure of hazardous substances associated with use resulting from site improvements.

4.3.14 CUMULATIVE IMPACTS

Cumulative impacts under the GMP Alternative would be comparable to the Proposed Action. Under the GMP Alternative, however, traffic and parking would likely have a greater cumulative impact due to higher visitation and the 700-car parking/staging area. Refer to the separate impact topics in Section 4.2 for a discussion of cumulative issues.

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4.4 ENVIRONMENTAL CONSEQUENCES OF OFFICE AND CULTURAL CENTER ALTERNATIVE

The Office and Cultural Center Alternative would have fewer adverse or beneficial environmental consequences than the Proposed Action. The primary difference between the two alternatives is that no new construction would occur, and additional parking (1,300 spaces) would be developed to support the office and cultural center's projected needs. Impacts that would be comparable to the Proposed Action are listed below for each impact topic, along with a discussion of impacts that would be different (specific to the Office and Cultural Center Alternative).

4.4.1 GEOLOGY AND SOILS

The following impacts related to geology and soils under the Office and Cultural Center Alternative would be comparable to the Proposed Action. Refer to Section 4.2.1 for a discussion of these impacts. There are no additional impacts related to geology and soils that are specific to the Office and Cultural Center Alternative.

- Soil erosion and runoff due to site disturbances prior to completion of construction activities and immediate post-restoration site stabilization.
- Soil disturbance due to heavy equipment associated with riprap and seawall removal/beach restoration along Horseshoe Bay.

4.4.2 COASTAL PROCESSES

The following impact related to coastal processes under the Office and Cultural Center Alternative would be comparable to the Proposed Action. Refer to Section 4.2.2 for a discussion of this impact. There are no additional impacts related to coastal processes that are specific to the Office and Cultural Center Alternative:

- Potential changes in shoreline configuration resulting from removal of bulkhead and restoration of beach.

4.4.3 WATER RESOURCES

The following impacts related to water quality, drainage and hydrology under the Office and Cultural Center Alternative would be comparable to the Proposed Action. Refer to Section 4.2.3 for a discussion of these impacts. There are no additional impacts related to water resources that are specific to the Office and Cultural Center Alternative.

- Short-term water quality impacts due to increased soil erosion and discharges of construction-related materials to surface waters.
- Short-term water quality impacts associated with maintenance dredging activities.
- Potential exposure of aquatic organisms to hazardous substances from beach restoration.
- Potential long-term water quality impacts due to incremental increases in urban runoff resulting from increased visitor use.

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4.4.4 BIOLOGICAL RESOURCES

The following impacts related to biological resources under the Office and Cultural Center Alternative would be comparable to the Proposed Action. Refer to Section 4.2.4 for a discussion of these impacts.

- Temporary disturbance to waterfront and long-term enhancement of beach habitat areas.
- Temporary disturbance to and long-term enhancement of eelgrass beds.
- Disturbance to marine mammals and waterbirds due to waterfront construction activities and increased visitor use.
- Disturbance to fish and other aquatic species due to construction and dredging activities.
- Effects on marine organisms due to urban runoff and boating.
- Management of invasive species already present.

The following discussion discloses the biological resources impact specific to the Office and Cultural Center Alternative.

4.4.4.1 Increased Risk of Impacts to Natural Habitats and Wildlife as a Result of an Increase in Visitor Use

Compared to the Proposed Action, because of the potential increase in visitor use at Fort Baker as a result of the Office and Cultural Center Alternative, there is a greater risk of impact to the ecological values of the site. Mitigation measures to manage visitor use similar to those identified in the Proposed Action would reduce adverse impacts to native habitats and wildlife, including the mission blue butterfly and its habitats. However, the effectiveness of the mitigation and the compliance of visitors with use restrictions cannot be predicted with absolute certainty. Therefore, impacts of increased visitor use on native habitats and wildlife due to the Office and Cultural Center Alternative are potentially adverse.

4.4.5 CULTURAL RESOURCES

The following impacts related to cultural resources under the Office and Cultural Center Alternative would be comparable to the Proposed Action. Refer to Section 4.2.5 for a discussion of these impacts.

- Restoration of beach.
- Rehabilitation of Capehart housing or replacement with compatible construction.
- Removal and/or rehabilitation of various contributing structures.
- Realignment, improvements, or removal of roads.
- Re-establishment or rehabilitation of cultural landscape vegetation.
- Potential to disturb archaeological resources.

The following discussion discloses the cultural resources impact specific to the Office and Cultural Center Alternative.

4.4.5.1 Rehabilitation of Buildings Surrounding the Parade Ground

The NPS and park tenants would assume responsibility for stabilization, rehabilitation, and preservation of the buildings they managed and occupied. Modifications or rehabilitation treatment

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proposed by prospective tenants that create an adverse effect on historic building fabric or materials would be prohibited. After each building was rehabilitated and/or occupied, the tenant would be required to prepare long-term maintenance and annual work plans for the building. This would include a cyclic maintenance program to prevent damage to historic features and ensure that the building was properly care for. The condition of the buildings would be monitored over the course of implementation of the alternative, in accordance with Section 110 of the National Historic Preservation Act.

An operations and maintenance agreement similar to the one now in effect at the Presidio would have to be negotiated with the California State Historic Preservation Officer and the Advisory Council on Historic Preservation. The NPS would retain ownership of the buildings, and the operator would manage them.

4.4.6 TRAFFIC AND CIRCULATION

The following impacts related to traffic and circulation under the Office and Cultural Center Alternative would be comparable to the Proposed Action. Refer to Section 4.2.6 for a discussion of these impacts.

- Addition of traffic to local and adjacent roadways as a result of construction-related trips.
- Improvements to the pedestrian and bicycle facilities.
- Increased demand for public transportation.

The following discussion discloses the traffic and circulation impacts specific to the Office and Cultural Center Alternative.

4.4.6.1 Addition of Traffic to Local and Adjacent Roadways and Intersections as a Result of Visitor Trips

This alternative would generate 3,473 daily vehicle trips. Overall, trips generated by the Office and Cultural Center Alternative would represent a 150% increase over the Proposed Action.

4.4.6.2 Potential Conflicts between Pedestrian/Bicycle and Vehicular Traffic due to Additional Parking

Compared to the Proposed Action, internal vehicular traffic associated with additional parking could result in hazards to pedestrians and bicyclists, particularly during peak use weekends.

4.4.6.3 Increased Parking Demand due to Increased Visitor Use

This alternative would generate a parking demand for 1,300 spaces compared to the 895 spaces required for the Proposed Action.

4.4.7 AIR QUALITY

The following air quality impacts under the Office and Cultural Center Alternative would be comparable to the Proposed Action. Refer to Section 4.2.7 for a discussion of these impacts. No additional air quality impacts are specific to the Office and Cultural Center Alternative.

- Increased short-term construction-related emissions from construction activities.

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- Regional emissions (approximately 32.6 lbs/day of ROG, 32.9 lbs/day of NO_x, and 4.3 lbs/day of PM₁₀) associated with increased vehicle use and energy consumption.
- CO emissions (approximately 416.7 lbs/day) associated with mobile sources.

The NPS would encourage park partners to promote and pursue measures to protect air quality. Park partners would be required to comply with BAAQMD feasible control measures controlling particulate emissions. Air resource management would be integrated into Fort Baker operations and planning to ensure that long-term operational emissions would not exceed applicable BAAQMD significance thresholds.

4.4.8 NOISE

The following impacts on noise under the Office and Cultural Center Alternative would be comparable to the Proposed Action. Refer to Section 4.2.8 for a discussion of these impacts. No additional impacts on noise are specific to the Office and Cultural Center Alternative:

- Short-term construction noise generation during hours in which such activities are allowed under local noise ordinances.
- Stationary source noise increases associated with new uses.
- Traffic noise increases associated with increased visitation.

4.4.9 LAND USE AND COMMUNITY SERVICES

The following impacts related to land use and community services under the Office and Cultural Center Alternative would be comparable to the Proposed Action. Refer to Section 4.2.9 for a discussion of these impacts.

- Potential changes due to building removal and new construction (increase of 26,500 square feet to a total of 325,337 square feet).
- Potential effects on minority and low-income communities.
- Potential effects on surrounding hotels.
- Effects on fire services.
- Effects on security and police protection.
- Effects on emergency medical services.

The following discussion discloses the land use and community services impacts specific to the Office and Cultural Center Alternative.

4.4.9.1 Consistency with Relevant Land Use Plans and Policies

NPS Management Policies. Long-term private mooring similar to existing use would be retained, and only some short-term public mooring would be provided. While the Office and Cultural Center would encourage more boating at the marina, it would not best fulfill the NPS management objective to “promote visitor enjoyment.” Nevertheless, this impact is considered beneficial because, compared with existing conditions, this alternative is more consistent with NPS Management Policies.

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4.4.9.2 Potential Economic Benefits due to Employment Opportunities

One-Time Employment Generation. Construction activities are anticipated to generate between 270 construction jobs during a 12-month period compared to 370 to 430 jobs associated with the Proposed Action.

Permanent Employment Generation. The offices, restaurant and gymnasium would generate 580 full-time jobs compared to 260 to 300 jobs associated with the Proposed Action.

Aggregate Wages. Annual aggregate wages earned by employees of the offices, restaurant and gymnasium are projected to total \$12.5 million throughout the life of the project compared to the Proposed Action's \$8.2 million. Aggregate one-time construction wages are estimated at \$21.2 million compared to \$28.6 to \$33.8 million that would be generated by the Proposed Action.

Similar to the Proposed Action, the direct economic benefit of both one-time construction-related and permanent employment opportunities associated with the Office and Cultural Center Alternative are considered to be beneficial impacts.

4.4.10 VISUAL AND AESTHETIC RESOURCES

The following impacts related to visual and aesthetic resources under the Office and Cultural Center Alternative would be comparable to the Proposed Action. Refer to Section 4.2.10 for a discussion of these impacts.

- Enhancement of existing views and provision of new high-quality views of the site from within Fort Baker.
- Enhancement of existing views of the site from surrounding areas.
- Enhancement of existing views and provision of new high-quality views of the surrounding area from Fort Baker.

The following discussion discloses the visual and aesthetic resources impact specific to the Office and Cultural Center Alternative.

4.4.10.1 Change in Character due to Removal of Capehart Housing for Parking Lot

While the Capehart housing area is not high in scenic quality, parking in this area would need to be compatible with the overall existing historic character of Fort Baker and the visual integrity of the site. Parking would be dispersed, sited and designed to reduce adverse impacts.

4.4.11 RECREATION AND VISITOR ENJOYMENT

The following impacts related to recreation and visitor enjoyment under the Office and Cultural Center Alternative would be comparable to the Proposed Action. Refer to Section 4.2.11 for a discussion of these impacts.

- Construction/improvement of visitor facilities.
- Temporary loss of recreational use/access during construction.

The following discussion discloses the recreation and visitor enjoyment impacts specific to the Office and Cultural Center Alternative.

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4.4.11.1 Effects of Increased Numbers of Visitors on Visitor Experience

Following implementation of this alternative, there would be a maximum of about 3,534 visitors at Fort Baker during peak times. This represents an increase of 1,995 over existing visitation (1,588) and an increase of 825 compared to the Proposed Action. Compared to the Proposed Action, this alternative would have a higher level of activity overall in addition to the greater number of visitors. Congestion on peak use weekends may result in visitor inconvenience and dissatisfaction, and may compromise the nature and character of the site. This impact is considered potentially significant.

4.4.11.2 Displacement of Current Users due to Changes at the Marina

Long-term private mooring similar to existing use would be retained, and only some short-term public mooring would be provided. Therefore, the impact on current Presidio Yacht Club users at the marina would be less than the Proposed Action.

4.4.12 INFRASTRUCTURE

The following impacts related to utility systems under the Office and Cultural Center Alternative would be comparable to the Proposed Action. Refer to Section 4.2.12 for a discussion of these impacts. No additional impacts related to utility systems are specific to the Office and Cultural Center Alternative.

- Repair and rehabilitation of water supply and distribution.
- Repair and rehabilitation of stormwater drainage.
- Repair and rehabilitation of energy systems.

4.4.13 HUMAN HEALTH, SAFETY AND THE ENVIRONMENT

The following human health, safety and environment issue under the Office and Cultural Center Alternative would be comparable to the Proposed Action. Refer to Section 4.2.13 for a discussion of this issue. No additional impacts related to human health, safety and the environment are specific to the Office and Cultural Center Alternative.

- Exposure of hazardous substances associated with use resulting from site improvements.

4.4.14 CUMULATIVE IMPACTS

Cumulative impacts under the Office and Cultural Center Alternative would be comparable to the Proposed Action, however, the additional traffic generated by this alternative would exacerbate the cumulative traffic effects. Refer to the separate impact topics in Section 4.2 for a discussion of cumulative issues.

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4.5 ENVIRONMENTAL CONSEQUENCES OF NO ACTION ALTERNATIVE

The No Action Alternative would implement only those actions necessary to meet the legislative requirements to protect Fort Baker's natural and cultural resources, provide for visitor safety, and support existing park partners and NPS programs. The NPS would be responsible for overall management and operations, with existing park partners (BADM and Coast Guard) responsible for continuing the responsibilities of their agreements. The NPS would not implement site improvements and restoration of the natural and cultural resources of Fort Baker and would not implement any new projects other than those that have already been separately programmed or initiated by the Army or the NPS (e.g., hazardous waste site remediation and mission blue butterfly habitat restoration under the Golden Gate Bridge Highway and Transportation District).

Under this alternative, none of the adverse or beneficial environmental effects described for the Proposed Action, GMP Alternative, or Office and Cultural Center Alternative would occur. The following actions would be implemented:

- Residential and nonresidential structures in the Parade Ground and Capehart Areas would receive minimum rehabilitation or would be "mothballed" to arrest decay without restoration or adaptation for visitor use.
- The waterfront area would receive minimal changes to protect visitor safety.
- The marina would be closed for public safety, the dilapidated docks and related structures would be removed, and the historic boat shop (currently Presidio Yacht Club) would be mothballed.
- Natural and cultural resources in the open space areas surrounding the developed area of the site would be protected to meet NPS legislative requirements, through such means as signing, fencing and routine patrol.
- Basic maintenance of roads and trails would continue.
- Minimal interpretive and educational signs/programs would be implemented as funding permitted.

The following discussion discloses impacts that are specific to the No Action Alternative.

4.5.1 GEOLOGY AND SOILS

Management actions would be taken to mitigate adverse impacts due to runoff and soil erosion. The shoreline configuration of Horseshoe Bay would remain unchanged. Existing development located on or near potential geologic hazards (landslide deposits and small fills) would most likely be phased out or relocated if it cannot reasonably be protected. No new development would be placed in areas subject to geologic hazards. Steps would be taken to minimize safety hazards and harm to property, visitors and natural values. Impacts would be minimal.

4.5.2 COASTAL PROCESSES

The restoration of the beach along Horseshoe Bay would not occur. The existing timber bulkhead and riprap along 800 feet of the shoreline between the launch ramp and the boatlift pier would remain. Export of material would not be required.

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4.5.3 WATER RESOURCES

The NPS would seek to protect surface water and groundwater consistent with the Clean Water Act (33 USC 1251 et seq.) and other applicable federal, state, and local laws and regulations. Human activities would be managed to control erosion. The NPS would coordinate with the Army to complete remedial measures to minimize the risk of water contamination. However, no additional water quality benefits would occur from stormwater improvements. Existing storm drain outfalls would be retained and would continue to discharge directly into Horseshoe Bay along the bulkhead.

4.5.4 BIOLOGICAL RESOURCES

Natural resource management would protect existing native plant habitats and endangered species. Endangered species, including the mission blue butterfly and the winter-run chinook salmon, would benefit from protection required by existing programs and law. Beach and coastal strand habitat would not be restored. Marine, migratory and terrestrial animal species would be protected as part of the park's resource management program. However, because no new native plant restoration would occur as described in the Proposed Action, no additional benefits to native ecological communities or wildlife habitat would be expected.

4.5.5 CULTURAL RESOURCES

Many of the buildings would continue to deteriorate until tenants were found. The NPS would provide treatment of vacant buildings to ensure their preservation and protection. Actions would include physical inspection and documentation before mothballing as well as establishment of a monitoring program. Minimum heat, adequate ventilation, and frequent monitoring of building interiors would be required. U.S. Park Police patrols would be increased in all areas with vacant buildings. The NPS would be responsible for ensuring that compliance activities related to Section 106 of the National Historic Preservation Act were carried out for all occupied buildings on the National Register of Historic Places and all features identified in the national historic landmark district nomination.

4.5.6 TRAFFIC AND CIRCULATION

No major road system modifications or transportation demand management measures would be implemented, including public transit. Actions would be taken to correct safety hazards, and minor improvements would be made to support bicycle and pedestrian use. Changes to existing parking (currently 818 spaces) would be minimal and essentially limited to safety improvements. Compared to the action alternatives, this alternative would be the lowest trip generator with 502 daily vehicle trips.

4.5.7 AIR QUALITY

The NPS would promote and pursue measures to safeguard Fort Baker from the adverse impacts of air pollution. Construction activities would comply with BAAQMD feasible control measures controlling particulate emissions. Air resource management would be integrated into Fort Baker operations and planning, and all air pollution sources would comply with all federal, state, and local air quality regulations.

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4.5.8 NOISE

Construction noise would be limited to repairs to infrastructure and building rehabilitation, and would not occur during hours in which such activities are prohibited under local noise ordinances. Building removal and beach restoration would not be conducted; therefore no impacts associated with these actions would result. Stationary source noise and traffic noise increases associated with increased visitation would not be noticeable.

4.5.9 LAND USES AND COMMUNITY SERVICES

The conceptual planning goals established in the GMP for Fort Baker would not be achieved. Furthermore, the No-Action Alternative is not consistent with NPS Management Policies to restore native species, or foster the appreciation of cultural resources through treatment and interpretation. Compared to the action alternatives, it would also provide the least desirable means of fulfilling the NPS mandate “to promote visitor enjoyment.” The alternative would be consistent with the NPS policy to maintain habitat for threatened or endangered species.

The land use pattern would be similar to existing conditions. Public recreation use would predominate in existing open areas, including the Parade Ground, at the current levels of intensity. Building and land uses would change minimally. No building removal would occur.

No significant new jobs would be created. The building and construction activities associated with minor rehabilitation of the buildings and infrastructure would generate approximately 11 full-time construction jobs during a 12-month period, generating aggregate wages of \$700,000. Very little or no public benefit would be derived from the buildings in their “mothballed” condition.

4.5.10 VISUAL AND AESTHETIC RESOURCES

No buildings would be removed to enhance scenic and natural values or expand recreational opportunities, and no major projects would be undertaken to restore historic vistas or viewing location. Dilapidated buildings and existing exotic vegetation would continue to detract from the visual quality of the site. Other than further deterioration of mothballed structures, the overall character of Fort Baker would remain much as it is today. Nighttime darkness levels would remain as much as they are today.

4.5.11 RECREATION AND VISITOR ENJOYMENT

Few actions would be taken to expand visitor opportunities. Existing visitor facilities would continue to operate at the same level, except for the marina (to be closed), docks (to be removed), and historic boat shop (to be mothballed). New programs and services would generally be concentrated in open space areas. Recreationists would continue to use portions of Fort Baker with limited accessibility. Shoreline use would remain limited due to the existing bulkhead, and might be prohibited if it is determined that the seawall, which is in a deteriorated condition, poses a safety hazard. Visitors during peak levels would be expected to decrease from 1,558 under existing conditions to 1,433 due to closure of the marina.

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4.5.12 INFRASTRUCTURE

Primary responsibility for provision of utility systems would rest with the NPS. Adequate sewage treatment and disposal would be provided for all public use and administrative facilities. Sewage treatment and disposal are subject to the provisions of Executive Order 12088, "Federal Compliance with Pollution Control Standards" (42 USC 4321). The currently failing electrical system would have to be assessed for safety and reliability of service if not rehabilitated. Lack of repair to the electrical system could result in continued power failures.

4.5.13 HUMAN HEALTH, SAFETY AND THE ENVIRONMENT

The Army would complete remediation at Fort Baker in a manner consistent with identified uses. NPS would monitor the Army's cleanup of hazardous substances, pollutants, and contaminants. NPS would work with the Army to determine whether public access would be permitted in areas that pose a potential risk to human health and the environment. The Comprehensive Environmental Response, Compensation, and Liability Act and other applicable federal and state laws and regulations would require that remedial response measures ensure the protection of human health and the environment.

4.5.14 CUMULATIVE IMPACTS

None of the adverse or beneficial cumulative effects of the Proposed Action as described under the separate discussions in Section 4.2 would occur. No additional cumulative impacts are specific to the No Action Alternative.