

4. Environmental Consequences

In this section the impacts listed below are analyzed.

- land uses
- slope stability
- water resources
- biological resources
- cultural resources
- recreation
- transportation
- air quality
- noise
- human health, safety, and the environment
- visitor access and other services
- scenic resources
- cumulative

A summary of environmental consequences is presented in Table 2. The results of the analysis conclude that none of the Action Alternatives would result in significant adverse environmental effects.

Overall, the Proposed Action (Alternative 2) would achieve the greatest balance of environmental benefits. The Proposed Action would result in beneficial impacts on water quality through lake deepening, exotic tree removal, and revegetation. Beneficial impacts on habitat quality in the Project Area would result from the enhancement of native plant communities. Under the Proposed Action, potential short-term impacts on scenic resources would be minimized by initially retaining several of the largest eucalyptus trees east of Mountain Lake and all trees east of the culvert. Under the Proposed Action, the removal of these trees would take place during a future phase, after the establishment of native tree cover along the east shore of Mountain Lake.

TABLE 2: SUMMARY OF IMPACTS

LAND USE IMPACTS

ALTERNATIVE 2 (PROPOSED ACTION)

Most consistent with NPS Management Policies and other plans: beneficial

ALTERNATIVE 1

Less consistent with NPS and other land use policies: beneficial

ALTERNATIVE 3

Consistent with NPS and other; land use Policies and other plans: beneficial

NO ACTION

Not consistent with NPS and other land use policies: less than significant

WATER RESOURCES IMPACTS

Erosion Related Water Quality Impacts

ALTERNATIVE 2 (PROPOSED ACTION)

Less than significant if mitigation steps implemented

ALTERNATIVE 1

Less than significant if mitigation steps implemented

ALTERNATIVE 3

Less than significant if mitigation steps implemented

NO ACTION

No construction, not applicable

Potential Water Quality Impacts Associated with Dredging/Native Plant Community Enhancement

ALTERNATIVE 2 (PROPOSED ACTION)

Beneficial impacts

ALTERNATIVE 1

Beneficial impacts

ALTERNATIVE 3

Beneficial impacts

NO ACTION

No change from current conditions

Water Quality Impacts on Contaminants and Water Temperature

ALTERNATIVE 2 (PROPOSED ACTION)

Insignificant

ALTERNATIVE 1

Insignificant

ALTERNATIVE 3

Insignificant

NO ACTION

Not applicable

Effect on Surface Water Flow and Groundwater Recharge

ALTERNATIVE 2 (PROPOSED ACTION)

Insignificant

ALTERNATIVE 1

Not applicable

ALTERNATIVE 3

Insignificant

NO ACTION

Not applicable

Water Quality Impacts and Potential Impacts on Federally Protected Wetlands

ALTERNATIVE 2 (PROPOSED ACTION)

Less than significant if mitigation steps implemented

ALTERNATIVE 1

Less than significant if mitigation steps implemented

ALTERNATIVE 3

Less than significant if mitigation steps implemented

NO ACTION

Not applicable

BIOLOGICAL IMPACTS

Temporary Impacts on Wildlife due to Tree Removal, Exotic Weed Removal, and Construction Activities

ALTERNATIVE 2 (PROPOSED ACTION)

Short term construction impacts minor; long term beneficial impacts if mitigation steps implemented

ALTERNATIVE 1

Short term construction impacts minor; long term beneficial impacts if mitigation steps implemented

ALTERNATIVE 3

Short term construction impacts minor; long term beneficial impacts if mitigation steps implemented

NO ACTION

Not applicable

Temporary and Long-Term Impacts on Native Vegetation

ALTERNATIVE 2 (PROPOSED ACTION)

Temporary construction impacts less than significant if mitigation steps implemented

Long term impacts: Beneficial

ALTERNATIVE 1

Temporary construction impacts less than significant if mitigation steps implemented

Long term impacts: Beneficial

ALTERNATIVE 3

Temporary construction impacts less than significant if mitigation steps implemented

Long term impacts: Beneficial

NO ACTION

No change from current conditions

No change from current conditions

Long-Term Beneficial Impacts to Wildlife from Native Plant Community Enhancement

ALTERNATIVE 2 (PROPOSED ACTION)

Significant beneficial Impacts for phase one activities. Additional beneficial impacts from future phase activities

ALTERNATIVE 1

Significant beneficial Impacts for phase one activities

ALTERNATIVE 3

Significant beneficial Impacts. Additional beneficial impacts from future phase activities

NO ACTION

No change from current conditions

Wetlands Impacts due to Exotic Tree and Weed Removal

ALTERNATIVE 2 (PROPOSED ACTION)

Minor if mitigation steps implemented

ALTERNATIVE 1

Minor if mitigation steps implemented

ALTERNATIVE 3

Minor if mitigation steps implemented

NO ACTION

No impacts

Long Term Wetlands Impacts

ALTERNATIVE 2 (PROPOSED ACTION)

Beneficial impacts

ALTERNATIVE 1

Beneficial impacts

ALTERNATIVE 3

Beneficial impacts

NO ACTION

No change from current conditions

Potential Land-Use Conflicts between Visitor-Use Areas and Natural Habitat

ALTERNATIVE 2 (PROPOSED ACTION)

Insignificant if mitigation steps implemented

ALTERNATIVE 1

Insignificant if mitigation steps implemented

ALTERNATIVE 3

Insignificant if mitigation steps implemented

NO ACTION

No change from current conditions

Beneficial Impacts of Future Adaptive Management Efforts

ALTERNATIVE 2 (PROPOSED ACTION)

Significant beneficial impacts anticipated

ALTERNATIVE 1

Significant beneficial impacts anticipated

ALTERNATIVE 3

Significant beneficial impacts anticipated

NO ACTION

No change from current conditions

Slope Stability

ALTERNATIVE 2 (PROPOSED ACTION)

Potential impacts on slope stability are considered minor if mitigation steps are taken

ALTERNATIVE 1

Potential impacts on slope stability are considered minor if mitigation steps are taken

ALTERNATIVE 3

Potential impacts on slope stability are considered minor if mitigation steps are taken

NO ACTION

No impacts

CULTURAL RESOURCES

Beneficial Impacts

ALTERNATIVE 2 (PROPOSED ACTION)

Significant beneficial impacts to existing cultural resources

ALTERNATIVE 1

Significant beneficial impacts to existing cultural resources

ALTERNATIVE 3

Significant beneficial impacts to existing cultural resources

NO ACTION

Significant beneficial impacts to existing cultural resources

Impacts to Historic Pumphouse Number 316

ALTERNATIVE 2 (PROPOSED ACTION)

No impacts anticipated

ALTERNATIVE 1

No impacts anticipated

ALTERNATIVE 3

No impacts anticipated

NO ACTION

No impacts anticipated

Impacts to Unknown Cultural Resources

ALTERNATIVE 2 (PROPOSED ACTION)

Insignificant if mitigation steps implemented

ALTERNATIVE 1

Insignificant if mitigation steps implemented

ALTERNATIVE 3

Insignificant if mitigation steps implemented

NO ACTION

No change from current conditions

RECREATION

Temporary Adverse Impacts to Visitor Services due to Dredging Activity and Trail Improvements

ALTERNATIVE 2 (PROPOSED ACTION)

Insignificant if mitigation steps implemented

ALTERNATIVE 1

Insignificant if mitigation steps implemented

ALTERNATIVE 3

Insignificant if mitigation steps implemented

NO ACTION

Not applicable

Beneficial Impacts of Construction on Visitor Facility Improvements

ALTERNATIVE 2 (PROPOSED ACTION)

Improvements of visitor facilities: beneficial

ALTERNATIVE 1

Improvements of visitor facilities: beneficial

ALTERNATIVE 3

Improvements of visitor facilities: beneficial

NO ACTION

No change from current conditions

TRANSPORTATION

ALTERNATIVE 2 (PROPOSED ACTION)

No impacts anticipated

ALTERNATIVE 1

No impacts anticipated

ALTERNATIVE 3

No impacts anticipated

NO ACTION

No impacts anticipated

AIR QUALITY

Increased Dust and Emissions from Construction

ALTERNATIVE 2 (PROPOSED ACTION)

Insignificant if mitigation steps implemented

ALTERNATIVE 1

Insignificant if mitigation steps implemented

ALTERNATIVE 3

Insignificant if mitigation steps implemented

NO ACTION

Not applicable

Temporary Increase in Particulate Emissions due to Construction Activity

ALTERNATIVE 2 (PROPOSED ACTION)

Insignificant if mitigation steps implemented

ALTERNATIVE 1

Insignificant if mitigation steps implemented

ALTERNATIVE 3

Insignificant if mitigation steps implemented

NO ACTION

Not applicable

Air pollution from Ongoing Operations

ALTERNATIVE 2 (PROPOSED ACTION)

Less than significant

ALTERNATIVE 1

Less than significant

ALTERNATIVE 3

Less than significant

NO ACTION

No change from current conditions

NOISE

Temporary Noise Impacts during Construction

ALTERNATIVE 2 (PROPOSED ACTION)

Minor if mitigation steps implemented

ALTERNATIVE 1

Minor if mitigation steps implemented

ALTERNATIVE 3

Minor if mitigation steps implemented

NO ACTION

Not applicable

Noise Impacts from Ongoing Operations

ALTERNATIVE 2 (PROPOSED ACTION)

Less than significant

ALTERNATIVE 1

Less than significant

ALTERNATIVE 3

Less than significant

NO ACTION

Less than significant

HUMAN HEALTH, SAFETY AND THE ENVIRONMENT

Construction-Related Hazards

ALTERNATIVE 2 (PROPOSED ACTION)

Less than significant

Less than significant; beneficial impacts after project completion

ALTERNATIVE 1

Less than significant

Fire hazards

Less than significant; beneficial impacts after project completion

ALTERNATIVE 3

Less than significant

Less than significant; beneficial impacts after project completion

NO ACTION

Not applicable

No change from current conditions

SCENIC RESOURCES

Temporary Adverse Impacts

ALTERNATIVE 2 (PROPOSED ACTION)

Minor if mitigation steps implemented

ALTERNATIVE 1

Minor if mitigation steps implemented

ALTERNATIVE 3

Minor if mitigation steps implemented

NO ACTION

Not applicable

Enhancement of Scenic Views

ALTERNATIVE 2 (PROPOSED ACTION)

Beneficial

ALTERNATIVE 1

Beneficial

ALTERNATIVE 3

Beneficial

NO ACTION

Beneficial

Cumulative Impacts

ALTERNATIVE 2 (PROPOSED ACTION)

Minor if mitigation steps implemented

ALTERNATIVE 1

Minor if mitigation steps implemented

ALTERNATIVE 3

Minor if mitigation steps implemented

NO ACTION

Minor if mitigation steps implemented

Alternative 1 (Figure 6) is anticipated to have fewer beneficial impacts on water quality due the removal of less nutrient-laden sediment and a shallower final profile. Water quality and habitat improvements under Alternative 1 are also not as beneficial because of the permanent retention of some exotic tree stands along the eastern part of the Project Area. Leaving some eucalyptus along the east shore would necessitate ongoing vigilance against its spread into adjacent habitats and the continuing fall of leaves and debris into the lake. Because fewer exotic trees and weeds are removed under this Alternative, there are fewer opportunities for native habitat enhancement. As a result, beneficial impacts associated with native plant community enhancement are more limited under this Alternative. Visitor access improvements are proposed only for south shore, meaning that existing un-designated access along the east shore would continue. Short-term visitor access impacts associated with construction activity would be minimal relative to Alternatives 2 and 3, because of the smaller scope of Alternative 1.

Alternative 3 (Figure 8) would result in beneficial long-term impacts on water quality and wildlife habitat similar to those described in the Proposed Action. Water quality improvements associated with lake deepening would be more beneficial than under the Proposed Action. Native plant community enhancements would be similar to the Proposed Action. Visitor access improvements would also occur in areas to the south and east of Mountain Lake, much like the Proposed Action. However, initial impacts on scenic resources would be adverse, as full tree removal along the east shore (1.65 acres) and east of the culvert (2.05 acres) is proposed for phase one.

Overall, adverse effects associated with elements of Alternative 1, 2, and 3 are

anticipated to be less than significant and temporary, occurring during construction. Impacts would generally be mitigated by actions that would be implemented as part of the Alternatives. For example, under Alternatives 1, 2, and 3, the temporary disturbance of existing wetland vegetation would be mitigated by exotic plant removal and revegetation with native plant communities. The remaining ongoing impacts can be reduced to less than significant levels through institutional controls and modifications to project operations.

4.1 LAND USE IMPACTS

Changes in existing land use are not anticipated for the Project Area. Project implementation is not anticipated to result in significant land use conflicts or inconsistencies with relevant plans and policies. No impacts are anticipated.

4.1.1 ALTERNATIVE 1 - LAND USE IMPACTS

4.1.1.1 Consistency with Presidio Trust Act and General Objectives of GMPA

Alternative 1 includes dredging, enhancement of native freshwater wetlands, riparian, and woodland habitats; the creation of an interpretative site near historic pump #316; and the provision of trails and overlooks for visitors. These actions comply with the Presidio Trust Act and General Objectives of the GMPA by restoring native plant communities in wetland, riparian, and woodland habitats in the Project Area (Presidio Trust Act; NPS, 1998) and providing an increased opportunity for recreation and interpretation. This Alternative is also consistent with the Presidio GMPA (NPS, 1994), which provides general guidelines for protecting and enhancing water quality in Mountain Lake.

Alternative 1 is generally consistent with the VMP (NPS, 1998). As defined in the VMP, Mountain Lake is located within the Presidio's Native Plant Management Zone. This document advocates protection and enhancement of wildlife habitat by expanding habitat for native plants, increasing diversity of habitats and native species, and avoiding construction-related disturbance to wildlife habitat at critical times in the year. This Alternative supports VMP objectives for restoring native plant communities by reclaiming habitat from past development and areas with non-native species (NPS, 1998). This Alternative is consistent with relevant land use policies. No negative impacts on existing land use policies and guidelines are anticipated.

4.1.1.2 Consistency with Relevant Land Use Policies

Alternative 1 is consistent with the objectives of the San Francisco Master Plan, which emphasizes the protection and maintenance of aquatic ecosystems, the managed use of natural resources, and the control of activities that can adversely affect aquatic systems (City and County of San Francisco, 1988). Because Alternative 1 is consistent with relevant local and regional plans, no impacts are anticipated.

4.1.2 ALTERNATIVE 2 (PROPOSED ACTION) - LAND USE IMPACTS

Alternative 2 is consistent with Trust, NPS, and other relevant land use policies summarized in 4.1.1. Therefore no impacts are anticipated.

4.1.3 ALTERNATIVE 3 - LAND USE IMPACTS

Alternative 3 is consistent with Trust, NPS, and other relevant land use policies summarized in 4.1.1. Therefore no impacts are anticipated.

4.1.4 NO ACTION ALTERNATIVE - LAND USE IMPACTS

The No Action Alternative is not consistent with Trust, NPS, and other relevant land use policies and guidelines summarized in 4.1.1.

4.2 SLOPE STABILITY

4.2.1 ALTERNATIVE 1 - IMPACTS TO SLOPE STABILITY

Dredging activity and soil placement in the Project Area could affect slope stability, with potential impacts within the lake and on adjacent upland areas. However, the dredging design for Alternative 1 includes a buffer to protect shoreline slope stability around the lake's edge where no dredging would occur (Figure 6). Removal of exotic trees and weeds could result in temporary impacts to slope stability. Best management practices that are incorporated into tree and weed removal under Alternative 1 should minimize impacts to soil stability. As a result, no impacts are expected.

4.2.2 ALTERNATIVE 2 (PROPOSED ACTION) - IMPACTS TO SLOPE STABILITY

The impacts summarized in Section 4.2.1 apply to Alternative 2.

4.2.3 ALTERNATIVE 3 - IMPACTS TO SLOPE STABILITY

Alternative 3 may have a slightly larger impact on slope stability within the lake than Alternatives 1 and 2, due to the removal of the top foot of sediment from non-sandy areas within the buffer area. This removal could affect slope stability along the lake edge. Otherwise, the impacts summarized in 4.2.1 apply to Alternative 3.

4.2.4 NO ACTION ALTERNATIVE - IMPACTS TO SLOPE STABILITY

No impacts on slope stability would result from the No Action Alternative.

4.3 WATER RESOURCES

Potential impacts of each Alternative (including the No Action Alternative) on surface water quality and hydrology are discussed in the following sections.

4.3.1 ALTERNATIVE 1 - WATER RESOURCES IMPACTS

4.3.1.1 Temporary Erosion Related Water Quality Impacts

Temporary Impacts Due To Exotic Plant Removal. Alternative 1 includes removal of exotic trees and weeds within the Project Area (Figure 6) scheduled for a period between late summer and fall of 2001 that may temporarily increase soil erosion (1.36 acres of exotic trees and 2 acres of weeds). Because appropriate erosion control measures will be taken following exotic plant removal, this impact is not considered significant.

Temporary Impacts Due To Dredging. Dredging would temporarily increase turbidity within Mountain Lake. Temporary shoreline disturbance and erosion could occur at the staging area due to dredging activities resulting in minor disturbance to the shoreline and desirable vegetation. These short-term impacts are not considered significant.

Temporary Impacts Due to Construction Activities. Temporary erosion impacts could

result from construction activities such as sediment placement in the Project Area and trail construction along the south shore. The employment of best management practices during construction should minimize potential impacts. These short-term impacts are not considered significant.

4.3.1.2 Long Term Impacts On Current Levels Of Erosion

Beneficial Impacts of Native Plant Community Enhancement. Native plant revegetation is anticipated to decrease current erosion associated with exposed soils on the east side of Mountain Lake (Poore and Fries, 1985). Long-term beneficial impacts would result from the planting of appropriate native plant communities in wetland, riparian, and woodland zones within the tree removal area.

Impacts Due to Unmanaged Trail Use. Some soil erosion due to unmanaged trail use would continue.

4.3.1.3 Water Quality Impacts on Contaminants and Water Temperature

Potential Contaminant Impacts Due to Dredged Sediment Placement. Temporary storage of approximately 5000 cubic yards of dredged sediment may take place at the Presidio, and approximately 1,000 cubic yards of suitable fill may be reused to recontour the former tank area. Appropriate handling and reuse of dredged sediment through employing best management practices would minimize the discharge of contaminants into the lake's surface water or leaching of contaminants into groundwater at the reuse or disposal sites.

Potential Contaminant Discharge During Construction Activities. Contaminant discharge during construction could occur under Alternative 1. Short-term impacts could result from discharge of construction-related materials (fuels, lubricants, solvents, and cleaners). The employment of best management practices during construction would reduce the potential for this impact.

Potential Traffic Related Impacts on Surface Water Quality. No increases in traffic are anticipated for parking areas occurring in the vicinity of the Project Area. Traffic-related impacts on surface water quality are considered insignificant. Long-term impacts of traffic-related pollutants in the Project Area would not change from current conditions.

Beneficial Impacts of Eucalyptus Removal on Water Quality. Eucalyptus removal

proposed under Alternative 1 would reduce nutrients in lake water, reduce the leaching of chemicals such as phenolics that are associated with eucalyptus vegetative matter (Moral and Muller 1969; Laws, pers. comm.), and decrease water discoloration associated with eucalyptus leaves (Horne, 2000). These are considered beneficial impacts.

Beneficial Impacts of Sediment Removal on Water Quality. Under Alternative 1, nutrient-rich sediment is dredged from the lake bottom. This action would reduce nutrients available in lake bottom sediments, increase the volume of water in the lake, dilute any remaining nutrients, and reduce the frequency of algae blooms (Horne, 2000). This is considered beneficial.

4.3.1.4 Impacts of Native Plants on Nutrient Levels

The establishment of native wetland and emergent vegetation along the margins of Mountain Lake may increase the efficiency of nutrient uptake from non-point sources of nutrient enrichment within the Mountain Lake watershed (Cannon, 2000). This is considered a beneficial impact.

4.3.1.5 Impacts on Surface Water Flow

No beneficial or adverse impacts on surface water flow would result from Alternative 1.

4.3.1.6 Potential Effect on Groundwater Recharge

Available information indicates that Mountain Lake is probably groundwater-fed (Horne, 2000). Dredging could affect lake levels if underlying impervious sediments are removed (Horne, 2000). However, during the construction of Park Presidio Boulevard, approximately 10 to 20 feet of fill material was deposited in the lake. A maximum of two feet of lake sediment would be removed under this Alternative. Therefore it is unlikely that sediment removal would impact groundwater recharge.

4.3.2 ALTERNATIVE 2 (PROPOSED ACTION) - WATER RESOURCES IMPACTS

4.3.2.1 Temporary Erosion Related Water Quality Impacts

The impacts summarized in Section 4.3.1.1 apply to Alternative 2. Additional temporary impacts are anticipated from east shore trail construction, future construction activities, and future tree removal activities (an additional 3.29 acres of trees and 4.3 acres of exotic weeds). The employment of best management practices during construction would reduce the potential for this impact.

4.3.2.2 Long Term Impacts On Current Levels of Erosion

Beneficial Impacts of Native Plant Community Enhancement. Native plant community enhancement would decrease current erosion associated with exposed soils to the east of Mountain Lake, as described in Section 4.2.1.2. Long-term beneficial impacts would be greater under Alternative 2 than under Alternative 1, due to the higher acreage of exotic trees replaced with native plants. Additional native plant enhancement would result in greater beneficial impacts under Alternative 2.

Impacts Due to Managed Trail Use. Alternative 2 is anticipated to have a beneficial impact on soil erosion by reducing unmanaged use of the east shore by building a trail through the area.

4.3.2.3 Water Quality Impacts on Contaminants and Water Temperature

The impacts summarized in Section 4.3.1.3 apply to phase one and future phases of Alternative 2. Additional temporary impacts include east shore trail construction, more extensive dredging (11,500 cy), and future phase activities. Beneficial impacts of eucalyptus removal on water quality and beneficial impacts of dredging are similar to those described in Section 4.3.1.3. Additional beneficial impacts on water quality, including a reduction in the likelihood of algae blooms, would result from the dredging of more sediment from the lake under Alternative 2. Additional long-term benefits would result from future phase tree removals.

4.3.2.4 Impacts of Native Plants on Nutrient Levels

Beneficial impacts of native plant community enhancement are similar to those described in Section 4.3.1.4. Additional long-term benefits would result from future native plant community enhancement.

4.3.2.5 Impacts on Surface Water Flow

The jurisdictional wetland to the east of the east arm culvert is hydrologically connected to Mountain Lake. Future phase replacement of the east arm culvert with a bridge and restoration of wetlands beyond the east arm culvert would have the beneficial effect of improving surface water flow to Mountain Lake.

4.3.2.6 Potential Effect on Groundwater Recharge

Impacts on groundwater recharge are similar to those described in Section 4.3.1.6. No impacts are anticipated.

4.3.3 ALTERNATIVE 3 - WATER RESOURCES IMPACTS

4.3.3.1 Temporary Erosion Related Water Quality Impacts

The impacts summarized in Section 4.3.1.1 apply to Alternative 3. This Alternative would result in temporary erosion impacts due to removal of the exotic trees and weeds in the first phase (3.7 acres of trees and 4.5 acres of weeds). Additional temporary impacts are anticipated from east shore trail construction, future construction activities, and future phase tree removals. These impacts are not considered significant.

4.3.3.2 Long Term Impacts on Current Levels of Erosion

Beneficial Impacts of Native Plant Community Enhancement. Native plant community enhancement would decrease current erosion associated with exposed soils to the east of Mountain Lake, as described in Section 4.3.2.2. Additional native plantings under Alternative 3 would result in beneficial impacts.

Impacts Due to Managed Trail Use. Alternative 3 is anticipated to have a beneficial impact on soil erosion by reducing unmanaged use of east shore through the construction of a new trail.

4.3.3.3 Water Quality Impacts on Contaminants and Water Temperature

The impacts summarized in Section 4.3.1.3 apply to Alternative 3. Additional temporary impacts are anticipated due to east shore trail construction, more extensive dredging

(14,300 cy), and future phase tree removals. Beneficial impacts of eucalyptus removal on water quality and beneficial impacts of dredging are similar to those described in Section 4.3.1.3. Additional beneficial impacts on water quality, including a reduction in the likelihood of algae blooms, would result from the dredging of more sediment from the lake under Alternative 3. Additional long-term benefits would result from future phase tree removals.

4.3.3.4 Impacts of Native Plants on Nutrient Levels

Beneficial impacts of eucalyptus removal on water quality are similar to those described in Section 4.3.1.4. Additional long-term benefits would result from future native plant community enhancements.

4.3.3.5 Impacts on Surface Water Flow

The jurisdictional wetland to the east of the east arm culvert is hydrologically connected to Mountain Lake. Replacement of the east arm culvert with a bridge and restoration of wetlands to the east of the culvert would have a beneficial impact on surface water flow to Mountain Lake.

4.3.3.6 Potential Effect on Groundwater Recharge

Impacts on groundwater recharge are similar to those described in Section 4.3.1.6. No impacts are anticipated.

4.3.4 NO ACTION ALTERNATIVE

4.3.4.1 Temporary Erosion Related Water Quality Impacts

No temporary erosion related water quality impacts would occur.

4.3.4.2 Long Term Impacts On Current Levels Of Erosion

No beneficial impacts on current levels of erosion would occur. Erosion impacts associated with unmanaged trail use would continue.

4.3.4.3 Water Quality Impacts on Contaminants and Water Temperature

No temporary construction related contaminant impacts would occur. Existing water quality impacts of eucalyptus trees and existing lake temperature problems would continue. Shallowness of lake would allow emergent vegetation to rapidly fill lake.

4.3.4.4 Impacts of Native Plants on Nutrient Levels

No beneficial impacts of native plant community enhancements would occur.

4.3.4.5 Impacts on Surface Water Flow

No beneficial impacts of improved surface water flow would occur.

4.3.4.6 Potential Effect on Groundwater Recharge

No impacts on groundwater recharge would occur.

4.4 BIOLOGICAL RESOURCES

4.4.1 ALTERNATIVE 1 - IMPACTS TO BIOLOGICAL RESOURCES

4.4.1.1 Temporary Impacts to Wildlife Due to Tree and Weed Removal

Alternative 1 includes the removal of 1.36 acres of exotic trees and 2 acres of weeds within the Project Area (Figure 6). These activities would temporarily affect wildlife, including special status species known to occur within the Project Area. Nearby native habitats within the Project Area would be protected during these activities, and could provide alternative habitat and/or refugia for wildlife during tree and weed removal activities. These temporary impacts are not considered significant.

4.4.1.2 Temporary Impacts to Wildlife Due to Construction Activities

Proposed construction activity such as dredging, sediment removal, and overlook construction could result in minor temporary disturbance to birds, fish, and other wildlife known to occur within the Project Area. Nearby native habitats within the Project Area would be protected during these activities, and can provide alternative habitat and/or refugia for wildlife during tree and weed removal activities. These temporary impacts are not considered significant.

4.4.1.3 Long-term Beneficial Impacts from Native Plant Enhancement

Dredging, exotic plant removal, and revegetation proposed in Alternative 1 would result in long-term beneficial impacts to wildlife.

The restoration of native plant communities would enhance habitat for birds and wildlife, with benefits increasing over time as habitat complexity and quality increase. Although eucalyptus does provide some habitat value for birds (e.g., nesting and roosting habitat for raptors), the riparian woodland and native woodland that would replace the eucalyptus have higher habitat value and are more restricted at the Presidio. Exotic weed removal is anticipated to reduce nuisance pests such as rats, which are known to prey on the eggs and fledglings of ground nesting birds such as orange-crowned warblers (*Vermivora celata*) and dark-eyed juncos. In addition, ground nesting birds are known to be more threatened with predation by Stellar's jays (*Cyanocitta stelleri*) in a relatively uniform, homogeneous habitat containing weeds (Clark, 2000).

4.4.1.4 Temporary Impacts on Native Vegetation

Exotic plant removal and revegetation may have temporary impacts on desirable plants such as willows, which are found among the exotic species to be removed.

Exotic tree and weed removal is proposed within the Project Area (Figure 4). Many of these weeds, such as Boston ivy and Himalayan blackberry, occur in close association with arroyo willow in riparian areas. Impacts to existing riparian and upland habitats from exotic plant removal could be significant. However, these impacts would be temporary. Trimming of willows in transitional wetland areas may be necessary to remove persistent weeds such as Cape ivy. Trimming of willows may also be required when the culvert at the east arm of Mountain Lake is replaced with a bridge.

Dredging activities may also have impacts on existing wetlands. Potential impacts on

wetlands depend upon the type of dredging methods employed. Temporary impacts to wetlands are likely to be minor if clamshell dredging is used.

4.4.1.5 Impacts on Native Plant Communities

Alternative 1 would include the restoration of 1.36 acres of habitat in the exotic tree removal area and 2 acres of native plant community habitat in the exotic weed removal area. Three native plant community zones would be reestablished adjacent to the lake: wetland, riparian, and oak woodland zones. Project benefits include diversification of native plant communities through the reintroduction of many species that previously occurred at the Project Area. The addition of native trees such as red alder, holly-leaf cherry, wax myrtle, oak, and willow to the western edge of the Project Area is considered a beneficial impact. The removal of exotic weeds and revegetation of the area between the golf course and the Juan Bautista De Anza Historic Trail is also considered a beneficial impact. Wetland quality is anticipated to improve from native plant community enhancements.

4.4.1.6 Beneficial Impacts on Wetlands Due to Exotic Tree and Weed Removal

Removal of weeds is considered a project benefit, as weeds compromise the quality of wetlands habitat. Removal of exotic trees such as eucalyptus is considered a project benefit because of the resulting improvement to water quality within wetlands areas. Native wetland enhancement would increase species diversity in existing wetlands.

4.4.1.7 Potential Land-Use Conflicts between Visitor Use and Habitat

Existing conflicts between visitor use areas and natural habitat in uncontrolled access areas along the east shore of Mountain Lake would continue under Alternative 1. Uncontrolled access to the enhanced habitats could result in adverse impacts to wildlife and vegetation.

4.4.1.8 Impacts of Adaptive Management Actions

Adaptive management actions under Alternative 1 may involve removal of non-native carp from the lake. Project benefits of fish removal include an increase in smaller planktivorous fish and a decrease in nutrients in the lake, lowering the likelihood of algae blooms in Mountain Lake and increasing the potential for aquatic flora and fauna restoration. The only fish documented at Mountain Lake are exotic species. No special

status aquatic biota has been documented. No adverse effects to native aquatic fauna are anticipated from this action.

4.4.2 ALTERNATIVE 2 (PROPOSED ACTION) - IMPACTS TO BIOLOGICAL RESOURCES

4.4.2.1 Temporary Impacts to Wildlife Due to Tree and Weed Removal

The impacts summarized in Section 4.4.1.1 apply to Alternative 2. Additional temporary impacts are anticipated from future phase tree and weed removal activities (3.29 acres of trees and 4.3 acres of exotic weeds).

4.4.2.2 Temporary Impacts to Wildlife Due to Construction Activities

The impacts summarized in Section 4.4.1.2 apply to this alternative. Additional temporary impacts are anticipated from future phase construction activities.

4.4.2.3 Long-term Impacts from Native Plant Enhancement

The impacts summarized in Section 4.4.1.3 apply to Alternative 2. Additional beneficial impacts are anticipated from future native plant enhancement (3.29 acres of exotic tree removal and 4.3 acres of weed removal). Wetlands enhancement during future phases could result in the creation of additional shallow, open water habitat.

4.4.2.4 Temporary Impacts on Native Vegetation

The impacts summarized in Section 4.4.1.4 apply to Alternative 2. Additional temporary impacts are anticipated from future phase tree and weed removal activities.

4.4.2.5 Impacts on Native Plant Communities

The beneficial impacts summarized in Section 4.4.1.5 apply to Alternative 2. Additional beneficial impacts are anticipated from future native plant enhancement (3.29 acres of exotic tree removal and 4.3 acres of weed removal).

4.4.2.6 Beneficial Impacts on Wetlands Due to Exotic Tree and Weed Removal

The beneficial impacts summarized in Section 4.4.1.6 apply to Alternative 2. Additional beneficial impacts to wetlands (e.g., wetlands to the east of the culvert) are anticipated from future native plant enhancement.

4.4.2.7 Potential Land-Use Conflicts between Visitor Use and Habitat

Proposed trail construction makes provisions for safe visitor access that is likely to reduce impacts to habitat from "off-trail" visitor use along the east shore of Mountain Lake. By defining currently uncontrolled access along the east shore, trail construction under Alternative 2 is expected to have a beneficial impact on the visitor experience and on wildlife.

4.4.2.8 Impacts of Adaptive Management Actions

The impacts summarized in Section 4.4.1.8 apply to Alternative 2.

4.4.3 ALTERNATIVE 3 - IMPACTS TO BIOLOGICAL RESOURCES

4.4.3.1 Temporary Impacts to Wildlife Due to Tree and Weed Removal

The impacts summarized in Section 4.4.1.1 apply to Alternative 3. Additional temporary impacts are anticipated during phase one (3.7 acres of trees and 4.5 acres of exotic weeds) and future phase tree and weed removal activities (0.75 acres of trees and 1.8 acres of exotic weeds).

4.4.3.2 Temporary Impacts to Wildlife Due to Construction Activities

The impacts summarized in Section 4.4.1.2 apply to Alternative 3. Additional temporary impacts are anticipated from more extensive first phase activities (culvert and tree removals) and future phase construction activities.

4.4.3.3 Long-term Impacts from Native Plant Enhancement

The impacts summarized in Section 4.4.1.3 apply to Alternative 3. Additional beneficial impacts are anticipated from more extensive native plant enhancement activities. Wetlands enhancement during future project phases could result in the creation of additional shallow, open water habitat.

4.4.3.4 Temporary Impacts on Native Vegetation

The impacts summarized in Section 4.4.1.4 apply to Alternative 3. Additional temporary impacts are anticipated from future phase tree and weed removal.

4.4.3.5 Impacts on Native Plant Communities

Impacts summarized in Section 4.4.1.5 apply to Alternative 3. Additional beneficial impacts are anticipated from more extensive first phase and future native plant enhancement.

4.4.3.6 Beneficial Impacts on Wetlands Due to Exotic Tree and Weed Removal

The beneficial impacts summarized in Section 4.4.1.6 apply to Alternative 3.

4.4.3.7 Potential Land-Use Conflicts between Visitor Use and Habitat

The impacts summarized in Section 4.4.2.7 apply to Alternative 3.

4.4.3.8 Impacts of Adaptive Management Actions

The impacts summarized in Section 4.4.1.8 apply Alternative 3.

4.4.4 NO ACTION ALTERNATIVE - IMPACTS TO BIOLOGICAL RESOURCES

4.4.4.1 Temporary Impacts to Wildlife Due to Tree and Weed Removal Activities

No temporary impacts to wildlife would occur under the No Action Alternative.

4.4.4.2 Temporary Impacts to Wildlife Due to Construction Activities

No temporary impacts to wildlife would occur under the No Action Alternative.

4.4.4.3 Long-term Impacts from Native Plant Enhancement

No beneficial impacts to wildlife would occur under the No Action Alternative.

4.4.4.4 Temporary Impacts on Native Vegetation

No temporary impacts to native vegetation would occur.

4.4.4.5 Impacts on Native Plant Communities

No beneficial impacts to native plant communities would occur.

4.4.4.6 Beneficial Impacts on Wetlands Due to Exotic Tree and Weed Removal

No beneficial impacts to wetlands would occur.

4.4.4.7 Potential Land-Use Conflicts between Visitor Use and Habitat

The impacts summarized in all sections of 4.4.1.7 would continue to apply under the No Action Alternative.

4.4.4.8 Impacts of Adaptive Management Actions

No beneficial impacts from future adaptive management efforts would occur.

4.5 CULTURAL RESOURCE IMPACTS

4.5.1 ALTERNATIVE 1 - IMPACTS TO CULTURAL RESOURCES

4.5.1.1 Impacts to Mountain Lake and Historic Pump #316

Alternative 1 includes measures to enhance the viability of Mountain Lake but would have no adverse effect on the qualities that qualify it as a Landmark. Alternative 1 also includes the stabilization of historic pump #316 and the non-historic structure within which it is located. These actions are considered beneficial.

4.5.1.2 Potential Impacts to Unknown Cultural Resources

Potential Dredging Impacts to Unknown Cultural Resources. It is possible that additional historic structures and/or objects are present within sediment at Mountain Lake and could be impacted by project activities. Proposed dredging activities would not occur in areas that were historically upland, but only within the former lake bed, minimizing potential impacts to unknown cultural resources within the sediment. The preparation of an Archeological Management Assessment and Monitoring Program, which would include an inventory of known and/or potential archeological sites at Mountain Lake and may include test excavations, prior to enhancement activities would minimize construction related impacts to cultural resources hidden in the sediment. During dredging, professional archeological monitoring would ensure that any unanticipated, post-review discoveries are treated appropriately.

Potential Construction Related Impacts to Cultural Resources. Other than Mountain Lake and pump #316, there are no known cultural resources of significance or potential significance where construction related activity would take place within the Project Area. It is possible that additional hidden historic sites and/or objects present in the Project Area could be impacted by project activities such as weed removal, tree removal and revegetation. The preparation of an Archeological Management Assessment and Monitoring Program, which would include an inventory of known and/or potential archeological sites at Mountain Lake and may include test excavations, prior to enhancement activities would minimize construction related impacts to hidden cultural resources. During the construction phases of the project, professional archeological monitoring would ensure that any unanticipated, post-review discoveries are treated appropriately. If any archeological or other historic resources are unexpectedly discovered during the construction process, the State Historic Preservation Office and the Advisory Council on Historic Preservation would be notified and the protocols outlined

in 36 CFR Part 800.13 "Post Discoveries" would be followed. This should minimize the impacts of construction on potential cultural resources.

4.5.2 ALTERNATIVE 2 (PROPOSED ACTION) - IMPACTS TO CULTURAL RESOURCES

4.5.2.1 Impacts to Mountain Lake and Historic Pump #316

The impacts summarized in Section 4.5.1.1 apply to Alternative 2. Beneficial impacts would result from enhancement activities (overlooks, interpretation area, trails, and native vegetation enhancement) around pump #316.

4.5.2.2 Potential Impacts to Unknown Cultural Resources

The impacts summarized in Section 4.5.1.2 apply to Alternative 2. Additional potential impacts to unknown cultural resources may occur during first phase trail and seating construction, as well as during future phase culvert removal, tree removal and bridge construction activities. These potential impacts would be mitigated by the actions described in Section 4.5.1.2.

4.5.3 ALTERNATIVE 3 - IMPACTS TO CULTURAL RESOURCES

4.5.3.1 Impacts to Mountain Lake and Historic Pump No. 316

The impacts summarized in Section 4.5.1.1 apply to Alternative 3. Beneficial impacts would result from enhancement activities (overlooks, interpretation area, trails, and native vegetation enhancement) of the area around pump #316.

4.5.3.2 Potential Impacts to Unknown Cultural Resources

The impacts summarized in Section 4.5.1.2 apply to Alternative 3. Additional potential impacts to unknown cultural resources may occur during first phase trail construction, overlook construction, culvert removal, tree removal, and bridge construction, as well as during future phase tree removal, weed removal, and revegetation activities. These potential impacts are mitigated by the actions described in Section 4.5.1.2.

4.5.4 NO ACTION ALTERNATIVE - IMPACTS TO CULTURAL RESOURCES

4.5.4.1 Impacts to Mountain Lake and Historic Pump #316

Beneficial impacts to Mountain Lake and historic pump #316 would not occur under the No Action Alternative.

4.5.4.2 Potential Impacts to Unknown Cultural Resources

No impacts to unknown cultural resources would result from the No Action Alternative.

4.6 RECREATION

4.6.1 ALTERNATIVE 1 - IMPACTS TO RECREATION

4.6.1.1 Temporary Impacts Due to Dredging and Trail Improvements

Visitor access would be temporarily limited during project construction. Designated trail access within the Project Area is on West Pacific Avenue (part of the Juan Bautista De Anza Historic Trail), which runs parallel to the east shore of the lake to the underpass under Park Presidio Boulevard (Figure 2). The east side of Mountain Lake would be closed during construction.

Advance notice and signage proposing detours to the public will be provided so that as much of the Project Area as possible remains accessible. This temporary closure is less than significant. In the long-term, visitor access would be enhanced at Mountain Lake.

Enhancement areas would be fenced during the establishment of native plant communities. However, designated trails do not currently exist in this area. Therefore, this temporary closure is not considered significant.

4.6.1.2 Impacts of Making Visitor Facility Improvements

Under Alternative 1, visitor facility improvements include construction of the south shore overlook. This improvement is considered a beneficial effect because it improves the

quality of visitor facilities at Mountain Lake and increases passive recreational opportunities such as bird watching.

4.6.2 ALTERNATIVE 2 (PROPOSED ACTION) - IMPACTS TO RECREATION

4.6.2.1 Temporary Impacts Due to Dredging and Trail Improvements

The temporary impacts summarized in Section 4.6.1.1 apply to Alternative 2. Additional temporary impacts to visitor services would result from future construction.

4.6.2.2 Impacts of Making Visitor Facility Improvements

The beneficial impacts summarized in Section 4.6.1.2 apply to Alternative 2. More extensive visitor improvements, such as the east shore trail (300'), overlooks, and the bridge over the east arm would create additional beneficial impacts to visitor services under Alternative 2.

4.6.3 ALTERNATIVE 3 - IMPACTS TO RECREATION

4.6.3.1 Temporary Impacts Due to Dredging and Trail Improvements

The temporary impacts summarized in Section 4.6.1.1 apply to Alternative 3. Additional temporary impacts to visitor services would result from the more extensive first phase and future construction activities included in Alternative 3.

4.6.3.2 Impacts of Making Visitor Facility Improvements

The beneficial impacts summarized in Section 4.6.1.2 apply to Alternative 3. More extensive first phase visitor improvements, such as the east shore trail, overlooks, and the bridge over the east arm, create additional beneficial impacts to visitor services under Alternative 3. This Alternative also includes a new trail at a length of 490'.

4.6.4 NO ACTION ALTERNATIVE - IMPACTS TO RECREATION

4.6.4.1 Temporary Impacts Due to Dredging and Trail Improvements

No adverse impacts would result from the No Action Alternative.

4.6.4.2 Impacts of Making Visitor Facility Improvements

No beneficial impacts would result from the No Action Alternative.

4.7 TRANSPORTATION

4.7.1 ALTERNATIVE 1 - IMPACTS TO TRANSPORTATION

Improvements included in Alternative 1 are proposed to accommodate existing users of Mountain Lake and would not affect access and parking in the Project Area. Nonetheless, Alternative 1 may result in a minimal increase in overall traffic because of the increased attractiveness of the site.

4.7.2 ALTERNATIVE 2 (PROPOSED ACTION) - IMPACTS TO TRANSPORTATION

The impacts summarized in Section 4.7.1 apply to Alternative 2.

4.7.3 ALTERNATIVE 3 - IMPACTS TO TRANSPORTATION

The impacts summarized in Section 4.7.1 apply to Alternative 3.

4.7.4 NO ACTION ALTERNATIVE - IMPACTS TO TRANSPORTATION

No increases in automobile traffic are anticipated from the No Action Alternative.

4.8 AIR QUALITY

4.8.1 ALTERNATIVE 1 - IMPACTS TO AIR QUALITY

4.8.1.1 Temporary Dust Generated from Construction Activities

Construction activities and exotic tree removal proposed as part of Alternative 1 could temporarily generate dust by heavy machinery operation on unpaved surfaces, earthmoving and grading, and wind erosion of unpaved areas and uncovered stockpiles.

4.8.1.2 Temporary Increase in Particulate Emissions Due to Construction

Construction activities and exotic tree removal proposed as part of Alternative 1 could temporarily generate particulate matter and diesel fuel combustion products such as Ox, CO, and SO₂.

4.8.1.3 Air Pollution Emissions from Ongoing Operations at Mountain Lake

Implementation of the Proposed Action would not significantly increase the amount of emissions. Traffic-related emissions and emissions from routine landscape maintenance are expected to be minor and similar to current levels. Because operation-related emissions under are not expected to increase over existing conditions this impact is considered less than significant.

4.8.2 ALTERNATIVE 2 (PROPOSED ACTION) - IMPACTS TO AIR QUALITY

The impacts summarized in Section 4.8.1 apply to Alternative 2. Similar impacts may occur during future phase construction activities.

4.8.3 ALTERNATIVE 3 - IMPACTS TO AIR QUALITY

The impacts summarized in Section 4.8.1 apply to Alternative 3. Temporary impacts may be slightly greater under this Alternative due to the broader scope of phase one activities. Similar impacts may occur during future phase construction activities.

4.8.4 NO ACTION ALTERNATIVE - IMPACTS TO AIR QUALITY

No impacts to air quality would result from the No Action Alternative.

4.9 NOISE

4.9.1 ALTERNATIVE 1 - NOISE IMPACTS

4.9.1.1 Noise Increase during Construction and Tree Removal

Construction and tree removal could be noticeable and annoying to nearby residents and visitors to Mountain Lake. Contractors and other equipment operators would be obliged to comply with provisions equivalent to the standards in the San Francisco Noise Ordinance. Because construction noise would be temporary and restricted in occurrence and level, the increase in noise in the project vicinity during project construction would not be considered a significant impact.

4.9.1.2 Potential Long-term Noise Increases from Ongoing Operations

Operation and maintenance would result in no or minimal increase in noise levels compared to current conditions. For example, trash collection may occur at a location along the east part of the Project Area in response to increased use of the area. Regular maintenance activities are not anticipated to increase on completion of the project construction phases.

4.9.2 ALTERNATIVE 2 (PROPOSED ACTION) - NOISE IMPACTS

The impacts summarized in Section 4.9.1 apply to Alternative 2.

4.9.3 ALTERNATIVE 3 - NOISE IMPACTS

The impacts summarized in Section 4.9.1 apply to Alternative 3.

4.9.4 NO ACTION ALTERNATIVE - NOISE IMPACTS

No adverse noise impacts would occur from the No Action Alternative.

4.10 HUMAN HEALTH, SAFETY, AND THE ENVIRONMENT

4.10.1 ALTERNATIVE 1 - IMPACTS TO HEALTH, SAFETY AND THE ENVIRONMENT

4.10.1.1 Construction-Related Hazards

Alternative 1 includes construction that could pose hazards to the public if uncontrolled access is permitted in the project construction areas during construction. However, because areas under construction would be fenced and closed to the public, this hazard is considered to be insignificant.

Remedial investigations have characterized waste in the Project Area. No hazardous levels of contamination occur within the Project Area (Dames and Moore, 1997). Analysis of lake sediment indicates that contaminants are present at levels that do not pose risks to human health under expected exposure scenarios.

4.10.1.2 Potential Fire Hazards

The climate of the Presidio is not conducive to wildfire because of its cool and humid conditions. Eucalyptus stands, because of their high natural loading of fuels and because of volatile compounds associated with eucalyptus bark, are considered a higher fire hazard than native plant communities (NPS, 1994). Although the risk of wildfire is low in the Presidio, tree removal in Alternative 1 could reduce potential fire hazard within the Project Area.

4.10.2 ALTERNATIVE 2 (PROPOSED) - IMPACTS TO HEALTH, SAFETY AND THE ENVIRONMENT

The impacts summarized in Sections 4.10.1 and 4.10.2 apply to Alternative 2.

4.10.3 ALTERNATIVE 3 - IMPACTS TO HEALTH, SAFETY AND THE ENVIRONMENT

The impacts summarized in Sections 4.10.1 and 4.10.2 apply to Alternative 3.

4.10.4 NO ACTION ALTERNATIVE - IMPACTS TO HEALTH, SAFETY AND THE ENVIRONMENT

No changes in current conditions are expected from the No Action Alternative.

4.11 SCENIC RESOURCES

4.11.1 ALTERNATIVE 1 - IMPACTS TO SCENIC RESOURCES

4.11.1.1 Temporary Adverse Impacts on Scenic Resources

Initial adverse effects on visitor scenic resources are anticipated during dredging and other construction activities. Exotic tree and weed removal proposed under Alternatives 1 would result in temporary adverse impacts to visual resources. Eucalyptus removal along the east shore would have a temporary adverse impact on scenic resources at the lake, by exposing bare slopes. The permanent retention of four large eucalyptus trees (roughly 20% of the canopy) along the east shore would mitigate some of the visual impacts of tree removals along the east shore. Tree and weed removal sites would temporarily appear to be bare during the revegetation process. Native species planted should cover the tree removal sites within three to five years.

4.11.1.2 Long Term Benefits to Scenic Resources

Enhancement of the View from the South Shore. Removal of exotic trees and weeds, revegetation, and the creation of an interpretive overlook along the south shore are proposed under Alternative 1. These actions, as well as the enhancement of native plant communities over time, would improve scenic resources in the Project Area.

Tree removal would permanently change the appearance of the east shore, opening up views of the golf course and cypress trees beyond (Figure 10). Eucalyptus trees would be removed along the east shore, and shorter-stature species including yellow willow, red alder, big-leaf maples, coast live oak, and wax myrtle would be planted. Over three to five years, a more complex mosaic of wetland, riparian, and native woodland habitat would be visible in the foreground. For some, the removal of these eucalyptus would be

considered a negative visual impact. For others, tree removal might be considered a beneficial visual impact, by opening up views into the Presidio Golf Course. The permanent retention of four, large eucalyptus trees (roughly 20% of the total existing canopy) along the de Anza Trail would mitigate the visual impact of tree removal along the east shore.

The view from the south shore looking west toward Highway 1 would also change under Alternative 1. Native tree planting amidst the existing trees along the western shore of Mountain Lake would be fully-grown in 25 to 30 years. These plantings would completely block views of passing cars and trucks on Park Presidio Boulevard, as well as block much of the Presidio housing on the hill above (Figure 13). These enhancements are considered beneficial to scenic resources.

Enhancement of Views from the East Shore. Alternative 1 would open up views of the lake from the Juan Bautista De Anza Historic Trail and the east shore. The exotic weed removal and the enhancement of native plant communities (native wetland, riparian, and woodland species) would eliminate bare, eroded slopes along the east shore, improving overall scenic character within the Project Area.

4.11.2 ALTERNATIVE 2 (PROPOSED ACTION) - IMPACTS TO SCENIC RESOURCES

4.11.2.1 Temporary Adverse Impacts on Scenic Resources

The impacts summarized in Section 4.11.1.1 apply to Alternative 2. Eucalyptus removal along the east shore would have a temporary adverse impact on scenic resources at the lake. First phase retention of four large eucalyptus trees (roughly 20% of the canopy) would mitigate some of the visual impact of tree removals along the east shore. Under Alternative 2, these four trees would be removed during a future phase, creating an additional temporary adverse impact on scenic resources at the time of removal.

4.11.2.2 Long Term Benefits to Scenic Resources

Enhancement of Views from the South. The impacts summarized in Section 4.11.1.2 apply to Alternative 2. Future phase weed removal, exotic tree removal, culvert removal and bridge construction would create new viewpoints, eliminate more bare slopes, and create a more visually-complex mosaic of vegetation. Future phase eucalyptus removal along the east shore (Figure 11) would further open the Project Area to views of the golf course and cypress trees beyond. The visual impact of this future phase removal would be

mitigated by growth of native woodland planted on the slopes below the tree removal area, which would create a pleasing visual buffer along the east shore (Figure 11).

Enhancement of Views from the East Shore. Alternative 2 would open up views of the lake from the Juan Bautista De Anza Historic Trail and the east shore. The construction of a trail and three overlooks along the east shore would create additional opportunities for visitors to enjoy the views. Future exotic weed removal and the enhancement of native plant communities (native wetland, riparian, and woodland species) would eliminate bare, eroded slopes along the east shore, improving scenic resources within the Project Area. Future phase culvert removal and bridge construction would increase visual access up the east arm, into the beautiful wetland and riparian woodland there. These are considered to be beneficial impacts.

4.11.3 ALTERNATIVE 3 - IMPACTS TO SCENIC RESOURCES

4.11.3.1 Temporary Adverse Impacts on Scenic Resources

The impacts summarized in Section 4.11.1.1 apply to Alternative 3. Temporary adverse impacts to scenic resources would occur during future phases of Alternative 3.

4.11.3.2 Long Term Benefits to Scenic Resources

Long term beneficial impacts summarized in Section 4.11.2.2 apply to Alternative 3.

4.11.4 NO ACTION ALTERNATIVE - IMPACTS TO SCENIC RESOURCES

No beneficial impacts to existing resources would result from the No Action Alternative.

4.12 CUMULATIVE IMPACTS

4.12.1 ALTERNATIVE 1 - CUMULATIVE IMPACTS

The combined, incremental effects of the restoration of Mountain Lake, when added to other past, present, and foreseeable future actions within the City of San Francisco, would be a benefit to the environment. These actions include the following:

- Restoring wetlands at Crissy Field
- Restoring Lobos Creek
- Restoring the Tennessee Hollow watershed
- Restoring Islais Creek (Glen Canyon Park)
- Restoring wetlands at Shoreline Park (India Basin) north of Hunter's Point (as well as those to be restored as part of the shipyard cleanup)
- Constructing wetlands at Heron's Head Park near Pier 98 on San Francisco's southeast shoreline
- Restoring wetlands at Lake Merced
- Restoring wetlands at McLaren Park (Yee, pers. comm., 2000)

These actions would result in the long-term enhancement and protection of local marine and freshwater habitats. Restoration would aid in the perpetuation of individual species (by providing food and shelter for residents and migrants) and marsh and stream-side communities within the context of a heavily urbanized city where most of this habitat has been altered or destroyed. Restoration would not only be a benefit for the future of wildlife and for the improvement of water quality, but for the quality of life of San Francisco's inhabitants as well. While the projects may contribute to an overall increase in visitor use to the project areas (the concern being the potential increase in vehicle trips within the city and associated air emissions), these actions would promote public understanding of the small fragments of original natural communities that still survive in San Francisco, and help guarantee their survival.

4.12.2 ALTERNATIVE 2 (PROPOSED ACTION) - CUMULATIVE IMPACTS

The impacts summarized in Section 4.10.1 apply to all phases of this Proposed Action.

4.12.3 ALTERNATIVE 3 - CUMULATIVE IMPACTS

The impacts summarized in Section 4.10.1 apply to all phases of this Proposed Action.

4.12.4 NO ACTION ALTERNATIVE - CUMULATIVE IMPACTS

The Alternative would not contribute to the beneficial cumulative impacts of restoration projects throughout the City of San Francisco.