Mount Umunhum Environmental Restoration and Public Access Project

Draft Environmental Impact Report
SCH# 2010122037

PREPARED FOR:
Midpeninsula Regional Open Space District
330 Distel Circle
Los Altos, CA 94022

December 2011

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1 INTRODUCTION

1.1 INTRODUCTION TO THE DRAFT ENVIRONMENTAL IMPACT REPORT (DRAFT EIR)

This Draft EIR evaluates the environmental impacts of the proposed Mount Umunhum Environmental Restoration and Public Access Project (proposed project). The lead agency and project applicant is the Midpeninsula Regional Open Space District (MROSD). The MROSD's mission is to purchase, permanently protect, and restore land to form a regional open space greenbelt. MROSD jurisdiction encompasses 550 square miles in parts of Santa Clara, San Mateo and Santa Cruz counties, in Northern California. The project site is located on approximately 44 acres in the southern Santa Cruz Mountains, within the MROSD's 18,000-acre Sierra Azul Open Space Preserve located in Santa Clara County. Under a separate project, US Army Corps of Engineers is abating hazardous materials from structures on the project site. The exteriors of structures have been removed in varying degrees; some structures appear relatively unaffected by the abatement, while others are stripped down to only the framing and foundation.

The project includes phased public access to the summit of Mount Umunhum, as well as roadway and access improvements, ecological restoration, and development of public use facilities and a range of possible amenities such as trails, observation and reflection areas, interpretive displays, picnic tables, shade structures, restrooms, camp sites, hang glider facilities, and a visitor center. The project also includes longer term plans to allow public access to the summit of Mount Thayer from the Lexington Basin. No access to Mount Thayer from Mount Umunhum is proposed as part of this project. The goal of the proposed project is to establish a fiscally and environmentally sustainable visitor destination that aligns with the District's mission by balancing public access, enjoyment, and education with environmental restoration. This goal will be achieved through several objectives including creating an accessible and accommodating destination, removing hazards and restoring the native landscape, providing minimalist amenities and ample trails, and highlighting the natural and cultural history of the site. (See Section 3, "Project Description" for further details.)

1.2 INTENDED USES OF THIS DRAFT EIR

The purpose of a Draft EIR is to analyze the potential environmental impacts of a project, propose measures to reduce or avoid significant impacts associated with the project when feasible, and to also evaluate alternatives to the project that are capable of reducing or eliminating significant effects. A Draft EIR must also disclose any significant impacts that cannot be avoided, growth-inducing effects, and cumulative impacts. The purpose of a Draft EIR is not to recommend approval or denial of a project, but to provide information to aid the public and decision makers as well as permitting agencies in the decision-making process.

This Draft EIR is a Project EIR pursuant to Section 15161. It examines all phases of the project: demolition, construction and operation. The analysis identifies significant and potentially significant impacts of all phases of the project. In some cases, the extent of impacts may not be fully known, such as the potential for certain rare plants or animals to be located on the site, or the potential that archaeological resources could be found during grading. Mitigation measures are provided to reduce all significant impacts. In those cases where the impacts are well defined, the mitigation is similarly precise. Where impacts may or may not occur due to unknown conditions, the potential for the impact is discussed, and mitigation is presented in stepwise fashion, wherein a survey may be prescribed, and if resources are found during the survey, other actions related to mitigating the impact are activated.

1.3 DRAFT EIR FOCUS AND EFFECTS NOT FOUND TO BE SIGNIFICANT

Section 15060(d) of the CEQA Guidelines requires that "the lead agency shall…focus the Draft EIR on the significant effects of the project and indicate briefly its reasons for determining that other effects would not be significant or potentially significant." Guidelines Section 15128 requires Draft EIRs to "contain a statement briefly indicating the reasons that various possible significant effects of a project were determined to not be significant and were therefore not discussed in detail in the Draft EIR." Such a statement can be included in an Initial Study, if one was prepared, or elsewhere in the Draft EIR. An Initial Study was not prepared for the proposed project. Therefore, this section describes certain environmental impacts that were found to not be significant, and explains why for each.

1. Agriculture and Forestry: The project site is not used for agriculture, nor does it consist of forestry land. It is designated as "hillsides" and "other public lands" in the Santa Clara County General Plan, indicating it is not intended for agricultural uses. The California Department of Conservation's Farmland Mapping and Monitoring Program identifies the project site as "urban and built-up land" and "other land" and identifies no farmland on the project site or in the project vicinity. (Department of Conservation 2008) The project would not convert agricultural or forestry uses and would therefore have no impact on these resources.

2. Land Use/Planning: Land use and planning impacts would occur if the project would physically divide an established community (example: a freeway dividing a populated residential community), if it would conflict with a land use policy adopted for the purpose of avoiding an environmental impact, or if it would conflict with an applicable habitat conservation plan or natural community conservation plan.

   The project site was a former air force station and consists of abandoned radar facility structures, other operational buildings, personnel housing and support facilities. The air force station was decommissioned in 1980 and since that time has not been used or populated. The proposed trail connections are also located in sparsely populated areas. The project would, therefore, not divide an established community. Although the Sierra Azul Open Space Preserve abuts the Santa Clara Habitat Conservation Plan (HCP), the project site is not included within the boundaries of the HCP or any other habitat conservation or natural community conservation plans, and therefore would not conflict with any such plans.

   Regarding land use policies, each section of the Draft EIR addresses the potential for conflicts between the project and relevant plans adopted for the purpose of avoiding environmental impacts.

3. Mineral Resources: The site does not have any known economic mineral resources. Further, the change in use from military to open space/park uses would not alter the availability of any resources, should they exist.

4. Population/Housing: No elements of the project would alter population growth. The project would not extend urban infrastructure into an unserved area; therefore, it would not induce population growth. Further, although the project would remove housing from the site, this housing was dedicated to military uses and was long ago abandoned; further, it is remote from any public services needed to serve a housing development. The project would not necessitate the construction of replacement housing.

5. Public Services (parks, schools): The project has the potential to affect fire and police protection, and these issues are addressed in Section 4.11, Public Services. The proposed project would not adversely affect park services; to the contrary, the project itself expands park services to the region, and would marginally reduce pressure on other parks to the degree the project provides an alternative to other regional recreation. The project also would have no effects on schools; it would not bring a new residential population to the area and would therefore not affect school capacity.

6. Recreation: The project would provide a new recreational facility. Generally, opening of a new recreational facility does not increase the number of users of recreational facilities in the area and therefore does not result in an increase in demand for other recreational facilities. However, the proposed trail connections would provide new access points to existing trails, which may slightly increase the use of the applicable trails. This increased use would not be substantial and would not result in substantial increased wear on connecting trails.

7. Utilities: The project would not adversely affect utilities. All typical utilities would be self contained. No substantial wastewater would be created; vault toilets would be used, with the septage cleaned out regularly by District staff or private service providers and disposed at an approved facility. Water use would be insubstantial, and nonpotable water would occasionally be purchased either from a municipality and transported to the summit, or purchased locally from a neighboring landowner at the summit and hauled a short distance to the storage tank. Water is intended primarily for on-site use but could be utilized for wildland fire suppression as appropriate. Regarding storm drainage, the site will be recontoured to its natural form where feasible, and no increase in storm drainage would be expected. Further, because the site would be cleared of debris and dilapidated buildings, runoff quality will improve. Regarding solid waste, no concessions will be provided as part of the project. Because the District would enforce a strict "carry-in, carry-out" policy (consistent with other similar open space facilities), no solid waste receptacles would be located on-site; therefore, no solid waste would be collected at the project site, and solid waste generation would be minimal. Thus, the project would not be expected to substantially affect landfill capacity.

8. Paleontological Resources: Paleontology is the science dealing with the life of past geological periods as known from fossil remains. Paleontological resources generally include fossilized remains of vertebrate and invertebrate organisms, fossil tracks and trackways, and plant fossils. (These differ from "prehistoric" cultural resources, which are generally limited to artifacts associated with human life and civilization predating written history). The project site has been largely disturbed, and grading activities are largely associated with restoring the site to its original contours, which primarily uses previously disturbed fill material. Because soil moving activities would use existing fill material and would occur primarily within previously disturbed areas, grading is not expected to substantially expose native soils. Thus, the potential to encounter paleontological resources is low. There are two areas outside of the previously disturbed land: 1) the proposed connecting trail from Ralph's Mountain, and 2) the proposed new trail from the proposed staging area at Bald Mountain. Trail construction involves small equipment and hand tools and results in minor soil disturbance. Potential for impacts related to paleontological resources would be minimal. Please see Section 4.2 "Cultural Resources" for discussion related to prehistoric and historic cultural resources.

1.4 LEAD AND RESPONSIBLE AGENCIES

The MROSD is the lead agency for the proposed project.

In addition to MROSD, the following responsible agencies are expected to use this Draft EIR for permitting actions associated with the project.

- Regional Water Quality Control Board: general construction permit.
- Santa Clara County: demolition (which may require approval by the Historical Heritage Commission), building (visitor's center, vault toilet), and health (vault toilet) permits.
- Bay Area Air Quality Management District: register all portable equipment permits with BAAQMD; notify BAAQMD of all demolition activities 10 days prior to occurrence of activity.

1.5 PUBLIC INVOLVEMENT/OPPORTUNITY TO COMMENT

Several opportunities for public involvement in the environmental review process have occurred and will occur. Prior to initiation of the Draft EIR, the MROSD held a public meeting to receive input on project features and preferences. This public meeting was held September 30, 2010. A public open house was held on November 18, 2010, to present the results of the first meeting and obtain further public feedback. A public scoping meeting on the issues to be addressed in the Draft EIR was held on December 9, 2010. Following these meetings, a notice of preparation (NOP) of this Draft EIR was released for public review, with the review period running from December 13, 2010 through January 12, 2011.

This Draft EIR is being circulated for a 60-day review period, which exceeds CEQA requirements. The Draft EIR review period began December 12, 2011 and will be closed February 10, 2012. During this time, any comments can be provided in writing to the following address:

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A hearing will be held during the public review period to accept verbal and written comments from the public on environmental issues associated with the project. Following the public review period, MROSD will prepare written responses to all comments raised regarding the environmental impacts of the project. The response to comments, together with the Draft EIR, will constitute the Final EIR. Once the Final EIR is completed, the Board of Directors of the MROSD will review it and other information at a second public hearing, and will decide whether to approve the project as proposed, modified, or whether it should be denied. Pending project approval and Final EIR certification by the Board, MROSD staff will then develop a detailed site plan, which will describe more specifically how the project will be phased. If the project is approved, a public hearing will be scheduled to accept verbal and written comments from the public on issues associated with the detailed site plan.

1.6 CHANGES IN PROJECT SINCE RELEASE OF NOP

Several changes in the proposed project have occurred since release of the NOP on December 13, 2010. None of these substantially change the nature of the project, and these changes are fully addressed as the project considered in this Draft EIR. The changes are:

- Elimination of electric gate on lower Mt. Umunhum Road and security additions: an electric gate was proposed on lower Mt. Umunhum Road near the Jacques Ridge parking area. This gate is no longer proposed. This change was made in response to concerns expressed by neighbors with respect to ease of access to their property and concerns that parked cars could block the gate. In addition, security fencing would be installed along Mt. Umunhum Road to protect the communications facility on McQueen's Ridge from trespassers.
- Change in proposed Trail connection to Wood's Trail (part of the Bay Area Ridge Trail): public access through private property is no longer proposed. MROSD determined that because the District does not currently possess rights through private property, a few of the trail connections identified in the NOP would be too speculative to include in the proposed project. Specifically, direct access to Wood's Trail would no longer be provided, although indirect access would be available via a proposed connection from the summit to Barlow Road, which connects to Woods Trail. In the event the District were to propose acquisition of public access rights in the future in order to undertake these trails, future CEQA review and Board approval would be required.
- Extension of proposed trail connection from Barlow Road to Mount Umunhum summit to reach Bald Mountain: a proposed trail would be extended past Barlow Road to Bald Mountain. This would allow users to park and access the summit on foot, bicycle, or horseback without traveling on Mt. Umunhum Road.
- Change proposed public access to Mount Thayer from Mount Umunhum: the proposed project is changed to no longer consider public access through private property between Mount Thayer and Mount Umunhum, due to the speculative nature of gaining public access (see discussion above). Instead, public access will be provided to Mount Thayer from Ralph's Mountain.
- Remove public access to Lexington Basin: access to Lexington Basin is no longer proposed due to the speculative nature of gaining public access (see discussion above).

The proposed project, including these changes, is described in detail in Section 3 of this Draft EIR.

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2 EXECUTIVE SUMMARY

2.1 INTRODUCTION

This Executive Summary is provided in accordance with the California Environmental Quality Act (CEQA) Guidelines Section 15123. As stated in the State CEQA Guidelines Section 15123(a), "[a]n EIR shall contain a brief summary of the proposed actions and its consequences. The language of the summary should be as clear and simple as reasonably practical." State CEQA Guidelines Section 15123(b) states, "[t]he summary shall identify: (1) each significant effect with proposed mitigation measures and alternatives that would reduce or avoid that effect; (2) areas of controversy known to the Lead Agency, including issues raised by agencies and the public; and (3) issues to be resolved including the choice among alternatives and whether or how to mitigate the significant effects." Accordingly, this summary includes a brief synopsis of the proposed project and project alternatives, environmental impacts and mitigation, areas of known controversy, and issues to be resolved during environmental review. Table 2-1 (at the end of this section) presents the summary of potential environmental impacts, their level of significance without mitigation measures, the mitigation measures, and the levels of significance following the implementation of mitigation measures.

2.2 PROJECT COMPONENTS

Midpeninsula Regional Open Space District (MROSD or the District) is the Lead Agency for the proposed Mount Umunhum Environmental Restoration and Public Access Project ("proposed project" or "project"). The project site is located at the former Almaden Air Force Station, which is currently closed to the public. Structures on the site are currently undergoing abatement, which will remove hazardous building materials (mostly containing asbestos and lead) from on-site structures. The proposed project requires demolition of most (possibly all) of the abandoned structures associated with the former Almaden Air Force Station. The site includes a visually-prominent five-story concrete structure, the "radar tower", constructed as the base for a long-range radar "sail" which was removed some time ago (described further below). Three options are proposed for addressing the radar tower ranging from demolition to preservation.

Aside from demolition, the primary components of the proposed project include phased public access to the summit of Mount Umunhum, as well as roadway and access improvements, environmental and landform restoration, development of public use facilities and a range of possible amenities such as trails, observation and reflection areas, interpretive displays, picnic tables, shade structures, restrooms, camp sites, and visitor center. The project also includes longer term plans to allow public access to the summit of Mount Thayer via a trail connection from Ralph's Mountain.

A detailed description of the project components is included in Chapter 3, Project Description, of this document.

2.3 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Pursuant to State CEQA Guidelines Section 15382, a significant effect on the environment is defined as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance". Chapter 4 of this Draft EIR describes in detail the significant environmental impacts that would result from implementation of the proposed project. Chapter 5 provides a discussion of cumulative and growth-inducing impacts. Table 2-1 summarizes the environmental impacts and mitigation measures discussed in these chapters.

2.4 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS

Detailed mitigation measures have been identified throughout Chapter 4 of this report that are intended to mitigate project effects to the extent feasible. All of these mitigation measures are identified in Table 2-1. After implementation of the proposed mitigation measures, all of the adverse effects associated with the proposed project would be reduced to a less-than-significant level. The proposed project would not result in any significant and unavoidable environmental impacts.

2.5 SUMMARY OF PROJECT ALTERNATIVES

State CEQA Guidelines Section 15126.6, as amended, mandates that all EIRs include a comparative evaluation of the proposed project with alternatives to the project that are capable of attaining most of the project's basic objectives, but would avoid or substantially lessen any of the significant effects of the project. CEQA requires an evaluation of a "range of reasonable" alternatives, including the "no project" alternative. Chapter 6, Alternatives, of this Draft EIR provides an analysis of the comparative impacts anticipated from four alternatives to the proposed project: 1) the No Project Alternative, which assumes no demolition, environmental restoration, or public access and associated facilities would occur; 2) Limited Ground Disturbance Alternative, which would eliminate nearly all of the proposed components of the project that would require ground disturbance, including environmental and landform restoration and regional trail connections; 3) Reduced Amenities/Increased Restoration Alternative, which includes elimination of most of the "structural" public amenities, such as the visitors center, restrooms, picnic tables, shade structures, etc., and would increase the amount of environmental restoration; and 4) Shuttle Alternative, which would generally restrict auto access to the site and would instead include a shuttle service.

As discussed in Section 6, although the No Project Alternative would not avoid or substantially reduce any environmental impacts of the proposed project, it would result in a greater reduction than the other three alternatives and would therefore be considered the environmentally superior alternative. However, CEQA requires that if the No Project alternative is identified as the environmentally superior alternative, another alternative must be selected from the range as the environmentally superior. In this case, all three of the other alternatives result in similar impacts to the proposed project. However, the proposed project itself involves minimal development, includes environmental restoration, and is designed to be low impact. Consequently, with implementation of proposed mitigation measures, the proposed project results in no significant impacts to the environment. Therefore, none of the Alternatives avoids or substantially reduces a significant impact of the proposed project. Furthermore, because the level of impact is similar between the proposed project and all of the Alternatives (except for No Project), there is no clear environmentally superior alternative aside from the No Project Alternative.

In addition, this Draft EIR evaluated the potential for environmental impacts resulting from three options for the existing radar tower: 1) retain and seal the structure onsite; 2) remove majority of structure but leave a publically accessible foundation; and 3) remove entire structure and environmentally restore the footprint. As discussed in Section 6, there is not a clear environmentally superior option for the radar tower. Because the radar tower is not considered to be eligible for listing, demolition would not be considered a significant impact. Furthermore, retaining the radar tower is less aesthetically desirable than removing the tower. Mitigation measures are included in this DEIR to reduce the impacts related to tower demolition (i.e. dust and air quality emissions) to a less-than-significant level. Retention of the tower also requires mitigation to reduce hazards associated with the nearby slope. Option 2 would be the least environmentally superior option (although negligibly so) because it shares the environmental impacts of the other two options and does not avoid any of their impacts. However, Option 2 should still be considered by the District equally along with the other two radar tower options. No option is considered environmentally superior.

2.6 AREAS OF CONTROVERSY

Section 15123 of the State CEQA Guidelines requires the summary section of a Draft EIR to identify areas of controversy known to the Lead Agency, including issues raised by agencies and the public. The following provides a summary of issues raised through scoping and comments on the Notice of Preparation (NOP) that could be considered controversial. The comment letters received on the NOP are included in Appendix A of this document.

- Treatment of the radar tower
- Level of environmental restoration
- Recognition of cultural history, including Native American, as well as the military personnel and their families who served at the site
- Potential to increase wildland fire risk and associated environmental impacts (i.e. water quality)
- Bicycle safety and auto safety hazards
- Vehicle access
- Appropriate access for various recreation activities, including hang gliding, hiking, bicycling, equestrians, and star gazers/astronomers
- Educational opportunities
- Appropriate facilities for bird watching
- Trail connections, and relation to regional open space facilities
- Appropriate evaluation and handling of potential cultural artifacts and human remains
- Dog restrictions
- Traffic hazards related to gate placement and illegal parking
- Issues related to air quality, noise, and climate change
- Water quality issues (i.e. erosion and potential introduction of pathogens into water supply)
- Property ownership and potential to increase trespassing and security related issues
- Cost associated with the project and cost difference between alternatives

The Draft EIR addresses the above issues to the extent that substantial evidence permits, and to the extent that the issue is an environmental issue. However, it does not address impacts that are speculative and not reasonably foreseeable. Further, all of the substantive environmental issues raised in the Notice of Preparation comment letters have been addressed in this Draft EIR.

2.7 ISSUES TO BE RESOLVED IN THE EIR

Section 15123 of the State CEQA Guidelines requires the summary section of a Draft EIR to identify issues to be resolved in the EIR including the choice among alternatives and whether or how to mitigate the significant project effects. The issues to be resolved in this Draft EIR include the following:

- The Draft EIR includes an equal-level evaluation of potential environmental impacts resulting from the three radar tower options: 1) retain and seal the structure onsite; 2) remove majority of structure but leave a publically accessible foundation; and 3) remove entire structure and environmentally restore the footprint. The Draft EIR does not recommend one tower option over another, but, as described above, the Draft EIR does evaluate the environmentally superior radar tower option. MROSD decision makers will determine the appropriate radar tower alternative based on the information included in this Draft EIR, the merits of each tower option, as well as other information that may be submitted as part of the administrative record.

Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.1 Aesthetics			
Impact 4.1-1 Impacts on Scenic Vistas. The project site is part of the overall scenic vista provided by the Santa Cruz Mountains part of the Pacific Coast Range. This scenic vista, including the project site, is visible from several south bay area communities. The existing radar tower is visible for miles and is a local land marker. If the project results in removal of the radar tower, the change to the overall scenic vista, although noticeable, would not result in a substantial adverse change to the scenic vista. Instead, it would return the site to a more natural visual setting, which could be considered a positive change to the natural scenic vista. If the project does not remove the radar tower, the change would likely be imperceptible relative to the overall view shed. This impact would be considered less-than-significant for all three radar tower options.	LTS	No mitigation measures necessary.	LTS
Impact 4.1-2 Damage Scenic Resources within a Scenic Highway Corridor. The project site is visible in the distant background from an officially designated California Scenic Highway and an eligible state scenic highway. The project site is more prominently visible from local scenic roadways, as designated by Santa Clara County. Implementation of the proposed project would primarily improve the scenic quality of the project site by removing dilapidated structures and restoring the former military base to a more natural setting, although these improvements would not be seen from the scenic highways given the topographic changes and other barriers that obstruct all but the radar tower from view. No rock outcroppings would be visibly affected by the proposed project (trails may be located near rock outcroppings), and the proposed project	LTS	No mitigation measures necessary.	LTS

NI = No Impact LTS = Less Than Significant PS = Potentially Significant S = Significant SU = Significant and Unavoidable

Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
would result in minimal tree removal and substantial native plant re-vegetation. None of the buildings on the project site, including the radar tower, are eligible for listing as an historic building on any federal, state, or county register. Therefore, implementation of the proposed project would result in a less-than-significant impact, regardless of which radar tower option is selected.			
Impact 4.1-3 Changes in Visual Character. The proposed project would change the visual character of the project site by removing existing dilapidated military structures and restoring much of the original natural setting. The District is considering three options for the radar tower, two that include varying degrees of tower removal, and one that would allow the tower to remain in its current configuration onsite. Implementation of the proposed project, regardless of which tower option is selected, would result in a substantial change to the character of the project site, especially as viewed by nearby residences. However, although the change would be substantial in all cases, it would not be an adverse visual change. In fact, it is arguably a positive change to the overall existing natural character of the site. Impacts to the existing visual character of the site would be considered less than significant.	LTS	No mitigation measures necessary.	LTS
Impact 4.1-4 Impacts from Nighttime Lighting. Construction activities would not occur during nighttime hours; therefore, no short-term construction-related lighting impacts would occur. In addition, the operation of the project would require minimal permanent lighting. All permanent light fixtures would be fully shielded and would not result in a nuisance to nearby residences and would be consistent with night sky principles. Therefore, impacts would be less than significant.	LTS	No mitigation measures necessary.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.2 Cultural Resources			
Impact 4.2-1 Construction-Related Impacts on Documented Significant Archaeological Resources. Implementation of the project would not result in any impacts on any documented archaeological resources presently listed or possibly eligible for listing in the CRHR because no resources are known to be present within the project site. Consequently, this impact would be less-than-significant.	LTS	No mitigation measures necessary.	LTS
Impact 4.2-2 Construction-Related Impacts on Documented Significant Historical Resources. Implementation of the project would not result in any impacts on any documented historical resources presently listed or possibly eligible for listing in the CRHR because no resources are known to be present within the project site and none of the historic-era structures within the project appear to be associated with important historic events or persons at the national, state, or local level. Consequently, this impact would be less-than-significant.	LTS	**Mitigation Measure 4.2-2 (Voluntary)—Radar Options 2 and 3 Only** If MROSD selects radar tower Option 1 (retain and seal the structure) no further mitigation is necessary. If MROSD selects either radar tower Option 2 (demolish but leave the foundation) or radar tower Option 3 (completely remove the radar tower), the following mitigation measure is required: MROSD will use the radar tower foundation or footprint to provide a setting for interpretive media in order to illustrate the topics of U.S. Military history, the Cold War, and the role of NORAD, the Almaden AFS, and the servicemen stationed there in national security. Media could include the following: interpretive panels showcasing period photographs of the operational AFS and servicemen stationed there, including photos of the site showing its visibility from far distances; oral histories provided by surviving veterans; interpretive panels exhibiting major political events of the Cold War; and/or inclusion as part of a self guided tour (via GPS/Smart technology or other means) illustrating the former structures and activities associated with different areas of the project site. Veterans and other community members will be invited to participate in the specific design and content of the interpretive features.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Impact 4.2-3 Construction-Related Impacts on Presently Undocumented Cultural Resources. Because the project is located in an area where "unique" or "historical" resources (per CEQA criteria) could be encountered during project implementation, disturbances of such resources would constitute a potentially significant impact.	PS	**Mitigation Measure 4.2-3 Protection of Undocumented Cultural Resources.** During all ground-related construction activities (i.e., grading, excavation, etc.) on the project site (including roadway and trail construction), if cultural materials (e.g., unusual amounts of shell, animal bone, glass, ceramics, structure/building remains) are inadvertently encountered, all work shall stop within 50 feet of the find until a qualified archaeologist can assess the significance of the find. A reasonable effort will be made by the District to avoid or minimize harm to the discovery until significance is determined and an appropriate treatment can be identified and implemented. Methods to protect finds include fencing and covering remains with protective material such as culturally sterile soil or plywood. If vandalism is a threat, 24-hour security will be considered and evaluated based on threat level, remoteness of site, materials found, significance of find, etc. Construction operations outside 50-feet of the find can continue during the significance evaluation period and while mitigation is being carried out; however, if the archaeologist determines that the nature of the find may signify a high potential for other finds in the area, the construction will be monitored by an archaeologist within 100-feet of the find. If a discovered resource is identified as significant and cannot be avoided, a qualified archaeologist will develop an appropriate treatment plan to minimize or mitigate the adverse effects. The District will not proceed with construction activities within 100 feet of the find until the treatment plan has been reviewed and approved. The treatment effort required to mitigate the inadvertent exposure of significant cultural and/or historical resources will be guided by a research design appropriate to the discovery and potential research data inherent in the resource in association with suitable field techniques and analytical strategies. The recovery effort will be detailed in a professional report in accordance with current professional standards. Any non-grave associated artifacts will be curated with an appropriate repository. Project construction	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		documents shall include a requirement that project personnel shall not collect cultural and/or historical resources encountered during construction. This measure is consistent with federal guideline 36 CFR 800.13(a) for invoking unanticipated discoveries. Prior to any trail construction, MROSD will hire a qualified archaeologist to conduct a pre-construction survey of the proposed trail alignments. If any potential archaeological resources are identified during the survey, and are found to be significant, the archaeologist shall recommend avoidance measures to ensure that no impacts result from trail construction or trail operation. If the found resource cannot be avoided, the archaeologist shall prepare a treatment plan, as described above.	
Impact 4.2-4 Construction-Related Impacts on Presently Undocumented Human Remains. Because construction activities associated with the project could potentially result in the disturbance of presently undocumented prehistoric or historic-era interments, human remains, and/or associated grave-related articles, this impact would be potentially significant.	PS	**Mitigation Measure 4.2-4 Protection of Presently Undocumented Human Remains.** In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, potentially damaging excavation in the area of the burial will be halted and the Santa Clara County Coroner and a professional archaeologist will be contacted to determine the nature and extent of the remains. The MROSD Project Manager will also be notified immediately. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code, Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code, Section 7050[c]). Following the coroner's findings, the State of California, project contractor, an archaeologist, and the NAHC-designated Most Likely Descendant (MLD) will determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities for	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		acting upon notification of a discovery of Native American human remains are identified in Section 5097.9 of the California Public Resources Code. The State of California will ensure that the immediate vicinity (according to generally accepted cultural or archaeological standards and practices) is not damaged or disturbed by further development activity until consultation with the MLD has taken place. The MLD will have 48 hours to complete a site inspection and make recommendations after being granted access to the site. A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment may be discussed. Assembly Bill (AB) 2641 suggests that the concerned parties may extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. AB 2641(e) includes a list of site protection measures and states that the landowner shall implement one or more of the following measures: 〉 record the site with the NAHC or the appropriate Information Center, 〉 utilize an open-space or conservation zoning designation or easement, and/or 〉 record a document with the county in which the property is located. The landowner or their authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the NAHC is unable to identify a MLD, or if the MLD fails to make a recommendation within 48 hours after being granted access to the site. The landowner or their authorized representative may also reinter the remains in a location not subject to further disturbance if they reject the recommendation of the MLD, and mediation by the NAHC fails to provide measures acceptable to the landowner.	

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.3 Biological Resources			
Impact 4.3-1 Loss of Bat Colonies During Building Demolition. Implementation of the proposed project involves demolition of existing abandoned buildings and other structures. These buildings provide potential roost structures for common and special-status bats. Demolition, sealing, or other construction activities at these facilities could result in disturbance to active bat colonies that could affect the survival of young or adult bats. Loss of an active bat colony would be considered a significant impact.	S	**Mitigation Measure 4.3-1** **Conduct Survey before Structure Demolition, Consult with DFG, and Develop Exclusion Methods and Compensatory Mitigation if Appropriate.** Surveys for roosting bats on the project site will be conducted by a qualified biologist. Surveys will consist of a daytime pedestrian survey looking for evidence of bat use (e.g., guano) and/or an evening emergence survey to note the presence or absence of bats. The type of survey will depend on the condition of the buildings. If no bat roosts are found, then no further study is required. If evidence of bat use is observed, the number and species of bats using the roost will be determined. Bat detectors may be used to supplement survey efforts, but are not required. If roosts of pallid, Townsend's big-eared, or western mastiff bats are determined to be present and must be removed, the bats will be excluded from the roosting site before the facility is removed. A program addressing compensation, exclusion methods, and roost removal procedures will be developed in consultation with DFG before implementation. Exclusion methods may include use of one-way doors at roost entrances (bats may leave but not reenter), or sealing roost entrances when the site can be confirmed to contain no bats. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young). The loss of each roost (if any) will be replaced in consultation with DFG and may include construction and installation of bat boxes suitable to the bat species and colony size excluded from the original roosting site. Roost replacement will be implemented before bats are excluded from the original roost sites. MROSD has successfully constructed bat boxes elsewhere that have subsequently been occupied by bats. Once the replacement roosts are constructed and it is confirmed that bats are not present in the original roost site, the structures may be removed or sealed.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Impact 4.3-2 Loss of Special-status Species During Trail Construction, Road Improvements, or Other Ground-Disturbing Activities. Implementation of the project could result in the degradation of habitat and loss of several special-status species, including rare plants, special-status amphibians and reptiles, and nesting birds. Special-status species are protected under ESA, CESA, California Fish and Game Code, CEQA or other regulations. Ground-disturbing activities related to the trail construction, road improvements, or other construction activities could result in a substantial adverse effect on these species. Therefore, the potential loss of special-status species is considered a significant impact.	S	**Mitigation Measure 4.3-2** **a) Conduct Special-status Plant Surveys, Implement Avoidance and Mitigation Measures, or Provide Compensatory Mitigation.** Known populations of Loma Prieta hoita and Mt. Hamilton fountain thistle shall be protected during road improvements. As directed by a qualified biologist, the populations shall be fenced before construction with high-visibility fencing and an adequate buffer so that direct and indirect impacts would be minimized. Construction personnel shall be instructed to keep project activities out of the fenced areas. A qualified botanist shall periodically inspect the fencing to ensure that the fence is intact and the impacts to the populations are being avoided. Indirect impacts (i.e., changes in hydrology) shall be minimized by placing culverts away from any plant populations, if necessary. MROSD shall utilize a qualified botanist to conduct protocol-level preconstruction special-status plant surveys for all potentially occurring species within the project footprint that has not previously been surveyed (e.g., trail connections, staging area expansion). Prior to ground-disturbance in potentially suitable habitat, surveys shall be conducted during the appropriate blooming period when they are most readily identifiable in accordance with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (DFG 2009) . If no special-status plants are found during focused surveys, the botanist shall document the findings in a letter report, and no further mitigation shall be required. If special-status plant populations are found in the project footprint, MROSD shall determine if the population can be avoided by adjusting the trail alignment or project design. If the impact cannot be avoided, MROSD shall consult with DFG and USFWS, as appropriate depending on species status, to determine the appropriate measures to minimize direct and indirect impacts on any special-status plant population that could occur as a result of project implementation. Mitigation measures may include preserving and enhancing existing populations, creation of off-site populations on project mitigation sites through seed collection	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		or transplantation, and/or restoring or creating suitable habitat in sufficient quantities to achieve no net loss of occupied habitat or individuals. **b) Avoid and Minimize Impacts to Special-Status Amphibians and Reptiles** Although the impact to special-status amphibians or reptiles is expected to be minimal due to a lack of suitable aquatic habitat along ridgelines and headwaters of creeks, MROSD shall implement the following measures to reduce impacts during construction of trail connections: 〉 Construction of the trail across drainages and streams shall occur when the drainages are dry, unless it is not feasible to do so, in which case the following measures shall also be applied. 〉 Guidelines shall be implemented to protect water quality and prevent erosion, as outlined in MROSD's Road and Trail Typical Design Specifications (MROSD 2008). 〉 If water is present during construction, disturbance to pools and slow runs with cobble-sized substrate shall be minimized. In particular, rocks shall not be collected from in-water environments from late March to early September to avoid disturbing frog egg masses, tadpoles, and turtle hatchlings. **c) Avoid and Minimize Impacts to Golden Eagle, White-tailed Kite, and Other Nesting Birds** To minimize potential disturbance to nesting birds, project activities shall occur during the non-breeding season (September 16-February 14), unless it is not feasible to do so, in which case the following measures shall also be applied. During trail construction, road improvements, and other activities, removal of trees greater than 6 inches dbh shall be limited to the greatest degree possible. If construction activity is scheduled to occur during the nesting season (February 15 to September 15), MROSD shall utilize a qualified biologist to conduct preconstruction surveys and to identify active nests on and	

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		within 500 feet of the project site that could be affected by project construction. The surveys shall be conducted before the approval of grading and/or improvement plans (as applicable) and no less than 14 days and no more than 30 days before the beginning of construction in a particular area. If no nests are found, no further mitigation is required. If active nests are found, impacts on nesting raptors and songbirds shall be avoided by establishment of appropriate buffers around the nests. No project activity shall commence within the buffer area until a qualified biologist confirms that any young have fledged or the nest is no longer active. A 500-foot buffer around raptor nests and 50-foot buffer around songbird nests are generally adequate to protect them from disturbance, but the size of the buffer may be adjusted by a qualified biologist in consultation with DFG depending on site specific conditions. For trail construction, use of non-power hand-tools may be permitted within the buffer area if the behavior of the nesting birds would not be altered as a result of the construction. Monitoring of the nest by a qualified biologist during and after construction activities will be required if the activity has potential to adversely affect the nest.	
Impact 4.3-3 Loss of Riparian Habitat or Other Sensitive Natural Communities and Fill of Waters of the U.S. During Trail Construction. Construction of new trails to connect with other existing trails could require crossing ephemeral or perennial streams. Trail construction could require removal of riparian and wetland vegetation and could result in the placement of fill material into waters of the U.S. This is considered a potentially significant impact.	S	**Mitigation Measure 4.3-3 Avoid and Minimize Impacts to Sensitive Natural Communities and Compensate for Loss of Riparian and Wetland Habitats.** As a first priority, MROSD will seek to avoid wetlands impacts through trail realignment, bridging, and other avoidance measures. Before any groundbreaking activity along the trail connections, MROSD shall have a jurisdictional wetland delineation conducted by a qualified wetland specialist in sensitive areas that cannot be avoided. The preliminary delineation shall be submitted to USACE for verification. The wetlands may be subject to DFG regulation under Section 1602 of the Fish and Game Code. No grading, fill, or other ground disturbing activities shall occur until all required permits, regulatory approvals, and permit conditions for effects on wetland habitats are secured.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		If the wetlands are determined to be subject to USACE jurisdiction, the project may qualify for use of Nationwide Permit 42 for construction of recreational trails if certain criteria are met. For those wetlands that cannot be avoided, MROSD shall commit to replace, restore, or enhance on a "no net loss" basis (in accordance with USACE, RWQCB, and DFG) the acreage of all wetlands and other waters of the U.S. that would be removed, lost, and/or degraded with project implementation. Wetland habitat shall be restored, enhanced, and/or replaced at an acreage and location and by methods agreeable to USACE, RWQCB, and DFG, as appropriate, depending on agency jurisdiction, and as determined during the permitting processes.	
Impact 4.3-4 Effects of Increased Recreation on Native Species and Interference with Wildlife Movement. Implementation of the proposed project would result in public access to wildlife habitats that previously have had limited human disturbance. Proposed trail connections would provide recreational opportunities for hikers, mountain bikers, and equestrians. These activities are unlikely to substantially adversely affect native wildlife or plant communities. The construction and use of trails are also not likely to substantially interfere with wildlife movement in the region. Therefore, this is considered a less than significant impact.	LTS	No mitigation measures necessary.	LTS
Impact 4.3-5 Conflict with Local Policies, Ordinances or Approved Habitat Conservation Plan. The proposed project would not cause a conflict with any local policies or ordinances. There are no habitat conservation plans or natural community conservation plans in the study area; therefore, the proposed project would not conflict with any such plans. There would be no impact.	NI	No mitigation measures necessary.	NI

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.4 Hydrology and Water Quality			
Impact 4.4-1 Potential Short-Term Construction-Related Soil Erosion and Water Quality Impairment. Project construction activities (e.g., excavation, grading) could generate sediment, erosion, and other nonpoint source pollutants in on-site stormwater, which could drain to off-site areas. On-site earthmoving and soil stockpiling activities could result in sheet erosion during rain events. This would be a potentially significant impact.	PS	**Mitigation Measure 4.4-1** a. Prior to earthmoving activities (e.g., grading, excavation, construction), MROSD will consult with the San Francisco Bay Basin RWQCB to acquire the appropriate regulatory approvals that may be required to obtain Section 401 water quality certification, SRCB statewide NPDES stormwater permit for general construction activities, and any other necessary site-specific waste discharge requirements. No grading or other soil disturbance will occur until the appropriate regulatory approvals and permits have been issued. b. Prior to any earthmoving activities, as required under the NPDES stormwater permit for general construction activity, MROSD will prepare and submit the appropriate Notice of Intent and prepare the SWPPP and other necessary engineering plans and specifications for pollution prevention and control. The SWPPP will identify and specify the use of erosion sediment control BMPs, means of waste disposal, nonstormwater management controls, permanent post-construction BMPs, and inspection and maintenance responsibilities. The SWPPP will also specify the pollutants that are likely to be used during construction and that could be present in stormwater drainage and nonstormwater discharges. c. Construction techniques will be identified that would reduce the potential runoff, and the SWPPP will identify the erosion and sedimentation control measure to be implemented. BMPs designed to reduce erosion of exposed soil may include, but are not limited to: 〉 Use temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; 〉 Store materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; 〉 Water exposed areas for dust control; 〉 Minimize off-site sediment transport on vehicles using techniques	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		such as gravel driving surfaces to knock soil off tires at exit points ; and 〉 Use barriers, such as perimeter silt fencing, to minimize the amount of uncontrolled runoff that could enter drains or surface waters. d. The SWPPP will also specify spill prevention and contingency measures, identify types of materials used for equipment operation, and identify measures to prevent or clean up spills of hazardous materials used for equipment operation. Emergency procedures for responding to spills will also be identified. The SWPPP will identify personnel training requirements and procedures that would be used to ensure that workers are aware of permit requirements and proper installation and performance inspection methods for BMPs specified in the SWPPP. The SWPPP will also identify the appropriate personnel responsible for supervisory duties related to implementation of the SWPPP. All construction contractors will be required to retain a copy of the approved SWPPP on the construction site.	
Impact 4.4-2 Stormwater Impacts. Although the proposed project includes development of some impervious surfaces (i.e., paved accessible trails and seating areas), the proposed project would remove existing structures and several parking lots resulting in a substantial overall decrease in impervious surface on the project site. Furthermore, the proposed project includes environmental and landform restoration, which would improve water quality both in previously paved areas and currently unpaved areas. Therefore, the project would not result in the substantial erosion, siltation, or flooding of on- or off-site areas. This would be a less-than-significant impact.	LTS	No mitigation measures necessary.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Impact 4.4-3 Water Quality Impacts. While most facilities and activities at the project site would not result in adverse water quality impacts, the project would result in vehicles parking in designated unpaved areas. Specific water quality protection measures have not been identified to prevent the discharge of pollutants in stormwater on- or off-site from these parking areas. Therefore, the project could result in potentially significant water quality impacts.	PS	**Mitigation Measure 4.4-3** MROSD will implement appropriate design measures to adequately trap and treat discharged pollutants in designated parking areas. These design measures could include, but are not limited to structural and non-structural BMPs including installation of oil and grit separators to capture potential contaminates that are discharged in parking areas, establishment of vegetation in drainages to achieve optimal balance of conveyance and water quality protection; and installation of vegetation filter strips.	LTS
4.5 Geology and Soils			
Impact 4.5-1 Risks to People and Structures from Seismic Hazards or Landslides. **Option 1. Retain and seal entire radar tower structure** Option 1 for the radar tower is to retain the structure in its current configuration onsite. Although the tower would be sealed to prevent any public access, the tower is a massive concrete structure and could pose hazards to users of the open space area if the structural integrity is not appropriate to withstand geologic phenomena, such as earthquakes. Under the option for retaining the radar tower, the District is proposing several improvements recommended by a structural engineer to increase the radar tower's structural integrity. These improvements will bring the building to a collapse prevention level to allow visitors to safely access the radar tower site. There has been ground disturbance and deterioration to slopes adjoining the radar tower, but deterioration has been slow and there is no imminent danger to the building foundation; however, long-term deterioration of the slope could eventually pose a threat to the structure. This is considered a potentially significant impact.	PS	**Mitigation Measure 4.5-1 (Radar Tower Option 1 Only)** Prior to completion of the proposed landform and environmental restoration, MROSD will utilize a qualified geotechnical engineer to conduct monitoring of the north and south slopes. If the qualified geotechnical engineer indicates that slope instability is jeopardizing the radar tower, then the MROSD will implement recommendations made by the geotechnical engineer including drainage rehabilitation and slope reinforcement (i.e. retaining walls). Implementation of these recommendations will ensure that slope subsidence does not occur that would affect the structural integrity of the tower. If the proposed landform and environmental restoration is completed prior to any actions recommended by the monitoring geotechnical engineer, MROSD will utilize a qualified geotechnical engineer to conduct a topographical survey based on the new contours. If the geotechnical engineer determines that additional slope stabilization measures are necessary (i.e. retaining wall) to ensure no risk of structural collapse, MROSD will implement these measures. As part of the proposed project, construction safety fencing will be erected, prior to structural stabilization of the tower, at a distance equal to the height of the structure (in this case, a distance of 80 feet from the base of the tower) in order to allow public access to the area. Prior to	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		implementation of the approved radar tower option and removal of the chain link fence from around the radar tower, MROSD will install permanent fencing along edges of the steep slopes in the vicinity of the radar tower. The permanent fencing will include materials consistent with a natural open space setting typical of fencing used in other MROSD preserves and open space facilities.	
Impact 4.5-1 Risks to People and Structures from Seismic Hazards or Landslides. **Options 2 and 3 (Radar Tower Removal Options)** The project includes primarily demolition of existing structures, environmental restoration, and development of open space facilities, including trail connections. The removal of the existing dilapidated structure would remove existing structural hazards from the project site by creating either an open-air structure or no structure. However, the potential for the slope south of the radar tower to slump could pose a danger to the public, even if the radar tower is removed. Therefore, implementation of tower Options 2 and 3 could result in a potentially significant impact.	PS	**Mitigation Measure 4.5-1 (Radar Tower Option 2 and 3 Only)** Prior to implementation of the approved radar tower option and removal of the chain link fence from around the radar tower, MROSD will install permanent fencing along edges of the steep slopes in the vicinity of the radar tower. The fencing will include materials consistent with a natural open space setting typical of fencing used in other MROSD preserves and open space facilities.	LTS
Impact 4.5-2 Construction-Related Erosion Hazards. Demolition activities would expose soils currently overlain by impervious surfaces. The project would also involve grading and filling areas for environmental restoration and development of open space facilities. Exposed, non-vegetated soil on the site could result in localized erosion during project construction. This would be a significant impact.	S	**Mitigation Measure 4.5-2** MROSD will implement Mitigation Measure 4.4-1 included in Section 4.4, Hydrology and Water Quality of this Draft EIR, which requires consultation with the San Francisco Bay Basin RWQCB, preparation of a Stormwater Pollution Prevention Plan (SWPPP), and implementation of Best Management Practices (BMPs).	LTS

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Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Impact 4.5-3 Slope Stability Hazards. The proposed project primarily includes demolition of existing structures, environmental restoration, and development of open space facilities. The project is within an area of steep slopes, including future trail alignments. (See Impact 4.5-1 for a discussion of slope stability with respect to retaining the existing radar tower.) Trails along steep slopes, if not designed properly, could pose hazards to trail users, including potential rock slides or slope failure. However, development of trails and trail connections would follow District Road and Trail Typical Design Specifications (MROSD 2008). These design specifications include trail designs specific for steep slopes, which would reduce potential hazards, such as landslides or falling rocks, to trail users. This impact is less than significant.	LTS	No mitigation measures necessary.	LTS
4.6 Hazards and Hazardous Materials			
Impact 4.6-1 Exposure to Existing Hazardous Materials. Small quantities of asbestos were documented in the shallow soils around the existing structures. Pesticides were also identified above acceptable levels. Excavation and construction activities in the area could result in the exposure of construction workers and the general public to existing hazardous materials contamination. This impact is considered significant.	S	**Mitigation Measure 4.6-1** Following demolition of structures, but prior to any grading activity or public access within the former Almaden Air Force Station, MROSD will hire a qualified hazardous materials specialist to prepare a focused pesticide soil testing and remediation program. The soil testing program will be prepared according to the recommendations in Northgate's Sampling and Analysis Report. Based on the focused soil testing program, the perimeters and depths of soils containing contamination above residential ESLs shall be specifically defined. Once these areas are defined, construction barriers or fencing shall be placed around the areas prior to initiating construction within other areas of the project site. No construction or public access may occur within the demarcated areas of contamination until the following remediation occurs: The qualified hazardous materials specialist will prepare a remediation plan for excavation and disposal of contaminated soils. The goal of the remediation plan will be to remove all soils containing chemical	LTS

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Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		concentrations in excess of California human health screening levels and render excavated soil suitable for disposal at an appropriate landfill, unless the soils can be suitably treated on site, to below screening levels, in which case the soils can be disposed onsite. Soil removal activity will be completed in accordance with state and local regulatory requirements that provide specific targets for protection of human health.	
Impact 4.6-2 Exposure to Hazardous Materials during Project Construction. Use of various paints, solvents, cements, glues, and fuels is expected during construction of the proposed project. Construction workers could be exposed to hazardous materials as a result of improper handling or use; accident; environmentally unsound disposal methods; or fire, explosion, or other emergencies, resulting in adverse health effects. However, all allowable uses would be subject to compliance with federal, state, and local hazardous materials regulations, and would be monitored by the state (e.g., Cal/OSHA, DTSC, CHP) and/or local jurisdictions. Therefore, the potential for human exposure to hazardous materials during construction would be considered a less-than-significant impact.	LTS	No mitigation measures necessary.	LTS
Impact 4.6-3 Use or Transport of Hazardous Materials during Project Operations. The proposed project would include hiking trails and campground facilities, and would not involve hazardous materials during the course of its daily operations. Therefore, impacts related to creation of significant hazards to the public or the environment would be less than significant.	LTS	No mitigation measures necessary.	LTS

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Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Impact 4.6-4 Potential Hazards from Interference with Emergency Response. The project would not interfere with an adopted emergency response plan. There would be adequate emergency vehicle access to the project site. Therefore, this impact would be less than significant.	LTS	No mitigation measures necessary.	LTS
Impact 4.6-5 Exposure of People or Structures to Wildland Fires. Even though more people would use the site than under existing conditions, and it is generally recognized that the potential for ignition is higher with increased visitorship, the overall potential for ignition is decreased when comparing the effects of placing legitimate users in a site with current abundant illegal use. The proposed project would reduce existing potential for ignition of a wildfire by legitimizing public use of the site and patrolling or monitoring user activities, thereby substantially restricting common ignition sources. The proposed project would also provide additional fuel breaks (trails and access roads), a fire-rated water storage tank, campground fire hose, dedicated 911 callbox, and appropriate emergency vehicle access, including a emergency landing zone. Implementation of the project would result in a less-than-significant impact.	LTS	**Mitigation Measure 4.6-5 (Voluntary)** No significant impacts associated with wildfire would occur. MROSD policy and standard practices include the following fire management practices/features that will be implemented for the proposed project as applicable project facilities are developed: 〉 Water tanks and campground fire hose; 〉 Emergency landing zone; 〉 Dedicated emergency call box; 〉 Roadside fuel management; 〉 Signage of fire safety regulations; and 〉 Collaboration with agencies and neighboring landowners on planning and implementing fire-safe projects. However, in order to further minimize risk associated with wildfire hazard in response to the public concern, the District will voluntarily implement, in addition to the standard practices/features, the following mitigation measures recommended by Wildland Resource Management: 〉 Preparation of fire prevention plan by construction contractors; 〉 Removal of fine dead fuels around campsites; 〉 Irrigated native landscaping (until plants are established); 〉 Vegetation managed as appropriate defensible space to improve vegetation structure and decrease volume of vegetation around campsites;	LTS

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		⟩ Additional signage specifying emergency protocol; ⟩ Training/ information associated with permit application or approval; and ⟩ Closure of facility during red flag days. The following discussion provides additional detail to the voluntary mitigation measures in the bullet-list above. Specifically, MROSD will implement the following fire hazard minimization measures recommended by Wildland Resource Management: **Construction-Related Fire Risk Reduction** Prior to initiation of construction (including activities associated with mitigation measures, such as vegetation clearing), MROSD's contractor will prepare a fire prevention plan. This fire prevention plan will include such measures as a list of tools to have on hand, proof of spark arrestors on all gas-powered engines, a description of available communications, specifications for the supply of water to have on hand, and descriptions of other actions that will reduce the risk of ignition and immediate control of an incipient fire. This requirement should be included in the contract with the District. To minimize the risk of wildfire ignition, all motorized vehicles, including earth-moving equipment, used during this project will be equipped with spark arresters, per California Public Resources Code 4442, and Health and Safety Code 13001 and 13005. Other motorized vehicles used on the project site will not be parked where vegetation may come in contact with exhaust systems and catalytic converters. **Fuel Management and Fire-safe Restoration Design** Prior to initiating construction of the proposed campground or other restoration areas, MROSD will prepare a site-specific fuel management plan for the campground area as part of the specific site planning and design that dictates which species of trees/shrubs should be removed or pruned, and which plants should be planted or maintained (i.e., conifers may be replaced with hardwoods to reduce the chance of	

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Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		torching and ember production and distribution). The plan will include measures above and beyond MROSD's standard fuel management plan, such as a strategically located visitor safety zone, which includes fuel conditions appropriate for a safety zone (i.e., large paved or graveled area such as a parking lot). This area will need to be inspected at least annually for compliance. The site-specific fuel management plan will apply to the campground, the former AFS housing area, and the summit areas, where the environmental restoration is proposed. The fuel management plan will also identify indigenous plant materials and/or seed mixes at staging areas or along trails. Indigenous plants are ideal due to their low maintenance and drought and fire resistant characteristics. The vegetation palette for the proposed restoration will identify native species that are shrubby or non-curing herbaceous cover (as opposed to grassy species), with little ignition potential. Plantings will be irrigated at least twice during the camping season to keep the moisture of the vegetation foliage high (keeping the dead material wet is not effective); if plantings cannot be irrigated twice a year, fuel volume will be reduced to meet the equivalent results in fire hazard. The spacing and design of the vegetation is more critical than the species planted. The restoration design will place plant species such that appropriate horizontal spacing occurs between masses of shrubs and specimen trees and appropriate vertical spacing will occur between tree branches, shrubs, and ground cover. This will discourage the creation of "fuel ladders"—a continuous fuel path by which a fire can climb from the ground to a shrub, to a tree, and ultimately produce and distribute embers than can start new fires far away. The restoration design will identify a palette of appropriate native plant species that have a low fuel volume and high foliar moisture and do not have a tendency to produce and "hold" dead wood and which also have a proper growth form. Factors that must be considered in rating the fire performance of plants include:	

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Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		〉 Total volume. The greater the volume of plant material (potential fuel) present, the greater the fire hazard. 〉 Moisture content. The moisture content of plants is an important consideration; high levels of plant moisture can both lower fire risk and act as a heat sink if a fire occurs, reducing its intensity and spread. 〉 Amount and distribution of dead material. The amount of dead material in a given plant influences the total amount of water in the overall plant; the dead material is usually much drier than living tissue. Whereas dead material rarely has a moisture content higher than 25%, live foliage moisture content ranges from 60 to 80% for chaparral species in xeric conditions to a high of 200 to 400% for succulent plants or plants under irrigation. 〉 Size of leaves, twigs, and branches. Materials with large surface areas (such as needles, twigs, or large flat leaves) dry more rapidly under fire conditions than materials with lower surface ratios (such as branches and fleshy leaves). 〉 Geometry and arrangement of the plant (overall spatial distribution of the biomass). The shape of a plant and the way in which the biomass is distributed throughout the plant is important because this bulk density affects the air flow and heat transfer through the plant. The arrangement of material within the plant affects its fuel continuity and its tendency to undergo preheating and promote fire spread. Examples of plants that may be appropriate include (but are not limited to) the following: coffeeberry, madrone, coast live oak, bay, ceanothus, and toyon. Examples of species to remove include coyote brush, black sage, and sagebrush. The fuel management plan will include a maintenance component. The maintenance program will require annual removal of dead material and maintenance of the vertical and horizontal spaces that create a fire-safe design. Maintenance requirements are incorporated in the District guidelines.	

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		Signage, Education, and Closure Prior to opening the proposed campsite to the public, MROSD will install a signboard in a central and conspicuous location at the proposed campsite that addresses fire safety, re-states MROSD rules, including prohibition of open fires, and identifies appropriate action and behavior during a wildfire. Specifically the signboard will identify where to go, how to stay safe, and location of call-boxes. Further, MROSD will send permitted campers additional information/training including statement of rules and location of call boxes in case of emergency. MROSD will close the site during times of Red Flag Warnings to further reduce the chance of ignition due to visitor usage.	

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.7 Air Quality			
Impact 4.7-1 Generation of Construction Emissions of NOX and PM_{10}. Construction and demolition activities associated with the project would generate exhaust and evaporative emissions of ozone precursors, Reactive Organic Gases (ROG) and Oxides of Nitrogen (NO_X), Particulate Matter under 10 microns (PM_{10}) exhaust, and Particulate Matter under 2.5 microns ($PM_{2.5}$) exhaust. Construction-generated emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust would not exceed Bay Area Air Quality Management District's (BAAQMD's) respective quantitative thresholds. Therefore, construction-generated emissions of ROG and NOX, PM10exhaust, and $PM_{2.5}$ exhaust would not substantially contribute to emissions concentrations that exceed the National Ambient Air Quality Standards (NAAQS) or California Ambient Air Quality Standards (CAAQS) and would not violate or contribute substantially to the San Francisco Bay Area Air Basin's (SFBAAB's) nonattainment status with respect to ozone or particulate matter. However, emissions of fugitive PM_{10} dust (not exhaust, as described above) emitted during demolition, excavation, earth movement, and other ground disturbance activities would be substantial. Thus, construction-related emissions of fugitive dust (PM_{10} and $PM_{2.5}$) could violate or contribute substantially to the SFBAABs nonattainment status with respect to PM_{10} and $PM_{2.5}$, expose sensitive receptors to substantial pollutant concentrations, and/or conflict with air quality planning efforts. This would be a significant impact.	S	**Mitigation Measure 4.7-1** MROSD and all construction contractors shall implement the following basic control measures during construction, per BAAQMD's Air Quality Guidelines: 〉 All un-compacted exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall either be watered two times per day when average winds exceed 20 miles per hour (mph) or covered with a dust palliative (e.g., mulch, straw). If watered, watering shall be done at a frequency adequate to maintain minimum soil moisture of 12%. Moisture content can be verified by lab samples or moisture probe. 〉 All haul trucks transporting soil, sand, demolished building materials, or other loose material off-site shall be covered. 〉 Erosion control seed mix shall be planted in disturbed areas where appropriate as soon as possible and watered as needed for up to three years. 〉 During windy days, the simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time. 〉 All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. 〉 All vehicle speeds on unpaved roads shall be limited to 15 mph. 〉 All roadways, driveways, and sidewalks that are planned as part of the project to be paved shall be completed as soon as possible. Any building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		〉 Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measures (ATCM) Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage about this requirement shall be provided for construction workers and truck drivers at all access points. 〉 All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. 〉 Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.	
Impact 4.7-2 Generation of Long-Term Operation-Related (Regional) Emissions of Criteria Air Pollutants and Precursor Emissions. Operation of the proposed project would not result in mass emissions of ROG, NO_x, PM_{10}, and $PM_{2.5}$ that exceed BAAQMD's respective quantitative thresholds of significance. Thus, long-term operational emissions of criteria air pollutant and precursors would not violate or contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations, and/or conflict with air quality planning efforts. This would be a less-than-significant impact.	LTS	No mitigation measures necessary.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Impact 4.7-3 Generation of Local Mobile-Source Carbon Monoxide (CO) Concentrations. Project-generated local mobile-source CO emissions would not result in or substantially contribute to concentrations that exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm. Therefore, this impact would be less than significant.	LTS	No mitigation measures necessary.	LTS
Impact 4.7-4 Exposure of Sensitive Receptor to Exhaust Emissions of Toxic Air Contaminants (TACs). Construction and operation of the proposed project would result in increased health risk levels associated with short-and long-term emissions of diesel PM and other TACs. However, the incremental increase in health risk levels, including cancer risk and noncancer chronic risk, would not exceed applicable thresholds at nearby sensitive receptors. As a result, this impact would be less than significant.	LTS	No mitigation measures necessary.	LTS
Impact 4.7-5 Exposure of Sensitive Receptor to Fugitive Dust Emissions Containing Naturally Occurring Asbestos (NOA). During construction-related earth movement activities, serpentine soils may be disturbed. Without appropriate controls, nearby sensitive receptors could be exposed to localized high levels of re-entrained fugitive PM_{10} dust, potentially including NOA. As a result, this impact would be considered potentially significant.	PS	**Mitigation Measure 4.7-5** Utilizing a qualified geologist, project-related construction and grading would be sited to avoid ultramafic rock to the maximum extent feasible. If construction or grading in ultramafic substrates would be unavoidable, MROSD shall conduct an investigation to determine whether and where NOA is present. The site investigation shall include the collection of soil and rock samples by a qualified geologist. If the site investigation determines that NOA is present on the project site then MROSD shall comply with the requirements of BAAQMD's naturally occurring asbestos program by submitting an Asbestos Dust Mitigation Application and any other applicable notification forms to BAAQMD pursuant to BAAQMD's Air Toxic Control Measure (ATCM) Inspection Guidelines Policies and Procedures. Completion of the Asbestos Dust Mitigation Application largely consists of the development of an asbestos dust control plan, which specifies measures for preventing or	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		minimizing the generation of NOA-containing dust associated with track-out onto paved public roads, active storage piles, inactive disturbed surfaces and storage piles, traffic on un-paved surfaces and roads, earthmoving activities, off-site transport of materials, and stabilization of disturbed soil surfaces post construction. In order to fulfill the requirements of Section 93105 of the California Health and Safety Code, "Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations," the asbestos dust control plan shall specify measures, such as periodic watering to reduce airborne dust and ceasing construction during high winds, that shall be taken to ensure that no visible dust crosses the property line. Measures in the Asbestos Dust Control Plan may include but shall not be limited to dust control measures required by Mitigation Measure 4.7-1. MROSD shall submit the plan to BAAQMD for review and approval before construction. Upon approval of the asbestos dust control plan by BAAQMD, the MROSD shall ensure that construction contractors implement the terms of the plan throughout the construction period.	
Impact 4.7-6 Exposure of Sensitive Receptor to Odorous Emissions. Construction and operation of the proposed project would not involve the addition of new odor sources into the area that would adversely affect off-site receptors or on-site recreational users. Therefore, this impact would be considered less than significant.	LTS	No mitigation measures necessary.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.8 Global Climate Change			
Impact 4.8-1 Generation of Green House Gas (GHG) Emissions. Implementation of the proposed project would result in generation of GHGs. However, because the project's operational emissions would be less than BAAQMD's threshold of significance, the project would not conflict with the goals of AB 32 or the goals of any local plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Thus, the project's contribution of GHG emissions would not be cumulatively considerable and this impact would be less than significant.	LTS	No mitigation measures necessary.	LTS
Impact 4.8-2 Impacts of Climate Change on the Environmental Restoration and Public Access Plan. Climate change is expected to result in a variety of effects on the project area including changes in precipitation, increased risk of drought and landslides, and increased frequency and intensity of wildfire. Substantial negative effects on facility operations and structures could result; however the project includes attributes to enable it to adapt to or withstand these effects. This impact would be less than significant.	LTS	No mitigation measures necessary.	LTS
4.9 Noise			
Impact 4.9-1 Long-Term Exposure of Existing Sensitive Receptors to Project-Generated Operational-Related Increases in Stationary Source Noise Levels. Long-term on-site operational-related stationary-source noise would not result in the exposure of persons off-site to or generation of noise levels in excess of applicable standards, or create a substantial permanent increase in ambient noise levels in the project vicinity without the proposed project. In addition, on-site noise levels would be compatibility with the proposed use type. This impact is considered less than significant.	LTS	No mitigation measures necessary.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Impact 4.9-2 Exposure of Existing Sensitive Receptors to Excessive Groundborne Vibration from Project-Related Activities. Construction- and operational-related project activities would not result in levels at the nearest sensitive land uses that exceed Caltrans's recommended level of 0.2 in/sec PPV with respect to the prevention of structural damage for normal buildings or FTA's maximum acceptable level of 80 VdB with respect to human response for residential uses (i.e., annoyance). Thus, implementation of the proposed project would not result in the exposure of existing off-site sensitive receptors to excessive groundborne vibration or noise levels. Therefore, this impact is considered less than significant.	LTS	No mitigation measures necessary.	LTS
Impact 4.9-3 Long-Term Exposure of Existing Sensitive Receptors to Project-Generated Operational-Related Increases in Traffic Source Noise Levels. Implementation of the proposed project would not result in project-generated operational-related traffic source noise levels that exceed applicable standards at any existing off-site sensitive receptors. In addition, on-site noise levels would be compatibility with the proposed use type. Therefore, this impact is considered less than significant.	LTS	No mitigation measures necessary.	LTS
Impact 4.9-4 Short-Term Exposure of Existing Sensitive Receptors to Project-Generated Increases in Construction Source Noise Levels. Construction activities would be limited to the less noise-sensitive hours of the day (7:00 am to 7:00 pm) for which noise levels would not exceed the applicable standards. Thus, project-generated construction source noise levels would not result in the exposure of noise-sensitive receptors to a substantial temporary increase in ambient noise levels. Therefore, this impact is considered less than significant.	LTS	No mitigation measures necessary.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
4.10 Traffic and Circulation			
Impact 4.10-1 Construction Traffic. Project construction activities would generate traffic associated with the delivery of materials and equipment to the project site and construction worker trips. In addition, trucks would be a safety concern for bike riders along these roads. Therefore, this impact would be considered potentially significant.	PS	**Mitigation Measure 4.10-1** MROSD shall implement the following mitigation measures to improve roadway condition/operation during and after construction. These measures would be required with or without removal of the radar tower. 〉 Improve and repave Mt. Umunhum Road to increase vehicle accessibility after completion of demolition. In the interim, provide necessary temporary improvements (e.g. pothole repairs). 〉 Survey the demolition and construction truck route between Mt. Umunhum Road and Almaden Expressway (or Camden Avenue) before project initiation and after all work is completed. Provide repair as required to all road segments with documented pavement degradation due to project trucks. 〉 Post signs along the narrower two-lane sections of construction haul routes informing bike riders as well as local drivers of dates and times of potential truck traffic. 〉 Post signs of potential delay in advance of construction/excavation sites along Mt. Umunhum Road. 〉 Ensure communication links between truck drivers so they are aware when there will be uphill and downhill truck traffic at the same time on Mt. Umunhum Road and/or Hicks Road. 〉 Survey Mt. Umunhum Road on a weekly basis during all demolition off haul, excavated material haul and any fill importation to determine whether pavement condition remains adequate in all locations along Mt. Umunhum Road for safe truck traffic activity. If not, provide interim pavement repairs as needed.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Impact 4.10-2 Roadway Level of Service. The proposed project would increase volumes on both Mt. Umunhum Road as well as along Hicks Road on both sides of Mt. Umunhum Road. Roadway level of service would change, but would not degrade to unacceptable levels during either weekday or weekend peak traffic conditions. Therefore, this impact would be considered less than significant.	LTS	No mitigation measures necessary.	LTS
Impact 4.10-3 Cumulative Roadway Level of Service, Year 2020. The proposed project would increase volumes on both Mt. Umunhum Road as well as along Hicks Road on both sides of Mt. Umunhum Road. Roadway level of service would change, but would not degrade to unacceptable levels during either weekday or weekend peak traffic conditions. Therefore, this cumulative impact would be considered less than significant.	LTS	No mitigation measures necessary.	LTS
Impact 4.10-4 Public Transit, Bicycle or Pedestrian Facility Effects. The proposed project would not be anticipated to conflict with adopted policies, plans or programs regarding public transit, bicycle or pedestrian facilities. However, mixing anticipated bicycle traffic with increased auto traffic on Mt. Umunhum Road and Hicks Road in the vicinity of the proposed project would result in significant safety concerns. However, implementation of the proposed bicycle safety signage program would ensure this impact is less than significant.	LTS	No mitigation measures necessary.	LTS
Impact 4.10-5 Safety – Guardrails and Reduced Possibility of Vehicle Diversion from Travel Lanes. Guardrails would be provided at locations with curves that have steep embankments. And signage for reduced vehicle speed would be placed at major curves. This impact would be less than significant.	LTS	No mitigation measures necessary.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Impact 4.10-6 Safety – Roadway and Drainage Ongoing Maintenance. The proposed project includes an ongoing roadway and drainage maintenance program for Mt. Umunhum Road. The District would also review pavement conditions and identify needed repairs. This impact is therefore less than significant.	LTS	No mitigation measures necessary.	LTS
4.11 Public Services			
Impact 4.11-1 Increased Demand for Fire Protection and Emergency Medical Services. Implementation of the proposed project would slightly increase the demand for fire protection and emergency medical services due to proposed new uses. The proposed project would be required to be designed and constructed consistent with the California Fire Code, applicable California Public Resources Code sections related to development in SRAs, California's Wildland-Urban Interface Code requirements and the fire and life and safety regulations of Santa Clara County. Therefore, this impact would be less than significant.	LTS	No mitigation measures necessary.	LTS
Impact 4.11-2 Increased Demand for Law Enforcement Services. Operation of the proposed project would not be expected to substantially increase the demand for law enforcement services. The project includes the implementation of site security measures to minimize new demands on law enforcement. Therefore, this impact would be less than significant.	LTS	No mitigation measures necessary.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
5 Cumulative Impacts			
Impact 5-1 Visual Resources. The proposed project would not have a substantial adverse effect on visual resources. Therefore, the proposed project would not cause any incremental adverse impacts to visual resources. The project's contribution would not be cumulatively considerable.	LTS	No mitigation measures necessary.	LTS
Impact 5-2 Cultural Resource Impacts. The proposed project could result in significant impacts to potential archaeological resources, including human remains. Although cumulative projects could affect the same resources, future development projects throughout the broader region, including the proposed project, would be required to participate in mitigation plans approved by the state resource agencies. Therefore, the project's contribution would not be cumulatively considerable.	LTS	No mitigation measures necessary.	LTS
Impact 5-3 Cumulative Biological Resource Impacts. The proposed project would result in significant impacts on special-status plant and animal species. Although cumulative projects could affect the same resources, future development projects, including the proposed project, would be required to participate in mitigation plans approved by the federal and state resource agencies. Therefore, the project's contribution would not be cumulatively considerable.	LTS	No mitigation measures necessary.	LTS
Impact 5-4 Hydrology and Water Quality Impacts. Although the project would cumulatively contribute to hydrology and water quality impacts, the contribution would not be considered cumulatively significant since measures are required to be in place to minimize or avoid project-related	LTS	No mitigation measures necessary.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
water quality and hydrology impacts on site. Because the proposed project would not be expected to measurably contribute to cumulative water quality and hydrology impacts, the proposed project would not be cumulatively considerable.			
Impact 5-5 Geology and Soils Impacts. The proposed project would result in potentially significant impacts related to erosion and slope stability, both of which are local, site specific impacts. Due to the localized nature of geology and soils impacts, the impacts would be confined to the project site and would not combine with any geologic or soil effects associated with development in other areas. Therefore, the project's incremental geology and soils impact would not be considered cumulatively considerable.	LTS	No mitigation measures necessary.	LTS
Impact 5-6 Hazards and Hazardous Materials Impacts. The proposed project could contribute to significant cumulative impacts related to hazards and hazardous materials. However, with implementation of project mitigation measures the project's contribution would not be cumulatively considerable.	LTS	No mitigation measures necessary.	LTS
Impact 5-7 Cumulative Air Quality Impacts. Mitigation measures included in this DEIR reduce the project-specific impacts related to fugitive dust and emissions resulting from construction, as well as impacts related to conflicts with air quality planning efforts, to a less-than-significant level. The project's contribution would not be cumulatively considerable.	LTS	No mitigation measures necessary.	LTS
Impact 5-8 Cumulative Noise Impacts. Noise and vibration are localized occurrences; therefore only projects in the direct vicinity of the project site are considered influential in regards to noise and vibration. No related projects are in the vicinity of the site, and implementation of the	LTS	No mitigation measures necessary.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
proposed project would result in less-than-significant project-specific impacts related to noise and vibration. The project's contribution would not be cumulatively considerable.			
Impact 5-9 Cumulative Roadway Level of Service, Year 2020. As discussed under Impact 4.10-3 in the "Traffic and Circulation" chapter, the proposed project would increase volumes on both Mt. Umunhum Road as well as along Hicks Road on both sides of Mt. Umunhum Road. Roadway level of service would change, but would not degrade to unacceptable levels during either weekday or weekend peak traffic conditions. Therefore, traffic and circulation impacts would not be cumulatively considerable.	LTS	No mitigation measures necessary.	LTS
Impact 5-10 Public Services Impacts. The proposed project is not anticipated to contribute significantly to the demand for public services (fire and police). Therefore, the proposed project's incremental contribution to public service demands would not be considered cumulatively considerable.	LTS	No mitigation measures necessary.	LTS

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3 PROJECT DESCRIPTION

3.1 PROJECT OVERVIEW

The Mount Umunhum Environmental Restoration and Public Access Project (proposed project) includes phased public access to the summit of Mount Umunhum, as well as roadway and access improvements, environmental restoration, development of public use facilities and a range of possible amenities such as trails, observation and reflection areas, interpretive displays, picnic tables, shade structures, restrooms, camp sites, and visitor center. Facilities at the summit will occur on previously disturbed ground resulting from the former Almaden Air Force Station. The project is proposed by the Midpeninsula Regional Open Space District (MROSD or the District) and also includes longer term plans to allow public access to the summit of Mount Thayer via a trail connection from Ralph's Mountain.

The proposed project requires demolition of most (possibly all) of the abandoned structures associated with the former Almaden Air Force Station. The site includes a visually-prominent five-story concrete structure, the "radar tower", constructed as the base for a long-range radar "sail" which was removed some time ago (described further below). Three options are proposed for addressing the radar tower ranging from demolition to preservation. For a more detailed description, see 3.5 "Project Details" below.

3.2 EXISTING SETTING

The project site is located within the Sierra Azul Open Space Preserve on the summits of Mount Umunhum and Mount Thayer, in the southern Santa Cruz Mountains, about 13 miles south of San Jose and three miles southeast of Los Gatos (see Exhibit 3-1, Regional Map). The project site was previously owned and operated by the federal government as the Almaden Air Force Station (AFS) until it was decommissioned in 1980. The District purchased the site in 1986 and it is now part of the 18,000-acre Sierra Azul Open Space Preserve owned and managed by the District. The project site is accessed by Mt. Umunhum Road, portions of which are under private ownership. The last two miles of the road are currently closed to the public and would require public access rights to permit public access to the site. Although the entire former AFS consists of 43.72 acres, the project site is limited to approximately 22.8 acres (refer to Exhibit 3-2, Project Area). The project site is located on the following Assessor's Parcel Numbers: 562-08-003, -004, and 562-09-050.

The project site consists of a former military complex comprised of operations, housing and support structures and self-contained infrastructure requirements (water, sewer, electrical). Exhibit 3-3 provides a historical map showing the building types and locations. Among these is the five-story high, massive concrete "radar tower"(designated as building 102 in Exhibit 3-3), formerly used as the base supporting an 85-ton radar sail. The sail was removed by the federal government before the District purchased the property. The buildings have been abandoned for 30 years, and due to the passage of time, vandalism, and extreme weather conditions, the structures are severely dilapidated. Ornamental landscaping species have become established and the main access road, interior roads, parking lots and infrastructure have deteriorated. The main site access road, Mt. Umunhum Road, begins at Hicks Road and continues for approximately five miles to the entrance of the former Almaden AFS near the summit. The road is held in various ownerships and surface and drainage conditions vary, but have generally deteriorated over time. Potential new trail connections could link existing Preserve trails to the summit and are part of the proposed plan for public access.

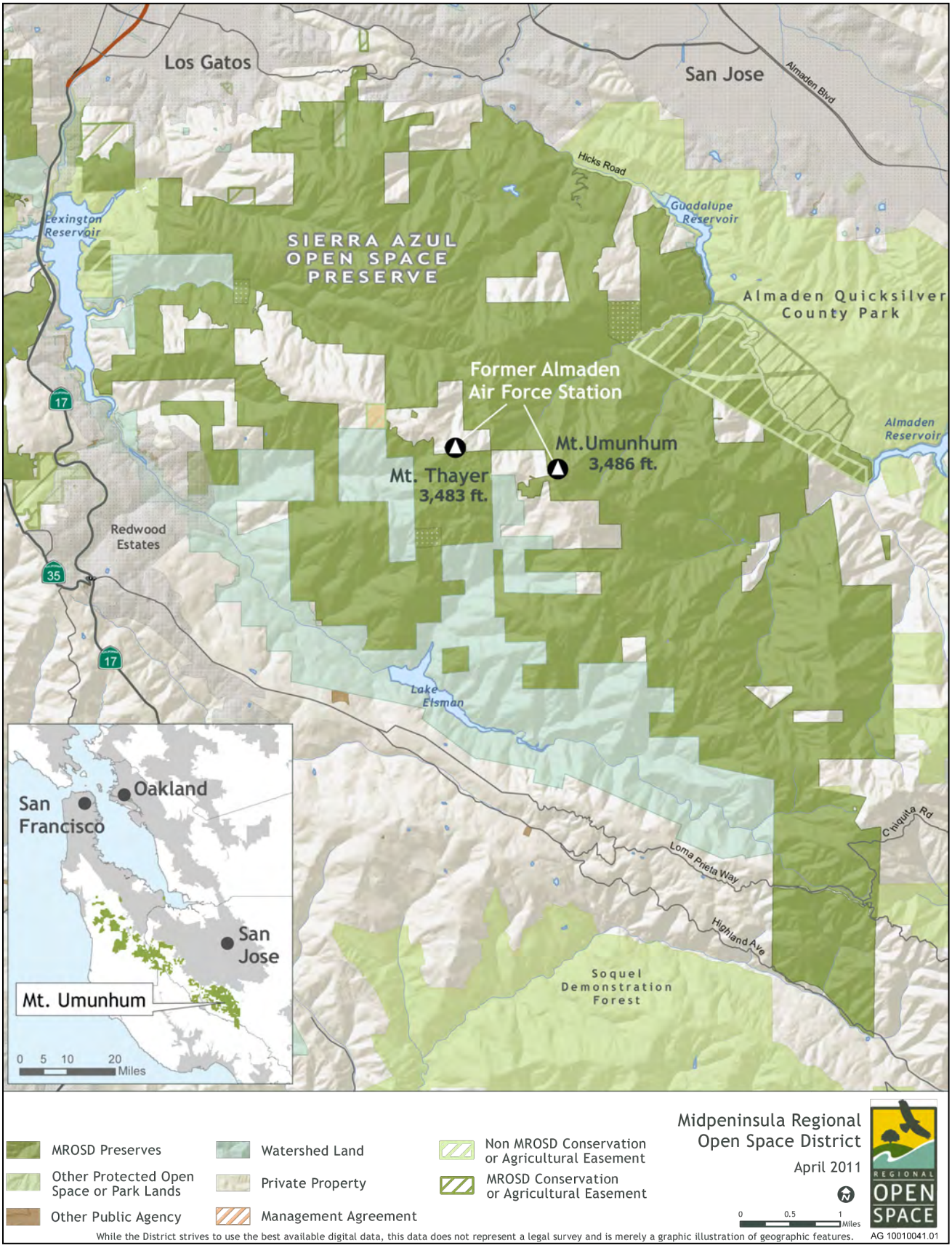


Exhibit 3-1 **Regional Location**

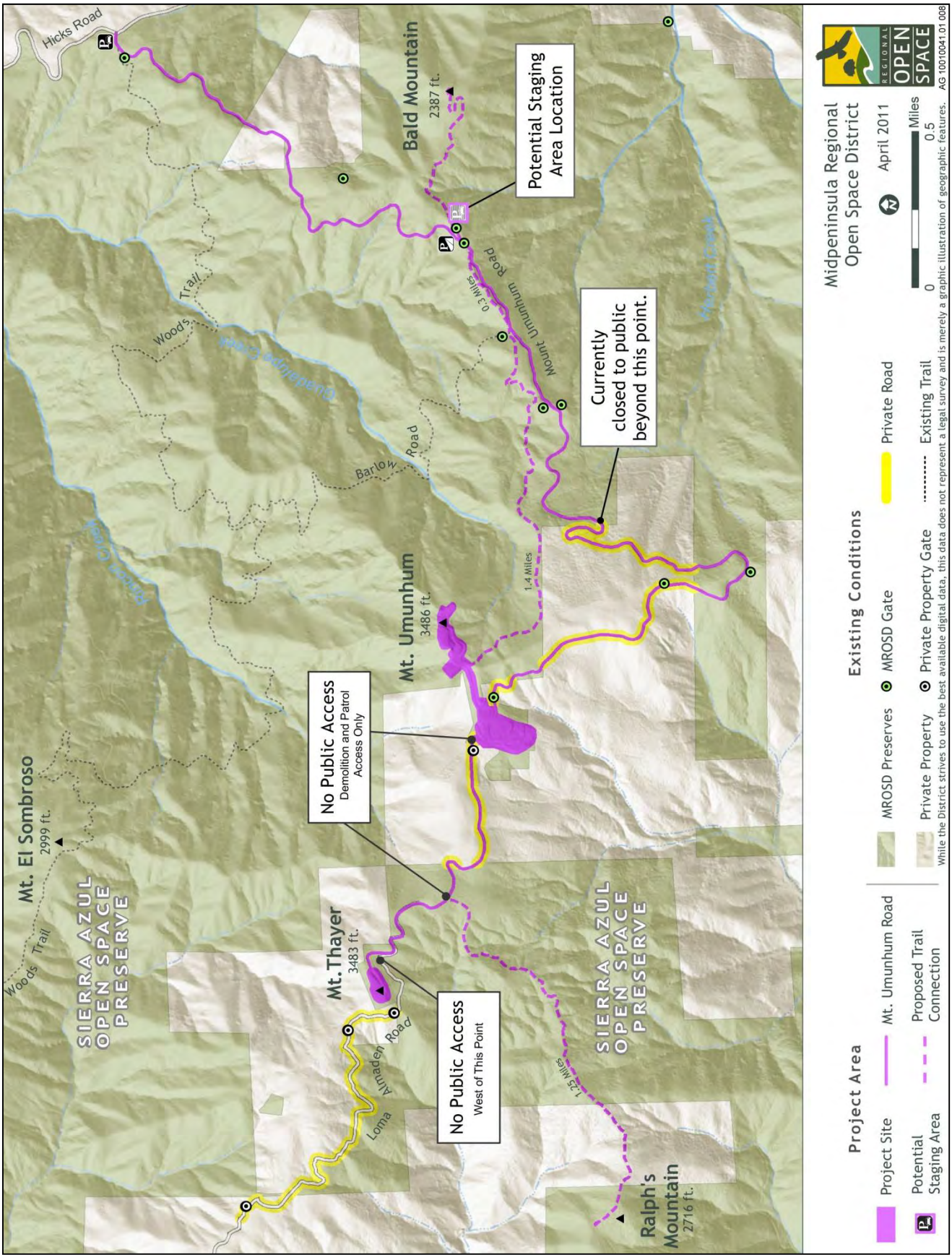
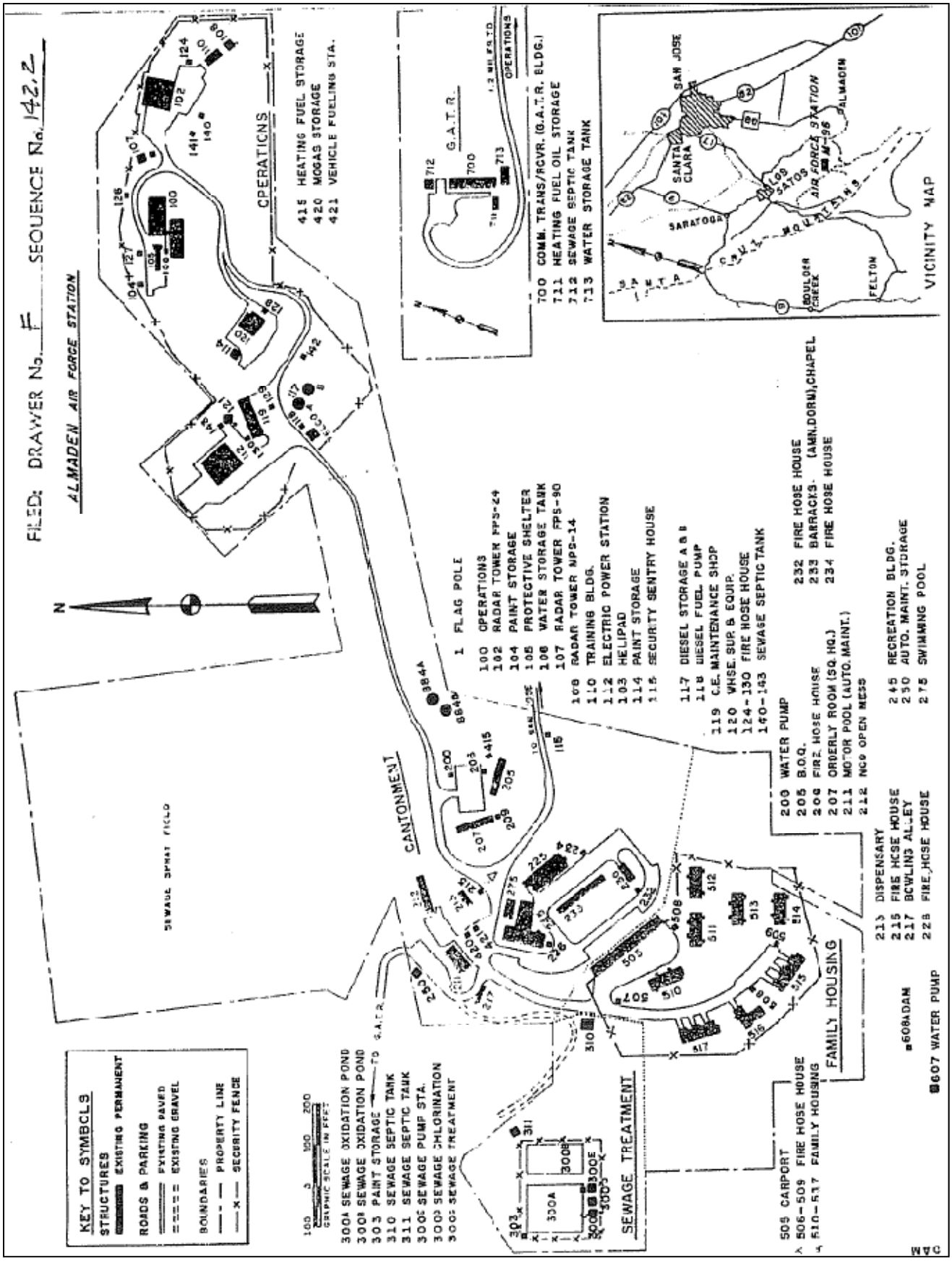


Exhibit 3-2 **Proposed Project Area**



Source: Page & Turnbull 2010

Exhibit 3-3 **Former Almaden Air Force Station**

3.3 PROJECT BACKGROUND

Mount Umunhum and the mountainous terrain that surrounds it have a long history of human use. Although early-history references to the specific site have not been found, it is well documented that the Mount Umunhum area figured strongly in the lives of the indigenous peoples who resided in the region. Mount Umunhum has most likely been part of the world view of many generations of ancestral Native Americans, as reflected in the name of the mountain: the word *Ummun* in the various Ohlone dialects translates to "hummingbird," a creature that figured in their creation story that took place on a mountain top. Historic settlements in the Austrian Gulch area, just west of Mount Umunhum, are also well documented.

In the late 1950s, the United States government procured Mount Umunhum to build the Almaden AFS, a US Air Force early warning radar base that operated from 1958 to 1980. The base was constructed as part of the North American Aerospace Defense (NORAD) Command to keep watch over northern California's airspace during the Cold War. With the end of the Cold War, and as a result of advancements in satellite technology, this and other radar base sites became obsolete. The official "inactivation" date of the facility was June 30, 1980. In June 1982, control of the property and improvements was transferred to the General Services Administration (GSA). The District purchased the 44-acre base in April 1986 from the GSA for then fair market value of $260,000.

The District acquired the former Almaden AFS and all remaining facilities at the site with the ultimate intent to restore the area to a natural condition and provide public access; however, hazardous materials associated with the construction and operation of the base had to first be removed. While a portion of hazardous materials was cleaned up by the federal government soon after the District's purchase, other materials, particularly lead-based paint and asbestos-containing construction materials used on buildings, fell outside the scope of the original federal cleanup program. The District has recently been working with community, state, and federal leaders to obtain federal funding to complete the remaining cleanup, and federal funds were committed in 2010 toward remediation of remaining hazardous materials. The District approved the structure abatement project in August 2010, which was complete in the summer of 2011. See Exhibits 3-4 through 3-8 below for recent photos of the existing structures on the site.

3.4 PROJECT GOALS AND OBJECTIVES

The goal of the proposed project is to establish a fiscally and environmentally sustainable visitor destination that aligns with the District's mission by balancing public access, enjoyment, and education with environmental restoration. This goal will be achieved through the following objectives:

- Create a destination that is accessible to and accommodates a broad range of user groups and introduces new visitors to open space.
- Remove or permanently cap physical hazards and restore the native landscape and habitat for wildlife as much as possible.
- Provide minimalist visitor amenities that complement and highlight the world-class views and open space experience.
- Provide ample, rich, and diverse trail experiences for hikers, bicyclists, and equestrians.
- Highlight the rich natural and cultural history of the site through self-discovery and focused interpretive and educational opportunities.

Source: MROSD 2010

Exhibit 3-4 **Radar Tower**

Source: Ascent 2011

Exhibit 3-5 **Abated Multi-Housing Structure**

Source: Ascent 2011

Exhibit 3-6 Abated Operations Building (Radar Tower in Background)

Source: Ascent 2011

Exhibit 3-7 Abated Electrical Power Station

Source: Ascent 2011

Exhibit 3-8 View of Mount Umunhum and Radar Tower from Mount Thayer

3.5 PROJECT CHARACTERISTICS

PROJECT ELEMENTS

The facilities, trails, and access features proposed for Mount Umunhum are designed to promote memorable, meaningful experiences for people with a wide range of physical abilities and, where possible, provide accessibility to persons with disabilities, consistent with the Americans with Disabilities Act (ADA). Proposed design elements, shown in Exhibit 3-9, would accommodate hikers, equestrians, bicyclists, and vehicles at or near the summit. Paved roads, unpaved trails, and viewpoints would provide diverse destination points for social interactions, quiet solitude, and nature study. Interpretation of recent and historic cultural activity and ecology would be emphasized via self-guided interpretive trails, signs, and/or audio tours. Special permitted activities (such as hang gliding, and night activities such as astronomy) and docent-led tours would be offered similar to those at other Open Space Preserves on a case-by-case basis, and would be phased in as funding allows. Mount Umunhum may be open to the public from sunrise to ½-hour after sunset, up to 365 days per year. Because the hours are based on daylight, actual park hours would vary with the seasons.

Note that while the full range of the opportunities for public enjoyment at Mount Umunhum are described, individual components may be phased in as funding, property ownership, access easements and other constraints allow. Also, the project is expected to be further refined based on the findings of this environmental review and as new data is collected, but will remain within the range of opportunities described in this document. The refined, final site plan is expected to be presented to the MROSD Board of Directors in early summer 2012 at a public meeting following completion of the environmental review process and pending approval of the proposed project.

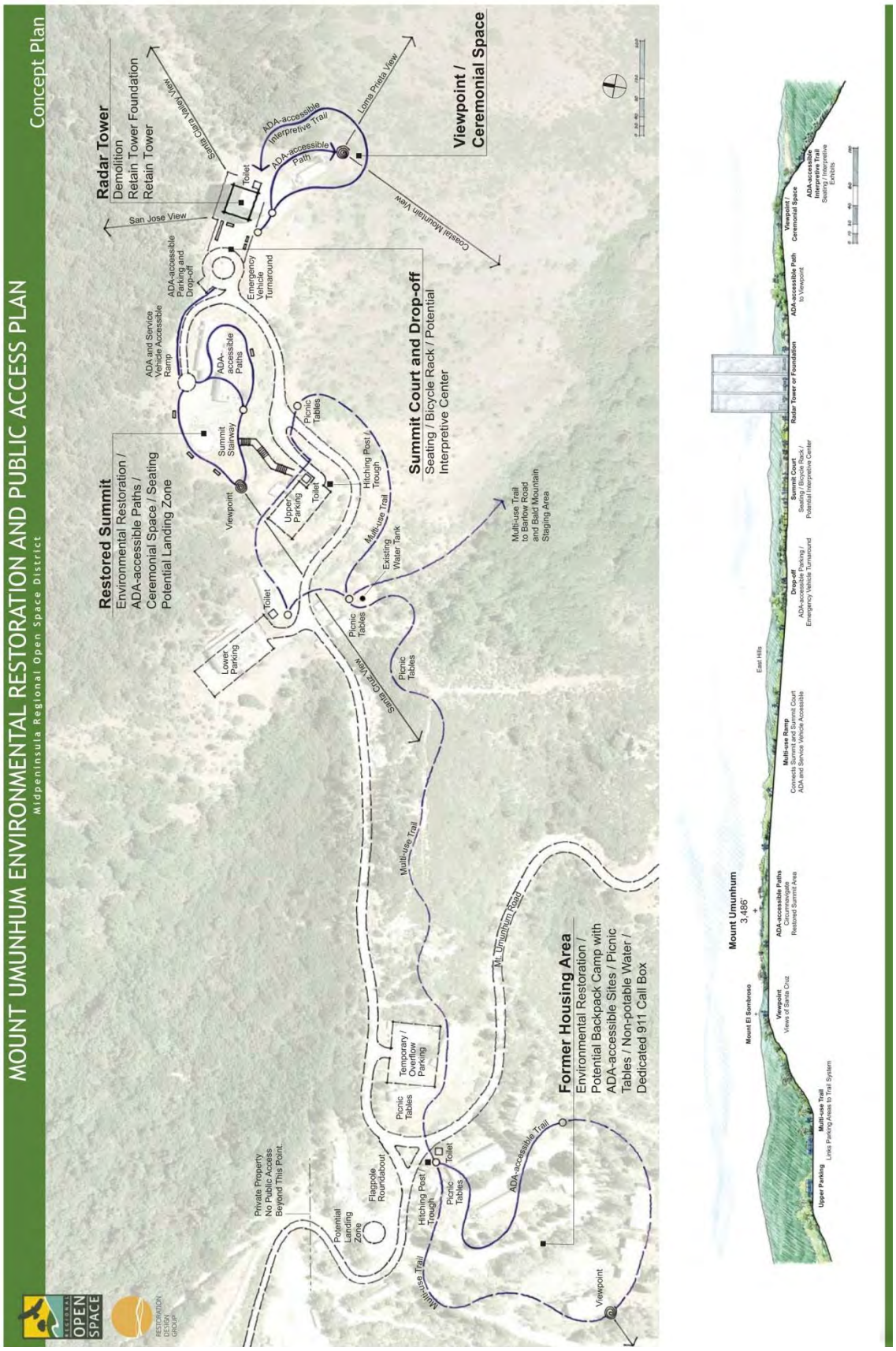


Exhibit 3-9 **Mount Umunhum Environmental Restoration and Public Access Plan**

Radar Tower Options

The proposed project includes demolition of all structures on the site, with the possible exception of the radar tower. Three options are currently being considered for the radar tower near the summit of Mount Umunhum: 1) retain and seal entire structure; 2) substantially remove structure but leave a publically accessible foundation; or 3) remove entire structure and environmentally restore the footprint. A brief discussion of each option follows:

1. **Retain and seal entire structure:** Under this option the structural damage caused by the 1989 Loma Prieta earthquake would be repaired and the radar tower building would be sealed to prevent public access inside the structure. To safely allow public access to the exterior base of the radar tower, necessary repairs to upgrade the structure to a "collapse" prevention level will include epoxy injection of cracks, removal and replacement of loose concrete, and infilling openings on the east side the building. This approach presumes the radar tower will not be occupied. To prevent entry, all other openings would be filled with reinforced concrete doweled into the existing structure. In addition, new roofing would be installed, the roof drainage system repaired/replaced, and a new exterior coating applied to protect the concrete walls. Once structurally repaired and sealed, the concrete structure would remain in its current location on the project site, and the interior of the structure would not be utilized. A separate maintenance stairway would be preserved to allow access to the roof to perform maintenance and repairs. Interpretive panels may be added to the exterior of the structure.

2. **Remove most of the structure but leave a publically accessible foundation:** Under this option, the tower structure would be mostly removed, leaving the foundation of the former tower as a monument. The walls would be neatly saw cut, leaving some walls high and others lower, and would provide seating, interpretive display and wind and shade shelter for public use.

3. **Remove entire structure and environmentally restore the footprint**: Under this option, the tower structure would be removed entirely, leaving only the subsurface foundation, and native habitat would be restored within the tower footprint.

Prior to public access to the summit, under all three options for the radar tower, a construction-grade chain link safety fence would be placed around the tower perimeter until the Board-selected option is implemented. Implementation of the radar tower option will occur after appropriate funding is secured. Because the radar tower sustained damage in the 1989 Loma Prieta earthquake, the fencing is required to restrict public access near the structure until "collapse prevention" level structural repairs can be performed. (See the list of the needed structural repairs described above under Option 1).

Environmental Restoration

After demolition of all structures on the site (with possible exception of the existing radar tower, as described above), the proposed project includes habitat and landform restoration to the maximum extent possible. Landform restoration would include recreating original topography, or a close semblance of it, using onsite or near-site clean fill material to create elevational peaks, create natural drainage swales and channels, and imitate adjacent rock outcrops, to blend seamlessly to the extent feasible into the surrounding landscape. Soil would be amended or blended as needed to imitate surrounding soil to support existing surrounding vegetation communities of chemise-manzanita/chapparal, and California bay and canyon live oak forest. A plant palette reflecting native habitat composition would be developed from local seed stock, following the guidelines set forth for defensible space and fire-resistant species in the Wildfire Risk Analysis (Rice, 2011). Revegetation plantings would be maintained and monitored to ensure success.

Observation, Reflection, and Ceremonial Facilities

A short, ADA-accessible interpretive trail and second viewpoint/ceremonial space would emphasize views, as well as the site's natural, Native American, and military cultural history. A ceremonial space marked with the four cardinal directions would provide a peaceful place for contemplation and would recognize the importance of the site to Native Americans.

Trails

Mount Umunhum would be accessed via a proposed 1.7-mile multiuse connector trail originating at a proposed new staging area on Mt. Umunhum Road (Exhibit 3-2). Alternatively, hikers, bikers, and equestrians could utilize the existing Preserve trail network, originating at the Jacques Ridge staging area and traversing Woods Trail and Barlow Road to the new connector trail; or, for a longer hike or ride, visitors could stage in the Lexington Basin and access the new connector trail via the Kennedy or Limekiln Trails. The new multiuse trail would connect the Bay Area Ridge Trail, a major regional network, to the summit of Mount Umunhum, which would be its highest point. Once on the summit, a loop trail would provide meaningful access to site amenities, viewpoints, and interpretive features. As funding and other constraints allow, a second connector trail from the west would link Ralph's Mountain and the Lexington Basin to Mount Thayer. Future linkages to the coast via an "Umunhum-to-the-Sea" connection, directly to the Woods Trail, and between Mount Umunhum and Mount Thayer are too speculative at this time and are not included in the project. Both trail connections would be open to hiking, equestrian use, and mountain biking. Dogs would be prohibited. The summit loop trail would be constructed to accommodate a range of mobilities and would be ADA accessible where possible. This summit trail would be open to hiking only, with facilities to secure horses and bicycles provided at key locations.

Camping Facilities

The proposed project includes up to 10 seasonal camp sites, which would be located within a previously disturbed area. The average camp site would be approximately 250 square feet of pre-disturbed area per site, with the potential for one or more smaller sites to be combined into a larger group camp area. The camp sites would be utilized by hikers and bicyclists. Direct driving access to the camp site would not be permitted except under special permission by visitors displaying disabled placards in their vehicles. While horses would not be allowed to overnight at the camp sites, equestrians may use the daytime picnic/rest stop with their horse in the camp area, away from the main activity center at the summit. Open camp fires would be prohibited, but camp stoves would be permitted within specifically designated locations. Camping would be allowed by advance special permit only for six months annually beginning May 1 and ending October 31. Other rules enforced at the campground would include all regulations currently enforced by MROSD, including no smoking or open fires. Noise restrictions would be in effect during early morning and late evening.

Hang Gliding

A hang gliding launch site and landing area would be provided as part of the proposed project. As at the District's Windy Hill Open Space Preserve, regulated hang gliding is expected to be compatible with other proposed open space uses. Motorized aircraft would not be permitted. If located on the Mount Umunhum summit, the designated hang glider launching area would be situated in an open area away from site amenities and areas where the public is expected to congregate. The launch site would be located in a previously disturbed area; therefore, no vegetation clearing would be required. Only five pilots would be permitted at the launch site at once, and no more than ten within the entire Sierra Azul Open Space Preserve at any one time. An organized, self-insured, and self-regulating group of pilots would be subject to a special use permit issued by the District,

which would be reviewed annually and would be revocable at any time. Prior to any hang glider use at Mount Umunhum, pilots would be required to provide the pilot group with required proof of training, ability, and membership in the United States Hang Gliding Association. The special use permit requires specific terms and conditions of the pilot group. For example, flying over residential areas and near utility lines would be prohibited, as would flying on certain holidays.

Hang gliders launching from the Mount Umunhum summit would be permitted to land a short distance off-site within District boundaries at Bald Mountain. Any other landing locations would require prior approval from the District, would be within easy walking distance from a parking or drop-off area, would be located in a previously-disturbed or otherwise open area, and would require no infrastructure development. Driving access to the Bald Mountain landing area would be via existing patrol road, by permit only, and limited to two vehicles at any one time. Access may be restricted during times of high fire danger, saturated roadway, or other unsafe conditions.

Other Amenities

Other potential amenities include benches, picnic tables, vault toilets, a dedicated emergency callbox, hitching posts, bicycle posts, and non-potable water (for horses and fire protection) contained in one or more onsite water tanks. Additional amenities such as wind and shade protection, easy-access rustic campsites with non-potable water and a fire hose, and a small visitor center may be phased in over time as funding, and other constraints allow.

Parking, Circulation, and Roadway Access

The proposed project includes a new parking / staging area on Mt. Umunhum Road at the Bald Mountain trailhead, and, as funding allows, up to two paved-surfaced and one gravel-surfaced parking lots in the summit area. Adjacent to the peak, a summit court would provide a paved passenger and emergency vehicle turnaround, ADA-accessible parking, and nearby seating. One of the project alternatives includes a visitor shuttle service with a potential new staging area near the corner of Pheasant and Hicks Roads (on District owned land). Following the District's ability to secure public access rights on Mt. Umunhum Road, the proposed project, as one option, may allow the public to drive to the summit year round except during hazardous road conditions. Other project options reduce the frequency of vehicular summit access to seasonal use only (from May through October), to weekends and holidays only, and by permit only. However, to conservatively analyze environmental impacts, this Draft EIR assumes year-round vehicular access.

Prior to allowing general public access MROSD would make road repairs and safety upgrades for auto users, including resurfacing, replacing and augmenting existing guard rails, and cleaning of drainage features on the five miles of Mt. Umunhum Road that provide access to the site from Hicks Road. MROSD would also post reduced vehicle speed signs on the approaches to all major curves and in other locations with steep embankment drop offs. MROSD's proposed roadway improvements include curve warning signs and reduced speed limit signs, as well as, potentially, pavement undulations (in bicycle-safe locations) in advance of all roadway segments adjacent to steep embankment drop offs. Mt. Umunhum Road would remain as a paved, two-lane vehicular access road that stretches between the intersection of Hicks Road at the Jacques Ridge parking lot and the summit of Mount Umunhum. MROSD currently does not have roadway standards; Mt. Umunhum Road currently provides adequate emergency vehicle access for San Jose Fire (the primary responder). Construction of a visitor center would result in the requirement for road improvements consistent with Santa Clara County standards.

The proposed project also includes a signage program to increase bicycle rider safety, which will include the following signs along Mt. Umunhum Road: "share the road" signs for auto/bicycle traffic, "no passing" signs and

other warning signs for auto drivers that slow moving bike riders are a possibility (especially on approaches of uphill horizontal curves with obstructed visibility), 20 mile per hour speed limit signs on the approaches to all sharp curves or curves with restricted sight lines. In conjunction with the signage program, MROSD will consider providing rumble strips (partial lane width and in bicycle-safe locations) on the approaches to select curves in order to obtain full driver attention to slow down.

In order to ensure the improved roadway will remain safe for auto drivers and bike riders, the proposed project includes design and implementation of an ongoing roadway and drainage maintenance program for Mt. Umunhum Road. For example, MROSD will make sure the paved travel surface, including paved pullouts and drainage facilities, are clear of debris that might pose safety concerns for auto drivers and bike riders. The maintenance program will include ongoing field surveys for debris and will identify road closure procedures prior to forecasted major storm events. MROSD will also annually review pavement surface conditions to identify the need for repair/repaving as required for safe bicycle/auto traffic flow. MROSD will review any accidents along the road to determine additional measures that may prevent future accidents at the location of the collision.

Gates would continue to be located along key points to allow for safe closure of the road when needed and to prevent the public from inadvertently driving onto private driveways or closed roads and at staging areas. An "iron ranger" fee collection system may be located either at the first entrance gate or at the summit parking area.

Safety, Security, and Lighting

The proposed project would include a centrally located, well-marked, dedicated emergency callbox to 911 always available in case of emergencies. The project also includes an emergency vehicle turnaround for large emergency equipment such as fire trucks. The primary access road (Mt. Umunhum Road) has been driven by the responding agencies (City of San Jose Fire Department Station 28 and CAL FIRE) and was found to provide adequate emergency vehicle access.

MROSD ranger staff would patrol the site year-round. The ranger staff would enforce District rules prohibiting activities, such as lighting campfires, smoking, lighting fireworks, vandalism, or excessive noise. MROSD ranger staff would also alert CAL FIRE, sheriff's department, or other appropriate emergency services in case of a more serious emergency.

With the exception of the potential camping area, the site would be open only during daylight hours. Temporary lighting includes lanterns and flashlights from visiting campers. Minimal permanent night lighting at bathroom entrances, the emergency callbox, and security lighting at the visitor's center, may be provided. Power for lighting would be generated by small solar panels associated with each individual light or structure. All permanent light fixtures would be fully shielded, downward pointing, generate the minimum light necessary, and utilize motion sensor equipment as appropriate.

Utilities

Non-potable water would either be purchased from nearby landowners or from a commercial source and stored on site in one or more water tanks. All restrooms would be vault toilets that require no water or sewage connections and would be regularly pumped by District staff or an outside septic service, as necessary. Solid waste from vault toilets would be pumped out, transported and disposed off site. Solar electricity would be generated on site as needed. Small solar panels would be associated with each light, appliance, and/or structure

(i.e., a small solar panel would be placed on top of the 911 call box post, and small solar panel arrays placed on the visitors center). Propane gas, if needed, would be stored in small, residential-style, aboveground tanks.

The former AFS created and distributed their own power. This service and all associated poles and lines are no longer active, and most will be removed as a part of the demolition of structures on site. There are also several PG&E poles that cross the site. The District would coordinate with PG&E to abandon these services and remove most of the associated poles from the site. One live power service and required associated poles would remain. A number of currently non-functioning power poles would remain on-site and would be re-purposed to provide nesting habitat for Purple Martin, a bird Species of Special Concern, which has been confirmed to have produced a nest in 2011 at the summit. This would allow the District to restore the site to a natural environment, but still preserve live electrical service at the site boundary that could be extended (either underground or above ground) in the future if needed to support a visitor center if additional electricity is necessary beyond the solar power.

Public Access Phasing

Public access to Mount Umunhum may be phased in conjunction with individual design elements. This phasing plan was developed in response to stakeholder, staff, and general public input, and refined by the District Board of Directors' Ad Hoc Committee. It will provide access to the summit as quickly as possible while simultaneously allowing deliberative planning and sustainable site development.

Special docent-led tours may bring participants to the summit following remediation of hazardous materials. Hiking, biking, and equestrian trail access may begin shortly after new trail construction to the summit from Bald Mountain. On Mt. Umunhum Road, the main access to the summit, hiking, biking, equestrian use, special uses, and limited vehicular access by special permit may begin after securing public access easements and implementing safety upgrades to the road. Full vehicle access may begin following resurfacing of Mt. Umunhum Road. Note that public access between Mount Umunhum and Mount Thayer is not included in this proposal.

Staffing

The plan will allow phasing of design elements as funding and staffing allows and will require additional staff to carry out the public access elements as described. One additional administrative staff position is estimated to be necessary to perform increased workload to manage docents, permitting, and volunteer activities, and two additional rangers and one maintenance field staff positions are estimated to be necessary to meet patrol and maintenance needs for this site.

Construction and Phasing

Project construction would be implemented in several phases. Phase I, anticipated to begin in Fall of 2012, includes above-and below-ground structural demolition of structures on Mount Thayer and Mount Umunhum. Dependent upon funding, the demolition work may be implemented over several years. Demolition of above and below ground structures at the summit area of Mount Umunhum will be the first area to be completed, followed by the aboveground demolition of structures in the cantonment area, the housing area, and on Mount Thayer. Below ground demolition at the cantonment area and Mount Thayer will then be completed. Below ground demolition at housing will not be completed until Phase III. Implementing the entire demolition scope of work is anticipated to take approximately 6-12 months to complete with a maximum on site presence of a 50-worker demolition crew. Consistent with Santa Clara County's Noise Ordinance, construction would occur only between the hours of 7:00a.m. and 7:00p.m. Safety and structural upgrades to the radar tower, if it remains,

may take place during Phase I. These upgrades would involve a 10-20 worker crew for up to three months. If the radar tower is removed from the site, demolition would occur in one of three ways:

1. Demolish building with excavators and concrete breaking equipment; crush on site and extract all steel; truck all spoils to landfills located in San Jose; recycle salvaged steel;
2. Demolish building with excavators and concrete breaking equipment; l crush on site and extract all steel; stockpile crushed concrete for re-use on site; haul off spoils to local landfill; recycle salvaged steel; or
3. Remove most of the structure but leave the lower portion as a publically accessible foundation, demolition would occur as in #1 or #2 to a point, then up to three remaining walls would be left to remain tall for wind and shade protection, and at least one cut low for public seating. Tools used are anticipated to include cut-off concrete saws, track-mounted diamond wall saws, and/or jackhammers. Water would be used to control/contain dust. Cut concrete would be capped to prevent water damage and provide seating where appropriate.

Phase II of the project, with an anticipated start date of Fall 2013 (if adequate funding is secured), includes landform and habitat restoration on the summits of both Mount Umunhum and Mount Thayer, construction of minimal visitor amenities on the Mount Umunhum summit area, construction of connector trails to the existing trail network, construction of new parking within a previously disturbed area near the Bald Mountain trailhead, and safety upgrades to and resurfacing of Mt. Umunhum Road. Restoration and construction on the summit area is anticipated to span three to four years and will involve heavy earth-moving equipment and ground disturbance throughout the project area footprint, all of which is currently developed or severely disturbed. It is anticipated that this work would be completed by a small crew of District staff, a small crew of private contractors, or both, as well as volunteers. Construction of the two five-foot wide connector trail segments to Ralph's Mountain to the west, and Bald Mountain to the southeast, which total 3.0 miles (1.0 mile of this distance does not require new trail construction because it would be located on a former road), would include hand tools and small trail construction equipment, including mini excavator and dozer, similar in size to a Bobcat, with narrow tracks about four feet wide. Trail construction would occur mostly near ridgelines within undisturbed chaparral and would involve a small crew of District staff for up to four months. Construction of the parking area would include larger heavy equipment such as a full size excavator and bulldozer and would involve a small crew for up to three months. Finally, off-site safety upgrades and resurfacing Mt. Umunhum Road would likely involve a small crew for up to four months, and would be contracted separately.

Phase III of the project may start in 2017 if adequate funding is secured, and involves summit-only improvements, including construction of two paved parking lots (upper parking lot and lower parking lot), an unpaved overflow parking lot, installation of a multi-use trail, and below-ground demolition and restoration of the former housing area.

Table 3-1 below outlines the total disturbance area for each phase of construction. Note that disturbance area for trail construction requires hand tools and small pieces of construction equipment (similar to a Bobcat compact tractor). Approximately one mile of the trail connection from Mount Thayer to Ralph's Mountain would be located on an existing road; therefore, only approximately ¼-mile would require new ground disturbance. Trails would be constructed consistent with District's Road and Trail Typical Design Specifications (MROSD 2008), which identify erosion control and water quality best management practices, including:

- Minimization of erosion and sedimentation during construction
- Elimination of pollution of storm runoff by chemicals and materials used in the construction process
- Mulching of exposed mineral soils outside of the trail running surface greater than 50 square feet

Table 3-1. Maximum Disturbance Area of Each Construction Phase (Acres)					
Phase	**Mount Umunhum**	**Mount Thayer**	**Road-side Drainages/ Staging**	**Trails**	**Total**
Phase 1 Demolition	19.9	2.8	--	--	22.8
Phase 2 Environmental and Landform Restoration, Trails, and Roads	9.9	--	6.8	1.2	17.9
Phase 3 Environmental and Landform Restoration of Housing Area, Paved Parking, Multi-use Trail	10.0	--	--	1.5	11.5

4 ENVIRONMENTAL SETTING, ENVIRONMENTAL IMPACTS, AND MITIGATION MEASURES

INTRODUCTION TO ENVIRONMENTAL ANALYSIS

The preparation of this draft environmental impact report (Draft EIR) is in conformance with the California Environmental Quality Act (CEQA) of 1970 and the State CEQA Guidelines. Chapter 4 contains discussions of the environmental setting, thresholds of significance, environmental impacts, mitigation measures, and levels of significance after mitigation. The issues evaluated in Chapter 4 consist of the significant and potentially significant environmental issue areas identified for review in the Notice of Preparation (NOP), found in Appendix A. The sections in Chapter 4 are organized into the following major components.

EXISTING CONDITIONS

The "Existing Setting" subsection presents the existing regional and local environmental conditions, in accordance with State CEQA Guidelines Section 15125. The subsection describes the baseline conditions against which the environmental impacts associated with the proposed project are assessed. In accordance with CEQA Guidelines Section 15125(a), the environmental baseline, as analyzed in this Draft EIR, is the environmental setting as it existed at the time the NOP was published, December 13, 2010. However, in order to provide full disclosure to the decision makers, responsible agencies, and the public, the environmental setting and baseline of this Draft EIR have been updated to describe the condition of the site resulting from the recent abatement activities that are ongoing at the project site. These abatement activities were just beginning at the time the NOP was released, but since that time have changed the physical setting, mostly resulting from the removal of building exteriors (See the stripped buildings in Exhibits 3-5 through 3-7 in Section 3 "Project Description"). The environmental impacts of these abatement activities were analyzed in an Initial Study/Mitigated Negative Declaration, and MROSD approved the abatement project in August 2010. The baseline conditions—those conditions against which the increment of environmental change/environmental impacts are measured—are the existing site conditions including the abatement of hazardous materials. This represents the current conditions at the site.

ENVIRONMENTAL IMPACTS

This subsection presents thresholds of significance used in the Draft EIR and discusses significant effects on the existing environmental conditions associated with the proposed project, in accordance with State CEQA Guidelines Sections 15126(a) and 15143. The thresholds of significance are presented at the beginning of each subsection. Project impacts are numbered sequentially by section and impact number throughout these sections. That is, impacts in Section 4.2 are numbered 4.2-1, 4.2-2, 4.2-3; and impacts in Section 4.3 are numbered 4.3-1, 4.3-2, and so on. A bold font impact statement precedes the discussion of each impact and provides a summary of each impact and its level of significance. The discussion that follows the impact statement includes the substantial evidence upon which a conclusion is made as to whether the impact would be significant or less than significant. A discussion of cumulative impacts and other CEQA Considerations is provided in Chapter 5.

The analysis of environmental impacts considers both the construction and operational phases associated with implementation of the proposed project.

MITIGATION MEASURES

Following the individual impact discussions, mitigation measures are identified to avoid or reduce significant effects associated with the proposed project, in accordance with State CEQA Guidelines Sections 15002(a)(3), 15021(a)(2), and 15091(a)(1). The mitigation measures are numbered corresponding to the impacts that they address. For example, Mitigation Measure 4.2-1 would mitigate Impact 4.2-1. Level of Significance After Mitigation

Following the individual mitigation measures, a conclusion is provided regarding whether mitigation measures would or would not reduce an impact to a less-than-significant level. The conclusion is presented in accordance with State CEQA Guidelines Section 15126(b), which requires identification of significant and unavoidable impacts. Significant and unavoidable impacts are also summarized in Chapter 2, "Executive Summary," of this document.

4.1 AESTHETICS

This section describes the existing aesthetic setting of the project site, the applicable regulatory background, and the aesthetic resource impacts associated with implementation of the proposed project..

4.1.1 EXISTING SETTING

The following text describes the existing visual character of the project site and surrounding land. The descriptions of existing conditions are accompanied by photographs of representative views taken during a site visit on November 19, 2010. The locations of project site viewpoints are identified in Exhibit 4.1-1. Note that Ascent staff visited the site more recently on April 19, 2011 to observe the physical condition of the site resulting from the ongoing abatement activity. The physical appearance of the structures as pictured in the November 19, 2010 photos have not been substantially altered. However, please refer to Exhibits 3-5 through 3-7 in Section 3 "Project Description" for pictures showing recently abated on-site structures, which appear substantially different from the pre-abatement condition.

VISUAL CHARACTER OF THE PROJECT SITE

The project site is located within a remote area of Santa Clara County and is developed with a former military complex. The existing military facility defines the character of the project site. The site includes approximately 32 abandoned buildings, including housing structures, operations facilities, recreation facilities (including swimming pool and bowling alley), an auto maintenance facility, and former radar/communications towers; the most notable of these is the large cube-like structure, which formerly functioned as the structural base to an 85-ton radar dish. (The radar dish, or "sail," was removed before the District purchased the property.)

The elevation of the project site is approximately 3,480 feet above mean sea level (msl). The military complex was laid out along the mountain top; sloped areas were excavated and retaining walls installed to develop the pads for the structures and roads. Steep slopes occur at the edges of the site, as well as within some of the areas proposed for trails.

As a former military site, little vegetation occurs within the disturbed areas of the property. Most of the vegetation that does occur within these areas is non-native and generally consists of overgrown landscaping associated with the former base. On-site trees are limited and occur mainly in the former housing area. The more undeveloped portions of the site (generally on the steeper slopes) include relatively dense chaparral.

Due to years of vandalism and extreme weather impacts, the existing military structures are severely dilapidated. Furthermore, recent abatement activities have stripped the exteriors from many of the structures leaving, in some cases, only the structural framework (See Exhibit 3-7 in Section 3 "Project Description"). Concrete and paving associated with the sidewalks, driveways, and parking areas are severely cracked.

The existing lighting associated with the former military complex was generated by an on-site electrical plant, which is no longer operational. There are currently two Pacific Gas and Electric services located on site; however, neither currently serve any site lighting.

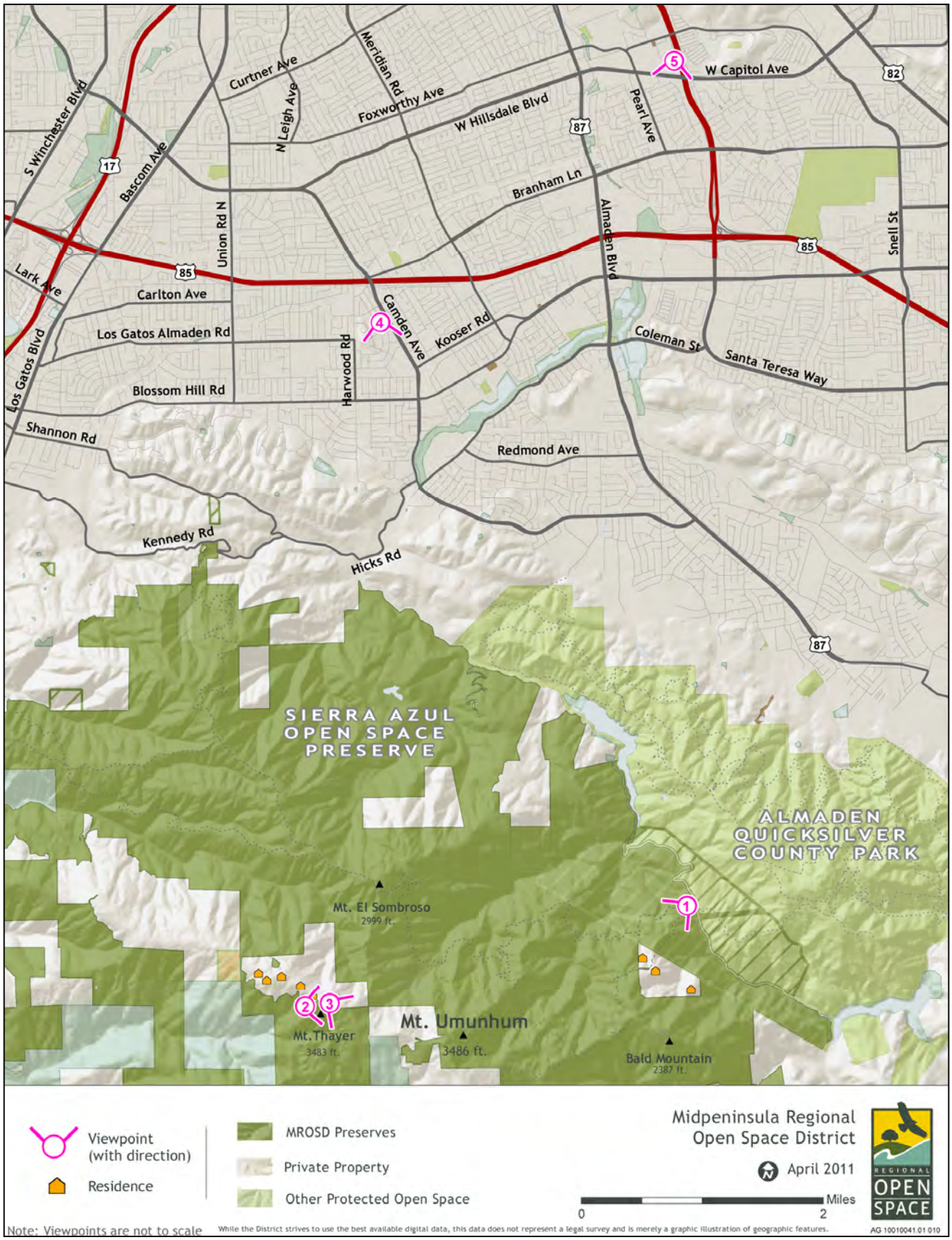


Exhibit 4.1-1 **Viewpoint Locations**

VISUAL CHARACTER OF THE SURROUNDING AREA

The project site is on a mountain peak; therefore, land surrounding the project site consists mostly of steep downward slopes, and they are largely vegetated. A few scattered rural residences and some operational communications equipment exist in the project vicinity. The general character of the surrounding area is described below.

- **North:** Land directly to the north of the project site consists primarily of steep slopes dominated by chaparral. No residences exist within 3,000 feet of the northern project site boundary.
- **East:** From the peak of Mount Umunhum, the ridgeline extends to the northeast. The south face of the ridge is generally less vegetated than the north face. No residences occur within 3,000 feet east of Mount Umunhum. The nearest residence east of the site is located over 1 mile away.
- **South:** A smaller ridgeline extends perpendicular to the Umunhum/Thayer ridgeline. A white Doppler radar facility (ball-shaped), located approximately 1,500 feet south of the site, is a prominent feature. The nearest residence to the south is located over 3,000 feet away.
- **West:** West of the Mount Umunhum site, a communications facility consisting of a dense cluster of towers, antennas, and support appurtenances exists on the private property between the Mount Umunhum and Mount Thayer portions of the site along the ridgeline. Only one residence exists west of the peak of Mount Umunhum, before Mount Thayer. However, west of Mount Thayer, a few rural residences are scattered. One rural residence is located within 400 feet of Mount Thayer.

NEARBY RESIDENCES

All but one of the nearby residences are located west of Mount Thayer. The nearest residence west of Thayer is located approximately 370 feet from the site, although intervening topography obstructs views of the site from this residential structure. The next nearest residence is located over 1,000 feet from the Mount Thayer site, and over 1 mile from the Mount Umunhum site. Observers from this residence have unobstructed views of the Mount Thayer site and unobstructed distant views of the Mount Umunhum site.

REPRESENTATIVE VIEWS OF THE PROJECT SITE

Any "view," by its nature, is dependent on the relative location (or perspective) of the viewer. In order to discuss the visual nature of the site, it is necessary to establish key viewpoints in order to provide a framework for the discussion.

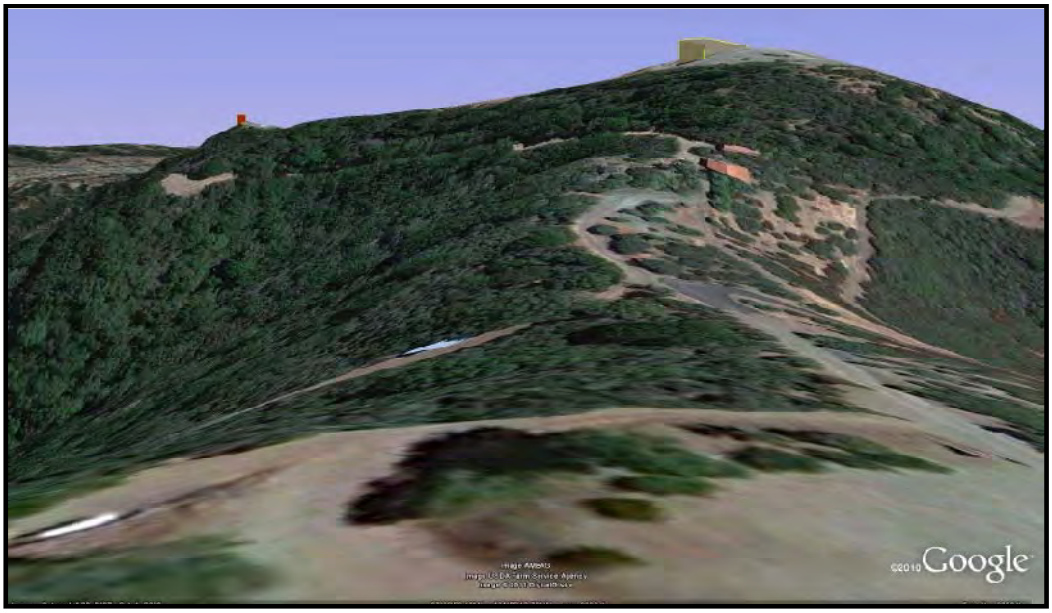
Key viewpoints are selected based on how "sensitive" a given perspective would be to a visual change at the project site. It is important to note that the sensitivity of a perspective takes into account the number and type of viewers, the duration of the view, and the quality of the view. Following is a list of the key viewpoints with a brief explanation of the reasons each was selected (note that all photographs of representative viewpoints were taken with a 50mm lens, which is the focal length that most closely resembles human eye sight):

Viewpoint 1: View of the Project Site from Mt. Umunhum Road (at "Jacques Ridge")

This viewpoint is representative of project views from Mt. Umunhum Road generally available to travelers to the project site. This view shown in Exhibit 4.1-2 is from the existing parking area at "Jacques Ridge", located at the intersection of Hicks and Mt. Umunhum Roads. As can be seen in Exhibit 4.1-2, the existing radar tower is a prominent feature within this otherwise natural mountain view.

View of Mount Umunhum from Mt. Umunhum Road (at "Jacques Ridge")

Exhibit 4.1-2 Representative Photograph (Viewpoint 1)



Source: Google Earth™ mapping service 2010

(Note: the 3-D models representing existing structures are approximately scaled and colored brightly for visibility.)

Exhibit 4.1-3a 3-D Illustration Representing Views from Nearest Residences

View of Mount Thayer from furthest accessible point west of site.

Exhibit 4.1-3b Representative Photograph (Viewpoint 2)

View of Mount Umunhum from western portion of Mount Thayer

Exhibit 4.1-3c Representative Photograph (Viewpoint 3)

Viewpoints 2 and 3: View of the Project Site from Residences to the West

Due to access restrictions, views of the site from the residences to the west were not feasible. Exhibit 4.1-3a is a 3-D illustration that approximately represents the likely view of the project site from the nearest residence from which the project site is clearly visible. The photograph was modeled based on satellite imagery. (Note that one residence is closer to the Mount Thayer portion of the site, but the view from that residence is substantially obstructed by intervening topography.) The view from viewpoint 2, shown in Exhibit 4.1-3b, shows the structures associated with the former GATR radar facility, as seen from the furthest point west of the site before a thick vegetation and steep slope obstruct views. As shown in Exhibit 4.1-3c, viewpoint 3 is the furthest point west of the site where Mount Umunhum is clearly visible. The structures seen from viewpoints 2 and 3 (shown in Exhibits 4.1-3b and c) would appear much more distant from the nearby residences. This distance is best illustrated by Exhibit 4.1-3a.

View of the peak of Mount Umunhum from residential area in Los Gatos

Exhibit 4.1-4 **Representative Photograph (Viewpoint 4)**

View of Mount Umunhum from West Capitol onramp to Highway 87

Exhibit 4.1-5 Representative Photograph (Viewpoint 5)

Viewpoints 4 and 5: View of the Project Site from Surrounding Urban Areas

Exhibits 4.1-4 and 4.1-5 show representative views of the project site from an existing residential neighborhood in Los Gatos (Viewpoint 4) located over 5 miles from the project site and from the West Capitol onramp to Highway 87 (Viewpoint 5) located nearly 8 miles from the project site. As shown in these photographs, the radar tower is visible from near and distant urban areas. However, as can be seen, the radar tower appears as an extremely small feature from these distances.

4.1.2 REGULATORY SETTING

CALIFORNIA SCENIC HIGHWAY PROGRAM

The California Department of Transportation (CAL TRANS) manages the California Scenic Highway Program. The goal of the program is to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to highways. State Route (SR) 9 is the only officially designated California Scenic Highway near the project area (CAL TRANS 2011). Although trees, structures, and topography obstruct most views, the project site is technically visible from a few portions of SR 9; however, the site is so distant (over 10 miles) from these portions of SR 9 that individual on-site structures or other site features are not easily discernable. Views of the site are in the background of the viewshed.

Although not officially designated, Highway 17 is identified by CAL TRANS as an "eligible scenic highway." The project site is visible along portions of Highway 17, and, although these portions of Highway 17 are as close as 5 miles from the project site, the individual features of the project site are only marginally discernable.

SANTA CLARA COUNTY GENERAL PLAN

County Scenic Highways

The Parks and Recreation Element of the Santa Clara County General Plan (Santa Clara County 1994, p. G-25) includes goals and policies for establishing scenic highways and roadways within the County and protecting view corridors along those scenic highways. Roads and highways identified as scenic include those established as officially designated and eligible for designation by the California Scenic Highway Program, as well as other roads and highways not currently considered eligible for the State Highway Program. County scenic roads in the project area and their respective views of the project site are described below.

State Route 9

SR 9 is an officially designated California Scenic Highway. See discussion under "California Scenic Highway Program" above for a detailed description.

Highway 17

Highway 17 is identified by Caltrans as an "eligible scenic highway." See discussion under "California Scenic Highway Program" above for a detailed description.

Local Roads

The General Plan identifies several local scenic roadways including Kennedy Road, Hicks Road, Coleman Road, and Almaden Expressway. The project site is clearly visible from these roadways. Hicks Road provides primary access to Mt. Umunhum Road; portions of Hicks Road are within 2 miles of the project site.

The Santa Clara General Plan includes policies (Santa Clara County 1994, p. G-25) providing guidelines for development along scenic highways. The policies that may apply to the proposed project are listed below:

C-PR 37: The natural scenery along many of Santa Clara County's highways should be protected from land uses and other activities which would diminish its aesthetic beauty.

C-PR 38: Land use should be controlled along scenic roads so as to relate to the location and functions of these roads and should be subject to design review and conditions to assure the scenic quality of the corridor.

C-PR 41: Signs should be strictly regulated, with off-site signs and billboards prohibited along scenic routes.

C-PR 43: New structures should be located where they will not have a negative impact on the scenic quality of the area, and in rural areas they should generally be set back at least 100 feet from scenic roads and highways to minimize their visual impact.

County Scenic Resources

The Resource Conservation Element of the Santa Clara County General Plan (Santa Clara County 1994, p. H-40) includes three general strategies for preserving and enhancing the scenic values of both natural and built environments:

Strategy #1: Manage Growth and Plan for Open Space

Strategy #2: Minimize Development Impacts on Significant Scenic Resources

Strategy #3: Maintain and Enhance the Values of Scenic Urban Settings

The Resource Conservation Element also includes goals and policies for preserving and enhancing scenic resources within the County. The following General Plan policies may apply to the proposed project:

C-RC 57: The scenic and aesthetic qualities of both the natural and built environments should be preserved and enhanced for their importance to the overall quality of life for Santa Clara County.

C-RC 58: The general approach to scenic resource preservation on a countywide basis should include the following strategies:

a. conserving scenic natural resources through long range, inter-jurisdictional growth management and open space planning;

b. minimize development impacts on highly significant scenic resources; and

c. maintaining and enhancing scenic urban settings, such as parks and open space, civic places, and major public commons areas.

4.1.3 IMPACTS AND MITIGATION MEASURES

METHOD OF ANALYSIS

This visual impact analysis evaluated the visual changes that would occur at the project site using the standards of quality, consistency, and symmetry typically used for a visual assessment. The visual impacts are compared against the thresholds of significance discussed below.

THRESHOLDS OF SIGNIFICANCE

The project would cause a significant impact related to aesthetic resources, as defined by the State CEQA Guidelines (Appendix G), if it would:

- have a substantial adverse effect on a scenic vista;
- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- substantially degrade the existing visual character or quality of the site and its surroundings; or
- create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

It should be noted that this section focuses on aesthetic principles only and does not consider more social aspects of the viewshed, such as a connection some viewers may have with past use of the site (particularly military personnel and their families who served and/or lived at the site). Some people have emotional attachments with the structures as symbols for the Cold War period in the United States, especially those who may have served at the site or with a family member who did. It is natural for somebody with a strong emotional attachment to an item, such as buildings at the project site, to characterize it as aesthetically pleasing; however, because the aesthetic of a symbol is tied intrinsically to its cultural or historical value, the analysis that follows focuses only on the visual quality of the project site and its surroundings, including the existing structures, whereas the cultural and historical significance of the existing structures is evaluated in Section 4.2 "Cultural Resources." Section 4.2 also includes a discussion related to the importance of the radar tower as a geographical reference point.

IMPACTS AND MITIGATION MEASURES

Impact 4.1-1	**Impacts on Scenic Vistas.** The project site is part of the overall scenic vista provided by the Santa Cruz Mountains part of the Pacific Coast Range. This scenic vista, including the project site, is visible from several south bay area communities. The existing radar tower is visible for miles and is a local land marker. If the project results in removal of the radar tower, the change to the overall scenic vista, although noticeable, would not result in a substantial adverse change to the scenic vista. Instead, it would return the site to a more natural visual setting, which could be considered a positive change to the natural scenic vista. If the project does not remove the radar tower, the change would likely be imperceptible relative to the overall view shed. This impact would be considered **less-than-significant** for all three radar tower options.

A scenic vista is generally considered a view of an area that has remarkable scenery or of a resource that is indigenous to the area (i.e., a natural feature, such as a waterfall, grove of old-growth trees, rock outcropping, etc.). The project site is located at the peaks of Mount Umunhum and Mount Thayer, which are part of the Santa Cruz mountain range. The Santa Cruz range provides a dramatic visual backdrop for much of the south bay area and is a scenic vista to several south bay area communities. The project site is part of this scenic vista.

The project site is currently developed with dilapidated structures associated with a former military base on the site. They have further been modified by abatement activities, which have resulted in removal of building siding and other building parts, leaving only frames in some cases. For the most part, these structures cannot be seen within the overall scenic vista. The radar tower is the exception. The five-story concrete cube has been a geographical land marker in the region due to its high visibility from miles away, including major roadways and freeways (See Exhibits 4.1-4 and 4.1-5). The ongoing abatement activities, which have removed lead-based paint and asbestos from the tower, have not substantially modified its appearance. It is structurally unchanged and its color appears the same as in the past. MROSD is considering three options for the radar tower. The first includes retaining the tower and the other two include substantial removal of the tower. Following the certification of the Draft EIR, the three radar tower options will be brought to the Board for consideration. (Note that all three radar tower options include placement of temporary construction fencing around the tower perimeter prior to public access until the selected radar tower option is implemented.) Because the design options for the radar tower are central to the discussion of the scenic vista, the analysis will discuss each of the three tower options separately:

Option 1. Retain and seal radar tower

Under this option, all structures on the Mount Umunhum and Mount Thayer summits, except the visually prominent radar tower, would be demolished. Implementation of this option would result in no perceptible change to the overall scenic vista of the Santa Cruz mountain range. Therefore, the impact resulting from retaining the radar tower would be **less than significant**.

Option 2. Remove most of the structure but leave a publically accessible foundation

This option includes removal of most of the radar tower with the exception of the foundation, which would remain as a monument. This monument would be low profile and, unlike the existing tower, would not likely be visible from considerable distances, however it might be visible from Viewpoint 1, Jacques Ridge and Mt. Umunhum Road. For viewers from the valley floor who are familiar with the existing scenic vista, including local residences, the change to the scenic vista resulting from implementation of Option 2 would be noticeable.

However, just because a change is noticeable does not mean that the change is substantial or adverse. In order to determine whether the change is adverse, the aesthetic "value" of the radar tower must first be assessed. Since the radar tower is a human-made object, the aesthetic value is determined by the consistency of the project with the basic design elements. These include line, shape, form, space, value, texture, and color.

The radar tower is distinctively geometric in shape and form with straight lines that disrupt the otherwise natural visual continuity of the ridgelines that make up the Santa Cruz Mountain Range. In addition, the tower is constructed of grey concrete and includes no colors to either complement or contrast with the surrounding natural colors (earth tones). The four flat walls offer no spatial interest, and the concrete provides no interesting texture. Furthermore, the building materials (concrete and metal) do not complement the surrounding natural setting. Although the radar tower does not exhibit design elements, it is important to note the "three F's" of architectural design—"form follows function"—and afford the design of the radar tower some reprieve given its specific former function (supporting a massive radar sail), which drastically constrained the design. Regardless, the radar tower no longer retains its function. Furthermore, because the radar tower is missing the original red and white sail, the former function of the radar tower is no longer visually apparent. Without an apparent function, the radar tower appears as a box among the mountains.

Removal of the majority of the radar tower under Option 2 would not obstruct any views and would not change the overall character of the mountain range, except it would remove a structure that helps visually locate the site, when seen from a distance. The removal of the majority of this tower would eliminate a fairly insignificant feature relative to the overall mountain range, and would remove a facility that does not add aesthetic value to the scenic vista. (Note that this discussion is focused on the "aesthetic" significance, not "cultural" significance, which is discussed in Section 4.2 "Cultural Resources.)

Further, the existing radar tower is out of place in the surrounding viewshed, which is otherwise generally composed of natural elements (other radio antennas exist in the area but are not as visible as the radar tower). Removal of most of the tower would result in a more consistent and natural viewshed, which arguably creates a more aesthetically pleasing scenic vista. A good test for this argument is the hypothetical development of an identical concrete tower on a currently undeveloped mountain peak with similar visibility. Placement of a new building of this magnitude and design within this viewshed would be visually disruptive and adverse to the visual setting. Therefore, using this test, it seems more plausible that the removal of most of the radar tower from the site would result in a positive change to the scenic vista.

In order to result in a significant impact to the scenic vista the change resulting from the project would need to be both substantial and adverse. Because implementation of Option 2 would not result in a substantial change to the existing scenic vista, and because the change would more likely be considered positive than adverse, the proposed project would result in a **less-than-significant** impact to a scenic vista.

Option 3. Remove entire structure and environmentally restore the footprint

Option 3 is substantially similar to Option 2 discussed above, except that implementation of Option 3 would environmentally restore the footprint of the tower, as opposed to leaving the foundation as a monument. Because the tower would be removed under both Options 2 and 3, the level of impact resulting from each option is similar. However, Option 3 would arguably result in somewhat reduced impacts than Option 2 because the footprint would be restored to a more natural state and would fit even more closely with the surrounding view shed. Therefore, impacts resulting from implementation of Option 3 would also be **less than significant**.

As noted, the project's design elements will be phased as funding and other constraints permit. In the near term, all three options would require securing the tower with chain-link fencing until the option can be implemented. As discussed, since most views are distant from the tower, a fence would not be discernable and impacts resulting from such fencing would also be **less than significant.**

Although not necessarily related to potential "impacts" to scenic vistas, it is important to note that the proposed project, by allowing public access to the site, would provide its visitors new scenic vistas of the Santa Clara Valley and San Jose to the east, the northern peninsula and San Francisco to the north, the Pacific Ocean and Santa Cruz to the west, and, on a clear day, Monterey Bay to the southwest. These new vistas would be a clear aesthetic benefit of the proposed project. It should also be noted that of the three radar tower options, Option 3, removal of the entire tower, would result in the greatest overall benefit to the new scenic vistas because it would remove an existing obstruction to the view shed as seen from Mount Umunhum. Although not related to an impact of an existing scenic vista, the benefit should be taken into consideration by decision makers.

Mitigation Measure 4.1-1

No mitigation measures necessary.

Impact 4.1-2	**Damage Scenic Resources within a Scenic Highway Corridor.** The project site is visible in the distant background from an officially designated California Scenic Highway and an eligible state scenic highway. The project site is more prominently visible from local scenic roadways, as designated by Santa Clara County. Implementation of the proposed project would primarily improve the scenic quality of the project site by removing dilapidated structures and restoring the former military base to a more natural setting, although these improvements would not be seen from the scenic highways given the topographic changes and other barriers that obstruct all but the radar tower from view. No rock outcroppings would be visibly affected by the proposed project (trails may be located near rock outcroppings), and the proposed project would result in minimal tree removal and substantial native plant re-vegetation. None of the buildings on the project site, including the radar tower, are eligible for listing as an historic building on any federal, state, or county register. Therefore, implementation of the proposed project would result in a **less-than-significant** impact, regardless of which radar tower option is selected.

Although the project site is visible from portions of State Route (SR) 9 (officially designated California Scenic Highway) and Highway 17 (eligible scenic highway) individual on-site structures or other site features are not discernable due to the distance from the site (over 10 miles and over 5 miles, respectively) and obstruction by intervening topography. In addition to the state scenic highways, the Santa Clara General Plan identifies several local roadways as scenic including Kennedy Road, Hicks Road, Coleman Road, and Almaden Expressway. The project site is clearly visible from these roadways (portions of Hicks Road are within 2 miles of the project site).

Although the project site is visible from these scenic roadways, the proposed project primarily involves removal of dilapidated structures and environmental restoration. The radar tower is the only structure visible from most views of the site. As indicated above, one of the thresholds of significance identifies historically significant buildings as potential scenic resources. A report prepared by Page & Turnbull in 2010 indicates that none of the structures on the project site, including the radar tower, are considered eligible for the federal or state historic register. Therefore, regardless of whether the radar tower remains on the site, or whether it is removed, substantial adverse visual effects associated with historically significant buildings along state scenic highways would not occur. (Note that Section 4.2 "Cultural Resources" evaluates potential project-related impacts to historic resources .)

Furthermore, because the proposed project involves substantial environmental restoration and native revegetation and would not affect any rock outcropping, the proposed project would not result in substantial adverse visual effects associated with damage to these features. Therefore, the proposed project would result in a **less-than-significant** impact.

Mitigation Measure 4.1-2

No mitigation measures necessary.

Impact 4.1-3	**Changes in Visual Character.** The proposed project would change the visual character of the project site by removing existing dilapidated military structures and restoring much of the original natural setting. The District is considering three options for the radar tower, two that include varying degrees of tower removal, and one that would allow the tower to remain in its current configuration. Implementation of the proposed project, regardless of which tower option is selected, would result in a substantial change to the character of the project site, especially as viewed by nearby residences. However, although the change would be substantial in all cases, it would not be an adverse visual change. In fact, it is arguably a positive change to the overall existing natural character of the site. Impacts to the existing visual character of the site would be considered **less than significant.**

The majority of the project site is currently defined by the former military complex, which includes many dilapidated and abated buildings, parking lots, and other abandoned military facilities. The most notable feature of the project site is the radar tower. This feature is easily seen from Mt. Umunhum Road on the way to the site. Although the former GATR radar facility (see Exhibit 4.1-3b, above) is the closest structure to the residences west of the Mount Thayer portion of the site, this structure is a very simple one-story building and does not stand out as a special feature on the site. The 5-story radar tower on Mount Umunhum arguably remains the most visually prominent structure on the site, even from the viewpoint of the residences west of Mount Thayer. Further, the radar tower defines the project site's current character as a former military complex more than any other structure or feature existing on the site; it was the facility that defined the functions of the former AFS.

The visual quality of the site as seen both from Mt. Umunhum Road and from residences west of the project site is considered very low due to the presence of dilapidated military structures, abandoned utility poles, and other deteriorating features, such as cracked parking lots and sidewalks. Landscaping associated with the former military complex is overgrown. By the same token, the site offers dramatic views of surrounding areas, and the current abandoned and rundown character of the site severely detracts from potential enjoyment of the views.

The proposed project includes three options for addressing the radar tower. Because the radar tower is such a noteworthy feature contributing to the site's character, the analysis will discuss each of the three tower options separately. Note that all three options include placement of construction fence around the perimeter of the radar tower until the selected option is implemented.

Option 1. Retain and seal entire structure

The project site's visual character is currently defined by the existing military structures. While the site may hold special meaning for those connected with or interested in military affairs, visual appeal to the general population is arguably low. Under Option 1, the proposed project would remove all military structures from the project site except the existing radar tower, and would restore much of the site's original natural ecosystem. As discussed below under Options 2 and 3, although removal of structures and environmental restoration under Option 1 is considered a major change to the character of the project site, the change from a dilapidated military facility with low visual quality to a more natural open space area would enhance the visual quality of the site and would not be considered an adverse change.

However, unlike Options 2 and 3 below, converting the character of the project site from a military complex to a natural open space area while simultaneously retaining the most prominently defining feature of that military complex, the radar tower, results in a site character that is much more difficult to define. Although the current visual quality of the project site is low, its character is consistent and easily defined: former military facility. By converting the entire site into a natural open space area, but retaining the massive tower structure, an inconsistency in character results, especially since the radar tower would serve no open-space-related function, such as an observation tower. Nevertheless, the tower currently exists, so its retention would not change the existing visual setting as it relates to that facility (although the tower would be kept in better visual and structural condition than under current conditions). Therefore, while implementation of Option 1 would improve the overall visual character of the site, it would retain a facility that suggests the site's military history, while detracting from its potential natural character. The tower exists, and removal of other dilapidated structures and restoration of the site would improve its visual character compared to existing conditions. Nonetheless, the impact resulting from implementation of Option 1 is **less than significant**.

Option 2. Remove most of the structure but leave a publically accessible foundation

As mentioned above, under Option 1, the project site's current visual quality is low due to the poor condition of the structures and features associated with the former military complex. Removal of all structures from the site, including most of the radar tower (leaving behind only the foundation), and environmentally restoring the site to a more natural condition would result in a substantial and beneficial change to the character of the project site. The change would not be visually adverse, and the alteration of the radar tower could, potentially, provide visual interest to the site, while avoiding the prominence of the existing structure, which could be argued as visually inconsistent with the potential natural character the project would otherwise create. In fact, retention of elements of the tower could provide uses consistent with open space, such as an area to sit, rest, and enjoy the view. Therefore, this impact would be **less than significant**.

Option 3. Remove entire structure and environmentally restore the footprint

For the reasons mentioned above under Option 2, removal of all structures from the site, including the complete removal of the radar tower, and restoring the ecology of the site would result in a substantial beneficial change in the overall natural character of the site. Under Option 3, the site would appear more natural from the viewpoints described above and the natural appearance would be consistent across the entire site. The impact resulting from implementation of tower Option 3 would be **less than significant.**

Overall Comparison of Options

When compared to the other two options, Options 2 and 3 offer tradeoffs. Both are environmentally beneficial compared to Option 1, which would retain the large and visually inconsistent radar tower. Because the tower would not be accessible—it would be too expensive to improve the tower to allow access to the interior or roof— its *only* visual attribute is a reminder of its prior use as a military facility. However, it would provide this reminder while not enhancing visual features of the site. Option 2, while not entirely restoring the entire site to natural conditions, would provide the opportunity to create visual interest that is more consistent with an open space use as compared to Option 1, and the interest would provide a strong reminder of its prior use. Option 3 would restore the site to natural conditions, and would therefore not have any substantial visual distractions from prior uses. Options 2 and 3 are both substantially more visually beneficial than Option 1, and they provide visual tradeoffs that suggest neither is substantially more beneficial than the other.

Mitigation Measure 4.1-3

No mitigation measures necessary.

Impact 4.1-4	**Impacts from Nighttime Lighting.** Construction activities would not occur during nighttime hours; therefore, no short-term construction-related lighting impacts would occur. In addition, the operation of the project would require minimal permanent lighting. All permanent light fixtures would be fully shielded and would not result in a nuisance to nearby residences and would be consistent with night sky principles. Therefore, impacts would be **less than significant.**

Construction activities would not occur during nighttime hours. No flood lighting would be necessary during project construction; therefore, no short-term construction-related lighting impacts would occur.

In addition, because the hours of operation are consistent with daylight hours, only minimal night lighting is necessary. The only permanent night lighting may be over bathrooms, at the emergency callbox, and security lighting at the visitor's center. Temporary lighting includes lanterns and flashlights from visiting campers. All permanent light fixtures would be fully shielded and downward pointing and would generate the minimum light necessary for security purposes.

Because minimal lighting would be emitted from the project site and all permanent lighting would be fully shielded and downward pointing, the proposed project would not result in a nuisance to nearby neighbors and would be generally consistent with night sky principals (would not result in substantial light pollution or sky glow). This impact is considered **less than significant.**

Mitigation Measure 4.1-4

No mitigation measures necessary.

4.2 CULTURAL RESOURCES

This section of the EIR includes an evaluation of the potential impacts on cultural resources that could be affected by implementation of the proposed project. Cultural resources may include archaeological traces such as early Native American occupation sites and artifacts, or historic-era buildings and structures. These materials can be found at many locations on the landscape and, along with prehistoric and historic human remains and associated grave-related articles, are protected under the provisions of CEQA.

4.2.1 EXISTING SETTING

The proposed project is located within the Sierra Azul Open Space Preserve on the summits of Mount Umunhum and Mount Thayer, in the southern Santa Cruz Mountains, about 13 miles south of San Jose and five miles southeast of Los Gatos (see Exhibit 3-1, Regional Map).

The project area (see Exhibit 3-2) contains the former Almaden Air Force Station (AFS), which is currently closed to the public. The former AFS consists of a complex of former military buildings and associated facilities that have been abandoned for 30 years (including driveways, parking lots, storage buildings, as well as other base structures and technical facilities). The exteriors of many of these structures have been recently removed as a result of the ongoing structural abatement project. Mt. Umunhum Road, a private double-lane paved road with limited entry through a series of locked gates, is also included in the project area.

The area of potential effect (APE) for this analysis consists of the radar installation, all other buildings on both summits, the paved service road straddling the crest of the ridge connecting Mount Umunhum to Mount Thayer, Mt. Umunhum Road (including the proposed staging area near Bald Mountain), and proposed trail connections from Ralph's Mountain and Bald Mountain to the summit. The perimeter of much of the facility is bounded by chain-link and/or barbed wire fencing, and steep slopes.

4.2.2 PREHISTORIC SETTING

The prehistory of the region surrounding the APE overlays dynamic cultural transformations that began sometime over 12,000 years ago when people first arrived along the west coast of North America during the late Pleistocene. Episodes of dramatic (even cataclysmic) environmental changes have lead to the recognition of four major climatic shifts that have transpired during the time of human occupation. These changes define the Late Pleistocene, Early, Middle and Late Holocene epochs and influenced the archaeological record.

General trends in California coastal Holocene environments and archaeological implications have previously been summarized (Hylkema 2010). Geologic interpretation of sediment profiles from deep borings in the south Bay indicate that between 17,000 and 7,000 years ago, post-Pleistocene warming trends in the global environment caused a rapid rise in sea level as glacial ice melted (Hylkema 2010). Sometime around 10,000 years ago, during the Early Holocene period (circa 10,000 to 6650 RYBP [radio carbon years before present]), the progressively rising sea began to encroach up through the deeper stream channels that meandered through the wide oak woodland and grassland valley plains of what was to become San Francisco Bay. The level coastal terrace terrain that once extended considerably farther offshore, facilitated submerging of the landscape until sea level reached its present height by Middle Holocene times 6,000 years ago (Hylkema 2010).

With the stabilization of sea level, marine and terrestrial plants and animals developed distinctive behaviors and territorial distributions that allowed for predictable, patterned resources important to human societies. Cyclical patterns of seasonal food availability, and repetitive use of these resources by the early people has resulted in

the distribution of extensive archaeological deposits at locations where residential and or task specific activities became established.

During the Middle Holocene, stone mortars and pestles appear in the archaeological record, of the San Francisco peninsula and coast, which indicates that acorns had increased in importance as a dietary staple. This addition augmented an earlier, archaic reliance on hard seeds (tarweeds, clarkia seeds, and others) that were milled through the use of handstones and milling slabs.

Archaeological sites within the Scotts Valley basin, not too distant from the project site, have produced radiocarbon dates and artifact assemblages dating to the Early and Middle Holocene transition. Recently, data from these sites and others in Santa Clara Valley has lead to the recognition and definition of the "Metcalfe Creek" cultural phase, which is the earliest cultural phase represented in the region (Hylkema 2010).

By the terminal phase of the Early period, about 6,000 years ago, mortuary sites around San Francisco Bay and the interior Delta-Central Valley region began to show a more complex level of social organization in tandem with increased use of mortars and pestles. Hildebrandt has demonstrated that an increased reliance on an acorn economy emerged in the Santa Clara Valley as early as 2500 BC. Deceased members of the various communities began to be interred as groups within their residential deposits and social distinctions appeared in the form of unique grave associated artifacts distributed among a few individuals. This pattern continued throughout the subsequent Middle period (circa 800 BC to AD 900). However, towards the terminal phase of the Middle period, social systems among divergent cultural regions intensified, and many localities were transformed into an inter-related economic network with an extensive geographic range. Still other cultural traditions of the Bay area (i.e. Meganos) became more isolated, progressively retreating as the Berkeley pattern sites transformed into traits characteristic of the Augustine pattern (Hylkema 2010).

With the increasing reliance on acorns as a food staple that took place during the Middle Period, access to productive oak woodlands necessarily became a crucial factor in the subsistence economy. Evidence of an earlier milling stone tradition and the transition to an acorn dependent economy has been noted at sites along the peninsula coast and within the Santa Clara Valley. Within the valley, greater numbers of milling tools relative to projectile points suggest that there was a greater reliance on vegetal resources than on hunting (Hylkema 2010).

The landscape of the study area achieved its historic equilibrium shortly after the advent of the Late Holocene (circa 3500 RYBP); however, even within this climatic regime there is evidence of several serious environmental perturbations. Nonetheless, relative environmental stability promoted dramatic cultural developments among the ancestral Ohlone people; however, after AD 700, a trend toward more complex social organization can be attributed to cultural rather than environmental factors (Hylkema 2010). The latter date heralds a period of cultural transition that involved the replacement of earlier artifact assemblages with new types, many of which served as markers of wealth and specialized societal membership. Archaeological findings from the northern Monterey Bay coast, in conjunction with findings from the larger San Francisco peninsula indicate that after AD 1100 a cultural florescence transpired among the ancestral Ohlone people when interior and coastal people merged into a highly integrated socio-economic interaction system (Hylkema 2010).

During the last three thousand years of the Late Holocene, the ancestral Ohlone people of the Santa Clara Valley had come to tend a landscape that offered a great range of ecological diversity. They were surrounded by an environment that brought them within close proximity to habitats that included marine, tidal marsh, freshwater marsh, grassland prairie, oak grassland savanna, riparian, chaparral, mixed hardwood, and evergreen forest communities. These habitats provided for most of the valley people's needs. Locally available stone tool materials, such as Franciscan cherts for flaked stone tools (available from the nearby Santa Teresa Hills),

sandstone for milling tools, and cinnabar for paint pigment was abundant throughout the western foothills of the valley. Intermarriage and exchange brought coastal resources such as sea foods, Monterey cherts for chipped stone tools, shells for beads and ornaments, and other exotic items from more distant neighbors specializing in a marine economy. In addition, other resources, particularly obsidian projectile points, knives, and other chipped stone tools were obtained from neighbors far to the east and northeast (Hylkema 2010).

The Santa Clara Valley region experienced seasonal patterns of abundance and scarcity in its flora and fauna; the cycles of which influenced the development of the human societies dwelling here. Natural forces created a terrain that included a mosaic of environmental zones with specific biological communities that enabled native populations to form distinctive social systems.

Ethnohistoric observations regarding the relationship of Central California's native people to their respective local environment often comment on their ability to manage certain biotic communities to enhance the productivity of the landscape (Hylkema 2010). This in turn allowed for the development of stable economies, and may account for the affluent social hierarchies exhibited at many archaeological sites of the area.

Within the south Bay, archaeological sites dating to the Middle/Late transition period (circa AD 700 to 1200) have produced artifact types in mortuary contexts that identify this time as a period of socio-economic transformation. By the Late period (circa AD 1200 to the 1770s) an elaborate social hierarchy had emerged. Certain ideotechnic artifact types found in mortuary contexts (particularly *Haliotis* banjo pendants, tobacco pipes, and incised bird bone whistles) coincide with an elaboration and refinement of wealth, status, and institutional organization (Hylkema 2010).

ETHNOGRAPHIC SETTING

At the time of the first contact with Spanish explorers in 1769, there were an estimated 50 Ohlonean tribelets-each composed of small villages organized into extended families, or clans. Most villagers were members of different clubs or societies. Membership usually involved initiation where novices learned the customs of the organization, and used shell beads to pay dues. Different membership driven organizations sponsored ceremonial events, each having their own distinctive costumes and regalia. Abalone (*Haliotis*) shell pendants were frequently used as badges of membership and rank. Together the various organizations formed the fabric of society and directed the storage and redistribution of surplus food resources, construction of village buildings, planned hunting strategies and followed the seasonal cycles of nature that would determine where and when they should relocate themselves.

Both men and women could become members of various societies and in the San Francisco Bay area an elite group of women, called *Mayen*, directed the construction of large circular dance houses that were excavated several feet below the surrounding ground level. The *Mayen* selected the most virtuous individuals to represent various spiritual forces that were personified in dances and ceremonies. This practice was called *Kuksui*. *Kuksu* dancers wore woven feather bandoleers made from woodpecker quills placed edge to edge that draped over their foreheads and down their shoulders (Hylkema 2010).

Both men and women used sharpened and polished deer bone pins to hold their hair into various fashionable styles. Both occasionally adorned themselves with polished circular stone disks that were inserted in their ear lobes or nasal septum. Most had their ears pierced and wore decorations of brightly colored feathers and bird bone tubes. Finely woven fibers of milkweed were used to make hairnets that sometimes were covered with feathers or shell beads.

Men typically governed the political structure of the village and did the hunting while women handled the gathering and processing of vegetal foods, and manufactured many of the fiber and basketry implements. Feuds between members of some villages were not uncommon, but relatives sought to avoid conflicts through payments made in shell beads. Men wore little or no clothing, a trait common among hunting people who must avoid retaining the human scent so that they could better blend in with their natural surroundings. Women wore a braided tule reed skirt with a rear apron made from finely tanned deerskin.

Houses called *ruk* and/or *tac* were constructed of tule reeds that were tightly thatched and woven over a framework of willow poles. Every house had an indoor and outdoor hearth and underground oven. Many fist-sized river cobbles were used to distribute heat in the ovens where plant bulbs, shellfish and animal meats could be roasted. Remnants of these ovens are among the most common archaeological features found locally.

Long poles with painted rings of black, red and white- and brightly colored feathers attached, were erected in the cemeteries adjacent to the villages. Each village also had a partially underground, roofed sweathouse where interior fires steamed the occupants like a sauna.

The year 1769 marked the advent of Spanish explorations of the valley. The subsequent colonization of the region was accomplished through the introduction of the Hispanic mission system. The first Spanish explorations, diaries and missionary records document numerous villages in the vicinity of the project area. These villages were part of a larger cultural sphere of communities that were among fifty political units, or tribelets, with variations of language, custom and appearance spread out around Monterey and San Francisco Bay. The Europeans referred to them collectively as the *costeños*, or coastal people (later writers use the term Costanoan and/or Ohlone, while some tribal representatives prefer their own titles [e.g. Muwekma, Amah/Mutsun Tribes). Starting with Mission San Carlos and the Presidio of Monterey in 1770, several other missions were established over the next thirty years, each exerting their influence over the native people of the project area. Ultimately, the people affiliated with the project area were dispersed among other tribesmen at Missions Santa Clara, San Juan Bautista, and Santa Cruz. The Coastal people, particularly the *Sayant*, *Aptos* and *Shokel* ranged up to the west flank of Mount Umunhum, while *Chaloctac*(*a*), *Somontac* and *Chitactac* villagers controlled the opposite valley side.

The subjugation of the native people resulted in dramatic environmental changes after they could no longer influence the native landscape, while poor nutrition and repeated exposure to introduced European diseases and violence served to decimate the Ohlone. Nonetheless, many survived and their descendants continue to live in the region. Today the descendants of the missions of San Jose and Santa Clara (the *Muwekma*) use the designation of *Ohlone* to encompass the families from as far south as Soledad and Monterey, all the way northward to Livermore and San Francisco. Many from the San Juan Bautista, Gilroy area prefer the designation *Amah/Mutsun*, and others have further subdivided into discrete family groups such as the Carmel Band of Rumsen, the Pajaro Valley Indian Association of Watsonville (Hylkema 2010).

HISTORIC-ERA SETTING

Historic Trends (La Mina Santa Clara)

Spanish land explorations and first contacts with the native people of the coast and Santa Clara Valley did not occur until as late as 1769 when the first overland expedition reached Upper California and inadvertently encountered San Francisco Bay. The diaries and accounts of these first expeditions provide valuable insights into the lifeways of the local Native American people.

With the establishment of the Royal Presidio at Monterey in 1770 and Upper California's first Mission, *San Carlos de Boromeo*, Imperial Spain began its efforts to take control of coastal California. Soon a number of other missions were to follow, and the Royal Presidio of San Francisco was founded in 1776, along with Mission Dolores, soon to be succeeded by Mission Santa Clara and California's first civilian town, el pueblo de San Jose de Guadalupe, in 1777.

The success of Spanish colonial settlement depended on centering its institutions in areas with large populations of native people. Spain had conquered and subjugated the native populations of Central America and the Southwest of North America through a tripartite economic system composed of three primary institutions: the presidio, the pueblo and the mission. Spanish settlers were at a premium as incentives to attract them to colonize unknown territories were few. Therefore, the philosophic objective was to reorganize the indigenous people along the coast into religious- based agricultural communities, bestow Spanish citizenship on the educated/Christianized neophytes, and use them to colonize the interior of California. The missions were to hold land in trust for the Indians, train them to perform various skills, and to become "*gente de razon*" or "men of reason," thus revealing the true tenor of the relationship.

The type of mission developed for California was called the *redución* or *congregación*. Its purpose was to induce the Indians to volunteer for conversion; however, once in the mission program they could not leave, and frequently severe punishments were imposed in accordance with European standards of discipline of the time to discourage desertion. The neophytes were to be trained in 10 years as prescribed by law, after which the missions were to be transferred to the secular clergy, and the missionaries transferred to another frontier to continue the expansion (Hylkema 2010).

The presidio was the military and legal authority responsible for defending the coast, subduing hostile Indians, and maintaining peace with allied and subjugated tribes. The presidio was a defensive fortification manned by infantry and cavalry, with detachments of soldiers assigned to the missions to protect the priests and enforce mission rules. Pueblos were civil communities established for the purpose of supplying the military with food. This reduced the cost of maintaining the presidios by sea. Pueblo citizens were also to function as a reserve militia in times of emergency. The presidio-mission-pueblo system was Spain's method of settling California. Therefore the selection of strategic sites was of primary importance.

After the Mexican Revolution began in 1812, Spain stopped sending supply ships to the presidios. By 1815 the missions became the sole supporter of these communities. The missions expanded their facilities to encompass a greater range of tasks so that by the end of Spanish rule in 1821, they were the farmers, bankers, manufacturers and traders.

The growing civilian populations at the towns of San Jose, Branciforte (in Santa Cruz), and elsewhere in California petitioned the Mexican Government to break up the extensive mission land holdings so that they could compete in the hide and tallow trade. The doctrine of Secularization was passed in 1832, effectively allowing judicial hearings to carve up mission lands. Between 1834 and 1836 the Mexican congress opened eight million acres of mission lands in California to private ownership. These lands had been held in trust for the mission Indians, but once the role of the missions was reduced to that of a local parish the Indians lost their claim to the land.

Directly west of the project APE, Rancho Soquel was granted to Martina Castro in 1833 by Governor Jose Figueroa, and consisted of 1,668 acres, primarily along the ocean front and interior redwoods. A later augmentation to the grant bestowed an immense tract of 32, 702 acres and reached up to the western slopes of Loma Prieta Mountain, followed the mountain ridge crest and towards the project vicinity. These grants were

later patented to her by the new California State government in 1860- which was a rare occurrence in those days.

Hoover, Rensch and Rensch noted that as early as 1824 the Spanish settlers knew about the cinnabar deposits below Mount Umunhum, and three brothers of the Suñol family- members of the San Jose government council, began a mining claim to seek silver and/or gold. Their excavations were known as "*La Mina Santa Clara*" (Hylkema 2010)

In 1842, Mexican Governor Alvarado made grants of land in the vicinity to two men (Jose Berryessa and Justo Larios), establishing *Ranchos San Vicente* and *Cañada de los Capitancillos* (interestingly, the later name, "little captains" was in reference to the many tribal village head-men that once stretched along the New Almaden Valley [King n.d. manuscript on file, Santa Clara University Archives]).

In 1845, Captain Andres Castillero of the Mexican Army, filed a claim to the site of the *Mina Santa Clara* and on December 30, 1845, was granted "Three thousand varas of land in all directions" around the claim, including the project APE. This became the first legal mining claim filed in California (Hylkema 2010).

The conclusion of the Mexican American War was immediately followed by the discovery of gold in the interior California Mountains in 1848, triggering the great flood of immigration known as the California Gold Rush. Statehood followed shortly thereafter in 1850, and an inevitable process of survey and court cases ensued in a manner so as to deprive most Mexican citizens of title to their lands.

The demand for quicksilver brought an intensive focus to Mount Umunhum and the New Almaden mines became the most famous, and one of the most productive in the world (Hylkema 2010).

In the early 1880s, on the west side of the mountain at a lower elevation, a group of Austro-German refugees of the Franco-Prussian War who became citizens of the US settled in and created a community based on grape horticulture. They built a winery and several buildings on what had become "public land" and planted apple and olive orchards. In 1889, an exceptional rainfall washed away the winery and dispensed thousands of gallons of red wine into the tributaries that feed Los Gatos Creek, turning the waters red the length of the drainage. A forest fire in 1923 destroyed many remnants of the community, but the name Austrian Gulch remains on the landscape. This gulch reaches up towards the project APE.

Naming Mount Umunhum

One of the world's greatest migrations of people transpired with the discovery of gold and the California Gold Rush in 1848, followed by Statehood in 1850. Immediately, the need to establish land boundaries and owner rights lead to a flurry of survey and mapping activity.

The long mountain range, forming many miles of skyline that includes the project APE, was surveyed under the supervision of Alexander Dallas Bache. Bache was the Grandson of Benjamin Franklin and became the superintendent of the United States Coast and Geodetic Survey from 1853 to the time of his death in 1867. In the early 1850s he directed many projects along the Pacific coast, and his name was applied to the ridge containing the project APE; however, there was confusion about which topographic high point was actually supposed to be the named one. Evidently the confusion lead to the re-naming of the peaks such that the Spanish designation, *Loma Prieta* (dark hill) was given to the highest peak and what was identified as an "Indian" name was given to the lesser peak on the ridge: Mount Umunhum (Hylkema 2010).

Since the late 1880s, anthropologists and ethnographers have surveyed the ranges of Ohlonean languages, at least those that were still recollected, and it is from these vocabulary lists that we find the distribution of the root word for hummingbird.

Although the root word for hummingbird is within the name, today it is said that it means "resting place of the hummingbird." The additional title (resting place) is not supported by the limited vocabulary lists recorded from among the divergent linguistic groups composing the "Ohlone" cultural sphere. This does not mean that the determinant ending of the word is incorrect, only that it is unsubstantiated. Regardless, the frequency of hummingbird as character in local and more distant native ideology, and the adherence of its name to the mountain is a significant cultural phenomenon. Many stories describe how hummingbird acquired a vermillion red throat from stealing fire from badger (Hylkema 2010).

Prior to the establishment of the Almaden Air Force Station on top of Mount Umunhum, aerial photographs from the late 1940s show that the area of the APE once supported olive orchards and cattle grazing.

The Cold War (1945 – 1991)

With the conclusion of World War II in 1945, disagreements arose between the Allied powers over the future political and economic direction of the conquered nations. These tensions soon developed into the "Cold War." This indirect conflict involved multiple nations, but was primarily a contest between the Soviet Union and the United States. The Cold War was not fully resolved until the Soviet Union collapsed and was officially dissolved in 1991 (Page & Turnbull, Inc. 2011a).

During the Cold War, both the Soviet Union and the United States vastly expanded their respective weapons capabilities, first with long-range nuclear bombers, and later with the development of Intercontinental Ballistic Missile (ICBM) systems capable of delivering nuclear warheads to targets located thousands of miles away. These developments compelled both nations to devise new defense systems, including significant investments in radar technology that could detect and help destroy incoming threats (Page & Turnbull, Inc. 2011a).

Radar Defenses

As part of its defense systems, the United States—in cooperation with Canada—built and maintained extensive radar networks. These included the interim LASHUP and PERMANENT networks throughout the U.S. (1951); 35 radar sites on the PINETREE line (1951) across mid-Canada; and the Distant Early Warning System, or DEW line (1954), in northern Canada (Page & Turnbull, Inc. 2011a). The Semi-Automatic Ground Environment (SAGE) system, established in 1958, allowed the military to locate enemy aircraft in U.S. airspace through an automated system that could receive and analyze data from many stations simultaneously (Page & Turnbull, Inc. 2011a). Along with other radar networks, management of the SAGE system was incorporated within the North American Aerospace Defense Command (NORAD), inaugurated in 1958. At its height in the early 1960s, NORAD employed about 120,000 individuals and commanded an annual budget of $1.4 billion (Page & Turnbull, Inc. 2011a). Its mission was to protect U.S. airspace from invasion, warn of weapons entering that airspace, and intercept any attacks that were launched from the air, sea, or ground.

Radar was originally developed by the U.S. Navy in 1940. The term is an acronym for Radio Detection and Ranging, indicating its use of electromagnetic radio waves to detect the presence of objects at long distances (Page & Turnbull, Inc. 2011a). Radar systems transmit radio waves and use any returns, or bounces, to pinpoint the location of objects. By the 1950s, radar had become sufficiently advanced to allow tracking of airborne missiles.

During the Cold War, Air Force radar stations generally operated three types of radars: a general surveillance radar, a search radar, and a long-range height-finder radar. The search radars detected potential hostile aircraft and told the range and bearing, while the height-finder radars rocked up and down to find the altitude of objects in the airspace (Page & Turnbull, Inc. 2011a). These two types of radars worked together to triangulate the specific location of objects. The radars each went through several upgraded iterations as technology improved over the years.

The highest period of tension for the United States during the Cold War was the 1962 Cuban Missile Crisis, when it was discovered that the Soviet Union was in the process of placing nuclear missiles on the island. Threats of nuclear war slowly diminished after that event, which was resolved without armed conflict. Between 1963 and 1979, the United States and Canada cooperated on reducing the size of NORAD facilities and eliminating obsolete sites, as air defense of the United States shifted more to the Air National Guard and Air Force Reserve. The Aerospace Defense Command (ADC), the U.S.'s operating arm of NORAD, was inactivated in 1979 and replaced with the Tactical Air Command (TAC), which consolidated air defense operations. The 1979 Joint U.S.-Canada Air Defense Study paved the way to modernize NORAD through the development of new radar lines and the use of Airborne Warning and Control System (AWACS) aircraft for improved performance (Page & Turnbull, Inc. 2011a). The development of these new technologies made many of the older radar facilities obsolete, and most were closed over the coming years.

Other Radar Facilities in California

The Almaden Air Force Station was one of two hundred air defense and long-range radar facilities that monitored the skies over the continental U.S. As such, it was one of about 23 Lashup (temporary) and permanent radar stations in California that were constructed to protect the West Coast from Soviet attack. The radar ranges generally reached up to 200 miles, though a couple, like Almaden's AN/FPS-24, reached 250 miles. The ranges overlapped for good coverage, and removable radars were positioned in gaps. In order to provide a comparative basis for the facilities at the former Almaden AFS, the following is a discussion of the other 11 permanent NORAD radar facilities in California.

Mill Valley Air Force Station

The closest station north of Mount Umunhum was the Mill Valley Air Force Station, located on a 106.4-acre site on the west peak of Mount Tamalpais. The 666th Aircraft Control and Warning (AC&W) Squadron began operating an AN/CPS-6B radar there in late 1951. In 1961, Mill Valley AFS was designated the headquarters for the San Francisco NORAD Control Center. Mill Valley AFS came under Tactical Air Command (TAC) jurisdiction in 1979. During the 1980s, most of the property was turned over to the National Park Service and the Federal Aviation Administration (FAA). At its height, the Air Force Station contained sixty-two buildings. Radar systems were housed in radome tower buildings. Most of the radar facilities were deactivated by 1980, and subsequently removed, except one that continues to function for the FAA The site was documented in the Historic American Buildings Survey (HABS) in 1995, and was determined eligible for listing in the National Register of Historic Places based on its significant role as one of the most important radar stations in the country. Because it was determined eligible for listing on the National Register, the Mill Valley Air Force Station was automatically listed on the California Register of Historical Resources. It was assigned a California Historic Resource Status Code of "2D2," which means "Contributor to a district determined eligible for NR by consensus through Section 106 process. Listed in the CR." (Page & Turnbull, Inc. 2011a)

Point Arena Air Force Station

Further north along the coast, the Point Arena AFS operated from December 1951 to the mid-1980s. The station was manned by the 776th Radar Squadron until 1980, and an element of the 26th Air Defense Squadron continued operations. The site included barracks, a post exchange, recreation center, tennis courts and a pool,

wastewater treatment plant, boiler plant, and an operations building, among other structures. It featured two radar towers, including an eighty-foot concrete tower, much like the one at the Almaden AFS. The Point Arena AN/FPS-24 general surveillance radar was the first of twelve productions (Almaden's was the second). In addition to the site's radars, it also supplied ground-to-air (GATR) communications. The site remained in use as joint FAA and civilian-manned radar station until 1998, but is now closed. (Page & Turnbull, Inc. 2011a)

Klamath Air Force Station

Klamath AFS was first established in 1951 as a temporary installation, but became part of the permanent radar network in April 1952 when the 777th AC&W Squadron began operating AN/FPS-3 and AN/FPS-4 radars. The 777th became a SAGE radar squadron in 1960, and the site came under TAC jurisdiction beginning in 1979. In the 1980s, much of the property was turned over to the National Park Service, and the operations area became an FAA/U.S. Air Force joint-use facility. The Klamath AFS has since been replaced by the FAA/U.S. Air Force site at Rainbow Ridge, CA. (Page & Turnbull, Inc. 2011a)

Red Bluff Air Force Station

South of Redding in Tehama County, the Red Bluff AFS became operational by the end of 1956 with the 85th AC&W Squadron as a garrisoning unit. At different times between 1959 and 1970, the facility operated several fixed AN/FPS radars. A GATR site and two gap filler annexes were established in 1960. In 1964, Red Bluff AFS came under joint control of the FAA and the ADC. The 859th Squadron was inactivated in 1970, and the facility closed. In 1971, the GATR site and operations portion of the main station were transferred to the FAA, who continues to operate a search radar there as part of the Joint Surveillance System (JSS), a joint U.S. Air Force/FAA air sovereignty monitoring system. By the end of 1972, the remainder of the station was transferred to Tehama County, which developed the site into a county park. Red Bluff AFS was unique to California radar stations in that it was the only station that used metal buildings for administration, logistical support, and housing. All of the other stations used wood frame construction for at least some of their buildings. With closure of the station, most of the buildings were disassembled. (Page & Turnbull, Inc. 2011a)

Madera Air Force Station

The Madera AFS was located northeast of Fresno, and was first occupied by the 774th AC&W Squadron in 1951 and became a permanent Air Force Station in 1952. The facilities at Madera AFS also included 26 housing units, as well as a swimming pool, skeet range, athletic court and field, base exchange, and a three-hole golf course, which contributed to the station's unofficial nickname, "Country Club of the Air Force." Madera AFS was integrated into NORAD's SAGE command and control system in 1960. In 1966, the Madera AFS was deactivated, and the Air Force issued a permit to the Bureau of Indian Affairs (BIA) to use the site as a school and vocational training center. It is unclear if any buildings remain standing at the site. (Page & Turnbull, Inc. 2011a)

Cambria Air Force Station

The Cambria AFS was established in 1951 on the Pacific coast, about thirty miles north of San Luis Obispo and operated three different AN/FPS radars during its period of operation. The radar units have since been dismantled, but the structures remain. The AFS was nearly self-sufficient, and included a post exchange, library, mess hall, theater/bowling alley, tennis courts, dark room, medical unit, two radar towers, six barracks, a bomb shelter, and many other maintenance and operations-related structures. The AFS was closed in 1979. As of 2008, the site was owned by a private individual, but it was still in minor use by the government to broadcast safety notices and weather information to ships. (Page & Turnbull, Inc. 2011a)

Santa Rosa Island and Lompoc Air Force Stations

The Santa Rosa Island AFS operated from 1952 to March 1963 on Santa Rosa, one of the Channel Islands.The 669th AC&W Squadron operated several different radars. The Lompoc AFS was established at Oak Mountain in

Santa Barbara County in 1963. The 669th operated as part of the SAGE network. A GATR facility was located about a mile south at Sudden Ranch. Between 1963 and 1968, the Lompoc AFS operated four different AN/FPS radars. The 669th was deactivated in June 1968. The GATR site has been retained. (Page & Turnbull, Inc. 2011a, p. 44)

Boron Air Force Station

Boron AFS was established in February 1952 in the Mojave Desert, and was initially managed by Edwards Air Force Base. The 750th AC&W Squadron subsequently assumed command of the site and operated two AN/FPS-10 radars, one of which remained until 1959. Between 1958 and 1969, Boron AFS operated eight other different AN/FPS radars, including one with a radome. The facility provided data for the regional SAGE center in 1961, and the one AN/FPS radar became an operational ADC/FAA joint-use radar. The 750th was deactivated in June 1975. Part of the site continued to be used by the FAA, while the other section was used as a federal prison camp, which subsequently closed in April 2000. (Page & Turnbull, Inc. 2011a, p. 44)

San Clemente Air Force Station and San Pedro Hill Air Force Station/Fort MacArthur

The 670th AC&W Squadron began operations at San Clemente AFS in May 1952 with a single AN/FPS-3 radar. A year later, an AN/FPS-4 height-finder radar joined the site. Between 1955 and 1960, the facility also operated three other AN/FPS radars. The site was deactivated in 1960, and the 670th AC&W Squadron relocated to Fort MacArthur/San Pedro Hill AFS, a joint-use Air Force/Army/FAA radar site. San Clemente Island was handed over to the Navy. Operations at San Pedro Hill AFS/Fort MacArthur included four different AN/FPS radars. The 670th Radar Squadron was deactivated in April 1976. (Page & Turnbull, Inc. 2011a)

Mount Laguna Air Force Station

Operations at the Mount Laguna Air Force Station, located east of San Diego, began in April 1952. At that time, the 751st AC&W Squadron (later 751st Radar Squadron) operated AN/CPS-4 and AN/FPS-3 radars. Between 1952 and 1966, the Radar Squadron operated nine additional types of radars. The site became integrated into the SAGE system in 1961. In 1979 the facility came under TAC jurisdiction. In the 1980s, the FAA assumed greater controlr, leaving the Air Force responsible only for a height-finder tower, which was removed circa 1988. The other radars have since been removed, and only the towers remain. The FAA currently uses the ARSR-4 radar for en route flight safety and air traffic control. The site is planned to be dismantled by the U.S. Forest Service with federal stimulus funds. (Page & Turnbull, Inc. 2011a)

History of the Almaden Air Force Station

With the outbreak of the Cold War, as well as the Korean War in 1950, the U.S. Army and U.S. Air Force began reestablishing air defenses to protect the United States against manned bomber attacks from the Soviet Union. Some air defense radar sites that were used in World War II were reactivated, and many new sites were established. Almaden Air Force Station (AFS) was a U.S. Air Force early warning radar base that operated from 1958 to 1980. It was constructed as part of NORAD to keep watch over Northern California's airspace during the Cold War. In order to develop the site, the U.S. Air Force acquired, between 1957 and 1962, 48.02 fee acres, 43.72 easement acres, and 26.62 lease acres (total acreage of 118.36) from several private individuals and the San Jose Water Works (SJWW), a public utility company (Page & Turnbull, Inc. 2011a).

Radar Facilities and Responsibilities

The Almaden AFS was established on July 24, 1957, when the 682nd Aircraft Control and Warning (AC&W) Squadron was assigned to the site. However, funding shortfalls at the Air Defense Command delayed construction, and the squadron was not officially transferred until October 7, 1957 (Page & Turnbull, Inc. 2011a).

Almaden AFS subsequently became fully operational on March 21, 1958 as part of the San Francisco Air Defense Sector. The radar facilities were clustered at the east end of the complex on the highest point of the mountain (see Exhibit 3-3). These buildings included the radar towers, operations building, and generator buildings. The first operational radars were an AN/FPS-20 search radar and AN/FPS-6A height finder that had been constructed in 1957. The AN/FPS-6A was located immediately north of the Operations Building (Building 100), and designated as Building 125. The radar was removed in 1963, and the structure is no longer extant (Page & Turnbull, Inc. 2011a). A second AN/FPS-6A height-finder radar was installed as Building 107 in 1958, and upgraded to an AN/FPS-90 in the spring of 1963. An AN/MPS-14 radar (Building 108) was constructed in 1962 and came online in 1963.

The AN/FPS-20 search radar was situated west of the Operations Building where the helicopter landing area is currently located. The radar was housed in a domed structure called a radome. This radar was replaced by a massive AN/FPS-24 search radar atop Building 102—itself an imposing five-story concrete tower constructed between 1959 and 1961. This building also included a height finder shop on the second floor. The AN/FPS-24 was deployed by the manufacturer in 1961, but bearing problems often occurred due to the eighty-five ton weight of the radar. In subsequent years, the radar was rarely updated because of difficulties arising from its enormous size (Page & Turnbull, Inc. 2011a).

The AN/FPS-24 system at Almaden AFS was the second of twelve production models built between 1958 and 1962. The radar became operational in 1962, and had a 250-mile range—considerably stronger than the 200-mile range of the Air Force radars at Mill Valley and Cambria. The AN/FPS-20 radome was removed after 1961, and the structural footings were shaved to the ground. The radar "sail" was removed in June 1980, and the radar for the AN/MPS-14 and AN/FPS-90 was removed about the same time (Page & Turnbull, Inc. 2011a).

The Ground to Air Transmitter Receiver (GATR), or communications function, was originally located in Building 110. Following the construction of the AN/FPS-24 tower, the GATR function needed to be moved so that the radar would not interfere with the transmitter communication equipment. A new GATR site was constructed in May 1962, about a mile away on Mount Thayer. Building 110 was then converted to the D.E. supply room. "D.E." was the Air Force office symbol at the time for "Civil Engineering." When Building 110 was used for GATR, the Civil Engineering Supply was located in part of Building 119, the Civil Engineering Quarters (CEQ), also known as Station Support. When GATR moved to Mount Thayer, the CEQ moved the supply portion into Building 110 until the new power plant (Building 112) was completed and the original power plant (Building 120) was converted to the D.E. warehouse/supply. Around 1965, Building 110 was converted for training new personnel (Page & Turnbull, Inc. 2011a).

The Operations Building (Building 100) was used to process information received from the radars. This included a Digital Data Processor and an AN/FST-2B "computer" which was installed in 1961 for the SAGE automated control system. The AN/FST-2B accepted all data input from the search and height finder radars and processed them into readable data for the radar scopes. The AN/FST-2B required a large room in the Operations Building to house all the equipment, as well as an air-conditioning system specifically designed to cool the equipment. The AN/FST-2B was replaced in 1973 by advanced technology in the form of an AN/FYQ-47, which took up only a couple of racks of equipment instead of an entire room. Building 100 also included a room for cryptography, where encrypted messages were sent and received from NORAD and the various Air Defense Sector "Direction Centers." This room included crypto "typewriters" that were used to encode messages, but the process of decoding was manual (Page & Turnbull, Inc. 2011a).

After operating as a NORAD Ground Control Intercept site from 1958 to 1963, the 682nd Radar Squadron reverted to a Long Range Radar Squadron in April 1966. At that time, it became part of the 26th Air Division headquartered at the Adair AFS in Oregon, under the command of the 4th Air Force at Hamilton Air Force Base,

California. On July 1, 1968, the Squadron was incorporated into the Backup Interceptor Control Center (BUIC) system, which provided backup capability in the event that a regional control center was destroyed. The squadron's mission again reverted to a Long Range Radar in March 1969, and on September 15, 1969, the squadron fell under the operational control of the 26th Air Division NORAD Region, headquartered at Luke Air Force Base, Arizona. By the mid-1970s, a handout provided by the 682nd Radar Squadron stated its mission was to "equip, administer and train all assigned personnel to provide surveillance data, height information, and IFF/SIF responses to the Region Control Center at 26AD/NORAD Region. We also provide ground-to-air communications and data link with aircraft in our area of responsibility" (Page & Turnbull, Inc. 2011a).

Support/Residential Facilities

The support buildings and residential facilities at Almaden AFS are located at the southwest end of the site. At its peak, Almaden AFS housed approximately 120 people including employees and their families, and counted eighty-four buildings. On average, the facility employed approximately 30 stationed military personnel and 50 to 100 civilian personnel. To support the radar installation and residential cantonment, the station included basic support facilities for water and sewage, fire protection, administration, heating and refrigeration, and supply. It also catered to community needs with facilities for medical and dental care, postal services, a commissary and exchange, a chapel, and a barber shop. Recreational facilities included a bowling alley, pool, and gymnasium. Nearly all of the non-residential support buildings were pre-fabricated Butler buildings, while the residential buildings were of wood-frame construction (Page & Turnbull, Inc. 2011a).

The widespread use of Butler buildings at Almaden AFS appears to be a departure from other Air Force stations that were constructed earlier in the 1950s in California, such as Klamath AFS and Mill Valley AFS (both established in 1951). There, the barracks, administration buildings, mess halls, recreation facilities, and maintenance buildings were primarily of wood-frame construction and based on standardized designs by the Chicago-based architectural firm of Holabird, Root and Burgee.

Administration was located in Building 207, the Orderly Building. It housed the commander's office, the first sergeant, and others who handled business operations. In its earliest years, the Almaden AFS commander lived in the Bachelor Officers' Quarters (Building 205, also known as the Visiting Airman Quarters or the Transient Lodging Facility). As the names suggest, this building was mostly used as temporary housing and included four hotel-style rooms, a bar and lounge (Page & Turnbull, Inc. 2011a).

The twenty-seven family housing units (Buildings 510 to 517) on site were completed in 1959. According to the architectural drawings, the apartment buildings were designed by the architecture and engineering firm of Porter, Urquhart, McCreary & O'Brien (PUMO). The designed resembled other mass-produced military housing designs of the period from the Capehart and Wherry programs (Page & Turnbull, Inc. 2011a).

Closure

Almaden AFS came under TAC jurisdiction in 1979, and the facility's closing ceremony took place on 29 March 1980 with a final lowering of the flag. The official "inactivation" date was June 30, 1980. On September 30, 1980, a total of 18.42 acres of leased land was disposed of by terminating two leases (14.60 and 3.82 acres). The net remaining acreage was 48.02 fee acres, 43.72 easement acres, and 8.20 leasehold acres for a total of 99.94 acres of land. In June 1982, control of the property and improvements was transferred to the General Services Administration (GSA). On April 21, 1986, the GSA quitclaimed 91.696 acres of perpetual easements and fee acres to the Midpeninsula Regional Open Space District (MROSD). The remaining 8.20 acres of leaseholds were terminated at that time (Page & Turnbull, Inc. 2011a).

Today the site is part of the Sierra Azul Open Space Preserve. It is not open to the public because of environmental hazards, including asbestos and lead-based paint. In addition, most of the buildings have deteriorated due to damage from the 1989 Loma Prieta earthquake, as well as ongoing vandalism and a significant amount of weather exposure which has damaged both the exteriors and interiors (Page & Turnbull, Inc. 2011a). More recently, the ongoing structural abatement project, which was approved by the US Department of Defense and the District in August 2010, has resulted in the removal of several building exteriors. Some of the abated structures still appear generally intact, while others have been stripped down to only their frames. (See Exhibits 3-5 through 3-7 in Section 3 "Project Description.")

Local Historic Context: The Cold War in Santa Clara County (1945-1991)

The following section provides a discussion of other military installations that operated during the Cold War in Santa Clara County. There is also a discussion of microwave, missile, satellite, and computer industries that received government funding to develop military technology. This "Local Historic Context" discussion is provided in order to evaluate the former Almaden Air Force Station for local significance in the National Register of Historic Places, the California Register of Historical Resources, and the Santa Clara County Historic Resources Inventory. (Page & Turnbull 2011b)

Moffett Federal Airfield

Moffett Federal Airfield, originally called the Sunnyvale Naval Air Station, was first constructed in 1931. More commonly called Moffett Field, the facility is located in northern Mountain View on the east side of U.S. Route 101. From World War II through the Cold War, Moffett Field was the primary military presence in Silicon Valley. It is perhaps best known as the home of Hangar One, which was constructed to contain a dirigible called the USS Macon. During World War II, the base was home for many non-rigid blimps and air balloons. (Page & Turnbull, Inc. 2011b)

In the post-war years, Moffett Field became a major Naval Air Transport Service Squadron Center. The base moved into the jet age, extending Moffett Field's landing strips and modifying its hangars. During the Korean Conflict in 1950, Moffett Field housed the first night jet fighter in the service. More support buildings and landing facilities were built during this time period, and the base became popular for testing new aircraft and jet operations. In 1963, Moffett Field became the home of the Navy's first land-based anti-submarine patrol aircraft, the Orion Hunter. These planes operated out of Moffett Field for the next 30 years. During the 1970s, the base became the headquarters of the Commander Patrol Wings, U.S. Pacific Fleet, responsible for patrolling 93 million square miles of ocean from Alaska to Hawaii. Operations continued until the Navy officially closed Moffett Field in July 1, 1994, and use of the base was transferred to NASA Ames Research Center. (Page & Turnbull, Inc. 2011)

In February 1994, the United States Naval Air Station, Sunnyvale was listed as a National Register Historic District by the National Park Service. It is significant at the national level for its association with the expanding coastal defense capabilities of the U.S. Navy and airship technology during the era between 1932 and 1945.2 Hangar One was determined eligible for nomination to the National Register of Historic Places circa 2001 by the U.S. Navy, in consultation with the California State Historic Preservation Officer. Hangar One was inducted as a Naval Historical Landmark in the early 1950s and as a California Historic Civil Engineering Landmark by the San Francisco Section, American Society of Civil Engineers in May 1975. It is also listed in the Santa Clara County Heritage Resource Inventory. Military contributions during the Cold War are outside Moffett Field's defined period of significance. (Page & Turnbull, Inc. 2011b)

Onizuka Air Force Station

Onizuka Air Force Station (AFS) is a former United States Air Force installation in Santa Clara County, just outside the city limits of Sunnyvale. The station was developed on land immediately south of Moffett Field. The main building, known locally as the "Blue Cube," is large, pale blue, and windowless. It is surrounded by an array of parabolic dish antennas used for communication with remote tracking stations that control military satellites. Built in 1960 on land purchased from Lockheed, the station was originally known as the Air Force Satellite Test Center. It was later renamed the Air Force Satellite Control Facility and Sunnyvale Air Force Station. In 1986, the base was renamed Onizuka Air Force Base in honor of Lt. Col. Ellison Onizuka, USAF, one of the astronauts who died in the Space Shuttle Challenger disaster on 28 January 1986. On 26 January 1994, Onizuka Air Force Base was renamed Onizuka Air Force Station. (Page & Turnbull, Inc. 2011b)

Onizuka AFS was operated by the 21st Space Operations Squadron, a geographically separated unit (GSU) of the 50th Space Wing. The facility contained Detachment 2 of the Space and Missile Systems Center and a branch of the National Reconnaissance Office.5 The latter was a classified operation that was created in September 1961 in response to the Soviet launch of Sputnik. Its purpose was overseeing "all satellite and overflight reconnaissance projects whether overt or covert." It operated at Onizuka AFS from 1961 to 2007. In general, between 1960 and 1970, Onizuka AFS was the exclusive satellite control center for all military satellites, international communications, space operations, space shuttle, and NASA communications. It was the primary military communications facility in the U.S., with no other comparable backup facility for 30 years. The AFS closed on 28 July 2010, and operations were moved to the new Ellison Onizuka Satellite Operations Facility at Vandenberg Air Force Base. (Page & Turnbull, Inc. 2011b)

Based on its significance as a "mid-century scientific site associated with important geo-political developments during the Cold War," the former Onizuka AFS was found by historic architecture consultant Frederick Knapp in 2008 to be potentially eligible for the local (City of Sunnyvale) register. The buildings were not age-eligible for listing in the California Register and National Register at the time of evaluation, but were found to possibly qualify under Criterion Consideration G: Properties that have Achieved Significance within the Past Fifty Years. (Page & Turnbull, Inc. 2011b)

Military-related Technological Development in Santa Clara County

Missile, Satellite, and Microwave Technology

During the Cold War and the arms race, the Korean conflict, and the space program, the Department of Defense (DOD) ordered numerous high-technology products from armament factories in California. Many companies established Research and Development (R&D) departments and production facilities in Santa Clara County, where Stanford University provided bright engineers and scientists. These burgeoning companies were largely supported by the DOD's demand for electronic products. (Page & Turnbull, Inc. 2011b)

Examples of such firms are FMC (formerly Food Machinery Corporation), GTE Corporation (formerly General Telephone & Electronics Corporation), Varian Associates, Westinghouse Electronic Corporation, and Lockheed. During the 1960s, FMC built the M113 Armored Personnel Carrier (APC), the Bradley Fighting Vehicle, and the XR311 prototype military vehicle at its former facility in Santa Clara, California.10 Automatic Electric, a subsidiary of GTE, supplied electronic switching equipment for the DOD's global communications systems, and GT&E International, another subsidiary of GTE, produced earth-based stations for both foreign and domestic markets. Though GTE had offices in Palo Alto, it also operated offices throughout the country and it is unclear through basic research which production departments were located in Palo Alto. Varian Associates was founded in Palo Alto in 1948, following the invention of a microwave device called the klystron at Stanford University by Russell and Sigurd Varian. During the Cold War period, Varian Associates developed vacuum electron tubes, power amplifiers, power supplies, microwave components, electromagnets for satellite communications, and

radar and electronic warfare applications.11 Westinghouse had a plant in Sunnyvale that manufactured launch tubes for Trident submarines beginning ca. 1968. Lockheed opened its R&D department in the Stanford Research Park in 1956 and started Lockheed Missiles and Space Company (LMSC) in Sunnyvale. Between 1959 and 1978, the company manufactured the U.S. Navy's submarine-launched ballistic missiles called UGM-27 Polaris and UCM-73 Poseidon. (Page & Turnbull, Inc. 2011b)

Despite using military funding during the Cold War, these technological developments likely took place in various corporations' offices and manufacturing plants, where non-military development and production also occurred. It does not appear that any buildings have been identified in the past as historically significant in relation to this Cold War-era context. Based on this preliminary research, no particular buildings stand out as being significant primarily for this context. (Page & Turnbull, Inc. 2011b)

Government Sponsored Computer Technology Development

According to the National Park Service's "Santa Clara County: California's Historic Silicon Valley: A National Register of Historic Places Travel Itinerary,"

> America's defense spending during the Cold War Era, when research and development strove to keep abreast of the Soviet Union, helped [develop the hi-tech corridor of Silicon Valley]. After the Soviets launched the first man-made satellite, Sputnik, in 1957, President Eisenhower created the Advance[d] Research Projects Agency, which was part of the Department of Defense, in 1958. After launching the first successful U.S. Satellite, the Advance Research Projects Agency turned its attention to the potential of computers.

The role of federal involvement in computer development is further explained by the Breakthrough Institute's *Case Studies in American Innovation: A New Look at Government Involvement in Technological Innovation*:

> From the beginnings of the computer industry, federal and military agencies promoted vital basic research into computing hardware and deployed early computers throughout the government. As economist Vernon Ruttan writes, "The role of the military in driving the development of computer, semiconductor and software technologies cannot be overemphasized. These technologies were, until well into the 1960s, nourished by markets that were almost completely dependent on the defense, energy and space industries." In fact, the ENIAC, the first electronic computer, was built in 1945 to crunch numbers for the Army Ballistics Research Laboratory. In the 1950s, the Army Signal Corps funded research into semiconductors, and weapons labs at the Atomic Energy Commission were the first purchasers of supercomputers, the ancestors of today's desktop PCs. NASA, the Department of Defense, the National Center for Atmosphere Research, and the U.S. Weather Bureau commissioned their own supercomputers soon after. Perhaps most importantly, the Air Force's SAGE air defense project generated numerous innovations in computing design and production during the early 1950s, including cheap manufacturing of computer memory, communication between computers, and the use of keyboard terminals.
>
> The government was also heavily involved in the development of computer software. Defense agencies funded the basic R&D that led to early computer programs and programming languages. During the 1970s, in fact, defense spending fueled over half of all academic computing research, and grants from the military's Advanced Research Project Agency (ARPA) established the first university computer science programs at MIT, Stanford, Carnegie Mellon and elsewhere. The defense establishment took computing seriously. In 1962, ARPA's computer research budget exceeded that of all other countries combined; by 1970, its funding had increased fourfold. The Department of Defense was the single

largest purchaser of software well into the 1980s, ensuring the consistent market demand that fueled an ever-growing industry.

In addition to producing major computing advances through research funding and direct acquisition, the federal government also cultivated the innovators and engineers of the modern computer industry. Many of the minds behind the groundbreaking work at Xerox's Palo Alto Research Center (PARC), the famous computer research center, and at corporations like Microsoft and Apple came straight from government agencies.

No less important, however, were the innumerable programmers, system designers, and computer theorists who cut their teeth and honed their skills at ARPA. So many veterans of ARPA and ARPA-supported university programs came to work at Xerox PARC that insiders there jokingly referred to an "ARPA Army." These numerous veterans of government-funded programs helped Xerox PARC develop the graphical user interface and the Alto, the world's first modern PC, and later scattered to run startup firms like Apple, Microsoft, and Adobe.

Popular myths about the rise of the PC make little mention of the government, but in reality, public funding built the foundations of personal computing. The government's prescient investments in computer research, hardware and software deployment, and computer science education unleashed a transformative technology and helped build a massive industry from the ground up.

In Santa Clara County, Stanford University and the Stanford Research Institute were provided government funding to develop computer technology through ARPA. The PARC, Microsoft, Apple, and Adobe were staffed by early computer engineers who may have originated from government positions. These historic developments likely took place on the Stanford campus and in various fledgling companies' offices, where non-military development also occurred. It does not appear that any buildings have been identified in the past as historically significant in relation to Cold War-era development. Based on this preliminary research, no particular buildings stand out as being significant primarily for this context. (Page & Turnbull 2011b)

4.2.3 REGULATORY BACKGROUND

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

State Historical Landmarks and National Register-listed properties are automatically listed in the California Register. The evaluative criteria used by the California Register for determining eligibility are closely based on those developed by the National Park Service for the National Register of Historic Places. Section 106 of the National Historic Preservation Act requires that federal agencies consider whether their actions would affect historic resources. Please refer to discussion below (State Plans, Policies, Regulations, and Laws) for a description of the California Register of Historical Resources. Further, although the project is not a federal project, because congressional monies are involved, Section 106 compliance was considered.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

California Environmental Quality Act

CEQA offers guidelines regarding impacts on historic and prehistoric cultural resources. CEQA states that if implementation of a project would result in significant impacts on significant cultural resources, then alternative plans or mitigation measures must be considered. The State CEQA Guidelines define a significant historical

resource as “a resource listed or eligible for listing on the California Register of Historical Resources” (CRHR) (Public Resources Code 5024.1). A historical resource may be eligible for listing on the CRHR if it:

1. is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage; or

2. is associated with the lives of persons important in our past; or

3. embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possess high artistic values; or

4. has yielded, or may be likely to yield, information important in prehistory or history.

The State CEQA Guidelines also require the consideration of unique archaeological sites (Section 15064.5). As outlined in the Public Resources Code (Section 21083.2), a "unique archaeological resource" is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that is meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If an archaeological site does not meet the criteria for inclusion in the CRHR but does meet the definition of a unique archaeological resource as outlined in the Public Resources Code (Section 21083.2), it may be treated as a significant historical resource. Treatment options under Section 21083.2 of CEQA include activities that preserve such resources in place in an undisturbed state. Other acceptable methods of mitigation under Section 21083.2 include excavation and curation, or study in place without excavation and curation (if the study finds that the significant historical resource would not meet one or more criteria for defining a “unique archaeological resource).

For historic buildings, Section 15064.5(b)(3) of the State CEQA Guidelines indicates that a project that follows the *Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Building*s, or the *Secretary of the Interior’s Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* (1995), shall mitigate impacts to a level of less than significant. Potential eligibility also rests upon the integrity of the resource. Integrity is defined as the retention of the resource’s physical identity that existed during its period of significance. Integrity is determined by considering the setting, design, workmanship, materials, location, feeling, and association of the resource.

Special Considerations in the Evaluation of Highly Technical and Scientific Facilities

The highly technical nature of the radar facilities at Almaden AFS presents unique issues for determining the resources’ historical significance and level of integrity. Since the character of highly technical and scientific facilities includes the constant evolution of technology and use, an evaluation of historic significance and integrity must be based upon a firm understanding of a resource’s functional history, historic context, character, and reason for the changes over time.

One of the earliest public documents to address this issue was the Advisory Council on Historic Preservation's "Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities," published in 1991. This document addressed the issue of stewardship of historic resources within scientific and technical facilities. These facilities are faced with the challenge of balancing ongoing technical advancements—which often involve major alterations to historically significant buildings, equipment, and spaces—with consideration of the effects of these activities on historic properties. In terms of evaluating scientific or technical properties, questions arise regarding the resources' direct connection to a significant historic context and the ability of the resources to convey this connection through their physical features. These two issues, determining the historic context and assessing historic integrity, are the main challenges in evaluating the eligibility of the radar facilities under review at Almaden Air Force Station.

LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Santa Clara County General Plan

The Resource Conservation section of the Santa Clara County General Plan (Santa Clara County, 1994) contains a number of goals and objectives related to the identification, protection, and enhancement of important cultural resources in the unincorporated areas of Santa Clara County.

Goals and objectives applicable to the proposed project include the following:

R-RC 81. Cultural heritage resources within the rural unincorporated areas of Santa Clara County should be preserved, restored wherever possible, and commemorated as appropriate for their scientific, cultural, historic and place values.

R-RC 82. The following strategies should provide overall direction to efforts to preserve heritage resources:

1. Inventory and evaluate heritage resources.
2. Prevent or minimize adverse impacts on heritage resources.
3. Restore, enhance, and commemorate resources as appropriate.

R-RC 85. No heritage resource shall knowingly be allowed to be destroyed or lost through a discretionary action (zoning, subdivision site approval, grading permit, building permit, etc.) of the County of Santa Clara unless:

a. the site or resource has been reviewed by experts and the County Historic Heritage Commission and has been found to be of insignificant value; or

b. there is an overriding public benefit from the project and compensating mitigation to offset the loss is made part of the project.

R-RC 86. Projects in areas found to have heritage resources shall be conditioned and designed to avoid loss or degradation of the resources. Where conflict with the resource is unavoidable, mitigation measures that offset the impact may be imposed.

R-RC 88. For projects receiving environmental assessment, expert opinions and field reconnaissance may be required if needed at the applicant's expense to determine the presence, extent, and condition of suspected heritage resources and the likely impact of the project upon the resources.

R-RC 89. Demolition permits proposed for designated heritage resources shall be referred to the Historic Heritage Commission for review and recommendation to the Board of Supervisors.

R-RC 93. Heritage resources should be restored, enhanced, and commemorated as appropriate to the value and significance of the resource. All historic rehabilitation activities should comply with the Secretary of Interior 's Standards for Rehabilitation.

Santa Clara County Historical Preservation Ordinance

Proposed demolition of on-site structures requires a demolition permit from the County of Santa Clara. Therefore, the proposed project is subject to compliance with the Santa Clara County Historical Preservation Ordinance. Applicable text from the County's preservation ordinance is provided below.

Santa Clara County Code, Article 7, Section C17-2

Purpose and Intent

The Historical Preservation Ordinance is adopted for the preservation, protection, enhancement, and perpetuation of resources of architectural, historical, and cultural merit within Santa Clara County and to benefit the social and cultural enrichment, and general welfare of the people. The purpose of this chapter is to:

A. Identify, protect, preserve, and enhance historic resources (as defined in Section C17-3(J) below) representing distinctive elements of the cultural, social, economic, political, and architectural history of Santa Clara County;

B. Provide a mechanism to compile, update and maintain the heritage resource inventory;

C. Enhance the visual identity of Santa Clara County by maintaining the scale and character of historic resources and their settings, and integrating the preservation of historic resources into public and private development;

D. Encourage, through public and private action and collaboration with other organizations, the maintenance and rehabilitation of historic resources;

E. Promote public knowledge, participation, understanding, and appreciation of Santa Clara County's rich history and sense of place;

F. Foster civic pride and a sense of identity based upon the recognition and use of Santa Clara County's historic resources;

G. Protect and enhance Santa Clara County's attraction to tourists and visitors thereby stimulating business and industry;

H. Promote awareness of the economic, social and cultural benefits of historic preservation in collaboration with other organizations;

I. Provide for consistency with state and federal preservation standards, criteria, and practices; and

J. Make available incentive opportunities to preserve Santa Clara County's historic resources as provided in Article V.

(Ord. No. NS-1100.96, 10-17-06)

Santa Clara County Code, Article 7, Section C17-5

Designation Criteria

A. For the purposes of this chapter, the Board of Supervisors may designate those historic resources as "landmarks" which meet the following designation criteria:

B. Fifty years or older. If less than 50 years old, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the historic resource and/or the historic resource is a distinctive or important example of its type or style; and

C. Retains historic integrity. If a historic resource was moved to prevent demolition at its former location, it may still be considered eligible if the new location is compatible with the original character of the property; and

D. Meets one or more of the following criteria of significance:

1. Associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;

2. Associated with the lives of persons important to local, California or national history;

3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or

4. Yielded or has the potential to yield information important to the pre-history or history of the local area, California, or the nation.

(Ord. No. NS-1100.96, 10-17-06)

4.2.4 IMPACTS AND MITIGATION MEASURES

This section describes the analysis of potential impacts to cultural resources associated with the proposed project. It describes the methods used to determine the project's impacts and the thresholds of significance of those impacts. Mitigation to avoid or reduce significant impacts is provided following the discussion of the impact.

METHOD OF ANALYSIS

Prefield Research

Prehistoric and Historical Archaeological Resources

In 2010, a pre-field literature review was conducted by Mark G. Hylkema, an MA, RPA Archaeologist, to research and identify any previously recorded prehistoric or historical archaeological resources or features within the project APE.

In consultation with the State Native American Heritage Commission, the MROSD planning staff has held several meetings with various leaders of the local Native American community. None of the tribal members consulted retained any traditional knowledge of the project APE, or the larger mountain system. Documentation of this effort is on file at the MROSD Administrative Office.

Archival research was performed at a variety of federal, state, local, and private institutions. Resources consulted included the following:

- California Historic Resources Information Center, NW Regional Office, Rohnert Park.
- California State Archives, Sacramento.
- National Archives and Records Administration, College Park and Suitland, Maryland and Washington, D.C.
- National Archives and Records Administration, Pacific Branch, San Bruno, California.
- Redwood City Public Library, Redwood City.
- San Mateo County Museum of History and Art, Redwood City.
- University of California, Santa Cruz, Special Collections Library.
- U.S. Geological Survey, Menlo Park.
- San Jose City Library, California Archive.

A variety of historic documents note various aspects of the mountain, and are cited throughout the project's archaeological survey report (Hylkelma 2010). No references were found regarding significant resources directly within the project APE (Hylkelma 2010).

The former military base itself has been previously evaluated in a negative (no resources found) archaeological survey report by Jones and Stokes, 1994 (available in Appendix A of the project's 2010 archaeological survey report).

Architectural and Historical Resources

In April 2010, Page & Turnbull completed a Historic Resource Study of forty-five resources at the Almaden AFS. This study consisted of site visits on February 10 – 11, 2010, and a review of historical documents, maps, facilities records, and historic photos. Historic research also included consultation with Kirk Lenington, Senior Resource Planner at the MROSD, as well as interviews with local historians having extensive knowledge about Almaden AFS. These local historians included:

- Basim Jaber, who provided information regarding the Almaden AFS site history and individual building histories. This information was derived from historic documents, photographs and oral histories, as well as correspondence with former Air Force staff.
- David Schwaderer, who provided information about the Almaden AFS site history.

Field Survey

Prehistoric and Historical Archaeological Resources

On July 22, 2010, Archaeologist Mark Hylkema, MA, RPA, conducted a pedestrian survey of the project APE (excluding potential trail alignments because they were impassable). The APE was composed of paved and graded surfaces, and multiple abandoned buildings of the former military base. Occasional areas of native soil were encountered and these locations were carefully examined for surface indications of either prehistoric or historic elements that might be considered potentially significant (disregarding broken glass and rusted metal scrap, which abounds throughout the project area).

The terrain of the survey provided reasonably good ground visibility, in the un-developed areas, but no artifacts or features were observed.

Architectural and Historical Resources

On February 10 – 11, 2010, Page & Turnbull surveyed and digitally photographed all forty-five structures, accompanied by staff members from the MROSD and Northgate Environmental Management, Inc. In February 2011, Page & Turnbull also surveyed additional structures associated with the Ground to Air Transmitter Receiver (GATR) located nearby on Mount Thayer.

Page & Turnbull staff then conducted research on the buildings of the Almaden AFS and identified significant themes, events, and persons associated with the facility. This research was conducted in consultation with the MROSD and local Almaden AFS historians, who provided historical documentation, photographs, and other pertinent references.

Section 106 Technical Report

Page and Turnbull prepared a Section 106 Technical Report (Appendix D) for the previously implemented hazardous materials abatement project at the site. The Technical Report was submitted to SHPO by MROSD on October 13, 2011. Under Section 106, in order for an undertaking to affect a historic property, the property must be listed or determined eligible for listing in the National Register. Properties eligible for local or state historical registers are not considered historical resources under the Section 106 Federal Review Process, unless they also qualify for National Register listing. The Section 106 Technical Report was based on research Page & Turnbull conducted for the reports described above. It should be noted that Milford Wayne Donaldson, FAIA (SHPO) responded to the Section 106 Technical Report in a letter dated November 9, 2011 (also included in Appendix D) indicating concurrence with the conclusions of the Technical Report.

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, a cultural resources impact is considered significant if implementation of the proposed project would do any of the following:

- cause a substantial adverse change in the significance of a unique archaeological resource or a historical resource, as defined in Section 21083.2 of CEQA and Section 15064.5 of the State CEQA Guidelines, respectively; or
- disturb any human remains, including those interred outside formal cemeteries.

Section 15064.5 of the State CEQA Guidelines defines "substantial adverse change" as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

4.2.5 PROJECT IMPACTS AND MITIGATION

Impact 4.2-1	**Construction-Related Impacts on Documented Significant Archaeological Resources.** Implementation of the project would not result in any impacts on any documented archaeological resources presently listed or possibly eligible for listing in the CRHR because no resources are known to be present within the project site. Consequently, this impact would be **less-than-significant.**

The 2010 evaluation and field survey, consistent with a previous survey conducted by Jones and Stokes (1994), found no indication of significant archaeological sites, artifacts, or features within the project APE (Hylkema 2010). In consultation with the State Native American Heritage Commission, the MROSD planning staff has held

several meetings with various members of the local Native American community. None of the tribal members consulted retained any traditional knowledge of the project APE, or the larger mountain system (Hylkema 2010). Therefore, this impact would be **less-than-significant**.

Although the site does not contain significant archeological resources, the Sierra Azul range was a regionally important source of cinnabar, an important trade good, and the name Umunhum clearly suggests a connection with native peoples. One of the project objectives is to "highlight the rich natural and cultural history of the site through self-discovery and focused interpretive and educational opportunities." The history of native people in the area will be interpreted through, for example, a viewpoint/ceremonial space marked with the four cardinal directions, which would provide a peaceful place for contemplation and would recognize the significance of the site to Native Americans. This space would provide an opportunity for docent tours, signage, and/or audio tour to interpret the precolonial history of the Bay Area, much of which is visible from the site, and the importance of the Sierra Azul area in particular.

Mitigation Measure 4.2-1

No mitigation measures necessary.

Impact 4.2-2	**Construction-Related Impacts on Documented Significant Historical Resources**. Implementation of the project would not result in any impacts on any documented historical resources presently listed or possibly eligible for listing in the California Register of Historical Resources because no resources are known to be present within the project site and none of the historic-era structures within the project appear to be associated with important historic events or persons at the national, state, or local level. Consequently, this impact would be **less-than-significant.**

The 2010 historic evaluation of the site concluded that the area most relevant to the historic purpose and function of the Air Force Station was the radar facility at the top of the mountain: the cluster consisting of Operations (Building 100), the concrete tower for the AN/FPS-24 (Building 102), the steel structure for the AN/MPS-14 (Building 108), and the steel Butler building (Building 110) together represent the most important function of the site. Please refer to Exhibit 3-3, "Project Description", of this document for location of these buildings onsite.

The following is an evaluation for national and state-wide significance by Page & Turnbull, using the significance criteria and integrity considerations of the California Register and National Register, discussed above under "Thresholds of Significance." An evaluation of local significance is located below. Note that the criteria for listing in the National Register and California Register are substantially similar to the criteria specified in the Santa Clara County Historic Preservation Ordinance. Also note that Page & Turnbull evaluated the on-site structures prior to implementation of the structural abatement project. (The IS/MND prepared for the structural abatement project relied on the Page & Turnbull analysis of the structures and concluded that the removal of hazardous building materials from the structures would not result in a substantial adverse effect to historic resources.) Many of the structures are currently much less intact than they were when the analysis was conducted (See Exhibits 3-5 through 3-7 in the project description). At the time of this writing, the radar tower had not yet been abated; however, because the radar tower is constructed primarily of concrete, the structure abatement will remove only paint and other minor exterior appurtenances; it will appear substantially the same as its current pre-abatement condition.

CRITERION A/1 (EVENTS)

The former Almaden AFS does not appear eligible for listing in the National Register under Criterion A or the California Register under Criterion 1 (Events) as a potential Historic District. Though the facility was constructed as part of NORAD's Cold War defense system for the United States and Canada, nine permanent Early Warning Radar Air Force Stations existed in California during the same period. (Page & Turnbull, Inc. 2011a)

The radars at Almaden AFS overlapped in range with the nearby stations, and all of the radars worked in concert to detect foreign objects in airspace along the Pacific Coast. Likewise, all these facilities were connected to the SAGE command and control system in 1960-61, and at least three other stations contained separate GATR facilities. Thus, Almaden AFS does not appear singularly significant in function, nor was its equipment unique. (Page & Turnbull, Inc. 2011a)

The facilities and operational tasks for each radar station were quite similar, and the hierarchy of command was nearly identical—aside from those stations which served as a command post or headquarters. For example, Mill Valley AFS functioned as a control station in the 1950s, as a SAGE combat division center from 1961 to 1963, as San Francisco Defense Area NORAD Control Center from 1961 to 1974, and as one of six SLBM radar stations from 1968 to 1980. Because of these significant functions, the station was determined eligible for listing as a historic district on the National Register in 1995, which meant that it was automatically listed in the California Register as well. By contrast, Almaden AFS does not rise to the same level of significance as Mill Valley AFS, and thus does not appear eligible for listing on the California Register or National Register (Page & Turnbull, Inc. 2011a).

Almaden AFS operated from 1958 to 1980. It was not the first Cold War-era Air Force radar station to be established in California. In fact, it was the last station established without transferring a radar squadron from a previous location in California (i.e. Santa Rosa AFS to Lompoc AFS and San Clemente AFS to Fort MacArthur). The Mill Valley, Point Arena, Klamath, and Cambria Air Force Stations were established in 1951, and Madera, Santa Rosa, Boron, San Clemente, and Mount Laguna Air Force Stations were established in 1952. The establishment of these stations may be considered more significant than Almaden AFS because the 1951-52 system of Early Warning Radar stations was the United States' first major construction project as a result of Cold War hostilities. Other stations also operated for longer periods than Almaden AFS, including Klamath AFS which closed in the 1980s, Mount Laguna which closed in the 1990s, and Point Arena which did not close until 1998. (Page & Turnbull, Inc. 2011a)

In conclusion, Almaden AFS does not stand out as particularly significant compared with other Cold War-era Air Force radar stations in California, such as those which served as local or regional command centers. It therefore does not appear eligible as a Historic District on the California Register of Historical Resources. (Page & Turnbull, Inc. 2011a).

CRITERION B/2 (PERSONS)

The former Almaden AFS does not appear eligible for listing in the National Register under Criterion B or the California Register under Criterion 2 (Persons). It was a military facility and by definition all of the personnel worked together in support of the operational mission. Research has failed to turn up an intimate association with a particularly prominent person or persons that would justify its inclusion in the National Register or California Register under this criterion. (Page & Turnbull, Inc. 2011a)

CRITERION C/3 (ARCHITECTURE & DESIGN)

The former Almaden AFS does not appear eligible for listing in the National Register under Criterion C or the California Register under Criterion 3 (Architecture & Design) as a potential Historic District. The buildings at Almaden AFS are common amongst radar stations of the Cold War era in terms of construction materials, style, size, massing, and use. Prefabricated steel Butler buildings were most often used for radar support, administration, community services, and airmen barracks. All of the stations except Red Bluff AFS used wood-frame construction for apartments or other buildings, in addition to the use of steel buildings. The wood-frame apartments, though modern in design, resemble other mass-produced military housing of the era, such as those constructed for the Capehart and Wherry programs. The buildings likewise do not appear significant in the portfolio of Porter, Urquhart, McCreary & O'Brien, who worked on larger military housing projects elsewhere. (Page & Turnbull, Inc. 2011a)

The radar structures used at Almaden AFS were not unique, but rather, followed common conventions similar to other radar installations. Height-finder radars were placed on steel structural supports, while search radars were placed on multi-story concrete cubes. The specific types of radars varied from station to station, and also varied over the years as technology improved. However, a select number of radars were in use during a given time period. For example, all nine other stations in California used AN/FPS-6 series height-finder radars, and seven used the AN/FPS-90. Three used the AN/FPS-20 search radar, and Santa Rosa AFS used the AN/MPS-14. Point Arena was the only other Early Warning Radar Station in California to operate the large AN/FPS-24. Though the concrete tower at Almaden AFS is distinctive, it supported the second of twelve production models of the AN/FPS-24—the first being at Point Arena. Furthermore, the radars themselves have been removed from the towers at Almaden AFS. Based upon Page & Turnbull's methodology of highly technical and scientific resources, which emphasizes the need to retain some technical equipment related to the historic function of the building, the towers consequently do not retain integrity of workmanship, feeling, and association. Thus, the historic integrity has been lost. (Page & Turnbull, Inc. 2011a)

The buildings and structures at the former Almaden AFS do not represent the work of a master or possess high artistic value. They embody the characteristics of a type, period, and method of construction, but within the broader historic context of the period, they do not stand out as a collection of buildings that should be recognized for their design as a California Register Historic District. (Page & Turnbull, Inc. 2011a)

Finally, the facility's site and layout are not unique compared to the other Cold War-era Air Force radar stations. For example, the Mill Valley, Point Arena, Klamath, Cambria, Santa Rosa Island, San Clemente, and Mount Laguna Air Force Stations were all situated on elevated pieces of land—either mountains or coastal bluffs—as these locations were advantageous for non-obstructed radar placement. It was also not uncommon for stations to combine the radar installation with multiple family housing and community services because the facilities were situated in relatively isolated locations. (Page & Turnbull, Inc. 2011a)

CRITERION D/4 (INFORMATION POTENTIAL)

Eligibility under National Register Criterion D or California Register Criterion 4 (Information Potential) is typically reserved for archaeological resources. (Page & Turnbull, Inc. 2011a) In the case of the Almaden AFS, because the Cold War is a fairly well-documented period of history and because so many other examples of similar facilities exist, it is not likely that the on-site structures would yield information important in history.

EVALUATION OF LOCAL SIGNIFICANCE

The Department of Defense (DOD) created a military presence in Silicon Valley and was influential in the development of the high-tech industry. Based on the local historic context described above, the former Onizuka AFS appears to contain the most significant and presumably intact buildings (at the time of historic evaluation) that represent the Cold War era in Santa Clara County, as it had extremely important and highly unique military responsibilities during its period of operation. (Page & Turnbull, Inc. 2011b)

The former Almaden AFS operated within this climate of defense spending and technological development. The facility may have been considered locally significant under National Register Criterion A/California Register Criterion 1 (associated with significant events) as the only Cold War-era military radar facility in Santa Clara County. Nevertheless, the historic context of U.S. military influence in Santa Clara County does not alter the fact that the Almaden AFS facility no longer retains integrity. To be considered historic resources eligible for local, state, or national listing, properties must be both historically significant and retain sufficient integrity to represent that significance. The buildings at the former Almaden AFS, though constructed in the early years of Cold War-era defense advancement, do not retain sufficient materials, workmanship, feeling, or association to maintain their historic integrity. This includes Building 102 (the Radar Tower), which, though a large and visually identifiable structure from the base of the mountain, does not retain the radar sail or interior mechanics that associate it with its former defense function. (Page & Turnbull, Inc. 2011b)

Local Designation

The Santa Clara County Municipal Code's "Article II. Landmark Designation," stated above, describes the criteria for listing a property in the local inventory. Because historic integrity is a crucial component to designation at the local level, the former Almaden AFS was not found eligible for listing in the Santa Clara County Heritage Resource Inventory. (Page & Turnbull, Inc. 2011b)

EVALUATION CONCLUSION

Page & Turnbull's "Historic Resource Study: Former Almaden Air Force Station" (Page & Turnbull, Inc. 2011a, and 2011b Update) evaluated the former Almaden AFS for eligibility for listing in the National Register of Historic Places and the California Register of Historical Resources at the national and state-wide level of significance. Because the property did not contain unique facilities or functions within the California network of Cold War-era radar Air Force stations, the report concluded that the on-site structures are not historically significant. Other facilities have more intact examples of radars or held a more significant role in the network. Furthermore, due to degradation and alterations to numerous buildings on the property, the report concludes that the Alamden AFS as a whole does not retain integrity as a potential historic district. Likewise, the individual buildings either do not possess individual significance or do not retain sufficient integrity to convey their potential significance. (Page & Turnbull, Inc. 2011a)

The Page & Turnbull report indicates that based on the local historic context (described above), the former Onizuka AFS appears to best represent significant military responsibilities in Santa Clara County during the Cold War. The report further concludes that neither the former Almaden AFS, nor any of the individual buildings on the property, were found eligible for listing in the National Register or California Register for local significance. The facility and its buildings were also not found to be eligible for local listing in the Santa Clara County Heritage Resource Inventory. (Page & Turnbull, Inc. 2011b)

However, the Page & Turnbull report does indicate that, though the site as a whole does not possess the level of significance required for listing on the National Register or the California Register, there are layers of importance

within the site. As mentioned above, the area most relevant to the historic purpose and function of the Almaden AFS was the radar facility. The cluster consisting of Operations (Building 100), the concrete tower for the AN/FPS-24 (Building 102), the steel structure for the AN/MPS-14 (Building 108), and the steel Butler building (Building 110) together represent the most important function of the site. They also exemplify typical construction methods. The Page & Turnbull report concludes that the buildings and structures lack the historic integrity needed to qualify for eligibility as a small historic district or as individual resources on the National Register or California Register. (Page & Turnbull, Inc. 2011a)

MROSD has been coordinating with SHPO and has submitted the Section 106 Technical Report prepared by Page & Turnbull in October 2011 (See Appendix D). Consistent with the previous Page & Turnbull Report, the Section 106 Technical Report concludes that of the 52 resources Page & Turnbull examined at the former Almaden Air Force Station on Mt. Umunhum and Mt. Thayer, none of the properties were found individually eligible for listing on the National Register by Page & Turnbull, whether at the local, state, or national level of significance. Most are support facilities or residences that are not significant architecturally and did not have a function individually vital to the mission of the station. The four extant buildings that were most important to the station include Building 100 (the Operations Building); Building 102 (the concrete tower for the AN/FPS-24 radar); Building 108 (the steel tower for the AN/MPS-14 radar); and Building 110 (the original GATR building). However, none of these buildings retain sufficient integrity to qualify for listing in the National Register as historic properties. Therefore, the proposed project has a finding of "No Historic Properties Affected" under Section 106 of the National Historic Preservation Act. (Page & Turnbull, inc. 2011c) In a letter dated November 9, 2011 (also included in Appendix D), from Milford Wayne Donaldson, FAIA (SHPO) indicated that he concurs that none of the buildings, structures, or objects within the identified APE are eligible for listing on the National Register of Historic Places within state, local, or national historical contexts. Three options are currently being considered for the former radar tower (Building 102): 1) retain and seal entire structure; 2) substantially remove structure but leave a publically accessible foundation; or 3) remove entire structure and ecologically restore the footprint. Like other buildings and structures examined at the site, Building 102 was not determined eligible for listing on the California Register of Historical Resources because it lacks the historic integrity needed to qualify for eligibility. Therefore, implementation of any of the radar tower options would result in a **less-than-significant** impact on documented significant historic resources.

It is acknowledged that, despite SHPO's determination that the structures are ineligible for listing, the Almaden AFS was not just a military base, but was a home to military service personnel and their families who worked and lived at the project site. As such, these structures, especially the prominent radar tower, carry strong sentimental value for these military service families. Furthermore, the radar tower may be seen by some local residents as a symbol for the Cold War era (although, visibly, its former function is no longer apparent due to loss of the massive radar sail). Further still, the radar tower has for decades provided residents of the region with a geospatial reference point, a land marker that many use to identify the locations of various mountain peaks and even the cardinal directions. Although the level of impact does not exceed the CEQA threshold of significance (i.e. eligibility for listing on local, state, or federal registers), and the environmental impact is not considered significant per CEQA, MROSD understands the emotional impact that could result for both the military service families and the local residents who care about this structure, which many of them consider to be a local icon. The feelings of these military service families associated with their former home, as well as the symbolic and iconic nature of the radar tower as seen and felt by the military families and local residents, are very important to MROSD and will be fully considered among the project merits during the selection of a radar tower option.

Mitigation Measure 4.2-2 (Voluntary)—

Radar Options 2 and 3 Only

If MROSD selects radar tower Option 1 (retain and seal the structure) no further mitigation is feasible. If MROSD selects either radar tower Option 2 (demolish but leave the foundation) or radar tower Option 3 (completely remove the radar tower), the following mitigation measure is required:

MROSD will use the radar tower foundation or footprint to provide a setting for interpretive media in order to illustrate the topics of U.S. Military history, the Cold War, and the role of NORAD, the Almaden AFS, and the servicemen stationed there in national security. Media could include the following: interpretive panels showcasing period photographs of the operational AFS and servicemen stationed there, including photos of the site showing its visibility from far distances; oral histories provided by surviving veterans; interpretive panels exhibiting major political events of the Cold War; and/or inclusion as part of a self guided tour (via GPS/Smart technology or other means) illustrating the former structures and activities associated with different areas of the project site. Veterans and other community members will be invited to participate in the specific design and content of the interpretive features.

Impact 4.2-3	**Construction-Related Impacts on Presently Undocumented Cultural Resources.** Because the project is located in an area where "unique" or "historical" resources (per CEQA criteria) could be encountered during project implementation, disturbances of such resources would constitute a **potentially significant** impact.

Although no cultural resources were documented within or in the immediate vicinity of the project APE, the site is in a region where CRHR-eligible prehistoric and early historic cultural resources have been documented. In addition, an individual who was a former resident of the now abandoned military facility, Mr. Patrick Cooper, recalled as a boy growing up on the base between the years 1960 and 1962, finding evidence of Native American artifacts in a "gully" outside of the APE (Hylkelma 2010, p.20).

Although no cultural resources are known to be present within the project APE, such resources could be present in subsurface contexts that were not identifiable during the archaeological investigations. In addition, the proposed trail alignment is currently impassable and has not been surveyed for cultural resources. Disturbances of such resources would constitute a **potentially significant** impact.

Mitigation Measure 4.2-3

Protection of Undocumented Cultural Resources.

During all ground-related construction activities (i.e., grading, excavation, etc.) on the project site (including roadway and trail construction), if cultural materials (e.g., unusual amounts of shell, animal bone, glass, ceramics, structure/building remains) are inadvertently encountered, all work shall stop within 50 feet of the find until a qualified archaeologist can assess the significance of the find. A reasonable effort will be made by the District to avoid or minimize harm to the discovery until significance is determined and an appropriate treatment can be identified and implemented. Methods to protect finds include fencing and covering remains with protective material such as culturally sterile soil or plywood. If vandalism is a threat, 24-hour security will be considered and evaluated based on threat level, remoteness of site, materials found, significance of find, etc. Construction operations outside 50-feet of the find can continue during the significance evaluation period and while mitigation

is being carried out; however, if the archaeologist determines that the nature of the find may signify a high potential for other finds in the area, the construction will be monitored by an archaeologist within 100-feet of the find. If a discovered resource is identified as significant and cannot be avoided, a qualified archaeologist will develop an appropriate treatment plan to minimize or mitigate the adverse effects. The District will not proceed with construction activities within 100 feet of the find until the treatment plan has been reviewed and approved. The treatment effort required to mitigate the inadvertent exposure of significant cultural and/or historical resources will be guided by a research design appropriate to the discovery and potential research data inherent in the resource in association with suitable field techniques and analytical strategies. The recovery effort will be detailed in a professional report in accordance with current professional standards. Any non-grave associated artifacts will be curated with an appropriate repository. Project construction documents shall include a requirement that project personnel shall not collect cultural and/or historical resources encountered during construction. This measure is consistent with federal guideline 36 CFR 800.13(a) for invoking unanticipated discoveries.

Prior to any trail construction, MROSD will hire a qualified archaeologist to conduct a pre-construction survey of the proposed trail alignments. If any potential archaeological resources are identified during the survey, and aref found to be significant, the archaeologist shall recommend avoidance measures to ensure that no impacts result from trail construction or trail operation. If the found resource cannot be avoided, the archaeologist shall prepare a treatment plan, as described above.

Level of Significance After Mitigation

Implementation of this mitigation measure would reduce potentially significant impacts associated with the inadvertent discovery of cultural materials during construction activities to a **less-than-significant** level by halting ground disturbances in the area of the find and notifying a qualified professional archaeologist regarding the discovery.

Impact 4.2-4	**Construction-Related Impacts on Presently Undocumented Human Remains.** Because construction activities associated with the project could potentially result in the disturbance of presently undocumented prehistoric or historic-era interments, human remains, and/or associated grave-related articles, this impact would be **potentially significant.**

Although no evidence for prehistoric or early historic-era interments was found on the project APE in surface contexts, this does not preclude the existence of buried human remains. California law recognizes the need to protect historic-era and Native American human burials, skeletal remains, and grave-associated items from vandalism and inadvertent destruction. The procedures for the treatment of Native American human remains are contained in Sections 7050.5 and 7052 of the California Health and Safety Code and Section 5097 of the California Public Resources Code. Construction activities associated with the project could potentially result in the disturbance of presently undocumented prehistoric or historic-era human remains. This impact would be **potentially significant**.

Mitigation Measure 4.2-4

Protection of Presently Undocumented Human Remains. *In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, potentially damaging excavation in the area of the burial will be halted and the Santa Clara County Coroner and a professional archaeologist will be contacted to determine the nature and extent of the remains. The MROSD Project Manager will also be notified*

immediately. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code, Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code, Section 7050[c]).

Following the coroner's findings, the State of California, project contractor, an archaeologist, and the NAHC-designated Most Likely Descendant (MLD) will determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities for acting upon notification of a discovery of Native American human remains are identified in Section 5097.9 of the California Public Resources Code.

The State of California will ensure that the immediate vicinity (according to generally accepted cultural or archaeological standards and practices) is not damaged or disturbed by further development activity until consultation with the MLD has taken place. The MLD will have 48 hours to complete a site inspection and make recommendations after being granted access to the site. A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment may be discussed. Assembly Bill (AB) 2641 suggests that the concerned parties may extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. AB 2641(e) includes a list of site protection measures and states that the landowner shall implement one or more of the following measures:

- *record the site with the NAHC or the appropriate Information Center,*
- *utilize an open-space or conservation zoning designation or easement, and/or*
- *record a document with the county in which the property is located.*

The landowner or their authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the NAHC is unable to identify a MLD, or if the MLD fails to make a recommendation within 48 hours after being granted access to the site. The landowner or their authorized representative may also reinter the remains in a location not subject to further disturbance if they reject the recommendation of the MLD, and mediation by the NAHC fails to provide measures acceptable to the landowner.

Level of Significance After Mitigation

Implementation of this mitigation measure would reduce potentially significant impacts associated with disturbance of presently undocumented prehistoric or historic-era human remains during construction activities to a **less-than-significant** level by halting ground disturbances in the area of the find and notifying Santa Clara County Coroner and a professional archaeologist within 48 hours to determine the nature and extent of the remains and appropriate treatments.

4.3 BIOLOGICAL RESOURCES

This section addresses biological resources that could be affected by implementation of the proposed project. The information presented is based on a site visit conducted by an Ascent biologist on November 29, 2010 and review of existing documentation including (1) California Natural Diversity Database (CNDDB 2011), (2) vegetation and special-status plant maps (MROSD 2010), (3) Habitat Assessment Report for Special-Status Invertebrates at the Midpeninsula Regional Open Space District's Mt. Umunhum and Mt. Thayer Areas in Santa Clara County, CA (Entomological Consulting Services 2011), (4) Botanical Survey of the Sierra Azul Open Space Preserve, Santa Clara And Santa Cruz Counties, CA (EcoSystems West Consulting Group 2008), and (5) other recent documents pertaining to biological resources in the region.

4.3.1 EXISTING SETTING

The proposed project is located within the Sierra Azul Open Space Preserve on the summit of Mt. Umunhum, in the southern Santa Cruz Mountains, about 13 miles south of San Jose and three miles southeast of Los Gatos (see Exhibit 3-1, Regional Map). The Santa Cruz Mountains are biologically diverse, containing cool, moist coastal ecosystems as well as warm, dry uplands that provide a wide range of habitats for many species of plants and animals.

The project area contains the former Almaden Air Force Station (AFS) and is currently closed to the public. The project area consists of a complex of former military buildings and associated facilities that have been abandoned for 30 years (including driveways, parking lots, storage buildings, as well as other base structures and technical facilities). MROSD is implementing a separate remediation project to remove contaminated materials from the site and some of the exteriors of these buildings have been partially or completely removed. Ornamental vegetation associated with landscaping around the facilities has become naturalized in some areas.

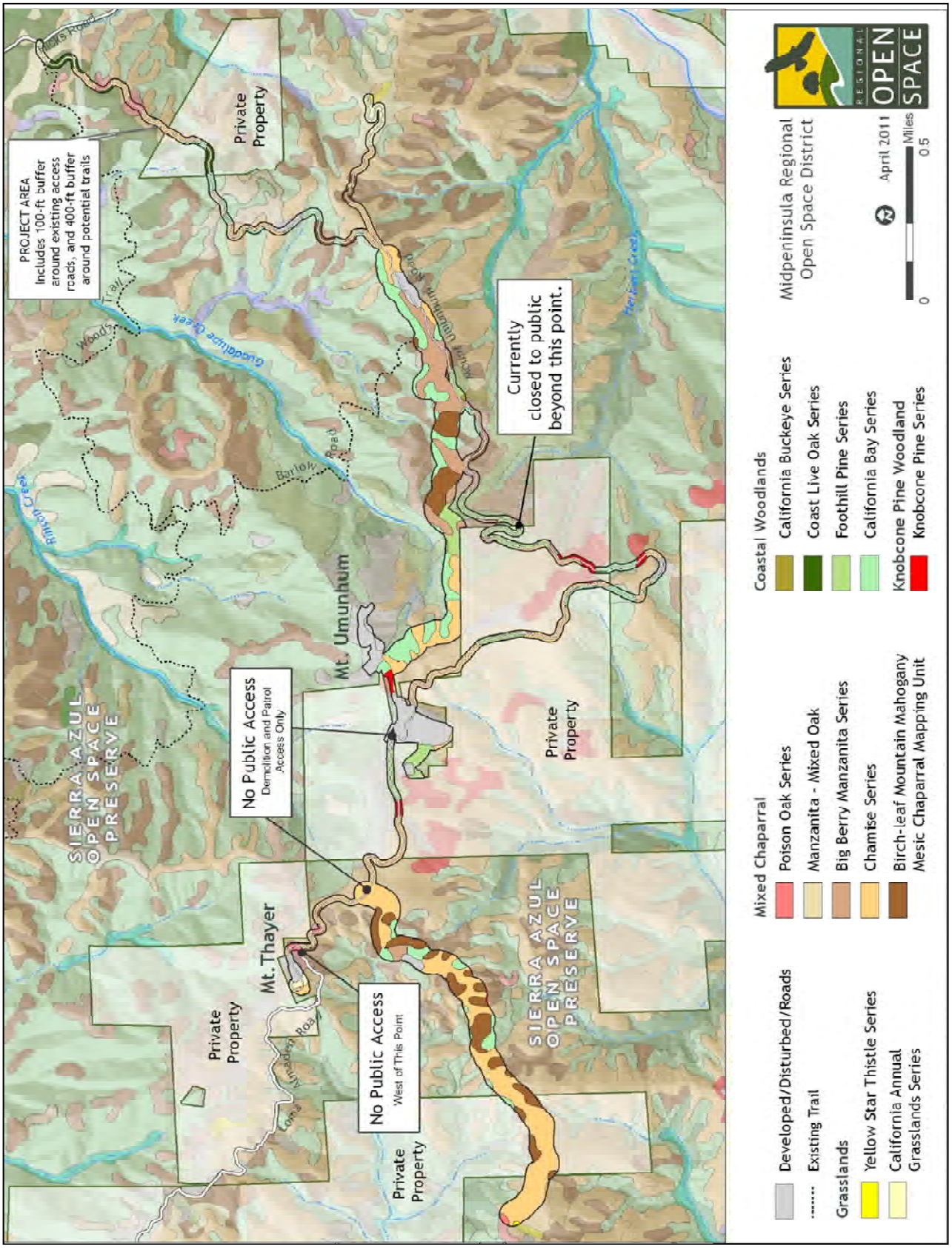
The study area for the proposed project includes the former AFS, a 100-foot corridor around existing access roads to Mt. Umunhum and Mt. Thayer, and two parking areas (one existing, one proposed) for recreational users along Mt. Umunhum Road (see Exhibit 3-2). Proposed phased trail connections in the study area include a 400-foot-wide corridor between Mt. Umunhum and Bald Mountain to the east, and between Mt. Thayer and Ralph's Mountain to the west.(see Exhibit 3-2).

VEGETATION AND WILDLIFE

The majority of the biological study area for the proposed project is characterized by existing abandoned structures from the former AFS and graded and compacted roadways. The undeveloped areas of the study area, mainly within the corridor buffer areas adjacent to existing roads and the proposed trail connections, are described below (See Exhibit 4.3-1 and 4.3-2).

Mixed Chaparral

The chaparral of the study area (Exhibit 4.3-2) is typically dense, often impenetrable scrub dominated by a variety of shrub species, especially chamise (*Adenostoma fasciculatum*), big berry manzanita (*Arctostaphylos glauca*), birch leafed mountain mahogany (*Cercocarpus betuloides*), and poison oak (*Toxicodendron diversilobum*). It may also include such species as California yerba santa (*Eriodictyon californicum*), toyon (*Heteromeles arbutifolia*), and coffeeberry (*Rhamnus californica* ssp. *californica*).



Source: MROSD 2011

Exhibit 4.3-1 **Vegetation and Ground Cover Map**

Mixed Chaparral and Coastal Woodland in the Project Vicinity (November 2010)

Serpentine Rocky Outcrop (November 2010)

Source: Ascent 2010

Exhibit 4.3-2 Representative Photographs of Habitat Types in the Project Vicinity

The majority of the vegetation adjacent to Mt. Umunhum Road, which provides access to Mt. Umunhum and Mt. Thayer, is mixed chaparral. It is also found adjacent to the summit of Mt. Thayer and along the proposed trail connections.

Mixed chaparral habitat generally has lower wildlife diversity than most forest and woodland habitats (Mayer and Laudenslayer 1988, pp. 104-107). However, scrub does provide habitat for many wildlife species, including some that are considered rare elsewhere. Common reptiles found in chaparral include western rattlesnake (*Crotalus oreganus*), California kingsnake (*Lampropeltis getula californiae*), western fence lizard (*Sceloporus occidentalis*), and western whiptail (*Aspidoscelis tigris*). Common birds in scrub habitat include California thrasher (*Toxostoma redivivum*), Bewick's wren (*Thryomanes bewickii*), California towhee (*Pipilo crissalis*), and California quail (*Callipepla californica*). Mammals commonly associated with scrub include gray fox (*Urocyon cinereoargenteus*) and black-tailed deer (*Odocoileus hemionus*).

Coastal Woodlands

Coastal woodland habitats in the study area (Exhibit 4.3-2) include plant communities dominated by coast live oak (*Quercus agrifolia*), foothill pine (*Pinus sabiniana*), California bay (*Umbellularia californica*), and tanoak (*Lithocarpus densiflora*). Canyon live oak (*Quercus chrysolepis*), Pacific madrone (*Arbutus menziesii*), and California buckeye (*Aesculus californica*) may also be present. Most of the woodlands are dense, closed-canopy broadleaved evergreen forests, but areas dominated by buckeye are deciduous.

Woodland habitats support a wide variety of wildlife species (Mayer and Laudenslayer 1988, pp. 72-79). This rich fauna largely results from acorn production and the availability of cavities for breeding and cover in large oak trees. In fact, the presence of at least some oaks in any habitat type increases wildlife abundance (CalPIF 2002, p. 8). Typical reptiles and amphibians that use this habitat in the study area include ringneck snake (*Diadophis punctatus*), California slender salamander (*Batrachoseps attenuatus*), western skink *(Eumeces skiltonianus*). Representative bird species include: wild turkey (*Meleagris gallopavo*), Cooper's hawk (*Accipiter cooperii*), great horned owl (*Bubo virginianus*), acorn woodpecker (*Melanerpes formicivorus*), oak titmouse (*Baeolophus inornatus*), Hutton's Vireos (*Vireo huttoni*), spotted towhee (*Pipilo maculates*), and lesser goldfinch (*Carduelis psaltria*). Common mammals in coastal woodlands include deer mouse (*Peromyscus maniculatus),* black-tailed deer (*Odocoileus hemionus*), mountain lions (*Felis concolor*), and wild boar (*Sus scrofa*).

Knobcone Pine Woodland

Knobcone pine woodland is a generally open-canopy forest of more or less evenly spaced trees of knobcone pine (*Pinus attenuata*), a pine that is essentially dependent on fire for its reproduction. Few other tree species occur in well-developed knobcone pine forest. The understory vegetation in knobcone pine forest consists of chaparral shrubs species and grassland species.

Knobcone pine is a serotinous conifer. Serotinous conifers have mature cones that remain closed and attached to the parent for one or more years following seed maturation and require fire or other natural disturbance for the seeds to be released from the cones. When cones mature, they are sealed shut by a thick resinous coating. The heat of a fire melts, vaporizes, and ignites this resin, allowing the cones to open. Although fires generally kill the mature trees, the cones themselves are generally not consumed by fire. Fire also reduces competing vegetation and accumulated litter, temporarily increases soil pH, and increases soil nutrient content, all of which may facilitate knobcone pine reproduction. Knobcone pine is observed to reproduce abundantly following fires, while young trees are absent or rare in mature unburned knobcone pine forest (EcoSystems West Consulting Group 2008, p. 24).

Given the high degree of dependence of knobcone pine reproduction on fire, particularly opening of cones and dissemination of seed, effective management to maintain knobcone pine forest in the absence of uncontrolled wildfires may require prescribed burns. In addition to the generally controversial nature of prescribed burns, management of knobcone pine forests may present special problems, because the physiognomy of these forests is such that fires readily become crown fires, which are more difficult to control than ground fires. Crown fires may be required to facilitate large-scale opening of cones whereas low-intensity prescribed burns conducted during wet weather, when fires would be more readily controlled may be ineffective for stimulating regeneration of knobcone pine (EcoSystems West Consulting Group 2008, p. 24).

In some areas in the Santa Cruz Mountains, knobcone pine reproduces sparingly along roadsides and in other disturbed areas in the absence of fire, suggesting that mechanical removal of competing vegetation, perhaps accompanied by soil scarification, could be an effective alternative technique to prescribed burns for stimulating regeneration of knobcone pine. However, research to investigate this possibility has not been conducted. Given the high temperature requirement for most cones to open, it is possible that supplementary seeding, or planting of knobcone pine seedlings, would be necessary for mechanical removal of vegetation to be an effective management technique for knobcone pine forest (EcoSystems West Consulting Group 2008, p. 25).

Representative wildlife species include: California mountain kingsnake (*Lampropeltis zonata*), ensatina (*Ensatina escholtzii*), hairy woodpecker (*Picoides villosus*), western wood-pewee (*Contopus sordidulus*), brown creeper (*Certhia americana*), pygmy nuthatch (*Sitta pygmaea*), purple finch (*Carpodacus purpureus*), and western gray squirrel (*Sciurus griseus*).

Annual Grassland

The only area of California annual grassland mapped in the project area is adjacent to the development at the summit of Mt. Thayer. However, small patches of annual grassland may be present in the project vicinity and along the trail connections as understory vegetation or in areas of disturbed soils. California annual grasslands in the Sierra Azul Preserve are typically dominated by non-native, mostly annual grasses such as slender wild oat (*Avena barbata*), soft chess (Bromus *hordeaceus*), ripgut grass (*Bromus diandrus*), Italian rye grass (*Lolium multiflorum*), hare barley (*Hordeum murinum* ssp. *leporinum*), and six-weeks fescue (*Vulpia bromoides*). Native perennial grasses such as purple needlegrass (*Nassella pulchra*) and meadow barley (*Hordeum brachyantherum*) are often present, but no areas are dominated by native grasses.

In areas where serpentine soils are present, serpentine grassland may mix with California annual grassland, although no areas were large enough to be mapped in the project vicinity. Serpentine grassland is characterized by having generally lower vegetation cover than is typical for most California annual grassland, and generally lower plant stature. The serpentine grasslands in the Sierra Azul Preserve are quite variable in species composition from place to place, but native grasses are typically among the dominant species. These include perennial species such as one-sided bluegrass (*Poa secunda* ssp. *secunda*), big squirreltail grass (*Elymus multisetus*), June grass (*Koeleria macrantha),* California melic grass (*Melica californica*), and purple needlegrass. A diverse and somewhat distinctive assemblage of native herb species is associated with these serpentine grasslands, including hayfield tarweed (*Hemizonia congesta* ssp. *luzulifolia*), Fremont's western rosinweed (*Calycadenia fremontii*), California plantain (*Plantago erecta*), flaxflowered linanthus (*Linanthus liniflorus*), and blue-eyed grass (*Sisyrinchium bellum*).

In general, grasslands support lower wildlife diversity than woodland and shrub dominated habitats do, but are invaluable to a number of grassland-dependent species (Mayer and Laudenslayer 1988, p. 118). A great diversity and abundance of insects rely on grasslands. Reptiles found in annual grasslands include northern alligator lizard (*Elgaria coerulea*) and common gopher snake (*Thamnophis sirtalis*). Birds that are common in this habitat include western meadowlark (*Sturnella neglecta*) and savannah sparrow (*Passerculus*

sandwichensis). Annual grassland also provides important foraging habitat for turkey vulture (*Cathartes aura*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), and red-tailed hawk (*Buteo jamaicensis*). Mammals known to use this habitat include California ground squirrel (*Spermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), and Botta's pocket gopher (*Thomomys bottae*).

Landslides, Cliffs and Rocky Outcrops

Throughout the Sierra Azul Open Space Preserve, rocky areas are present, consisting of landslides, cliffs, or outcrops. A typical small rock outcrop of serpentine boulders is shown in Exhibit 4.3-2. Due to the thin soil layer developed on the serpentine bedrock, a low moisture-holding capacity and a unique chemical composition, the serpentine areas support numerous endemic plant species. Fremont's western rosinweed, smooth lessingia (*Lessingia micradenia* var. *glabrata*), flax-flowered linanthus (*Linanthus liniflorus*), coast range false bindweed (*Calystegia collina* ssp. *collina*), and most beautiful jewel-flower (*Streptanthus albidus* ssp. *peramoenus*) are species that are entirely or largely restricted to serpentine substrate or are regionally uncommon.

SENSITIVE BIOLOGICAL RESOURCES

Sensitive biological resources evaluated as part of this analysis include special-status species and sensitive natural communities. The California Natural Diversity Database (CNDDB) was used as the primary source to identify previously reported occurrences of special-status species and sensitive natural communities in the project vicinity. The CNDDB is a statewide database, managed by the California Department of Fish and Game (DFG) that is continually updated with the location and condition of the state's rare and declining species and habitats. Although the CNDDB is the most current and reliable tool available for tracking occurrences of special-status species, it contains only those records that have been reported to DFG. The MROSD also maintains its own GIS database of sensitive species reported in the preserves. Occurrences of sensitive biological resources in the project vicinity documented in the CNDDB and the MROSD's GIS database are shown in Exhibit 4.3-3. A search of the California Native Plant Society's (CNPS's) online *Inventory of Rare and Endangered Plants* (CNPS 2011) was also conducted.

Special-Status Species

Special-status species are plants and animals in the following categories:

- Listed or proposed for listing as threatened or endangered under federal Endangered Species Act (ESA) or candidates for possible future listing;
- Listed or candidates for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA);
- Listed as Fully Protected under the California Fish and Game Code;
- Animals identified by DFG as species of special concern;
- Plants considered by DFG to be "rare, threatened or endangered in California" (California Rare Plant Ranks of 1A, presumed extinct in California; 1B, considered rare or endangered in California and elsewhere ; and 2, considered rare or endangered in California but more common elsewhere). Note, that while these ranking do not afford the same type of legal protection as ESA or CESA, the uniqueness of these species requires special consideration under CEQA;
- Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G); or
- Otherwise meets the definition of rare or endangered under CEQA §15380(b) and (d).

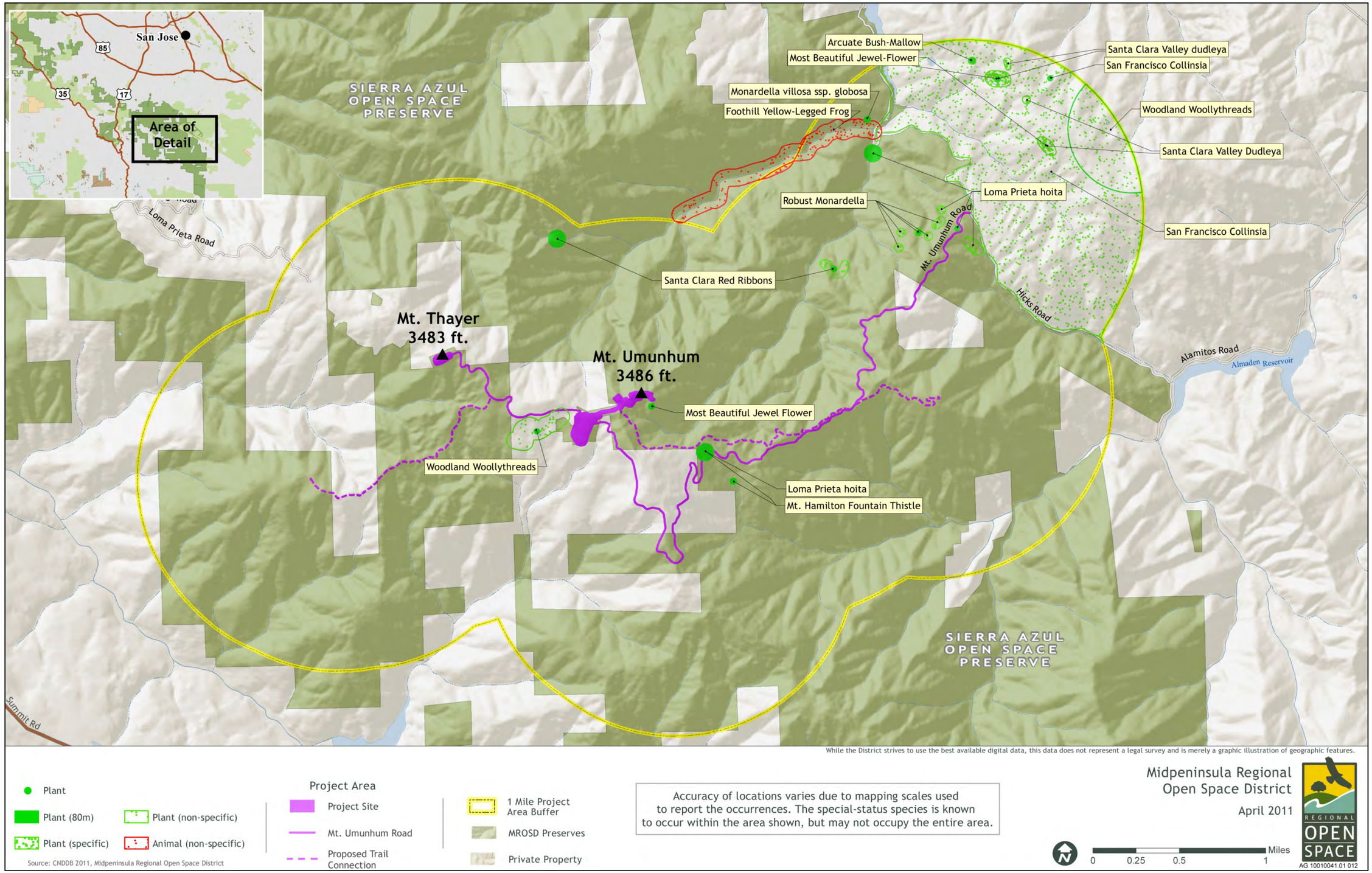


Exhibit 4.3-3 **CNDDB Records within 1 Mile of the Project Site**

Special-Status Plants

Searches of the CNDDB and CNPS online electronic inventory identified 54 special-status plant species that have been documented in the vicinity of the study area. Many of these species are not expected to occur in the study area due to a lack of suitable habitat, such as marshes, sand hills, or heavy clay soils (Appendix C). The remaining 25 species have potential to occur in the undeveloped portions of the study area, especially where trail connections may be provided in the future (Table 4.3-1). Surveys for special-status plants have been conducted around existing development at Mt. Umunhum and none were found (MROSD 2010). However, four special-status plants are known to occur near the summit and along Mt. Umunhum Road (see Exhibit 4.3-3) and are described in more detail below.

Table 4.3-1. Special-Status Plants With Potential to Occur in the Study Area

Species	Status[1]			Habitat	Blooming Period
	FESA	CESA	California Rare Plant Rank		
Amsinckia lunaris bent-flowered fiddleneck	–	–	1B.2	Cismontane woodland, grassland	March-June
Anomobryum julaceum slender silver moss	–	–	2.2	Broadleaf upland forest, lower montane coniferous forest	Not applicable
Arctostaphylos andersonii Anderson's manzanita	–	–	1B.2	Chaparral; openings in and edges of broadleaf upland forest and coniferous forest	November-April
Balsamorhiza macrolepis var. *macrolepis* big-scale balsamroot	–	–	1B.2	Chaparral, cismontane woodland, grassland	March-June
Calyptridium parryi var. *hesseae* Santa Cruz Mountains pussypaws	–	–	1B.1	Chaparral, cismontane woodland	May-July
Ceanothus ferrisiae Coyote ceanothus	E	–	1B.1	Serpentine soil, chaparral, coastal scrub, grassland, cismontane woodland	January-March
Cirsium fontinale var. *campylon* Mt. Hamilton fountain thistle	–	–	1B.2	Seeps, moist places in serpentine soil, chaparral, cismontane woodland, grassland (*Observed in the project area)*	April-October
Collinsia multicolor San Francisco collinsia	–	–	1B.2	Closed-cone coniferous forest, coastal scrub, broad-leafed upland forest	March-May
Didymodon norrisii Norris' beard moss	–	–	2.2	Cismontane woodland, lower montane coniferous forest	Not applicable
Dirca occidentalis western leatherwood	–	–	1B.2	Moist places, broad-leafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland, coastal scrub	January-March
Dudleya abramsii ssp. setchellii Santa Clara Valley dudleya	E	–	1B.1	Rocky areas in serpentine soil, cismontane woodland, grassland	April-July
Erysimum teretifolium Santa Cruz wallflower	E	E	1B.1	Lower montane coniferous forest, chaparral	March - July
Hoita strobilina Loma Prieta hoita	–	–	1B.1	Moist sites in chaparral, cismontane woodland, riparian woodland, usually serpentine soil (*Observed in the project area)*	May-October

Table 4.3-1. Special-Status Plants With Potential to Occur in the Study Area

Species	Status[1]			Habitat	Blooming Period
	FESA	CESA	California Rare Plant Rank		
Horkelia cuneata ssp. *sericea* Kellogg's horkelia	–	–	1B.1	Closed-cone coniferous forest, coastal scrub, chaparral	
Lessingia micradenia var. *glabrata* smooth lessingia	–	–	1B.2	Serpentine soil, chaparral, often disturbed areas	July-November
Malacothamnus arcuatus arcuate bush-mallow	–	–	1B.2	Chaparral, cismontane woodland	April-September
Malacothamnus hallii Hall's bush-mallow	–	–	1B.2	Chaparral, Diablan sage scrub	May-September
Monardella villosa ssp. globosa robust monardella	–	–	1B.2	Grassland, openings in broadleaf upland forest, chaparral, cismontane woodland, coastal scrub	June-July
Monolopia gracilens woodland woolythreads	–	–	1B.2	Openings on serpentine soils in broadleaf forest, chaparral, cismontane woodland, coniferous forest, and grassland	March-July
Piperia candida white-flowered rein orchid	–	–	1B.2	Broadleaf upland forest, lower montane coniferous forest, northcoast coniferous forest	May-September
Plagiobothrys chorisianus var. chorisianus Choris' popcorn-flower	–	–	1B.2	Moist places in chaparral, coastal prairie, coastal scrub	March-June
Rosa pinetorum pine rose	–	–	1B.2	Closed cone coniferous forest	May-July
Senecio aphanactis chaparral ragwort	–	–	2.2	Alkaline soil, chaparral, cismontane woodland, coastal scrub, grassland	January-April
Silene verecunda ssp. *verecunda* San Francisco campion	–	–	1B.2	Coastal bluff scrub, chaparral, coastal prairie, coastal scrub, grassland, in sandy or rocky soil	March-June
Streptanthus albidus ssp. *peramoenus* most beautiful jewel-flower	–	–	1B.2	Serpentine soil, chaparral, cismontane woodland, grassland (*Observed in the project area)*	April-June

[1] Status definitions:
Federal Endangered Species Act (FESA):
E Endangered
California Endangered Species Act (CESA):
E Endangered
California Rare Plant Rank:
1B Considered rare or endangered in California and elsewhere (protected under CEQA, but not legally protected under ESA or CESA)
2 Considered rare or endangered in California but more common elsewhere (protected under CEQA, but not legally protected under ESA or CESA)
Extensions:
.1 Seriously endangered in California (>80% of occurrences are threatened and/or high degree and immediacy of threat)
.2 Fairly endangered in California (20 to 80% of occurrences are threatened)

Source: CNDDB 2011 and CNPS 2011.

Mt. Hamilton Fountain Thistle

Mt. Hamilton fountain thistle is considered fairly threatened in California and has a California Rare Plant Rank of 1B (it is also denoted with an extension, .2, meaning "fairly threatened in California"). It has no other federal or state status. Mt. Hamilton fountain thistle occurs mostly in Santa Clara County, where it is most abundant in the hills bordering the Santa Clara Valley on the east. This species occurs in seeps and other moist places on serpentine substrate in chaparral, cismontane woodland, and grassland. The CNDDB lists 40 known occurrences in Santa Clara, Alameda, and Stanislaus counties (CNDDB 2011). MROSD mapped two occurrences of Mt. Hamilton fountain thistle during surveys conducted in May 2010. One occurrence is within a serpentine seep adjacent to Mt. Umunhum Road and the other is within a swallow swale on serpentine substrate, south of the road toward the Herbert Creek drainage.

Loma Prieta Hoita

Loma Prieta hoita is considered seriously threatened in California and has a California Rare Plant Rank of 1B (an extension of ".1" is added, indicating the species is seriously endangered in California). It has no other federal or state status. Loma Prieta hoita occurs primarily in Santa Clara County, with CNDDB records indicating two disjunct occurrences east of San Francisco Bay in Alameda and Contra Costa counties (one based on an 1865 collection) and a possible Santa Cruz County occurrence (based on a nineteenth-century collection labeled "Santa Cruz"). In Santa Clara County, Loma Prieta hoita occurs mostly west of the Santa Clara Valley between Saratoga and Los Gatos, with two occurrences known in the hills immediately east of the valley. CNDDB records indicate approximately 26 previously known occurrences in Santa Clara County. Loma Prieta hoita grows in relatively moist or seasonally moist places, usually on serpentine substrate, in a variety of habitats, including chaparral, cismontane woodland, and riparian woodland (Ecosystems West 2008, CNDDB 2011). MROSD mapped one occurrence of Loma Prieta hoita in a serpentine seep adjacent to Mt. Umunhum Road during surveys conducted in May 2010.

Most Beautiful Jewelflower

Most beautiful jewelflower is considered fairly threatened in California and has a California Rare Plant Rank of 1B.2. It has no other federal or state status. Most beautiful jewel-flower occurs east and south of San Francisco Bay in Alameda, Contra Costa, and Santa Clara counties. Most beautiful jewel-flower is restricted to serpentine substrate and occurs in sparse serpentine grassland, on serpentine barrens, and in relatively sparsely vegetated areas in chaparral and cismontane woodland. The CNDDB has 86 records, of which 56 are in the San Francisco Bay area (Ecosystems West 2008, CNDDB 2011). MROSD mapped one occurrence of most beautiful jewelflower south of the Mt. Umunhum summit during surveys conducted in May 2010. This occurrence is outside of areas expected to be disturbed during site demolition, ecological restoration, or trail construction.

Woodland Woolythreads

Woodland woolythreads is considered fairly threatened in California and has a California Rare Plant Rank of 1B.2. It has no other federal or state status. Woodland woolythreads occurs in the bay area in Alameda, Contra Costa, San Mateo, and Santa Clara counties and extends south along the coast range to Santa Cruz, Monterey and San Luis Obispo counties. Woodland woolythreads is typically associated with serpentine grasslands and openings in chaparral, woodlands, and coniferous forest. The CNDDB has 45 records, of which 30 are in Santa Clara and Santa Cruz counties (CNDDB 2011). CNDDB estimates the location of one occurrence of woodland woolythreads approximately 0.75 miles west of Mt. Umunhum from a botanical collection in 1935. Blooming-period surveys conducted for this species by MROSD in 2011 failed to confirm this occurrence (Pers. comm. L. Bankosh). Known populations of woodland woolythreads were observed nearby, both near Almaden Reservoir and in the Loma Prieta area. Both populations occurred in open areas, one on thin soils on a steep slope, and another in an area that had recently burned. No such open areas currently occur in the vicinity of the 1935 Mt. Umunhum collection, which may have been associated with a wildfire that occurred around that time.

Special-Status Animals

Based on a review of the results of the CNDDB search, documented species ranges, review of relevant documents pertaining to biological resources, and conditions observed during the reconnaissance-level survey, a list of special-status wildlife species in the vicinity of the project site was compiled (Table 4.3-2). Eleven special-status animals have potential to occur in the study area and are described in more detail below.

Table 4.3-2. Special-Status Wildlife in vicinity of the Project Site

Species	Status[1]			Habitat	Potential for Occurrence[2]
	FESA	CESA	Other		
Invertebrates					
Smith's blue butterfly *Euphiotes enoptes smithi*	E	–	–	Sand dunes, coastal sage scrub, and ecotones between scrub and grassland habitats in association with larval food plants, *Eriogonum latifolium* and *Eriogonum parvifolium*	Unlikely to occur due to lack of suitable habitat including perennial buckwheat food plants (Entomological Consulting Services 2011, p. 8).
Bay checkerspot butterfly *Euphydryas editha bayensis*	T	–	–	Serpentine grassland containing oviposition and larval food plant *Plantago erecta*	Unlikely to occur due to lack of suitable habitat including larval food plants (Entomological Consulting Services 2011, p. 8). The study area does not contain designated critical habitat (USFWS 2008). The closest unit of critical habitat is approximately 5 miles to the east of Mt. Umunhum near Calero Reservoir.
Callippe silverspot butterfly *Speyeria callippe callippe*	E	–	–	Coastal grasslands containing larval food plant, *Viola pedunculata*	Unlikely to occur due to lack of suitable habitat and conditions to support larval food plant (Entomological Consulting Services 2011, p. 8).
Mt. Hermon june beetle *Polyphylla barbata*	E	–	–	Restricted to Zayante sandhills communities including ponderosa pine, chaparral, and sparsely-vegetated areas of grasses, forbs and shrub	Unlikely to occur due to absence of Zayante sands and sandhills vegetation (Entomological Consulting Services 2011, p. 8).
Zayante band-winged grasshopper *Trimerotropis infantalis*	E	–	–	Restricted Zayante sandy soils in barren or sparsely-vegetated, sunlit areas	Unlikely to occur due to absence of Zayante sands and sandhills vegetation (Entomological Consulting Services 2011, p. 8).

Table 4.3-2. Special-Status Wildlife in vicinity of the Project Site

Species	Status [1]			Habitat	Potential for Occurrence [2]
	FESA	CESA	Other		
Amphibians and Reptiles					
California red-legged frog *Rana draytonii*	T	–	CSC	Ponds or slow moving deep water with dense shrubby or emergent riparian vegetation, minimum 11-20 weeks of water for larval development, and upland refugia for aestivation.	Could occur in slow-moving streams near proposed trail connections, unlikely to occur at Mt. Umunhum and Mt. Thayer summits due to lack of suitable habitat The study area does not contain designated critical habitat (USFWS 2010). The closest units of critical habitat are approximately 15 miles northwest, west, and south of Mt. Umunhum.
California tiger salamander *Ambystoma californiense*	T	T	–	Vernal pools and seasonal wetlands with a minimum 10-week inundation period and surrounding uplands, primarily grasslands, with burrows and other below ground refugia (e.g., rock or soil crevices).	Unlikely to occur due to lack of grassland habitat in study area. The study area does not contain designated critical habitat (USFWS 2005). The closest unit of critical habitat is approximately 5 miles to the east of Mt. Umunhum near Calero Reservoir.
Coast horned lizard *Phrynosoma blainvillii*	–	–	CSC	Lowlands along sandy washes with scattered low bushes, open areas for sunning, patches of loose soil for burial, and abundant supply of ants and other insects.	Unlikely to occur. No suitable habitat in study area.
Foothill yellow-legged frog *Rana boylii*	–	–	CSC	Perennial streams with predominantly cobble, boulder, and gravel substrates.	Could occur in streams near proposed trail connections, unlikely to occur at Mt. Umunhum and Mt. Thayer summits due to lack of suitable habitat.
Western pond turtle *Actinemys marmorata*	–	–	CSC	Ponds, marshes, slow-moving streams, sloughs, and irrigation/drainage ditches; nests in nearby uplands with low, sparse vegetation.	Could occur in slow-moving streams near proposed trail connections, unlikely to occur at Mt. Umunhum and Mt. Thayer summits due to lack of suitable habitat.

Table 4.3-2. Special-Status Wildlife in vicinity of the Project Site

Species	Status [1]			Habitat	Potential for Occurrence [2]
	FESA	CESA	Other		
Birds					
Alameda song sparrow *Melospiza melodia pusillula* (year round)	–	–	CSC	Tidal salt marshes adjacent to San Francisco Bay	Unlikely to occur in the study area. *Pusillula* race is restricted to saline environments. *Gouldii* race is common in riparian and freshwater marsh habitats throughout Santa Clara County (Bousman 2007, p. 412).
Burrowing owl *Athene cunicularia* (breeding)	–	–	CSC	Nests and forages in grasslands, agricultural lands, open shrublands, and open woodlands with existing ground squirrel burrows or friable soils.	Unlikely to nest in the study area due to lack of suitable nesting and foraging habitat.
Golden eagle *Aquila chrysaetos*	–	–	FP BGEPA	Nests in large trees in open woodlands. Forages in large open areas of foothill woodlands and grassland habitats and occasionally croplands.	Could nest in study area. Known to nest in Santa Cruz mountains (Bousman 2007, p. 184), and Calero Reservior (CNDDB 2011).
Grasshopper sparrow *Ammodramus savannarum* (breeding)	–	–	CSC	Nests and forages in dense grasslands; favors a mix of native grasses, forbs, and scattered shrubs.	Unlikely to nest in study area. Study area lacks extensive areas of suitable grasslands for foraging and nesting.
Long-eared owl *Asio otus* (breeding)	–	–	CSC	Woodlands with nearby open meadows for foraging.	Unlikely to nest in study area due to lack of suitable breeding and foraging habitat.
Loggerhead shrike *Lanius ludovicianus* (breeding)	–	–	CSC	Forages and nests in grasslands, shrublands, and open woodlands.	Could nest in study area. Potentially suitable breeding and foraging habitat in woodland on south side of project site.
Northern harrier *Circus cyaneus* (breeding)	–	–	CSC	Nests and forages in grasslands, agricultural fields, and marshes.	Unlikely to nest in the study area due to lack of suitable breeding and foraging habitat.
Purple martin *Progne subis* (breeding)	–	–	CSC	Open riparian forests with large trees such as sycamores or snags with cavities for nesting	Known to nest in the study area. Nest with chicks observed in cavity in power pole at Mt. Umunhum summit in summer 2011.
Olive-sided flycatcher *Contopus cooperi* (breeding)	–	–	CSC	Montane forests dominated by Douglas fir, but also tan oak, live oak and madrone	Likely to nest in the study area. Breeds widely in Santa Cruz Mountains (Bousman 2007, p. 272)

Table 4.3-2. Special-Status Wildlife in vicinity of the Project Site

Species	Status [1]			Habitat	Potential for Occurrence [2]
	FESA	CESA	Other		
Tricolored blackbird *Agelaius tricolor* (breeding)	–	–	CSC	Forages in agricultural lands and grasslands; nests in marshes, riparian scrub, and other areas that support cattails or dense thickets of shrubs or herbs.	Unlikely to occur. No suitable foraging or breeding habitat in the study area.
Vaux's swift *Chaetura vauxi* (breeding)	–	–	CSC	Mature coniferous forests, with snags or cavities for nesting. Also in chimneys.	Unlikely to occur. All known breeding records in Santa Clara County are in residential chimneys (Bousman 2007, p. 244)
White-tailed kite *Elanus leucurus* (breeding)	–	–	FP	Forages in grasslands and agricultural fields; nests in riparian zones, oak woodlands, and isolated trees.	Could occur along proposed trail connections. Unlikely to occur at summits of Mt. Umunhum and Mt. Thayer as generally absent from highest elevations in Santa Cruz Mountains (Bousman 2007, p. 172).
Yellow-breasted chat	–	–	CSC	Well developed riparian habitats with cottonwoods, willows, and thick understory of brambles and brush	Unlikely to occur. No suitable breeding habitat in the study area.
Yellow warbler	–	–	CSC	Streams supporting willow, alder, and bigleaf maple with thick shrub understory	Likely to occur along proposed trail connections. Unlikely to occur at summits of Mt. Umunhum and Mt. Thayer. Relatively common breeder along Santa Cruz mountain foothill streams.
Mammals					
Pallid bat *Anthrozous pallidus*	–	–	CSC	Deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats. Roosts in rock crevices, oak hollows, bridges or buildings. Colonies are usually small and may contain 12 to 100 bats.	Could occur. Abandoned buildings may provide suitable roosting habitat.
Townsend's big-eared bat *Corynorhinus townsendii*	–	–	CSC	Typically roosts in caves; however, colonies of <100 individuals occasionally nest in buildings or bridges. Forages in all habitats except alpine and subalpine, though most commonly in moist forests and woodlands.	Known to occur. 3 individuals were detected in the radar tower in March 2011. Abandoned buildings may provide suitable roosting habitat.

Table 4.3-2. Special-Status Wildlife in vicinity of the Project Site

Species	Status [1]			Habitat	Potential for Occurrence [2]
	FESA	CESA	Other		
Western mastiff bat *Eumops perotis californicus*	–	–	CSC	Typically roosts in high cliffs and rock crevices in small colonies of <100 individuals. Forages in a variety of grassland, shrub and wooded habitats including riparian and urban areas, though most commonly in open, arid lands.	Could occur. Abandoned buildings may provide suitable roosting habitat.
Western red bat *Lasiurus blossevill*	–	–	CSC	Roosts primarily in tree foliage, especially in cottonwood, sycamore, and other riparian trees or orchards. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging, including grasslands, shrublands, and open woodlands.	Unlikely to occur. Study area does not contain substantial areas of riparian habitat with suitable roost trees.

[1] Status definitions:

Federal Endangered Species Act (FESA):

E Endangered

T Threatened

California Endangered Species Act (CESA):

E Endangered

Other:

CSC Considered California species of special concern by DFG (no formal protection other than CEQA consideration)

FP Fully protected (legally protected under Fish and Game Code)

BGEPA Legally protected under the Bald and Golden Eagle Protection Act

[2] Potential for Occurrence Definitions

Unlikely to occur: Species is unlikely to be present on the project site due to poor habitat quality, lack of suitable habitat features, or restricted current distribution of the species.

Could occur: Suitable habitat is available at the project site; however, there are little to no other indicators that the species might be present.

Likely to occur: Habitat conditions, behavior of the species, known occurrences in the project vicinity, or other factors indicate a relatively high likelihood that the species would occur at the project site.

Known to occur: The species, or evidence of its presence, was observed at the project site during reconnaissance surveys, or was reported by others.

Sources: Entomological Consulting Services 2011, CNDDB 2011, Bousman 2007

California Red-legged Frog, Foothill Yellow-legged Frog, and Western Pond Turtle

California red-legged frog is federally listed as threatened and a California species of special concern. Foothill yellow-legged frog and western pond turtle are California species of special concern. California red-legged frog requires still or slow-moving water with emergent vegetation and is often found in stock ponds or seasonal pools that dry during late summer and fall. Although breeding success increases in absence of predatory fish, California red-legged frogs can be found in stream habitats in areas where suitable pooling occurs. Western pond turtles are generally associated with permanent or near-permanent aquatic habitats, such as lakes, ponds, streams, freshwater marshes, and agricultural ditches. Foothill yellow-legged frog requires perennial stream habitats with rocky or cobble substrate. In the study area, no suitable aquatic habitat is present at the summits of Mt. Umunhum or Mt. Thayer, but the proposed trail connections could cross ephemeral or perennial streams that could provide suitable habitat. Stockponds or other isolated wetland features would be avoided during trail siting.

Golden Eagle, White-tailed Kite, and Other Raptors

Golden eagle and white-tailed kite are fully protected under the California Fish and Game Code. Golden eagle is also protected under the Golden and Bald Eagle Protection Act. Nests of all raptors (hawks and owls) are protected under Section 3503.5 of the California Fish and Game Code. White-tailed kites forage in grasslands and agricultural fields and nest in isolated trees or small woodland patches. The CNDDB contains one record of a golden eagle nest reported in 1989 in an electrical transmission tower approximately 1 mile northwest of Calero Reservoir Dam. The woodland plant communities in the study area contain suitable nesting trees for special-status and common raptors species.

Olive-sided Flycatcher, Purple Martin, Loggerhead Shrike, and Yellow Warbler

The olive-sided flycatcher, purple martin, loggerhead shrike, and yellow warbler are California species of special concern that could nest in the study area. In the Santa Cruz Mountains, olive-sided flycatchers typically nest in coniferous forests dominated by Douglas fir, but also tan oak, live oak, and madrone. Purple martins typically nest in tree cavities, but may also use artificial structures. In spring 2011, several purple martins were observed at the summit of Mt. Umunhum and a nest with chicks was identified in a cavity in a power pole. Loggerhead shrikes nest in shrubs and small trees in shrublands and open woodlands and typically forage in grasslands and agricultural fields. Yellow warblers are widespread in the Santa Cruz Mountains and breed along foothill streams supporting willow, white alder, and bigleaf maple, with a thick shrub understory. Nesting habitat for these species is likely to be found within the proposed trail connections in the study area.

Special-Status Bats

Three special-status bats, pallid bat, Townsend's big-eared bat, and western mastiff bat, which are California species of special concern, have potential to roost in the study area. In particular the abandoned buildings and other structures on Mt. Umunhum and Mt. Thayer could provide thermal and structural cover for bats use as day, wintering, or maternity roosts. As part of a separate remediation project, some of the exteriors of these buildings have been partially or completely removed, in some cases leaving only the structural framing. However, some buildings still may provide suitable thermal protection and cover, such as the operations and housing buildings and radar tower. Three Townsend's big-ear bats were detected in the radar tower during preconstruction surveys and mitigation for the remediation project in March 2011.

Sensitive Natural Communities

Sensitive natural communities are of limited distribution statewide or within a county or region that provides important habitat value to native species. Most types of wetlands and riparian communities are considered sensitive natural communities due to their limited distribution in California. In addition, sensitive natural communities include habitats that are subject to U.S. Army Corps of Engineers (USACE) jurisdiction under

Section 404 of the Clean Water Act (CWA), Section 1602 of the California Fish and Game Code, and the state's Porter-Cologne Water Quality Control Act, which protects waters of the state. Sensitive natural communities are of special concern because they have high potential to support special-status plant and animal species. Sensitive natural communities can also provide other important ecological functions, such as enhancing flood and erosion control and maintaining water quality.

In the study area, California bay-canyon live oak woodlands, riparian woodlands, and wetlands habitats are considered sensitive natural communities. Serpentine grassland is a sensitive natural community that is not mapped in the study area due to the scale of mapping unit, but may be present in small patches.

4.3.2 REGULATORY BACKGROUND

Biological and forest resources in California are protected and/or regulated by a variety of federal and state laws and policies. Key regulatory and conservation planning issues applicable to the proposed project are discussed below.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Federal Endangered Species Act

U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) regulate the taking of a species listed as threatened or endangered under the ESA. In general, persons subject to ESA (including private parties) are prohibited from "taking" endangered or threatened fish and wildlife species on private property, and from "taking" endangered or threatened plants in areas under Federal jurisdiction or in violation of state law. Under ESA, the definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." USFWS has also interpreted the definition of "harm" to include significant habitat modification that could result in take. If a proposed project would result in take of a Federally-listed species, either the project applicant must acquire an incidental-take permit, under Section 10(a) of ESA, or if a federal discretionary action is involved, the federal agency consults with USFWS under Section 7 of the ESA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act declares it is illegal to take bald eagles, including their parts, nests, or eggs unless authorized. "Take" is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. "Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment" (USFWS 2007, p. 31156). In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

Section 404 of the Clean Water Act

Section 404 of the Federal CWA requires a project applicant to obtain a permit before engaging in any activity that involves any discharge of dredged or fill material into waters of the United States, including wetlands. Fill material is material placed in waters of the United States where the material has the effect of replacing any portion of a water of the United States with dry land, or changing the bottom elevation of any portion of a water of the United States. Waters of the United States include navigable waters of the United States; interstate

waters; all other waters where the use, degradation, or destruction of the waters could affect interstate or foreign commerce; relatively permanent tributaries to any of these waters, and wetlands adjacent to these waters. Wetlands are defined as those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Potentially jurisdictional wetlands must meet three wetland delineation criteria: hydrophytic vegetation, hydric soil types, and wetland hydrology. Wetlands that meet the delineation criteria may be jurisdictional under Section 404 of CWA pending USACE verification.

Section 401 Water Quality Certification

Under Section 401 of the CWA, an applicant for a Section 404 permit must obtain a certificate from the appropriate state agency stating that the intended dredging or filling activity is consistent with the state's water quality standards and criteria. In California, authority to grant water quality certification is delegated by the State Water Resources Control Board to the nine Regional Water Quality Control Boards (RWQCB).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, provides for protection of international migratory birds and authorizes the Secretary of the Interior to regulate the taking of migratory birds. The MBTA provides that it shall be unlawful, except as permitted by regulations, to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird. The current list of species protected by the MBTA can be found in Title 50 of the Code of Federal Regulations (CFR), Section 10.13 (50 CFR 10.13). The list includes nearly all migratory birds native to the United States.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

California Endangered Species Act

The California Endangered Species Act (CESA) prohibits the taking of state-listed endangered or threatened species, as well as candidate species being considered for listing. Project proponents may obtain a Section 2081 incidental take permit if the impacts of the take are minimized and fully mitigated, and the take would not jeopardize the continued existence of the species. A "take" of a species, under CESA, is defined as an activity that would directly or indirectly kill an individual of a species. The CESA definition of take does not include "harm" or "harass" as is included in the federal act. As a result, the threshold for a take under CESA may be higher than under ESA.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act requires that each of the nine RWQCBs prepare and periodically update basin plans for water quality control. Each basin plan sets forth water quality standards for surface water and groundwater and actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Basin plans offer an opportunity to protect wetlands through the establishment of water quality objectives. The RWQCB's jurisdiction includes waters of the U.S. as well as areas that meet the definition of "waters of the state." Waters of the state is defined as any surface water or groundwater, including saline waters, within the boundaries of the state. The RWQCB has the discretion to take jurisdiction over areas not federally protected under Clean Water Act Section 404 provided they meet the definition of waters of the state. Mitigation requiring no net loss of wetlands functions and values of waters of the state is typically required by the RWQCB.

Section 1602 of the California Fish and Game Code

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by DFG under Sections 1600 et seq. of the California Fish and Game Code. Under Section 1602, it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by DFG, or use any material from the streambeds, without first notifying DFG of such activity and obtaining a final agreement authorizing such activity. "Stream" is defined as a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish or other aquatic life. DFG's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife.

Fully Protected Species

Protection of fully protected species is described in Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species and do not provide for authorization of incidental take. DFG has informed nonfederal agencies and private parties that their actions must avoid take of any fully protected species.

Protection for Bird Nests and Raptors

Section 3503 of the California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (e.g., hawks, owls, eagles, and falcons), including their nests or eggs. Section 3513 of the California Fish and Game Code codifies the federal Migratory Bird Treaty Act.

LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Road and Trail Typical Design Specifications

MROSD has developed Road and Trail Typical Design Specifications (MROSD 2008). These specifications include preserving existing vegetation outside of grading, limiting removal of trees greater than 6 inches diameter breast height (dbh), excavating only within the minimum required area , and adhering to practices that cause minimal disruption of natural drainage patterns. During project construction, erosion control measures are implemented to minimize storm water runoff from the construction site pursuant to applicable regulations and permits, including minimization of erosion and sedimentation during construction and elimination of pollution of storm runoff by chemicals and materials used in the construction process. All work is subject to inspection and approval by MROSD and a Certified Engineering Geologist where appropriate, in addition to inspections required by local jurisdictions and regulatory agencies.

MROSD Resource Management Policy

MROSD prepared a Resource Management Policy document to define the policies and practices used to protect and manage resources on District lands (MROSD 1994). The Resource Management Policies are intended as a tool to:

- Set the framework for the District's resource management program;
- Provide general direction for issue-specific and site-specific planning;
- Give staff and Board the basis for informed, consistent, and effective resource management decisions;

- Inform the public of the purpose and intentions of the District's resource management program;
- Provide a basis for evaluation of the District's progress in reaching its resource management objectives.

From MROSD's Basic Policy:

Objective 2: Open Space Management: The District follows management policies that ensure proper care of the land, that provide public access appropriate to the nature of the land, and that are consistent with ecological values and public safety.

The resource management mission of MROSD is to protect and restore the natural diversity and integrity of its resources for their value to the environment, and the public, and provide for the use of the preserves consistent with resource protection.

Specifically, the District will:

- Favor protection of resources when use significantly interferes with resource protection.
- Provide an effective interdisciplinary resource management program to protect and enhance natural and cultural resources. This program should include planning, interpretation, research, protective measures, maintenance, and monitoring practices.
- Prevent or minimize human-caused and accelerated impacts, including erosion, invasion by non-native species, disruption of the natural flow of water, degradation of water quality, trampling of vegetation, and displacement of wildlife.
- Protect and restore known rare, endangered, or special concern species and habitats, as well as seriously degraded or deteriorating areas. Give priority to endangered habitats and consider the relative scarcity of the specific resources involved.
- Manage open space as a composite resource, not separate and isolated parts. Maintain ecological processes as well as individual species and features. Consider the regional context and cumulative impacts of resource management decisions. Favor long-term goals over short-term benefits.
- Support recreational use of District lands, consistent with resource protection. Consider present and potential use.
- Balance efforts to protect and restore resources with efforts to acquire and provide public access to lands.
- Monitor changing conditions and the effectiveness of resource management practices.

4.3.3 IMPACTS AND MITIGATION MEASURES

This section describes the analysis of impacts to biological resources associated with the proposed project. It describes the methods used to determine the project's impacts and the thresholds of significance of those impacts. Mitigation to avoid or reduce significant impacts is provided following the discussion of the impact.

METHOD OF ANALYSIS

Potential impacts on biological resources resulting from project implementation were determined by evaluating the project plans in relation to the habitat characteristics of the project site, quantifying potential loss of common and sensitive habitats, and evaluating potential effects to common and special-status species that could result from this habitat loss.

THRESHOLDS OF SIGNIFICANCE

Criteria for determining the significance of impacts related to biological resources were based on the environmental checklist form in Appendix G of the State CEQA Guidelines and mandatory findings of significance.

Impacts on biological resources resulting from implementation of the proposed project would be considered significant if the project would:

- Substantially reduce the habitat of a fish or wildlife species;
- Cause a fish or wildlife species to drop below self-sustaining levels;
- Threaten to eliminate a plant or animal community;
- Substantially reduce the number or restrict the range of an endangered, rare, or threatened species;
- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the DFG or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by DFG or USFWS;
- Have a substantial adverse effect on federally-protected wetlands, as defined by Section 404 of the Clean Water Act, through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or,
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or State conservation plan.

PROJECT IMPACTS AND MITIGATION

Impact 4.3-1 **Loss of Bat Colonies During Building Demolition.** Implementation of the proposed project involves demolition of existing abandoned buildings and other structures. These buildings provide potential roost structures for common and special-status bats. Demolition, sealing, or other construction activities at these facilities could result in disturbance to active bat colonies that could affect the survival of young or adult bats. Loss of an active bat colony would be considered a **significant** impact**.**

Numerous vacant buildings on the project site could provide day roosts, maternity colony roosts, and/or hibernation roosts for several bat species. Common bats with potential to roost on the project site include Yuma myotis, free-tailed bat, California myotis, and big brown and little brown bats. Special-status bats that could roost on site include pallid, Townsend's big-eared, and western mastiff bat. Pallid bats have been documented in the project vicinity (CNDDB 2011).These species of bats are known to roost in abandoned or little-used structures in wall sections, behind fascia, in spaces between vaulted interior ceiling and roofing materials, and in similar enclosed spaces which provide thermal protection. Day roosts are used throughout the spring and summer and maternity colony roosts can be active from early April until mid-October. Demolition of buildings, sealing of openings or cracks, or other construction activities that cause noise, vibration, or physical

disturbance, could affect the survival of adult or young bats. It should be noted that preconstruction surveys for special status bats were recently conducted for several of the on-site structures prior to the structure abatement of hazardous materials currently taking place at the project site. Three Townsend's big-eared bats were identified by a bat expert and were relocated out of the construction area in March 2011 and were then returned after abatement was completed in that area. However, not all the structures identified for demolition were included in the abatement project, and it is possible that special status bats could inhabit the abated structures prior to demolition. Loss of an active bat colony resulting from demolition of structures would be considered a **significant** impact.

Mitigation Measure 4.3-1

Conduct Survey before Structure Demolition, Consult with DFG, and Develop Exclusion Methods and Compensatory Mitigation if Appropriate

Surveys for roosting bats on the project site will be conducted by a qualified biologist. Surveys will consist of a daytime pedestrian survey looking for evidence of bat use (e.g., guano) and/or an evening emergence survey to note the presence or absence of bats. The type of survey will depend on the condition of the buildings. If no bat roosts are found, then no further study is required. If evidence of bat use is observed, the number and species of bats using the roost will be determined. Bat detectors may be used to supplement survey efforts, but are not required.

If roosts of pallid, Townsend's big-eared, or western mastiff bats are determined to be present and must be removed, the bats will be excluded from the roosting site before the facility is removed. A program addressing compensation, exclusion methods, and roost removal procedures will be developed in consultation with DFG before implementation. Exclusion methods may include use of one-way doors at roost entrances (bats may leave but not reenter), or sealing roost entrances when the site can be confirmed to contain no bats. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young). The loss of each roost (if any) will be replaced in consultation with DFG and may include construction and installation of bat boxes suitable to the bat species and colony size excluded from the original roosting site. Roost replacement will be implemented before bats are excluded from the original roost sites. MROSD has successfully constructed bat boxes elsewhere that have subsequently been occupied by bats. Once the replacement roosts are constructed and it is confirmed that bats are not present in the original roost site, the structures may be removed or sealed.

Level of Significance after Mitigation

Implementation of this mitigation measure would reduce significant impacts to bat colonies to a **less-than-significant** level by surveying for bats prior to disturbance to potential roosting habitat, and minimizing impacts if they are present by providing alternative roost habitat and excluding the bats from the roost habitat to be removed.

Impact 4.3-2 **Loss of Special-status Species During Trail Construction, Road Improvements, or Other Ground-Disturbing Activities**. Implementation of the project could result in the degradation of habitat and loss of several special-status species, including rare plants, special-status amphibians and reptiles, and nesting birds. Special-status species are protected under ESA, CESA, California Fish and Game Code, CEQA or other regulations. Ground-disturbing activities related to the trail construction, road improvements, or other construction activities could result in a substantial adverse effect on these species. Therefore, the potential loss of special-status species is considered a **significant** impact**.**

Special-Status Plants

A total of 25 special-status plants have potential to occur in the study area (see Table 4.3-1). Natural habitat that could support special-status plants is extremely limited at the summit of Mt. Umunhum, where native vegetation was removed and soils were compacted as a result of the former use of the site by the Department of Defense. No special-status plants were found around the former Almaden Air Force Station during surveys for rare plants conducted by MROSD in 2010. Three special-status plants, Mt. Hamilton fountain thistle, Loma Prieta hoita, and most-beautiful jewelflower, are known to occur along Mt. Umunhum Road and near the summit of Mt. Umunhum (MROSD 2010), and an additional species, woodland woolythreads, historically occurred in the vicinity. Road improvements, such as resurfacing, installation of guard rails, and management of roadside drainages, in the vicinity of the populations of Loma Prieta hoita and Mt. Hamilton thistle could result in smothering, compaction of soils, or crushing of root systems which could affect the survival of these populations. In addition, construction of trail connections from Mt. Umunhum to other trail systems could result in removal of special-status plant occurrences if they are present in the trail alignment. This impact would be significant.

Special-Status Amphibians and Reptiles

No suitable habitat for California red-legged frog, foothill yellow-legged frog, or western pond turtle is present at the summit of Mt. Umunhum or immediately adjacent to Mt. Umunhum Road. Therefore it is unlikely that building demolition, environmental restoration of Mt. Umunhum, road improvements, parking lot expansion or other construction activities at the summit of Mt. Umunhum or along Mt. Umunhum Road would adversely affect special-status amphibians or reptiles. The project site is located at the top of its associated watersheds and is characterized by steep, rocky slopes and well-drained soils. The headwaters of Guadalupe, Rincon, and Herbert Creeks originate in or near the project area, however, these drainages are ephemeral or seasonal and do not have sufficient hydrology to support permanent aquatic or significant wetland habitat. The proposed trail connections from Mt. Umunhum to other existing trails are expected to follow ridgelines and would not cross any major riparian or wetland areas, which do not occur in the vicinity. If proposed trails cross seasonal or ephemeral drainages, the crossings would be at the headwaters of creeks where suitable aquatic habitat for special-status amphibians or reptiles is expected to be limited. Furthermore, MROSD trail construction specifications avoid impacts to wetland and aquatic habitat. However, because there is some potential for seasonal aquatic habitat to be present, construction of trail crossings could result in crushing of individuals. This impact would be significant.

Golden Eagle, White-tailed Kite, and Other Nesting Birds

Some tree removal will be required for building demolition and environmental restoration of Mt. Umunhum, especially where trees have been allowed to grow to maturity immediately adjacent to buildings, such as in the former housing area, and where their roots extend under building foundations. Specifically, the proposed

demolition and environmental and landform restoration would require the removal of approximately 410 trees (does not include trail connections). No more than 30 of these trees would be over 12 inches dbh. Ground-disturbing and other construction activities could result in disturbance to bird nests in adjacent trees. Trees at the former Almaden AFS provide suitable nesting habitat for white-tailed kite and common raptors such as red-tailed hawk, great horned owl, and America kestrel. Purple martin, loggerhead shrike and olive-sided flycatcher could also nest in this area. Golden eagles are not expected to nest at near the summit of Mt. Umunhum due to the fragmented and disturbed habitat; they could, however, nest in woodlands along the potential trail connections. MROSD trail construction specifications limit tree removal; on the contrary, trail layout is carefully designed to preserve and highlight large trees adjacent to trails. However, if the trail connection alignments would cross riparian woodland, yellow warbler nests could also be affected. If active raptor or songbird nests are present, project construction could disturb nesting birds. Disturbance to nesting birds could result in nest abandonment by the adults and mortality of chicks and eggs. This impact would be **significant**.

Mitigation Measure 4.3-2

a) Conduct Special-status Plant Surveys, Implement Avoidance and Mitigation Measures, or Provide Compensatory Mitigation.

Known populations of Loma Prieta hoita and Mt. Hamilton fountain thistle shall be protected during road improvements. As directed by a qualified biologist, the populations shall be fenced before construction with high-visibility fencing and an adequate buffer so that direct and indirect impacts would be minimized. Construction personnel shall be instructed to keep project activities out of the fenced areas. A qualified botanist shall periodically inspect the fencing to ensure that the fence is intact and the impacts to the populations are being avoided. Indirect impacts (i.e., changes in hydrology) shall be minimized by placing culverts away from any plant populations, if necessary.

MROSD shall utilize a qualified botanist to conduct protocol-level preconstruction special-status plant surveys for all potentially occurring species within the project footprint that has not previously been surveyed (e.g., trail connections, staging area expansion). Prior to ground-disturbance in potentially suitable habitat, surveys shall be conducted during the appropriate blooming period when they are most readily identifiable in accordance with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (DFG 2009) . If no special-status plants are found during focused surveys, the botanist shall document the findings in a letter report, and no further mitigation shall be required.

If special-status plant populations are found in the project footprint, MROSD shall determine if the population can be avoided by adjusting the trail alignment or project design. If the impact cannot be avoided, MROSD shall consult with DFG and USFWS, as appropriate depending on species status, to determine the appropriate measures to minimize direct and indirect impacts on any special-status plant population that could occur as a result of project implementation. Mitigation measures may include preserving and enhancing existing populations, creation of off-site populations on project mitigation sites through seed collection or transplantation, and/or restoring or creating suitable habitat in sufficient quantities to achieve no net loss of occupied habitat or individuals.

b) Avoid and Minimize Impacts to Special-Status Amphibians and Reptiles

Although the impact to special-status amphibians or reptiles is expected to be minimal due to a lack of suitable aquatic habitat along ridgelines and headwaters of creeks, MROSD shall implement the following measures to reduce impacts during construction of trail connections:

- *Construction of the trail across drainages and streams shall occur when the drainages are dry. Guidelines shall be implemented to protect water quality and prevent erosion, as outlined in MROSD's Road and Trail Typical Design Specifications (MROSD 2008).*

c) Avoid and Minimize Impacts to Golden Eagle, White-tailed Kite, and Other Nesting Birds

To minimize potential disturbance to nesting birds, project activities shall occur during the non-breeding season (September 16-February 14), unless it is not feasible to do so, in which case the following measures shall also be applied.

During trail construction, road improvements, and other activities, removal of trees greater than 6 inches dbh shall be limited to the greatest degree possible.

If construction activity is scheduled to occur during the nesting season (February 15 to September 15), MROSD shall utilize a qualified biologist to conduct preconstruction surveys and to identify active nests on and within 500 feet of the project site that could be affected by project construction. The surveys shall be conducted before the approval of grading and/or improvement plans (as applicable) and no less than 14 days and no more than 30 days before the beginning of construction in a particular area. If no nests are found, no further mitigation is required.

If active nests are found, impacts on nesting raptors and songbirds shall be avoided by establishment of appropriate buffers around the nests. No project activity shall commence within the buffer area until a qualified biologist confirms that any young have fledged or the nest is no longer active. A 500-foot buffer around raptor nests and 50-foot buffer around songbird nests are generally adequate to protect them from disturbance, but the size of the buffer may be adjusted by a qualified biologist in consultation with DFG depending on site specific conditions. For trail construction, use of non-power hand-tools may be permitted within the buffer area if the behavior of the nesting birds would not be altered as a result of the construction. Monitoring of the nest by a qualified biologist during and after construction activities will be required if the activity has potential to adversely affect the nest.

Level of Significance After Mitigation

Implementation of these mitigation measures would reduce significant impacts associated with the degradation of habitat for special-status species and potential loss of individuals to a **less-than-significant** level by surveying for special-status plants and minimizing impacts if they are present, avoiding direct impacts to special-status amphibians and reptiles during construction of trail crossings over watercourses, and minimizing potential for loss of active bird nests.

Impact 4.3-3 **Loss of Riparian Habitat or Other Sensitive Natural Communities and Fill of Waters of the U.S. During Trail Construction.** Although trails are expected be located along ridgelines where wetlands and riparian areas are less likely to occur, construction of new trails to connect with other existing trails could require crossing minor seeps or creeks. Trail construction could require removal of riparian and wetland vegetation and could result in the placement of fill material into waters of the U.S. This is considered a potentially **significant** impact.

The proposed trail connections from Mt. Umunhum to other existing trails are expected to follow ridgelines and are not expected to cross any major riparian or wetland areas. However, there are several named and unnamed creeks in the study area that could be within a proposed trail connection alignment. Construction of the trail connections could entail the installation of stream crossings and bridges across drainages. Although the trail alignments will be designed to avoid impacts to these resources to the maximum extent feasible, the bed and bank of existing drainages may be altered and riparian and wetland vegetation may be removed. Placement of trail material or bridge footings in the drainages would likely be subject to USACE jurisdiction under Section 404 of the CWA and could require Section 401 certification from RWQCB. In addition, the streams supporting riparian and wetland vegetation are regulated by DFG under Section 1600-1616 of the California Fish and Game Code, which provides for the protection of fish, wildlife, and native plant resources. Although this impact is expected to be minor because of the trail connections would be located along ridgelines where wetlands and riparian areas are not likely to occur, the trails have potential to cross seeps or drainages that may be considered sensitive habitats. Loss of riparian and wetland habitat is a potentially **significant** impact.

Mitigation Measure 4.3-3

Avoid and Minimize Impacts to Sensitive Natural Communities and Compensate for Loss of Riparian and Wetland Habitats

As a first priority, MROSD will seek to avoid wetlands impacts through trail realignment, bridging, and other avoidance measures.

Before any groundbreaking activity along the trail connections, MROSD shall have a jurisdictional wetland delineation conducted by a qualified wetland specialist in sensitive areas that cannot be avoided. The preliminary delineation shall be submitted to USACE for verification. The wetlands may be subject to DFG regulation under Section 1602 of the Fish and Game Code. No grading, fill, or other ground disturbing activities shall occur until all required permits, regulatory approvals, and permit conditions for effects on wetland habitats are secured.

If the wetlands are determined to be subject to USACE jurisdiction, the project may qualify for use of Nationwide Permit 42 for construction of recreational trails if certain criteria are met. For those wetlands that cannot be avoided, MROSD shall commit to replace, restore, or enhance on a "no net loss" basis (in accordance with USACE, RWQCB, and DFG) the acreage of all wetlands and other waters of the U.S. that would be removed, lost, and/or degraded with project implementation. Wetland habitat shall be restored, enhanced, and/or replaced at an acreage and location and by methods agreeable to USACE, RWQCB, and DFG, as appropriate, depending on agency jurisdiction, and as determined during the permitting processes.

Level of Significance After Mitigation

Significant impacts associated with loss of riparian habitat and fill of waters of the U.S. would be reduced to a **less-than-significant** level by providing replacement, restoration or enhancement habitat of equal or greater value.

Impact 4.3-4 **Effects of Increased Recreation on Native Species and Interference with Wildlife Movement.** Implementation of the proposed project would result in public access to wildlife habitats that previously have had limited human disturbance. Proposed trail connections would provide recreational opportunities for hikers, mountain bikers, and equestrians. These activities are unlikely to substantially adversely affect native wildlife or plant communities. The construction and use of trails are also not likely to substantially interfere with wildlife movement in the region. Therefore, this is considered a **less than significant** impact.

The proposed trail connections would be constructed in phases in the future to increase opportunities for public access and recreation on MROSD lands. The trail connections would link Mt. Umunhum to Bald Mountain to the east, and link Mt. Thayer towards the Lexington Basin through Ralph's Mountain to the west. These trails would be open to hiking, equestrian use, and mountain biking. Dogs would not be permitted. Recreational use of the trails in previously undisturbed areas may deter some wildlife species from using the area immediately adjacent to the trails, but the effect is not expected to be severe enough in magnitude to cause localized extinctions or restrict the range of native species.

A wildlife corridor connects fragmented habitats and, by doing so, helps to increase movement and gene flow between core habitat areas resulting in improved fitness for a species. The Sierra Azul region has been identified as an important linkage between the Santa Cruz Mountains on the west and the Diablo and Gabilan mountain ranges to the east and south (Elkhorn Slough Coastal Training Program 2007, p. 2). Researchers have found that habitat in this area is mostly intact and fairly available to large vertebrate migration. However, two linkages between the Santa Cruz Mountains and areas of the Diablo Range are of critical concern, especially with respect to the integrity of the mountain lion population in the Santa Cruz Mountains. The first linkage, between the Sierra Azul region and the northern Diablo Range, is across Coyote Valley in southern Santa Clara County. There is also a biotic connector between the Santa Cruz Mountains and the southern Diablo Range and Gabilan Range at Chittenden Gap, along highway 129. Both linkages are very important and in danger of being lost due to urbanization, development, and other land use changes. These two corridors represent the last remaining biotic connectors between the Santa Cruz Mountains and other mountain ranges in the region (Elkhorn Slough Coastal Training Program 2007, p.3).

Creation of trail connections from Mt. Umunhum to other existing trails is unlikely to substantially deter wildlife movement through the Sierra Azul region. The trail bed will be approximately 5 feet wide and would not present a substantial barrier to wildlife movement. While construction of trails would not likely create a wildlife barrier, some movement patterns may shift or change, as some species would avoid areas with trails and human scent, and other species may prefer to use the trails for easier access routes. However, these changes are expected to be minor and would not constitute a significant change in wildlife movement patterns.

MROSD implements measures on preserve lands to deter pest species, such as rats, raccoons, jays, and crows. Large populations of predatory pest species can reduce the number of other native species, including migratory birds. MROSD avoids concentrating recreational picnic sites in large areas that may become feeding stations for pest species. In addition, recreational users of District preserves are instructed to dispose of all garbage in proper locations, under a "pack it in, pack it out" approach.

The recreational use of trails would not have a substantial adverse effect on native species and is not expected substantially interfere with wildlife movement; therefore, impacts are less than significant.

Mitigation Measure 4.3-4

No mitigation measures necessary.

Impact 4.3-5	**Conflict with Local Policies, Ordinances or Approved Habitat Conservation Plan.** The proposed project would not cause a conflict with any local policies or ordinances. There are no habitat conservation plans or natural community conservation plans in the study area; therefore, the proposed project would not conflict with any such plans. There would be **no impact.**

The project site is within Santa Clara County and is therefore subject to County ordinances. Section C16 of the County Ordinance Code defines a "protected tree" as a tree with a trunk diameter of 12 inches or more at 4.5 feet above ground level in certain areas of the County. One of the areas identified includes parcels of 3 acres or fewer that are zoned "Hillsides." The project site is zoned Hillsides; however, none of the project site parcels are 3 acres or fewer. The project site is not located within any of the other areas identified for protected trees. And none of the trees on the project site meet the other criteria specified in Section C16 (i.e., a County-designated "heritage tree," a replacement tree, or a tree planted as part of a permit condition). Therefore, the proposed project would not conflict with the County's tree ordinance or any other local policies or ordinances.

A draft habitat plan for the Santa Clara Valley was released in December 2010. The Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) is a regional partnership between six local partners (the County of Santa Clara, Santa Clara Valley Transportation Authority, Santa Clara Valley Water District, and the Cities of San Jose, Gilroy and Morgan Hill) and two wildlife agencies (DFG and USFWS). The study area for the Santa Clara Valley HCP/NCCP abuts MROSD's Sierra Azul Open Space Preserve. The proposed project is not within the study area for the Santa Clara Valley HCP/NCCP. Because the proposed project would not conflict with any approved habitat conservation plans or natural community conservation plans, there would be **no impact**.

Mitigation Measure 4.3-5

No mitigation measures necessary.

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4.4 HYDROLOGY AND WATER QUALITY

This section describes the existing hydrology and drainage conditions at the project site and provides an analysis of the potential hydrology and water quality impacts associated with project implementation.

4.4.1 EXISTING SETTING

HYDROLOGY AND DRAINAGE

The project site is currently developed with a former military complex, which includes impervious surface areas such as parking lots, sidewalks, and structures (although for many of the structures the ongoing abatement project has left nothing but framing and foundation).

Mount Umunhum is located within the Guadalupe Creek Watershed Planning Area, which consists of the Guadalupe Creek, Alamitos, and Los Gatos watersheds. Portions of Mount Umunhum and Mount Thayer drain into each watershed as described below.

Los Gatos Creek Subwatershed

Los Gatos Creek Watershed is located at the southwestern edge of the Guadalupe Watershed Planning Area (Exhibit 4.4-1). The watershed originates at approximately 3,485 feet in the Santa Cruz Mountains. The creek joins Guadalupe River north of Interstate 280, near Alameda, an area near downtown San Jose. Similar to most watersheds in the Santa Clara Valley, the geography varies between the undeveloped, steep uplands (about 73 percent) and the developed urban valley floor. Approximately three-quarters of the Los Gatos Creek Watershed is non-urbanized (SCVWD 2011a).

Guadalupe Creek Watershed

The Guadalupe Creek watershed originates at approximately 3,500 feet on the eastern side of Mount Umunhum in the Santa Cruz Mountains and has a drainage area of about 15 square miles. The creek joins Guadalupe River just north of Almaden Lake. Guadalupe Creek is the principal drainage for the watershed (Exhibit 4.4-1). Geography in the watershed varies between the undeveloped mountains and the highly developed urban valley floor. Approximately 92 percent of the Guadalupe Creek Watershed is non-urbanized (SCVWD 2011b).

Alamitos Creek Watershed

The Alamitos Creek Watershed is located in the southeastern area of the Guadalupe Watershed Planning Area (Exhibit 4.4-1). The watershed drains to Almaden Reservoir located in the northern portion of the watershed and originates at the Sierra Azul portion of the Santa Cruz Mountains. Almaden Creek joins Guadalupe River just north of Almaden Lake. Approximately 82 percent of the Alamitos Creek Watershed is non-urbanized (SCVWD 2011c).

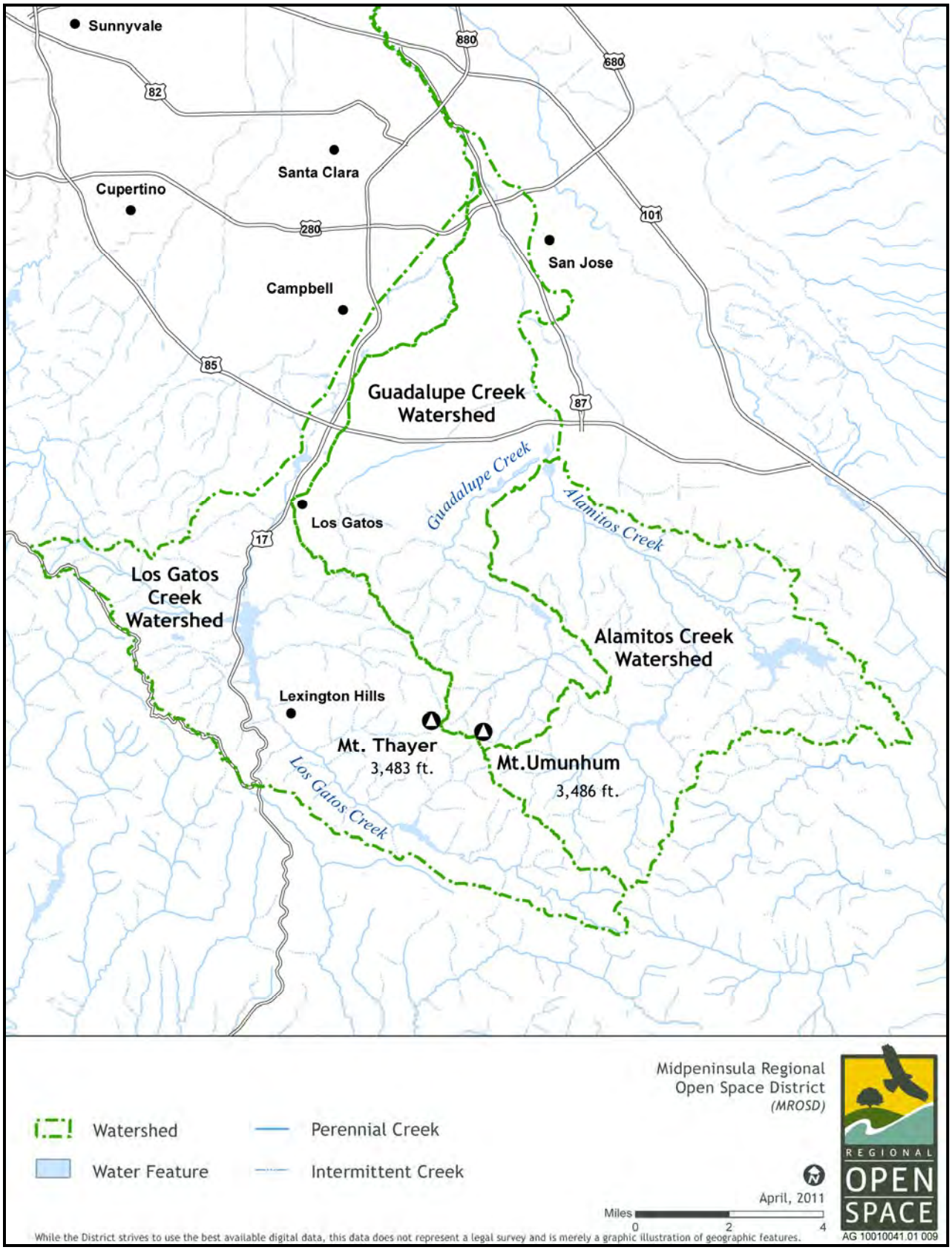

Exhibit 4.4-1 **Watersheds in the Project Area**

WATER QUALITY

Surface and groundwater quality within Santa Clara County is generally good. Waters within the County, including Guadalupe Creek, Los Gatos Creek, Almanitos Creek, have multiple beneficial uses including municipal, freshwater, groundwater, aquatic life, wildlife, and recreation(RWQCB 2010, Table 2-1).

Limited groundwater is available in fractures and joints of the sedimentary and intrusive rocks that make up the Diablo Range and Santa Cruz Mountains. Where groundwater is found, it is generally of good quality (Santa Clara County 1994, p. 5M-8).

4.4.2 REGULATORY SETTING

FEDERAL

Federal Emergency Management Agency

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. FEMA administers the NFIP to provide subsidized flood insurance to communities that comply with FEMA regulations to limit development in floodplains. FEMA also issues flood insurance rate maps (FIRMs) that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones in the community. FEMA has established a minimum level of flood protection for new development as the 1-in-100 Annual Exceedence Probability (AEP) (i.e., 100-year flood event). The project site and surrounding area are over 3,000 feet in elevation and are not located in a 100-year flood protection zone.

Clean Water Act

The U.S. Environmental Protection Agency (EPA) is the lead federal agency responsible for water quality management. The Clean Water Act (CWA) is the primary federal law that governs and authorizes water quality control activities by EPA as well as the states. Various elements of the CWA address water quality. These are discussed below.

Federal Antidegradation Policy

The federal antidegradation policy, established in 1968, is designed to protect existing uses and water quality and national water resources. The federal policy directs states to adopt a statewide policy that includes the following primary provisions:

- existing in-stream uses and the water quality necessary to protect those uses shall be maintained and protected;
- where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and
- where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

Water Quality Criteria/Standards

Pursuant to federal law, EPA has published water quality regulations under Title 40 of the CFR. Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the act, water quality standards consist of designated beneficial uses of the water body in question and criteria that protect the designated uses. Section 304(a) requires EPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. As described in the discussion of state regulations below, the SWRCB and its nine RWQCBs have designated authority in California to identify beneficial uses and adopt applicable water quality objectives.

National Toxics Rule and California Toxics Rule

In 1992, EPA issued the National Toxics Rule (NTR) (40 CFR 131.36) under the CWA to establish numeric criteria for priority toxic pollutants in 14 states and jurisdictions, including California, to protect human health and aquatic life. The NTR established water quality standards for 42 pollutants for which water quality criteria exist under CWA Section 304(a) but for which the respective states had not adopted adequate numeric criteria. EPA issued the California Toxics Rule (CTR) in May 2000. The CTR establishes numeric water quality criteria for 130 priority pollutants for which EPA has issued Section 304(a) numeric criteria that were not included in the NTR.

Section 404 of the Clean Water Act

In accordance with Section 404 of the CWA, the USACE regulates discharge of dredged or fill material into waters of the United States. Waters of the United States and their lateral limits are defined in Title 33, Part 328.3(a) of the Code of Federal Regulations to include navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Waters of the United States are often categorized as "jurisdictional wetlands" (i.e., wetlands over which the USACE exercises jurisdiction under Section 404) and "other waters of the United States" when habitat values and characteristics are being described. "Fill" is defined as any material that replaces any portion of a water of the United States with dry land or that changes the bottom elevation of any portion of a water of the United States. Any activity resulting in the placement of dredged or fill material within waters of the United States requires a permit from the Corps. In accordance with Section 401 of the Clean Water Act, projects that apply for a USACE permit for discharge of dredged or fill material must obtain water quality certification from the appropriate RWQCB indicating that the project will uphold state water quality standards. Wetland protection elements of the CWA administered by the USACE are further discussed in Section 4.3, "Biological Resources."

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program was established in the CWA to regulate municipal and industrial discharges to surface waters of the United States. NPDES permit regulations have been established for broad categories of discharges including point source municipal waste discharges and nonpoint source stormwater runoff. Each NPDES permit identifies limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. "Nonpoint source" pollution originates over a wide area rather than from a definable point. Nonpoint source pollution often enters receiving water in the form of surface runoff and

is not conveyed by way of pipelines or discrete conveyances. Two types of nonpoint source discharges are controlled by the NPDES program: discharges caused by general construction activities and the general quality of stormwater in municipal stormwater systems. The goal of the NPDES nonpoint source regulations is to improve the quality of stormwater discharged to receiving waters to the maximum extent practicable. The Regional Water Quality Control Boards (RWQCBs) in California are responsible for implementing the NPDES permit system (see the discussion of state regulations below).

Section 303(d) Impaired Waters List

Under Section 303(d) of the CWA, states are required to develop lists of water bodies that do not attain water quality objectives after implementation of required levels of treatment by point source dischargers (municipalities and industries). Section 303(d) requires that the state develop a total maximum daily load (TMDL) for each of the listed pollutants. The TMDL is the amount of the pollutant that the water body can receive and still be in compliance with water quality objectives. The TMDL is also a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. EPA must either approve a TMDL prepared by the state or disapprove the state's TMDL and issue its own. NPDES permit limits for listed pollutants must be consistent with the waste load allocation prescribed in the TMDL. After implementation of the TMDL, it is anticipated that the problems that led to placement of a given pollutant on the Section 303(d) list would be remediated. It should be noted that MROSD participates in a multi-agency monitoring program and is currently working with RWQCB on an erosion inventory associated with mercury TMDL in the Guadalupe River Watershed.

STATE

State Water Resources Control Board

In California, the SWRCB has broad authority over water quality control issues for the state. The SWRCB is responsible for developing statewide water quality policy and exercises the powers delegated to the state by the federal government under the CWA. Other state agencies with jurisdiction over water quality regulation in California include the California Department of Health Services (DHS) (for drinking water regulations), the California Department of Pesticide Regulation, the California Department of Fish and Game, and the Office of Environmental Health and Hazard Assessment. Regional authority for planning, permitting, and enforcement is delegated to the nine regional water boards. The regional boards are required to formulate and adopt water quality control plans for all areas in the region and establish water quality objectives in the plans. The San Francisco RWQCB is responsible for the water bodies in the project vicinity.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act) is California's statutory authority for the protection of water quality. The act sets forth the obligations of the SWRCB and RWQCBs under the CWA to adopt and periodically update water quality control plans, or basin plans. Basin plans are plans in which beneficial uses, water quality objectives, and implementation programs are established for each of the nine regions in California. The Porter-Cologne Act also requires waste dischargers to notify the RWQCBs of such activities by filing Reports of Waste Discharge and authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements, NPDES permits, Section 401 water quality certifications, or other approvals.

National Pollutant Discharge Elimination System Permits

The SWRCB and San Francisco RWQCB have required specific NPDES permits for a variety of activities that have potential to discharge pollutants to waters of the state and adversely affect water quality. To receive an NPDES permit a Notice of Intent to discharge must be submitted to the San Francisco RWQCB and design and operational Best Management Practices (BMPs) must be implemented to reduce the level of contaminated runoff. BMPs can include the development and implementation of regulatory measures (local authority of drainage facility design) various practices, including educational measures (workshops informing public of what impacts result when household chemicals are dumped into storm drains), regulatory measures (local authority of drainage facility design), public policy measures (label storm drain inlets as to impacts of dumping on receiving waters), and structural measures (filter strips, grass swales, and retention basins). All NPDES permits also have inspection, monitoring, and reporting requirements.

General Permit for Stormwater Discharges Associated with Construction Activity

The SWRCB adopted the statewide NPDES General Construction Permit in August 1999. The state requires that projects disturbing more than 1 acre of land during construction file a Notice of Intent with the RWQCB to be covered under this permit. Construction activities subject to the General Construction Permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce non-stormwater discharges to storm sewer systems and other waters. A Storm Water Pollution Prevention Plan (SWPPP) must be developed and implemented for each site covered by the permit. The SWPPP must include BMPs designed to prevent construction pollutants from contacting stormwater and keep products of erosion from moving off-site into receiving waters throughout the construction and life of the project; the BMPs must address source control and, if necessary, pollutant control.

General Order for Dewatering and Other Low-Threat Discharges to Surface Waters

Dewatering during construction is sometimes necessary to keep trenches or excavations free of standing water when improvements or foundations/footings are installed. Clean or relatively pollutant-free wastewater that poses little or no threat to water quality may be discharged directly to surface water under certain conditions. The Central Valley RWQCB has adopted a general NPDES permit, the General Order for Dewatering, for short-term discharges of small volumes of wastewater from certain construction-related activities. Discharges may be covered by the General Order for Dewatering provided either that they are 4 months or less in duration or that the average dry-weather discharge does not exceed 0.25 million gallons per day. Construction dewatering, well development water, pump/well testing, and miscellaneous dewatering/low-threat discharges are among the types of discharges that may be covered by the permit.

State Nondegradation Policy

In 1968, as required under the federal antidegradation policy described previously, the SWRCB adopted a nondegradation policy aimed at maintaining high quality for waters in California. The nondegradation policy states that the disposal of wastes into state waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of the state. The policy provides as follows:

> a. Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water.

b. Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters would be required to meet waste discharge requirements.

Safe Drinking Water Act

As mandated by the Safe Drinking Water Act (Public Law 93-523), passed in 1974, EPA regulates contaminants of concern to domestic water supply. Such contaminants are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by EPA primary and secondary Maximum Contaminant Levels (MCLs). MCLs and the process for setting these standards are reviewed triennially. Amendments to the Safe Drinking Water Act enacted in 1986 established an accelerated schedule for setting drinking water MCLs. EPA has delegated to the DHS the responsibility for California's drinking water program. DHS is accountable to EPA for program implementation and for adoption of standards and regulations that are at least as stringent as those developed by EPA. Title 22 of the California Administrative Code (Article 16, Section 64449) defines secondary drinking water standards, which are established primarily for reasons of consumer acceptance (i.e., taste) rather than for health issues.

LOCAL

Santa Clara County General Plan

The following policies from the Resource Conservation Element of the Santa Clara County General Plan are applicable to the proposed project:

C-RC 11: Water quality countywide should be maintained and improved where necessary to ensure the safety of water supply resources for the population and the preservation of important water environments and habitat areas.

C-RC 19: The strategies for maintaining and improving water quality on a countywide basis, in addition to ongoing point source regulation, should include:

a. effective non-point source pollution control;
b. restoration of wetlands, riparian areas, and other habitats which serve to improve Bay water quality; and
c. comprehensive Watershed Management Plans and "best management practices" (BMPs).

C-RC 20: Adequate safeguards for water resources and habitats should be developed and enforced to avoid or minimize water pollution of various kinds, including:

a. erosion and sedimentation;
b. organic matter and wastes;
c. pesticides and herbicides;
d. effluent from inadequately functioning septic systems;
e. effluent from municipal wastewater treatment plants;
f. chemicals used in industrial and commercial activities and processes;
g. industrial wastewater discharges;
h. hazardous wastes; and
i. non-point source pollution.

C-RC 21: Multi-jurisdictional, countywide programs and regulatory efforts to address water pollution problems should have the full support and participation of each jurisdiction within Santa Clara County, including cities, special districts, state and federal agencies, and County government.

C-RC 22: Countywide, compliance should be achieved with the requirements of the National Pollution Discharge Elimination System (NPDES) permit for discharges into S.F. Bay, and to that end, the Countywide Nonpoint Source Pollution Control Program should receive the full support and participation of each member jurisdiction.

4.4.3 IMPACTS AND MITIGATION MEASURES

METHOD OF ANALYSIS

Evaluation of potential hydrology and water quality impacts was based on a review of documents pertaining to the project site, including the Santa Clara County General Plan (1995-2010). The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects, based on the standards of significance presented in this section. In determining the level of significance, the analysis assumes that the proposed project would comply with relevant federal, state, and local ordinances and regulations.

THRESHOLDS OF SIGNIFICANCE

An impact is considered significant, as defined by the State CEQA Guidelines (Appendix G), if the proposed project would:

- violate any water quality standards or waste discharge requirements;
- substantially deplete groundwater supplies or interfere substantially with groundwater recharge, such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion, siltation, or flooding on- or off-site;
- create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- otherwise substantially degrade water quality;
- place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or FIRM or other flood hazard delineation map;
- place within a 100-year flood hazard area structures that would impede or redirect flood flows; or
- expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

ISSUES NOT DISCUSSED FURTHER

The project site including proposed trail alignments are not located in a 100-year flood protection zone as delineated by FEMA and are not located within a dam inundation area. Further, no new housing is proposed as part of this project. Therefore, impacts related to facilities located within a 100-year flood protection zone or hazards associated with flooding as a result of a levee or dam failure are not discussed further in this document. In addition, no groundwater pumping is proposed and development of impervious surfaces (e.g., concrete pads,

buildings) would occur in areas that are currently developed and impervious. Therefore, the project would not increase the total impervious areas and would not substantially deplete groundwater supplies or interfere with groundwater recharge at the site. Thus, these issues are not discussed further.

IMPACTS AND MITIGATION MEASURES

Impact 4.4-1	**Potential Short-Term Construction-Related Soil Erosion and Water Quality Impairment.** Project construction activities (e.g., excavation, grading) could generate sediment, erosion, and other nonpoint source pollutants in on-site stormwater, which could drain to off-site areas. On-site earthmoving and soil stockpiling activities could result in sheet erosion during rain events. This would be a **potentially significant** impact.

The proposed project would result in several ground-disturbing, construction-related activities. As described in Section 3 "Project Description," the MROSD has prepared *Road and Trail Typical Design Specifications* (MROSD 2008). These specifications identify specific measures for the prevention of erosion and protection of water quality during trail construction. These measures would be incorporated into the project and include activities such as thoughtful design and construction of trails to provide adequate drainage to handle large storm events without eroding the trail surface or surround areas, limiting trail grades to less than 15% where possible; preserving as much existing vegetation as is feasible; and applying native mulch and straw rolls for erosion control in disturbed areas during construction. In addition to trails the proposed project includes several other construction activities including the demolition of existing structures associated with the former Almaden AFS, environmental and landform restoration at the summit of Mount Umunhum and Mount Thayer, construction of new campsites, construction of new trail connections and alignments, construction of a new staging area for vehicles, installation of recreational amenities (e.g., picnic tables, vault toilets, hitching and bicycle posts), and construction of an emergency vehicle turnaround. Grading, earthmoving, excavation, materials delivery, and building construction under the proposed project would disturb the existing vegetative cover, soil, and drainage systems. Construction activities, if not properly implemented could result in sedimentation and blockage of downstream drainage channels. Heavy equipment may reduce the infiltration capacity of site soils and increase the potential for runoff and erosion. Construction activities could also result in substantial stormwater discharges of suspended solids and other pollutants from the construction site. These pollutants could be carried to downstream waterways. Therefore, this would be a **potentially significant** impact.

Mitigation Measure 4.4-1

a. *Prior to earthmoving activities (e.g., grading, excavation, construction), MROSD will consult with the San Francisco Bay Basin RWQCB to acquire the appropriate regulatory approvals that may be required to obtain Section 401 water quality certification, SWRCB statewide NPDES stormwater permit for general construction activities, and any other necessary site-specific waste discharge requirements. No grading or other soil disturbance will occur until the appropriate regulatory approvals and permits have been issued.*

b. *Prior to any earthmoving activities, as required under the NPDES stormwater permit for general construction activity, MROSD will prepare and submit the appropriate Notice of Intent and prepare the SWPPP and other necessary engineering plans and specifications for pollution prevention and control. The SWPPP will identify and specify the use of erosion sediment control BMPs, means of waste disposal, nonstormwater management controls, permanent post-construction BMPs, and inspection and maintenance responsibilities. The SWPPP will also specify the pollutants that are likely to be used during construction and that could be present in stormwater drainage and nonstormwater discharges.*

c. *Construction techniques will be identified that would reduce the potential runoff, and the SWPPP will identify the erosion and sedimentation control measure to be implemented. BMPs designed to reduce erosion of exposed soil may include, but are not limited to:*

   - *Use temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils;*
   - *Store materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water;*
   - *Water exposed areas for dust control;*
   - *Minimize off-site sediment transport on vehicles using techniques such as gravel driving surfaces to knock soil off tires at exit points ; and*
   - *Use barriers, such as perimeter silt fencing, to minimize the amount of uncontrolled runoff that could enter drains or surface waters.*

d. *The SWPPP will also specify spill prevention and contingency measures, identify types of materials used for equipment operation, and identify measures to prevent or clean up spills of hazardous materials used for equipment operation. Emergency procedures for responding to spills will also be identified. The SWPPP will identify personnel training requirements and procedures that would be used to ensure that workers are aware of permit requirements and proper installation and performance inspection methods for BMPs specified in the SWPPP. The SWPPP will also identify the appropriate personnel responsible for supervisory duties related to implementation of the SWPPP. All construction contractors will be required to retain a copy of the approved SWPPP on the construction site.*

Level of Significance after Mitigation

With implementation of the above mitigation, the project's construction-related water quality and erosion impacts would be reduced to a **less-than-significant** level because sufficient measures would be in place to prevent the release of pollutants in stormwater off-site and would substantially minimize erosion of on-site soils consistent with regulatory requirements.

Impact 4.4-2	**Stormwater Impacts.** Although the proposed project includes development of some impervious surfaces (i.e., paved accessible trails and seating areas), the proposed project would remove existing structures and several parking lots resulting in a substantial overall decrease in impervious surface on the project site. Furthermore, the proposed project includes environmental and landform restoration, which would improve water quality both in previously paved areas and currently unpaved areas. Therefore, the project would not result in the substantial erosion, siltation, or flooding of on- or off-site areas. This would be a **less-than-significant** impact.

Implementation of the proposed project would result in the demolition of some or all buildings, restoration of hillside areas to natural, vegetated conditions, construction of trail connections, and establishment of camping areas in previously disturbed areas. All of these activities would not result in the increase in impervious surfaces at the project site. Overall, there would be a net decrease in impervious surfaces as result of the environmental restoration activities that would remove existing impervious surfaces. Further, the project would result in the recreation of long-buried natural drainage features (e.g., swales, channels) on-site and would restore existing drainage features (i.e., remove blockages within existing drainages along existing roadway alignments). Because net impervious surfaces on the site would decrease and new and restored drainages would be provided with

implementation of the project, the project would not result in the substantial erosion, siltation, or flooding of on- or off-site areas. This would be a **less-than-significant** impact.

Mitigation Measure 4.4-2

No mitigation measures necessary.

Impact 4.4-3	**Water Quality Impacts.** While most facilities and activities at the project site would not result in adverse water quality impacts, the project would result in vehicles parking in designated unpaved areas. Specific water quality protection measures have not been identified to prevent the discharge of pollutants in stormwater on- or off-site from these parking areas. Therefore, the project could result in **potentially significant** water quality impacts.

In general, implementation of the project would retain existing natural areas on-site and restore developed areas to natural, vegetated conditions. While trails would be constructed, they would only be accessible by pedestrians, horses, and mountain bikes (non-motorized). Dogs would not be permitted in the Mount Umunhum project area. However, some open space users riding horses may leave animal excrement on the trails. Public comments were received during the public scoping process that raised concerns that fecal contaminants and other bacteria associated with domestic animals could be washed into nearby drainages during storm events.

MROSD also posts "Equestrian Access Guidelines" at trail heads; these guidelines do not require removal of horse waste from trails. These guidelines do however indicate that each year, MROSD seasonally closes certain trails to equestrian use during wet conditions to prevent, among other things, damage to natural resources.(MROSD 2007) During the rainy season, use by equestrians, even on trails that are not seasonally closed, is expected to diminish substantially due to aversion to poor weather. Substantial amounts of horse waste would not typically occur on trails, especially during the off-peak (rainy) season. Also, because the trails would tend to follow ridgelines, where distinct drainage ways and creeks have not yet formed, most trail areas are not located adjacent to waterways. Any horse waste occurring on the trails would not likely be washed away quickly within a drainage or creek, but would generally be absorbed directly into the soil or dissolved via sheetflow and filtered by surrounding substrate/vegetation prior to entering distinct drainages or creeks. Furthermore, the nearest water reservoir is located over two miles from the nearest proposed trail alignment, and over this distance waste would be diluted, filtered, and dispersed by soil and vegetation. Therefore, no significant water quality impacts would occur.

However, the project would allow public vehicular access to the summit. While vehicles would be required to park in designated areas, specific water quality protection measures have not yet been identified in the project in these parking areas to prevent the discharge of pollutants in stormwater on- or off-site. Therefore, the project could result in **potentially significant** water quality impacts.

Mitigation Measure 4.4-3

MROSD will implement appropriate design measures to adequately trap and treat discharged pollutants in designated parking areas. These design measures could include, but are not limited to structural and non-structural BMPs including installation of oil and grit separators to capture potential contaminates that are discharged in parking areas, establishment of vegetation in drainages to achieve optimal balance of conveyance and water quality protection; and installation of vegetation filter strips.

Level of Significance after Mitigation

With implementation of this mitigation, adequate measures would be in place to protect water quality; therefore, this impact would be reduced to a **less-than-significant** level.

4.5 GEOLOGY AND SOILS

This section describes the existing geologic and soil conditions at the project site and provides an analysis of the potential geologic hazards and soils impacts associated with project implementation. This section is based largely on a Geologic Investigation prepared in March 2010 by Joyce Associates, Geologic Consultants.

4.5.1 EXISTING SETTING

GEOLOGY

Regional Geology

Mount Umunhum is located in the Santa Cruz Mountains along the west side of the Santa Clara Valley, east of Monterey Bay. This mountain range is one of numerous northwest-trending ridges and valleys that comprise the northern Coast Ranges of California. The region is underlain by a complex series of sedimentary and volcanic rocks ranging in age from Jurassic to Tertiary. Since their deposition, these rocks have been extensively deformed by repeated episodes of folding and faulting. Valleys within the region are generally filled with unconsolidated sedimentary deposits of Quaternary age. (Joyce Associates 2010, p. 2)

Project Site Geology

Published geologic maps show that Mount Umunhum lies in a geologically complex area composed of Mesozoic age sedimentary and igneous rocks. The area is cut by numerous faults, most of which are no longer active. The Spring Fault zone passes approximately 1,200 feet southeast of the former military complex. Additional fault zones, including the Sierra Azul fault zone, the Lime Kiln fault zone, and the Berrocal fault zone are present 4,200 feet south, 6,400 feet north, and 12,000 feet north of the site, respectively. (Joyce Associates 2010, p. 2)

The upper portion of Mount Umunhum is underlain by sandstone of Cretaceous age. Bedding attitudes in the project area dip to the southwest at moderately steep inclinations. Several faults are shown within the immediate vicinity of the former military complex. Several landslides are present on the slopes of Mount Umunhum and adjacent areas; however, no landslides are apparent in the immediate vicinity of the site. (Joyce Associates 2010, p. 2)

The project site does not occur in a liquefaction hazard area (Santa Clara County 2003) or a fault rupture hazard zone (Santa Clara County 2002)

Geologic Condition near the Radar Tower

The Radar Tower Building site is characterized by a generally level to gently sloping pad approximately 100 feet in width and 200 feet in length. The natural ridge crest trends in a northwest-southeast direction at the site; thus, cut slopes are present at the northwest and southeast edges of the pad. The pad is rimmed by steep, descending hillslopes on the remaining north, east and south sides. Most of the pad is covered with asphaltic concrete pavement. Construction of the pad involved the excavation of up to about 11 feet of rock, and placement of rocky fill along the southern and northeastern sides of the pad. The Radar Tower Building occupies the north-central portion of the pad.

Sandstone outcrops are located on the north-facing slope and limited exposures on the hillside below the southeast part of the site. The sandstone appeared similar to the fractured sandstone described on logs of

exploratory borings drilled for the building foundation design. The sandstone is characterized as stratified, fine- to coarse-grained, moderately hard, strong and closely to moderately fractured. Sandstone underlying the excavated pad is considered to be unweathered due to amount of removal associated with construction of the pad. Sandstone exposures on upper slopes rimming the pad are moderately weathered with structural joints spaced from several inches to several feet apart. (Rutherford & Chekene 2011, p. 24)

Slopes Immediately Adjacent to the Radar Tower Building

North Slope

The north slope of the site is characterized by a steep slope with two well-defined drainage ravines. Prior to excavation of the hilltop, the ravines extended further upslope (southerly) where they probably merged at a point that is now above the building pad. Site excavation resulted in removal of the heads of the ravines, and exposing new heads where they now lie within 15 feet of the building edge. The ravine to the northwest of the Radar Tower Building was partly covered with fill associated with site construction, and it remains similar in appearance on aerial photography for the past 50 years. The upslope edge of the northwest ravine is 11 feet from the northwest corner of the building. This ravine is heavily vegetated and shows no obvious signs of significant recent activity.

The ravine that is roughly centered along the north slope of the Radar Tower Building is unvegetated and contains fractured sandstone outcrops with signs of recent and continuing rock fall activity. The upslope edge of the central ravine is 13 feet from the north edge of the building. The general shape and unvegetated nature of the ravine is similar in appearance in aerial photography dated from 1963. The one earlier photograph set that was reviewed, dated 1958, precedes the building, but shows the site under construction. Fill generated from site construction activities appears to be pushed over the head of the ravine in the 1958 photography. Observations of the ravine during the site reconnaissance revealed the presence of fill and small patches of concrete patches that appear to have been poured or dumped over the edge of the slope.

The north slope ravine is characterized by fractured sandstone, including open fractures along steeply sloping joints, and recent rock fall debris. The fractures generally control small rock topples, which generate small amounts of rock fall blocks, typically on the order of less than one to several feet in size. Four major rock discontinuities in the exposures on the north side of the Radar Tower Building were observed and measured, including stratification (bedding) and three joint sets.. (Rutherford & Chekene 2011, p. 25)

Northeast Slope

The northeast slope is a steep, descending hillside overlain by relatively shallow fill that was placed or pushed over the edge of the pad. Shallow settlement of the fill has occurred at the northern edge of the fill about 18 feet northeast of the Radar Tower Building corner. Minor slumping was noted along the east edge of the pad by the U.S. Geological Survey following the 1989 earthquake (Rutherford & Chekene 2011). Consequently, the ground disturbance observed was probably caused by strong shaking from the 1989 earthquake. Further movement of the steep fill slope should be anticipated in the future, but it is not likely to impact the building pad, unless significant amount of rock is exposed or undermined.

South Slope at the Parking Lot

The south slope area is characterized by a large, broad, drainage swale. Fill associated with construction of the building pad has been placed over the upper slopes of the drainage swale, and a portion of the fill has been paved for parking. The edge of the pad is approximately 90 feet south of the southeast corner of the Radar Tower Building, and approximately 60 feet south of the southwest corner of the building. A ground fissure runs across the southern margin of the parking area and into the unpaved ground at both ends of the pavement for a continuous length of approximately 100 feet. The fissure is vegetated along the length in the paved area, and is

up to 1- foot wide and 8-inches vertical, with the south side of the fissure dropped down. The fissure trends northwest-southeast, and it is approximately 75 feet south of the southeast corner of the building and 32 feet south of the southwest corner of the building. The fissure likely represents the head of an incipient fill slope slump. The fissure is faintly visible in the 1990 aerial photography, indicating that it probably formed as a result of shaking from the 1989 earthquake. Minor slumping was noted along the south edge of the pad by the U.S. Geological Survey following the 1989 earthquake. There is a subdrain system in the south side fill, and leakage or damage to the subdrain system might also have contributed to the incipient earth movement. (Rutherford & Chekene 2011, p. 26)

4.5.2 REGULATORY SETTING

FEDERAL

Earthquake Hazards Reduction Act

In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes in the United States. To accomplish this, the act established the National Earthquake Hazards Reduction Program (NEHRP). This program was significantly amended in November 1990 by the NEHRPA by refining the description of agency responsibilities, program goals, and objectives.

The mission of NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and, accelerated application of research results. The NEHRPA designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology, National Science Foundation, and USGS.

STATE

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Act (Public Resources Code Sections 2621–2630) was passed in 1972 to mitigate the hazard of surface faulting to structures designed for human occupancy. The main purpose of the law is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones known as “Earthquake Fault Zones” around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and State agencies for their use in planning efforts. Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (Public Resources Code Sections 2690–2699.6), addresses earthquake hazards from nonsurface fault rupture, including liquefaction and seismically induced landslides. The act established a mapping program for areas that have the potential for liquefaction, landslide, strong ground shaking, or other earthquake and geologic hazards. The Act also specifies that the lead agency for a project may

withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

National Pollutant Discharge Elimination System Permit

In California, the State Water Resources Control Board (SWRCB) administers regulations promulgated by the U.S. Environmental Protection Agency (55 Code of Federal Regulations [CFR] 47990) requiring the permitting of stormwater-generated pollution under the National Pollutant Discharge Elimination System (NPDES). In turn, the SWRCB's jurisdiction is administered through nine regional water quality control boards. Under these federal regulations, an operator must obtain a General Permit through the NPDES Stormwater Program for all construction activities with ground disturbance of one acre or more. The General Permit requires the implementation of best management practices (BMPs) to reduce sedimentation into surface waters and control erosion. One element of compliance with the NPDES permit is preparation of a Storm Water Pollution Prevention Plan (SWPPP) that addresses control of water pollution, including sediment, in runoff during construction. (See Section 4.5, Hydrology and Water Quality, for more information about the NPDES and SWPPPs.)

California Building Standards Code

The State of California provides minimum standards for building design through the California Building Standards Code (California Code of Regulations, Title 24). Where no other building codes apply, Chapter 29 regulates excavation, foundations, and retaining walls. The California Building Standards Code (CBC) applies to building design and construction in the state and is based on the federal Uniform Building Code (UBC) used widely throughout the country (generally adopted on a state-by-state or district-by-district basis). The CBC has been modified for California conditions with more detailed and/or more stringent regulations.

The State earthquake protection law (California Health and Safety Code Section 19100 et seq.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. The CBC identifies seismic factors that must be considered in structural design.

Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, and Appendix Chapter A33 regulates grading activities, including drainage and erosion control and construction on unstable soils, such as expansive soils and areas subject to liquefaction.

4.5.3 IMPACTS AND MITIGATION MEASURES

METHOD OF ANALYSIS

Evaluation of potential geologic and soil impacts was based on a review of documents pertaining to the project site, including the Geologic Investigation prepared in March 2010 by Joyce Associates and the Santa Clara County General Plan. The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects, based on the standards of significance presented in this section. In determining the level of significance, the analysis assumes that the proposed project would comply with relevant federal, state, and local ordinances and regulations.

THRESHOLDS OF SIGNIFICANCE

An impact is considered significant, as defined by the State CEQA Guidelines (Appendix G), if the proposed project would:

- expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - the rupture of a known earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known active fault;
  - strong seismic ground shaking;
  - seismic-related ground failure, including liquefaction; or
  - landslides;
- result in substantial soil erosion or the loss of topsoil;
- be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landsliding, lateral spreading, subsidence, liquefaction, or collapse;
- be located on expansive soil, as defined in Table 18-1-B of the UBC, creating substantial risks to life or property;
- cause the disturbance or destruction of a unique paleontological resource or site or unique geologic feature; or
- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

ISSUES NOT DISCUSSED FURTHER

Several of the thresholds of significance identified above relate primarily to hazards resulting from development of structures in areas subject to certain geologic phenomena. For instance, hazards related to expansive soil would not generally affect people walking on such soils; however, expansive soils may affect improperly designed building foundations and can result in damage to structural integrity, which, in turn, could result in hazards to people inside such a structure. Aside from possible retention of the radar tower and development of a small visitor center, which would be designed consistent with California Building Code, the proposed project includes primarily removal of structures from the site and does not include development of new habitable structures ("habitable" meaning enclosed structures generally occupied for long periods of time by people, as opposed to small maintenance structures or open-air landscape structures, like pergolas or other shade structures). Impacts related to fault rupture, seismic ground shaking, expansive soils, subsidence, lateral spreading, liquefaction, and collapse are not typically substantial within public open space areas where people are generally outside and not exposed to hazards associated with collapsing structures. The analysis that follows analyzes potential geologic impacts related to the possible retention of the radar tower onsite; however, these types of geologic impacts will not be discussed further with respect to the proposed demolition, environmental restoration, and public access because no impact would occur. (Note that impacts related to the potential for landslides along proposed trail alignments is discussed further below.)

Because the proposed project would utilize vault toilets, which would be emptied by truck, and would not require any septic or other waste water disposal system, impacts related to the adequacy of project site soils that support such septic systems would not occur. This impact is also not discussed further.

IMPACTS AND MITIGATION MEASURES

Impact 4.5-1 **Risks to People and Structures from Seismic Hazards or Landslides.**

Option 1. Retain and seal entire structure

Option 1 for the radar tower is to retain the structure onsite. Although the tower would be sealed to prevent any public access, the tower is a massive concrete structure and could pose hazards to users of the open space area if the structural integrity is not appropriate to withstand geologic phenomena, such as earthquakes. Under the option for retaining the radar tower, the District is proposing several improvements recommended by a structural engineer to increase the radar tower's structural integrity. These improvements will bring the building to a collapse prevention level to allow visitors to safely access the radar tower site. There has been ground disturbance and deterioration to slopes adjoining the radar tower, but deterioration has been slow and there is no imminent danger to the building foundation; however, long-term deterioration of the slope could eventually pose a threat to the structure. This is considered a **potentially significant** impact.

Options 2 and 3 (Tower Removal Options)

The project includes primarily demolition of existing structures, environmental restoration, and development of open space facilities, including trail connections. The removal of the existing dilapidated structure would remove existing structural hazards from the project site by creating either an open-air structure or no structure. However, the potential for the slope south of the radar tower to slump could pose a danger to the public, even if the radar tower is removed. Therefore, implementation of tower Options 2 and 3 could result in a **potentially significant** impact.

The proposed open space facilities, including trail connections, would not generally result in impacts related to seismic hazards, since people using these facilities would generally be outside and would not be exposed to hazards from falling structures or compromised structural integrity. The proposed project would result in the demolition of existing structures associated with the former Almaden AFS. Although the former military base is currently closed to the public, the compromised structural integrity of many of these dilapidated structures may currently pose risk to trespassers illegally accessing the structures. Removal of all structures from the project site would reduce the existing level of risk associated with seismic hazards.

The District is currently considering three options for the existing radar tower: (1) retain and seal entire structure; (2) remove most of the structure but leave a publically accessible foundation; and (3) remove entire structure and environmentally restore the footprint. These three options are discussed below.

Option 1. Retain and seal entire structure

In September 2010, the District consulted with the County of Santa Clara structural senior plan check engineer to determine the structural requirements to retain the radar tower, whether for public occupancy or if it were sealed up. The County indicated that the building would need to be brought up to current "life safety" level if it were to be occupied or to a "collapse prevention" level if completely and permanently sealed. The County stressed that in order to make a thorough assessment of the existing structure, a structural engineer will need to evaluate the residual lateral capacity of the radar tower to determine whether there have been losses in structural strength from the 1989 Loma Prieta earthquake.

In 2011, Rutherford & Chekene performed a detailed structural lateral analysis of the radar tower and complete further geologic evaluation of the surrounding slopes, including consideration of the radar tower's as-built drawings and boring logs. The analysis indicated that to meet the collapse prevention level that would allow the public to safely access the base of the radar tower as proposed in Option 1 , the radar tower would require substantial repairs, including epoxy injection of all exterior wall cracks (injected from both interior and exterior of building), patching and repair all spalled areas, drilling in of additional dowels at severely cracked areas, and infill of openings on the east side, which sustained the greatest damage in the 1989 Loma Prieta Quake. All other openings require infill with concrete to meet the County's requirement to permanently seal the structure against public access. This additional sealing of the building openings would serve to further increase the lateral resisting capacity of the structure, bringing it close to "life-safety" level. These structural repairs would reduce seismic hazards to the public associated with retaining the radar tower under Option 1. It is also noted that the project site does not occur in a liquefaction hazard area (Santa Clara County 2003) or a fault rupture hazard zone (Santa Clara County 2002).

The slopes surrounding the radar tower were also evaluated, specifically with respect to any potential impact of slope deterioration on the building. The assessment determined that the north and northeast slopes have experienced and will continue to experience rock fall activity but the slope deterioration has been very slow and there is no imminent danger to the radar tower. The south slope, which is comprised of layers of fill deposited during the air force station construction activities at the summit, has experienced more recent slumping and has the potential to experience significant movement in the future. However, the south slope failure is considerably farther away from the radar tower, and poses no immediate threat to the structure. It could however, pose a risk to anyone standing on or near the edge of the south slope.

Until the radar tower is permanently sealed, a chain-link construction fence with no opening would surround the perimeter of the radar tower. Therefore, any structural failures would not pose safety risks to visitors of Mount Umunhum. In addition, part of the proposed project includes landform and environmental restoration, which would rehabilitate the faulty drainage and may result in greater slope stability and would likely preclude the mitigation measures recommended in the 2011 Rutherford and Chekene report. Further evaluation of the slopes after implementation of the proposed landform restoration would be necessary to determine specific slope stability measures necessary (if any). Potentially unstable slopes may continue to pose a threat for users walking or standing along the edges of the slopes. This is considered a **potentially significant** impact.

Mitigation Measure 4.5-1 (Radar Tower Option 1 Only)

Prior to completion of the proposed landform and environmental restoration, MROSD will utilize a qualified geotechnical engineer to conduct monitoring of the north and south slopes. If the qualified geotechnical engineer indicates that slope instability is jeopardizing the radar tower, then the MROSD will implement recommendations made by the geotechnical engineer including drainage rehabilitation and slope reinforcement (i.e. retaining walls). Implementation of these recommendations will ensure that slope subsidence does not occur that would affect the structural integrity of the tower. If the proposed landform and environmental restoration is completed prior to any actions recommended by the monitoring geotechnical engineer, MROSD will utilize a qualified geotechnical engineer to conduct a topographical survey based on the new contours. If the geotechnical engineer determines that additional slope stabilization measures are necessary (i.e. retaining wall) to ensure no risk of structural collapse, MROSD will implement these measures.

As part of the proposed project, construction safety fencing will be erected, prior to structural stabilization of the tower, at a distance equal to the height of the structure (in this case, a distance of 80 feet from the base of the tower) in order to allow public access to the area. Prior to implementation of the approved radar tower option and removal of the chain link fence from around the radar tower, MROSD will install permanent fencing along

edges of the steep slopes in the vicinity of the radar tower. The fencing will include materials consistent with a natural open space setting typical of fencing used in other MROSD preserves and open space facilities.

Level of Significance After Mitigation

Implementation of Mitigation Measure 4.5-1 (Radar Tower Option Only) would reduce the potential for future erosion and subsidence by conducting slope monitoring and ensuring that appropriate slope stabilization measures are implemented either as a result of the proposed landform and environmental restoration and/or by additional stabilization measures (i.e., retaining wall). Furthermore, installation of permanent fencing around steep slopes would reduce potential slope-instability-related impacts to open space users walking or standing near the edges of the slopes. This would reduce impacts associated with landslides to a **less-than-significant** level.

Options 2 and 3. Tower Removal Options

Although the partial or total removal of the structure would substantially reduce seismic- and slope-related impacts to structures, the instability of slopes near the radar tower could pose a safety threat to visitors walking or standing along those slopes. This is considered a **potentially significant** impact.

Mitigation Measure 4.5-1 (Radar Tower Option 2 and 3 Only)

Prior to implementation of the approved radar tower option and removal of the chain link fence from around the radar tower, MROSD will install permanent fencing along edges of the steep slopes in the vicinity of the radar tower. The fencing will include materials consistent with a natural open space setting typical of fencing used in other MROSD preserves and open space facilities.

Level of Significance After Mitigation

Installation of permanent fencing around steep slopes would reduce potential slope-instability-related impacts to open space users walking or standing near the edges of the slopes. This would reduce impacts associated with landslides to a **less-than-significant** level.

Impact 4.5-2	***Construction-Related Erosion Hazards.*** Demolition activities would expose soils currently overlain by impervious surfaces. The project would also involve grading and filling areas for environmental restoration and development of open space facilities. Exposed, non-vegetated soil on the site could result in localized erosion during project construction. This would be a **significant** impact.

Project construction activities would involve demolition of buildings on the site, which would result in exposure of soils that are currently overlain by buildings and other impervious surfaces associated with the former military base. In addition, the proposed project includes some grading, excavation, and movement of fill material on the site for environmental restoration and development of other open space facilities. These construction activities could expose on-site soils to wind and water erosion. Due to the high winds common to these mountain peaks, the erosion potential of the soils on the site is considered high. Although demolition activities, grading, excavation, and other soil movement would be conducted according to standard construction practices and building codes, construction activities associated with project implementation have the potential to create substantial localized erosion during wind and rain events. Therefore, this impact would be considered **significant**.

Mitigation Measure 4.5-2

MROSD will implement Mitigation Measure 4.4-1 included in Section 4.4, Hydrology and Water Quality of this Draft EIR, which requires consultation with the San Francisco Bay Basin RWQCB, preparation of a Stormwater Pollution Prevention Plan (SWPPP), and implementation of Best Management Practices (BMPs).

Level of Significance After Mitigation

Implementation of these mitigation measures would reduce significant impacts associated with construction-related erosion hazards to a **less-than-significant** level by ensuring that substantial soil erosion or loss of topsoil does not occur during project construction activities.

Impact 4.5-3	***Slope Stability Hazards.*** The proposed project primarily includes demolition of existing structures, environmental restoration, and development of open space facilities. The project is within an area of steep slopes, including future trail alignments. (See Impact 4.5-1 for a discussion of slope stability with respect to retaining the existing radar tower.) Trails along steep slopes, if not designed properly, could pose hazards to trail users, including potential rock slides or slope failure. However, development of trails and trail connections would follow District *Road and Trail Typical Design Specifications* (MROSD 2008). These design specifications include trail designs specific for steep slopes, which would reduce potential hazards, such as landslides or falling rocks, to trail users. This impact is **less than significant**.

Generally, slope stability hazards result from development of buildings or other structures on or near an unstable slope. Placement of structures on an unstable slope increases the potential for landslide, and also increases the risk that landslides will compromise a building's structural integrity, which can result in risk to human safety. As discussed in Impact 4.6-1 above, if the District chooses to retain the existing radar tower, the project will include drainage improvements and slope stability monitoring to ensure that structural integrity of the tower is not affected by future landslides.

However, although the proposed project does not include any development of structures on steep slopes, the project does include construction of trails and other publically accessed open space facilities, which may pass through areas in proximity to such slopes. In order to prevent hazards to trail users resulting from landslides, or other hazards resulting from trails on or near steep slopes, the District follows the *Road and Trial Typical Design Specifications* (MROSD 2008), which includes trail designs specific for areas with steep slopes (over 60%), such as full or partial bench cut designs, which provide more support from bedrock or native soil and rely less on sidecast fill to provide the trail surface. Combined with adequate drainage designed to handle large storm events, these designs decrease potential slope failure hazards. Consistency with the trail design standards would reduce potential hazards to trail users. The proposed project would result in a **less-than-significant** impact.

Mitigation Measure 4.5-3

No mitigation measures necessary.

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4.6 HAZARDS AND HAZARDOUS MATERIALS

This section addresses potential impacts related to hazardous materials and hazards associated with historic and current use of the project site and surrounding areas. The impacts of airborne toxics risks are discussed in Section 4.7, Air Quality, of this Draft EIR.

4.6.1 ENVIRONMENTAL SETTING

DEFINITIONS OF TERMS

For purposes of this section, the term "hazardous materials" refers to both hazardous substances and hazardous wastes. A "hazardous material" is defined in the Code of Federal Regulations (CFR) as "a substance or material that … is capable of posing an unreasonable risk to health, safety, and property when transported in commerce" (49 CFR 171.8). California Health and Safety Code Section 25501 defines a hazardous material as follows:

> "Hazardous material" means any material that, because of its quantity, concentration, or physical, or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

"Hazardous wastes" are defined in California Health and Safety Code Section 25141(b) as wastes that:

> … because of their quantity, concentration, or physical, chemical, or infectious characteristics, [may either] cause, or significantly contribute to an increase in mortality or an increase in serious illness [, or] pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

LAND USES AND ENVIRONMENTAL CONDITIONS ON THE PROJECT SITE

The project site consists of a complex of former military buildings and associated facilities (driveways, parking lots, storage buildings, etc.) The buildings have been abandoned for 30 years and, due to vandalism and extreme weather conditions, are severely dilapidated. The site has become overgrown with vegetation (including ornamental landscaping species), and interior roads, parking lots and infrastructure have deteriorated.

The U.S. Army Corps of Engineers (USACE) has been performing remediation activities at the project site. The project site was classified as part of the USACE's Formerly Used Defense Sites (FUDS) Program. Both in scope and funding, the FUDS Program was limited primarily to remediation of petroleum-related contamination. Clean-up of other materials, particularly lead-based paint and asbestos-containing materials used on buildings, fell outside the scope of the original federal cleanup program. The District has recently been working with community, state, and federal leaders to obtain federal funding to complete the cleanup, and federal funds were committed this past year (2010) toward clean up of remaining hazardous materials. The District approved the structure abatement project in August 2010, and completed the work in July 2011. This structure abatement remediated all hazardous building materials containing asbestos, lead, and PCBs from the existing structures on the site, as well as pieces of asbestos- and lead-containing chipped paint that have fallen onto the soil surface surrounding buildings.

In order to determine if soil remediation is required after completion of the structure abatement, a Soil Sampling and Analysis Report was prepared by Northgate Environmental Management in 2010 on behalf of MROSD. A screening-level soil quality survey was conducted to identify the possible presence of contaminants in surface/shallow soil near selected buildings and at the former sewage treatment ponds at the site. The analysis found that shallow soils at the perimeter of buildings did not appear to contain levels of lead from building exterior paints above Regional Water Quality Control Board (RWQCB) environmental screening levels (ESLs) for residential land use. Four soil samples contained measurable asbestos, but it is possible that the asbestos identified could be naturally occurring and associated with the ultramafic bedrock present in the vicinity, rather than associated with the asbestos contained in the building materials (Northgate Environmental Management 2010, p. 11). Note that in order to ensure soil tests analyzed only the soil , collection of soil samples avoided inclusion of surface-level paint chips and other debris present around many of the buildings, which were already determined likely to contain lead and asbestos per the findings of the Asbestos & Lead Based Paint Report (ATC Associates 1997). The paint chips and other debris were removed from the surface of the on-site soils as part of the structure abatement project. .

Pesticides, primarily chlordane, appeared to be widespread in surface and shallow soils around building perimeters and in the former sewage treatment ponds. Concentrations exceeding residential ESLs for chlordane were detected in seven samples. Concentrations exceeded commercial ESLs for chlordane in two samples from the former sewage treatment pond. Several other pesticides were detected at relatively low concentrations. Aldrin exceeded residential ESL in two samples and commercial ESL in one sample, all from the sewage treatment pond. No Total Petroleum Hydrocarbons (TPH), semi-volatile organic compounds (SVOCs), or heavy metals were identified as being present in shallow soil at the former sewage ponds or auto maintenance building at levels that would require mitigation before the property is restored (Northgate Environmental Management 2010, p. 12).

HAZARDS ASSOCIATED WITH MOSQUITOES

Mosquitoes are blood-sucking insects whose biting habits can create irritating and unpleasant conditions for outdoor activities. In addition, some types of mosquitoes have the ability to transmit organisms that cause diseases in humans. All species of mosquitoes require standing water to complete their growth cycle; therefore, any body of standing water represents a potential mosquito breeding area. A former sewage treatment area associated with the military base has been removed from the project site. There is an unmaintained swimming pool on the project site that will be removed as part of the project. There are no other water bodies or potential areas for water to pool on the project site.

FIRE PROTECTION AND EMERGENCY MEDICAL RESPONSE

Due to the vegetation type, relatively steep slopes, and high winds associated with the project site and the surrounding area, the project site is considered to have a high potential for fire risk.

Fire protection and emergency medical response services in the project area are provided by several entities through automatic aid and mutual aid agreements between the agencies. San Jose Fire provides primary fire response to the site. Other agencies that provide fire and basic emergency medical response services in the project area include the California Department of Forestry and Fire Protection (CAL FIRE) and Santa Clara County Fire Department.

MROSD currently manages the fire hazard in the Sierra Azul Open Space Preserve in a variety of ways with the over-arching goal to reduce fire hazard and minimize risk from wildfire.

- Fuels are managed around structures to bolster their survivability from wildfire.
- Access is enhanced through mowing, brush cutting and/or grading selected paths and roads, providing emergency vehicle access and staging for fire suppression activities. A fuelbreak is maintained on MROSD lands on lower Loma Prieta Road, and along "the Northern Fuelbreak," which are located about two miles east of the site. These fuelbreaks are maintained by CAL FIRE.
- District staff are currently active in the local Fire-Safe Council where fire hazard reduction projects are promoted and implemented on a regional scale.
- Smoking and open fires are prohibited in all district preserves; signs are installed informing visitors of fire safety prohibitions and regulations.

MROSD considers education and information as central to fire prevention. For example, all access points in MROSD preserves are signed indicating the appropriate fire danger. Signs with this information are also posted at all trailheads. During the fire season, the District also posts larger red Hazardous Fire Area/No Smoking/No Fire signs to remind the public of these requirements. Enforcement of fire prevention requirements (such as no smoking) is elevated during the fire season. (Rice 2011, p. 1)

Section 13. "Fire Prevention and Fire Operations" of MROSD's adopted Operations and Maintenance Manual (described in detail below under Regulatory Setting), include required maintenance-related fire prevention measures such as road maintenance, brush clearing, equipment maintenance, and defensible space maintenance.

MROSD requires staff and hired contractors to follow fire protection precautions when conducting maintenance and construction activities on the preserves when necessary based on fire weather conditions. Depending upon the work at hand, these include:

- Providing onsite fire extinguishers and/or water sources to suppress potential fires;
- Adherence to the No Smoking ordinance;
- Availability of ABC fire extinguishers on all vehicles in the work area;
- Awareness of emergency response numbers in the event of a fire;
- Mowing of dry grass where equipment will be staged and restricting parking on tall grass; and
- Limiting high risk activities during Red Flag Warning periods. (The National Weather Service issues Red Flag Warnings to alert fire departments of the onset, or possible onset, of critical weather and dry conditions that could lead to rapid or dramatic increases in wildfire activity.)

Other fire protection measures implemented by MROSD as common practice include: supplying water for fire protection and emergency landing zones where possible, minimizing land uses associated with high wildfire risk, formalizing mutual aid agreements with appropriate agencies, preparing site-specific fuel management plans for areas at risk, and following specific operations at trail heads and staging areas (including closure during high fire danger periods, appropriate signage, mowing and/or establishing fire resistant plants, periodic patrol, fencing, adequate gate width and road configuration.

4.6.2 REGULATORY SETTING

FEDERAL

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) is the agency primarily responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials. Applicable federal regulations pertaining to hazardous materials are contained mainly in CFR Titles 29, 40, and 49. Hazardous materials, as defined in the CFR (see "Definitions of Terms" above), are listed in 49 CFR 172.101. The Resource Conservation and Recovery Act of 1976 (RCRA) (42 U.S. Code [USC] 6901 et seq.) regulates the generation, transportation, and disposal of hazardous waste under the jurisdiction of EPA. RCRA also sets forth a framework for management of non-hazardous wastes. In 1992, the EPA granted enforcement authority of RCRA to the California Department of Toxic Substance Control (DTSC) (see below for further discussion).

Hazardous Substances

Hazardous substances are a subclass of hazardous materials. They are regulated under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act (SARA) (and the federal Clean Water Act for water resources). Under CERCLA, EPA has authority to seek the parties responsible for releases of hazardous substances and ensure their cooperation in site remediation. CERCLA also provides federal funding (the "Superfund") for remediation. SARA Title III, the Emergency Planning and Community Right-to-Know Act, requires companies to declare potential toxic hazards to ensure that local communities can plan for chemical emergencies. EPA maintains a National Priority List of uncontrolled or abandoned hazardous waste sites identified for priority remediation under the Superfund program. EPA also maintains the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database, which contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities across the nation.

Hazardous Wastes

Hazardous wastes, although included in the definition of hazardous materials and hazardous substances, are regulated separately under RCRA. A waste can legally be considered hazardous if it is classified as ignitable, corrosive, reactive, or toxic. Title 22, Section 66261.24 of the California Code of Regulations (CCR) (i.e., 22 CCR 66261.24) defines characteristics of toxicity. Under RCRA, EPA regulates hazardous waste from the time that the waste is generated until its final disposal ("cradle to grave"). RCRA also gives EPA or an authorized state the authority to conduct inspections to ensure that individual facilities are in compliance with regulations, and to pursue enforcement action if a violation is discovered. EPA can delegate its responsibility to a state if the state's regulations are at least as stringent as the federal ones. RCRA was updated in 1984 by the passage of the federal Hazardous and Solid Waste Amendments, which required phasing out land disposal of hazardous waste.

U.S. Department of Transportation

The U.S. Department of Transportation (DOT), in conjunction with EPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to transportation of hazardous materials. The Hazardous Materials Transportation Act of 1974 (49 USC 5101 et seq.) directs DOT to establish criteria and regulations regarding safe storage and transportation of hazardous materials. Hazardous materials regulations are contained in 49 CFR 171–180, and address transportation of hazardous materials, types of materials defined as hazardous, and the marking of vehicles transporting hazardous materials. In particular, 49 CFR 173, titled "Shippers' General Requirements for Shipments and Packagings," defines hazardous materials for transportation

purposes; within this portion of the code, 49 CFR 173.3 provides specific packaging requirements for shipment of hazardous materials, and 49 CFR 173.21 lists categories of materials and packages that are forbidden for shipping. 49 CFR 177, titled "Carriage by Public Highway," defines unacceptable hazardous materials shipments.

Occupational Health and Safety Administration

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor is responsible for enforcement and implementation of federal laws and regulations pertaining to worker health and safety.

STATE

California Environmental Protection Agency

The Department of Toxic Substances Control (DTSC), a division of Cal/EPA, has primary regulatory responsibility over hazardous materials in California, working in conjunction with the federal EPA to enforce and implement hazardous materials laws and regulations. DTSC can delegate enforcement responsibilities to local jurisdictions.

The hazardous waste management program enforced by DTSC was created by the Hazardous Waste Control Act (California Health and Safety Code Section 25100 et seq.), which is implemented by regulations described in CCR Title 26. The State program thus created is similar to, but more stringent than, the federal program under RCRA. The regulations list materials that may be hazardous and establish criteria for their identification, packaging, and disposal.

Environmental health standards for management of hazardous waste are contained in CCR Title 22, Division 4.5. In addition, as required by California Government Code Section 65962.5, DTSC maintains a Hazardous Waste and Substances Site List for the state, commonly called the Cortese List. The project site is not included on this list (DTSC 2006).

California's Secretary for Environmental Protection has established a unified hazardous waste and hazardous materials management regulatory program (Unified Program) as required by Senate Bill 1082 (1993). The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental programs:

- hazardous waste generator and hazardous waste on-site treatment programs;
- Underground Storage Tank program,
- hazardous materials release response plans and inventories;
- California Accidental Release Prevention Program (CalARPP);
- Aboveground Petroleum Storage Act requirements for spill prevention, control, and countermeasure plans; and
- California Uniform Fire Code (UFC) hazardous material management plans and inventories.

The six environmental programs within the Unified Program are implemented at the local level by local agencies—Certified Unified Program Agencies (CUPAs). CUPAs carry out the responsibilities previously handled by approximately 1,300 state and local agencies, providing a central permitting and regulatory agency for permits, reporting, and compliance enforcement (California Resources Agency 2003).

State Water Resources Control Board

The SWRCB has primary responsibility to protect water quality. The project site is located within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). As described in Section 4.4, Hydrology and Water Quality, the RWQCB is authorized by the Porter-Cologne Water Quality Control Act of 1969 to protect the waters of the state. The RWQCB provides oversight for sites where the quality of groundwater or surface waters is threatened.

California Department of Industrial Relations, Division of Occupational Health Administration

The California Department of Industrial Relations, Division of Occupational Safety and Health Administration (Cal/OSHA), assumes primary responsibility for developing and enforcing workplace safety regulations within the state. Cal/OSHA standards are more stringent than federal OSHA regulations, and are presented in CCR Title 8. Standards for workers dealing with hazardous materials include practices for all industries (General Industry Safety Orders); specific practices are described for construction, and hazardous waste operations and emergency response. Cal/OSHA conducts on-site evaluations and issues notices of violation to enforce necessary improvements to health and safety practices.

California Office of Emergency Services

The California Office of Emergency Services (OES) issued the State of California Multi-Hazard Mitigation Plan (Multi-Hazard Mitigation Plan) (California Office of Emergency Services 2004) in September 2004. The federal Disaster Mitigation Act required all state emergency services agencies to issue such plans by November 1, 2004, for the states to receive federal grant funds for disaster assistance and mitigation under the Stafford Act (44 CFR 201.4). The overall intent of the Multi-Hazard Mitigation Plan is to reduce or prevent injury and damage from natural hazards in California, such as earthquakes, wildfires, and flooding. The plan identifies past and present hazard mitigation activities, current policies and programs, and mitigation goals, objectives, and strategies for the future (California Office of Emergency Services 2004).

LOCAL

Santa Clara County Office of Emergency Preparedness

The Santa Clara County Office of Emergency Services (OES) implements the State's Right-to-Know Ordinance that gives the OES the authority to inventory hazardous materials used by businesses. The OES is responsible for the administration of the Santa Clara County emergency management program on a day-to-day basis and during disasters. The office is charged with providing the necessary planning, coordination, response support, and communications with all agencies affected by large-scale emergencies or disasters. OES works in a cooperative effort with other disciplines such as law enforcement, fire, emergency medical services, state and federal agencies, utilities, private industry and volunteer groups in order to provide a coordinated response to disasters. The Emergency Services Coordinator also manages the County Emergency Operations Center (EOC). In any disaster, the EOC becomes the single focal point for centralized management and coordination of emergency response and recovery operations during a disaster or emergency affecting the Santa Clara Operational Area. The EOC will be activated when an emergency situation occurs that exceeds local and/or in field capabilities to adequately respond to and mitigate the incident (Santa Clara County 2011a).

Association of Bay Area Governments Multi-Jurisdictional Multi-Hazard Mitigation Plan

The purpose of the Association of Bay Area Governments (ABAG) multi-jurisdictional Local Hazard Mitigation Plan (MJ-LHMP) for the San Francisco Bay Area is to maintain and enhance the disaster resistance of the region, but also fulfill the requirements of the Disaster Mitigation Act of 2000. The plan was prepared to meet the Disaster Mitigation Act of 2000 requirements in order to maintain Santa Clara County's eligibility for the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation (PDM) and Hazard Mitigation Grant Programs (HMGP).

Santa Clara County is vulnerable to several natural hazards that are identified, profiled, and analyzed in the plan. Earthquakes, wildfires, floods, and landslides are some of the hazards that can have a significant impact on the county.

The plan puts forth several mitigation goals and objectives that are based on the results of the risk assessment. To meet identified goals and objectives, the plan also includes specific recommendations for actions that can mitigate future disaster losses. The multi-jurisdictional plan includes the participating Counties of Alameda, Contra Costa, Marin, San Mateo, Santa Clara, Solano, and Sonoma; many incorporated Cities and special districts within each of those Counties. This plan has been formally adopted by each participating entity and is required to be updated a minimum of every five years (ABAG 2010).

Certified Unified Program Agency

The Unified Program is a consolidation of state environmental programs into one program under the authority of a Certified Unified Program Agency (CUPA). A CUPA can be a county, city or Joint Powers Authority (JPA). This program was established by amendments to the California Health and Safety Code made in SB 1082 in 1994.

The Hazardous Materials Program is part of the Hazardous Materials Compliance Division (HMCD) within Santa Clara County Department of Environmental Health. HMCD is the Certified Unified Program Agency (CUPA) for all areas of Santa Clara County other than the cities of Santa Clara, Gilroy, and Sunnyvale. HMCD provides comprehensive environmental regulatory compliance inspection services to protect human health and the environment. Additionally, program personnel perform plan reviews and inspections associated with the construction, upgrading, and closure of hazardous materials storage facilities and equipment (Santa Clara County 2011b).

Santa Clara County Fire and Life Safety Regulations

The Santa Clara County Code Division B7 Fire Protection identifies specific fire safety regulations that apply to new development and construction. These regulations define the standards for building setbacks, maintenance of defensible space, emergency access, premises identification and signage, emergency water supply, fire hydrant/fire valve requirements, and overall fire protection.

Santa Clara County General Plan

The Santa Clara County General Plan was adopted by the County Board of Supervisors in 1994. The Health and Safety Element within the County General Plan include the following policies and implementation measures relevant to hazardous material and human safety-related impacts within rural unincorporated Santa Clara County (Santa Clara County 1994):

R-HS 7: Areas of significant natural hazards, especially high or extreme fire hazard, shall be designated in the County's General Plan as Resource Conservation Areas, with generally low development densities in order to minimize public exposure to risks associated with natural hazards and limit unplanned public costs to maintain and repair public infrastructure.

R-HS 10: In all hazard areas, projects shall be designed and conditioned to avoid placement of structures and improvements where they would:

a. be directly jeopardized by hazards;

b. increase the hazard potential; and/or,

c. increase risks to neighboring properties.

R-HS 11: Proposals for General Plan amendments, zone changes, use permits, variances, building site approvals, and all land development applications subject to environmental assessment shall be reviewed for the presence of hazardous conditions, utilizing the best, most up-to-date information available. If a development proposal would require a major investment or addition to public infrastructure in areas subject to high hazards, objective estimates of the probable public costs of maintaining and repairing the infrastructure should be provided to decision-makers.

R-HS 12: Proposals shall be conditioned as necessary to conform with County General Plan policies on public safety. Projects which cannot be conditioned to avoid hazards shall be conditioned to reduce the risks associated with natural hazards to an acceptable level or shall be denied.

R-HS 13: Where needed to adequately assess the hazards of a proposal, the County shall require on-site investigations and analysis by certified professionals.

R-HS 22: Adequate access and water supplies for fire safety shall be required for all new development, including building sites, subdivisions, and clustered development.

R-HS 23: Areas for which inadequate access is a general concern, either due to lack of secondary access, dead-end roads of excessive length, and substandard road design or conditions, should be examined to determine if there are means by which to remedy the inadequacies. Such means may include:

a. specific local area circulation plans to establish alternative access;

b. specific roadway improvements to remedy hazardous situations, financed by those most benefited by the improvements; and

c. traffic routing and controls to discourage the use of such roads by non-residents.

R-HS 24: Dead-end roads shall not be extended unless in the judgment of the Fire Authority, such extensions will serve to reduce the risks from fire hazards in the affected area.

R-HS 27: The County should encourage the use of fire retardant building materials and landscaping not already required by County development and building codes when new development and rebuilding are proposed in areas of high or extreme fire hazard.

R-HS 28: Development projects shall be reviewed by the County Fire Marshall's Office for safety code compliance and should also be referred if necessary to the appropriate fire protection authority or district for further review and recommendations.

R-HS 33: For areas where it may be appropriate, fire protection agencies and districts should utilize controlled burns and other forms of vegetation management to reduce the buildup of vegetative matter and the potential fire hazard within an area.

R-HS 34: Public awareness of the prevalence and risks of natural hazards should be maintained and enhanced by activities and programs of the County, safety service providers, and through the educational system.

MROSD Operations and Maintenance Manual

Section 13. Fire Prevention and Fire Operations

MROSD's adopted Maintenance Operations Manual includes fire prevention and fire operations requirements for all District open space areas, including the following:

- Road and trail maintenance practices for proper fire prevention
  - Maintain roads and trails accessible for ranger vehicles (trucks, ATV's, motorcycles) to effectively patrol properties and minimize ignitions.
  - Maintain vegetation clearance in parking lots to minimize risk of ignition from a car or cigarette.
  - Install "No Fires" and "No Smoking" signs during fire season.
- Factors that can improve fire access during fire suppression activities
  - Remove brush to allow for clear access by fire suppression vehicles. Guidelines regarding brush removal are found in the District Details and Specifications Manual.
  - If a road is designated as a fire break, utilize the proper brush clearance standards.
  - Do not pile cut brush near the road or trail to prevent fuel build up where fire suppression activity might occur.
  - Fuel less than 1" diameter is considered small diameter fuel – as much as possible minimize the buildup of small diameter fuels near a road or trail by chipping the brush, dragging it further from the edge of the trail, or cutting it into small pieces that are low to the ground. It can also be disposed of on illegal trails or shortcut trails.
  - Maintain road surface width – 14' typical for fire apparatus access.
    - Maintain passing areas for vehicles
    - Depending on the terrain, visibility and recommendations of local fire jurisdictions; turnouts could be as frequent as every 1/10 mile and whenever possible not less than every 1/4 mile.
    - Passing area should allow 1-2 vehicles to pull to the shoulder allowing for other vehicles to pass.
    - Develop and maintain Staging Areas which are large fire safe areas designed to stage emergency response vehicles.
  - Sites that are identified as valuable fire suppression resources (such as hydrants, ponds, etc.) should be maintained so they are accessible for fire fighting apparatus.

- Equipment operation procedures to minimize risk of starting a fire in a wildland (Public Resources Code 4427):
  - Clear brush and have a shovel and water available when operating a stationary motor, welder, cutting torch, grinder or similar device in a brush or grass covered area.
  - For chainsaws or other portable gas-powered tools, must have a fire extinguisher or shovel within 25' of the operation.
  - A functioning spark arrester must be in place on all internal combustion engines.
  - See Safety Manual Chapter 1.7.00 regarding fire prevention requirements and Sections 1.6.5.4 to 1.6.5.8 regarding safe fueling of equipment.
  - Consider the weather conditions and fire danger of the area you are working in – low humidity, high winds, steep slopes, easily ignited fuels such as grass or high value items that could burn may all indicate that it is not appropriate to use power equipment in that location at that time.
- Defensible space clearance should be maintained around all structures. California Public Resources Code sections 4291-4299 define the required clearance. Publications from CAL FIRE, Firesafe, and other local agencies provide good information regarding clearance standards.
  - Typically, defensible space clearance will be considered a high priority task to be completed by June 1. Where possible, remove brush and lower tree limbs outside of nesting/breeding season, and mow grass in spring.
  - Tenants must be notified a minimum of 24 hours prior to performing work around structures.

4.6.3 Impacts and Mitigation Measures

Method of Analysis

This analysis considers the range and nature of foreseeable hazardous materials use, storage, and disposal resulting from the proposed project and identifies the primary ways that these hazardous materials could expose individuals or the environment to health and safety risks. Local and State agencies would be expected to continue to enforce applicable requirements to the extent that they do so now.

The following reports documenting potential hazardous conditions at the project site were reviewed for this analysis:

- Land use plans for the proposed project;
- Available literature, including documents published by city, county, State, and federal agencies;
- Applicable elements from the Santa Clara County General Plan; and,
- Soil Sampling and Analysis Report for Former Almaden Air Force Station at Mt. Umunhum (Northgate Environmental Management).
- Fire Hazard Analysis prepared by Wildland Resource Management, Inc.

The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects, based on the standards of significance presented in this section. In determining the level of significance, the analysis assumes that development in the project area would comply with relevant federal, State, and local ordinances and regulations.

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, a public health and hazards impact is considered significant if implementation of the proposed project would do any of the following:

- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment or through the routine transport, use, or disposal of hazardous materials;
- result in safety hazards to people residing or working in the project area;
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment;
- result in safety hazard to people residing or working in a project area located within an airport land use plan or within two miles of a public or private airport;
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or,
- expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands, or otherwise increase the risks of fire damage to these areas.

ISSUES NOT DISCUSSED FURTHER

No schools are located within one-quarter mile of the project site and the project is not located within an airport land use plan or within two miles of a public airport. As such, no safety hazards related to schools or public airports are anticipated. Also, the project is not anticipated to affect emergency response plans or emergency evacuation plans. These issue areas will not be evaluated further in this Draft EIR.

IMPACTS AND MITIGATION MEASURES

Impact 4.6-1	**Exposure to Existing Hazardous Materials.** Small quantities of asbestos were documented in the shallow soils around the existing structures. Pesticides were also identified above acceptable levels. Excavation and construction activities in the area could result in the exposure of construction workers and the general public to existing hazardous materials contamination. This impact is considered **significant.**

The soil sampling and analysis report (Northgate Environmental Management 2010) and Asbestos & Lead Based Paint Report (ATC Associates 1997) indicated that lead based paint and asbestos were present in shallow soils around the buildings. However, the report further indicates that although asbestos was identified in 5 of 15 soil samples taken from specific areas, the laboratory verbally noted that the asbestos appeared to be part of the rock fragments, rather than associated with paint chips. Furthermore, the structure abatement currently underway on the project site has removed the paint chips and debris, which is consistent with the mitigation recommended in Northgate's Sampling and Analysis to reduce potential impacts associated with asbestos. All sources of commercially-processed asbestos-containing material have been removed. Because naturally occurring asbestos (NOA) poses a potential hazard to human health only when its component fibers become

airborne, it is discussed below in Section 4.7, Air Quality, In addition, of 21 soil samples, 4 samples exhibited concentrations of lead slightly above naturally occurring levels (detected lead levels ranged from 31 to 62 milligrams per kilogram [mg/kg] compared to naturally-occurring concentrations of less than approximately 20 mg/Kg.). All concentrations of lead detected were below the residential RWQCB ESL of 260 mg/kg.

As described above in the environmental setting, pesticides, primarily chlordane, appeared to be widespread in surface and shallow soils around building perimeters and in the former sewage treatment ponds (Northgate 2010). Generally, concentrations appeared to be relatively low, but some of the detected concentrations, particularly in the samples collected from the former sewage ponds, exceeded RWQCB residential and commercial land-use screening levels. The Sampling and Analysis Report concluded that it is likely that pesticides could be detected in soils associated with other areas of the site, including the former sewage spray field, the former orchard area (in the southwest portion of the site), and former pesticide storage sheds.

The project includes grading and other earthwork. If this ground-related work occurs in areas with soils that have levels of pesticides above RWQCB ESLs, construction workers could be exposed to unacceptable levels of these contaminants. Furthermore, the proposed project includes opening the project site for public access. Exposure of the public to soils with these levels of pesticides could present a potential substantial adverse effect. This potential impact is considered **significant**.

Mitigation Measure 4.6-1

Following demolition of structures, but prior to any grading activity or public access within the former Almaden Air Force Station, MROSD will hire a qualified hazardous materials specialist to prepare a focused pesticide soil testing and remediation program. The soil testing program will be prepared according to the recommendations in Northgate's Sampling and Analysis Report. Based on the focused soil testing program, the perimeters and depths of soils containing contamination above residential ESLs shall be specifically defined. Once these areas are defined, construction barriers or fencing shall be placed around the areas prior to initiating construction within other areas of the project site. No construction or public access may occur within the demarcated areas of contamination until the following remediation occurs: The qualified hazardous materials specialist will prepare a remediation plan for excavation and disposal of contaminated soils. The goal of the remediation plan will be to remove all soils containing non-naturally occurring chemical concentrations in excess of California human health screening levels and render excavated soil suitable for disposal at an appropriate landfill, unless the soils can be suitably treated on site, to below screening levels, in which case the soils can be disposed onsite. Soil removal activity will be completed in accordance with state and local regulatory requirements that provide specific targets for protection of human health.

Level of Significance after Mitigation

Implementation of the above mitigation measures would reduce potential hazards associated with exposure of construction workers and the public to contaminated soil by requiring a testing program. This program would identify the area of contamination, restrict construction activities within those areas, and remediate those contaminated areas consistent with state and federal regulations before any construction or access within those areas is allowed. Therefore, this impact would be reduced to a **less-than-significant** level. Note that minor ground disturbance associated with potential soil removal is consistent with the level of ground-related construction activity analyzed throughout this Draft EIR.

Impact 4.6-2	**Exposure to Hazardous Materials during Project Construction.** Use of various paints, solvents, cements, glues, and fuels is expected during construction of the proposed project. Construction workers could be exposed to hazardous materials as a result of improper handling or use; accident; environmentally unsound disposal methods; or fire, explosion, or other emergencies, resulting in adverse health effects. However, all allowable uses would be subject to compliance with federal, state, and local hazardous materials regulations, and would be monitored by the state (e.g., Cal/OSHA, DTSC, CHP) and/or local jurisdictions. Therefore, the potential for human exposure to hazardous materials during construction would be considered a **less-than-significant** impact.

Hazardous materials would be used in varying amounts during construction of the proposed project. Construction and maintenance activities would use hazardous materials, such as fuels (gasoline and diesel), oils and lubricants, paints and paint thinners, glues, and cleaners (which could include solvents and corrosives in addition to soaps and detergents). Construction workers and the general public could be exposed to hazards and hazardous materials as a result of improper handling or use during construction activities (particularly by untrained personnel); transportation accidents; or fires, explosions, or other emergencies. Construction workers could also be exposed to hazards associated with accidental releases of hazardous materials, which could result in adverse health effects.

The proposed project would be required to comply with regulations on the transportation of hazardous materials codified in 49 CFR 173 and 49 CFR 177 and CCR Title 26, Division 6. These regulations, which are under the jurisdiction of Caltrans and the CHP, provide specific packaging requirements, define unacceptable hazardous materials shipments, and prescribe safe-transit practices by carriers of hazardous materials. Compliance with these regulations would reduce the risk of exposure to humans and the environment related to the transportation of hazardous materials.

Hazardous materials regulations, which are codified in CCR Titles 8 and 22, and their enabling legislation set forth in Chapter 6.5 (Section 25100 et seq.) of the California Health and Safety Code, were established at the State level to ensure compliance with federal regulations to reduce the risk to human health and the environment from the routine use of hazardous substances. Construction specifications would include the following requirements in compliance with applicable regulations and codes, including, but not limited to CCR Titles 8 and 22, Uniform Fire Code, and Division 20 of the California Health and Safety Code: all reserve fuel supplies and hazardous materials must be stored within the confines of a designated construction area; equipment refueling and maintenance must take place only within the staging area; and construction vehicles shall be inspected daily for leaks. These regulations and codes must be implemented, as appropriate, and are monitored by the State and/or local jurisdictions, including the Santa Clara County Environmental Health Department and the Santa Clara County Fire Department.

Contractors would be required to comply with Cal/EPA's Unified Program; regulated activities would be managed by the Santa Clara County Department of Environmental Health, the designated Certified Unified Program Agency for Santa Clara County, in accordance with the regulations included in the Unified Program (e.g., hazardous materials release response plans and inventories, California UFC hazardous material management plans and inventories). Such compliance would reduce the potential for accidental release of hazardous materials during construction of the proposed project. As a result, it would lessen the risk of exposure of construction workers and the public to accidental release of hazardous materials, as well as the demand for incident emergency response.

Compliance with federal, State, and local hazardous materials regulations and codes, would reduce to a **less-than-significant** level impacts related to hazards for construction workers and the general public involving the release of hazardous materials into the environment or through the routine transport, use, or disposal of hazards materials.

Mitigation Measure 4.6-2

No mitigation measures necessary.

Impact 4.6-3	**Use or Transport of Hazardous Materials during Project Operations.** The proposed project would include hiking trails and campground facilities, and would not involve hazardous materials during the course of its daily operations. Therefore, impacts related to creation of significant hazards to the public or the environment would be **less than significant.**

As a public open space use, the proposed project would not involve hazardous materials during the course of its daily operations. Therefore, exposure of the public to hazardous materials as a result of improper handling or use; transportation accidents; environmentally unsound disposal methods; or fire, explosion, or other emergencies caused by hazardous materials; is not of concern during operation. Any hazardous materials currently contained in the structures or on the project site will be removed or secured and sealed off from public access prior to implementation of the proposed project.

In addition, the proposed project is required to be consistent with federal, State, and local laws and regulations addressing hazardous materials management and environmental protection, including, but not limited to 49 CFR 173 and 177, and CCR Title 26, Division 6 for transportation of hazardous materials, and CCR Titles 8 and 22, Uniform Fire Code, and Division 20 of the California Health and Safety Code for routine use of hazardous materials. These regulations and codes must be implemented, as appropriate, and are monitored by the State and/or local jurisdictions, including Caltrans, the CHP, the Santa Clara County Environmental Health Department, and the Santa Clara County Fire Department.

The proposed project would be required to comply with all applicable federal, State, and local regulations pertaining to safe-transit practices, workplace safety, spill prevention, and other hazardous materials-related concerns. The Santa Clara County Department of Environmental Health and the local fire departments, and other agencies would be required to enforce compliance, including tracking and inspections of hazardous materials transportation and storage. As a result, operation of the proposed project would not create a significant hazard to the general public or the environment involving the release of hazardous materials into the environment or through the routine transport, use, or disposal of hazards materials. Therefore, this impact is considered **less than significant**. (Note that exposure of the public users of the site to existing on-site contamination is addressed above under Impact 4.9-1)

Mitigation Measure 4.6-3

No mitigation measures necessary.

Impact 4.6-4	**Potential Hazards from Interference with Emergency Response.** The project would not interfere with an adopted emergency response plan. There would be adequate emergency vehicle access to the project site. Therefore, this impact would be **less than significant**.

The project site consists of an unoccupied former military complex, currently restricted from public access, located in a fairly remote area of unincorporated Santa Clara County. No emergency evacuation plan exists for the site because the site is not used. The project would not place any permanent residences on the project site, but would be open to the public. During the construction activities, all vehicles (including construction worker vehicles) not being used for construction activities would be parked in staging areas that would not obstruct emergency vehicle access.

During project operation, visitors to the project site (e.g., people camping, hiking, or visitors participating in other recreational activities, such as hang gliding) could require emergency response from time to time. There is one road on which to enter the project site (Mt. Umunhum Road). San Jose Fire has indicated that Mt. Umunhum Road provides adequate emergency vehicle access. As part of the proposed project, this roadway would be improved to meet County Fire standards, including standards for emergency access, at such time as a structure such as the proposed visitor center is developed. Adjacent to the peak, a summit court would provide a paved passenger and emergency vehicle turnaround. Furthermore, as indicated in Section 4.10 of this Draft EIR, "Traffic and Circulation," the proposed project would not result in near-term or cumulative impacts related to roadway level of service. A secondary emergency access route for fire and other emergencies on the northern end of the project site is currently accessible and would remain accessible by emergency personnel but would remain restricted from public access. Therefore, the project would not result in levels of traffic that could delay emergency vehicles from accessing the project site.

In addition, a dedicated landing zone and/or the proposed parking lot would be sufficient to accommodate a helicopter landing, if necessary during emergency response. The proposed project would not interfere with an adopted emergency response plan or emergency evacuation plan. This impact would be **less than significant**.

Mitigation Measure 4.6-4

No mitigation measures necessary.

Impact 4.6-5	**Exposure of People or Structures to Wildland Fires.** Even though more people would use the site than under existing conditions, the proposed project would reduce existing potential for ignition of a wildfire by legitimizing public use of the site and patrolling or monitoring user activities, thereby substantially restricting common ignition sources. The proposed project would also provide additional fuel breaks (trails and access roads), a water storage tank, campground fire hose, dedicated 911 callbox, and appropriate emergency vehicle access, including an emergency landing zone. Implementation of the project would result in a **less-than-significant** impact.

The project site is located in a remote area of Santa Clara County that is exposed to high winds. On-site structures are currently unoccupied, many of which have been stripped of their exterior walls due to structural abatement, and are in a state of disrepair. General public access is currently prohibited. According to a Wildland Fire Risk Analysis prepared specifically for the proposed project in 2011 by Wildland Resource Management, Inc., it is generally recognized that, in most circumstances, the potential for risk for fire ignition is higher with increased visitorship. For example, wildfires can be started by vehicles (i.e., collisions, malfunctions, hot engine

parts); therefore, simply allowing vehicle access can increase the chance of ignition. In fact, roadsides are the most common location for wildfire ignition. (Wildand Resource Management 2011, p. 2) MROSD's adopted Operation and Maintenance Manual (described in detail above under "Regulatory Setting") requires appropriate maintenance of roadways and parking areas, including brush clearing and grass mowing, to reduce fire potential associated with roadways. Power lines are also a possible ignition source. The proposed project includes removal of all power lines on the project site, except one live power line and associated poles, which currently exists along the northern property line. Note that a few existing poles will be left standing and re-purposed for Purple Martin habitat.

The possibility of ignition is also related to the types of fuels on site. The dry grass and dead pine needles that are currently on the site are much more likely to ignite than almost any other type of vegetation. The current buildings are also in a highly ignitable condition because they are constructed of wood that is now weathered, with ample crevices and small pieces that comprise kindling for a fire. As the buildings are removed and open space facilities such as campgrounds are developed, fuels will be reduced and managed such that the ignition potential of the site due to the vegetative fuels is expected to decrease. (Wildand Resource Management 2011, p. 4)

According to Wildand Resource Management, Inc., because the project site currently experiences illegal use, the project differs from the typical introduction of visitors to a site, in that the proposed project is expected to result in decreased sources of ignition. This is due to the effect of placing legitimate users on a site in place of the current illegal use. Although access to the project site is completely restricted, trespass and vandalism does occur. The Patrol Incident Report Database indicates multiple accounts of trespass and associated incidents at the site. This illegitimate use of the site results in fire ignition risk because behavior of trespassers cannot be continually monitored, the level of ranger patrol is consistent with a closed preserve, and, since the project site is void of residents and there are few residences in the vicinity, the likelihood for timely detection and reporting of a fire is currently low. There are several examples in coastal California where illegal campfires have caused wildfires with significant damage. Two such examples are the Vision Fire in Pt. Reyes (1998) and the Morse Fire in Pebble Beach (1987). By opening the project site to the public, increasing the regularity of ranger patrol, and allowing only permitted campers overnight use of the site, illegitimate use and associated risk of arson and illegal campfires is expected to decline. The users of the proposed campsite, who would have to obtain a permit that includes fire-safe education, are apt to intervene when illegal activities such as smoking or lighting campfires are occurring.

Furthermore, by allowing legitimate use of the site, increasing ranger patrol, and providing emergency 911 call box and other emergency contact instructions, the proposed project would enhance the ability to detect and report wildfires, and therefore initiate fire suppression sooner than under current conditions. (Wildand Resource Management 2011, p. 3)

During the NOP public comment period, comments were received regarding the potential fire risk associated with the proposed campground. Campfires would not be allowed at the proposed campground. Small cooking stoves would be allowed only within a designated fire ring cleared of vegetation. There is an important difference in the potential for wildfire ignitions between locations with stoves and campfires. In an informal poll of local land managers, fires from stoves did not occur. One manager observed, "though we'd get escaped campfires every year, we never got fires from gas stoves. No blowing embers; when they're turned off, they're off." (Wildand Resource Management 2011, p. 3) In addition, rules enforced at the campground would include all regulations currently enforced by MROSD, including no smoking, no fireworks, and no motorized off-road vehicles. Furthermore, the campground area would be sited away from the topographic saddle to avoid windy conditions that could favor rapid fire spread. Frequent ranger patrols would monitor activities at the campground, enforce prohibition of campfires during the months of use (May-October), and in case of fire,

would perform initial attack with on-site resources if safe to do so, or immediately establish the Incident Command System and request assistance from responder agencies.

Risk of wildland fire associated with trails use is also low. In Sonoma County, only two fires were associated with trail use within a six-year period between 1990 and 1996. One of the two incidents was started by smoking, the other was suspected arson. Both fires were located near high population centers. A quote from staff of the East Bay Regional Park District describes the likelihood: "Fires from campers and trail users are a miniscule part of our fire causes. We get many more from equipment use (mowers hitting rocks, etc) (27%), vehicles in dry grass (17%) and arsonists" (Wildand Resource Management 2011, p. 5).

Design of all project elements would incorporate the California Fire Code, applicable California Public Resources Code sections, California's Wildland-Urban Interface Building Code requirements, and Santa Clara County's fire and life safety regulations (if occupied structures such as a visitor center are constructed). In addition, fire prevention signage would be posted at preserve signboards during fire season, consistent with MROSD standard practice.

Furthermore, MROSD has included specific project elements to enhance fire safety. Design plans for the summit area provide a location for Incident Command in the event of local or regional wildland fire, including an emergency vehicle turn around, landing zone, water tank, and campground hose Mt. Umunhum Road provides adequate access for emergency vehicles. The proposed project includes improvements to Mt. Umunhum Road, including removal of accumulated debris to widen narrow sections, that would further increase the accessibility of the site to emergency vehicles. Adequate egress from the site is provided by Mt. Umunhum Road, via the proposed trail connection to Bald Mountain, and during an emergency, via two existing private roads leading to Summit Road and Alma Bridge Road, respectively.

In conclusion, although the proposed project would increase human presence at the site, which increases ignition risk, because the proposed project would: 1) legitimize use of the site, 2) restrict campfires and smoking, 3) be consistent with existing local and State fire codes and requirements, 4) include at least one water tank and campground hose for fire suppression, 5) increase emergency vehicle access, 6) provide a dedicated 911 callbox, 7) provide a landing zone, and 8) provide adequate evacuation for users of the site, the proposed project would result in a **less-than-significant** impact related to exposure to people or structures to risk of wildland fire.

Mitigation Measure 4.6-5 (Voluntary)

No significant impacts associated with wildfire would occur. MROSD policy and standard practices include the following fire management practices/features that will be implemented for the proposed project as applicable project facilities are developed:

- *Water tank(s) and campground fire hose;*
- *Emergency landing zone;*
- *Dedicated emergency call box;*
- *Roadside fuel management;*
- *Signage of fire safety regulations; and*
- *Collaboration with agencies and neighboring landowners on planning and implementing fire-safe projects.*

However, in order to further minimize risk associated with wildfire hazard in response to the public concern, the District will voluntarily implement, in addition to the standard practices/features, the following mitigation measures recommended by Wildland Resource Management:

- *Preparation of fire prevention plan by construction contractors;*
- *Removal of fine dead fuels around campsites;*
- *Irrigated native landscaping (until plants are established);*
- *Vegetation managed as appropriate defensible space to improve vegetation structure and decrease volume of vegetation around campsites;*
- *Additional signage specifying emergency protocol;*
- *Training/ information associated with permit application or approval; and*
- *Closure of facility during red flag days.*

The following discussion provides additional detail to the voluntary mitigation measures in the bullet-list above. Specifically, MROSD will implement the following fire hazard minimization measures recommended by Wildland Resource Management:

Construction-Related Fire Risk Reduction

Prior to initiation of construction (including activities associated with mitigation measures, such as vegetation clearing), MROSD's contractor will prepare a fire prevention plan. This fire prevention plan will include such measures as a list of tools to have on hand, proof of spark arrestors on all gas-powered engines, a description of available communications, specifications for the supply of water to have on hand, and descriptions of other actions that will reduce the risk of ignition and immediate control of an incipient fire. This requirement should be included in the contract with the District.

To minimize the risk of wildfire ignition, all motorized vehicles, including earth-moving equipment, used during this project will be equipped with spark arresters, per California Public Resources Code 4442, and Health and Safety Code 13001 and 13005. Other motorized vehicles used on the project site will not be parked where vegetation may come in contact with exhaust systems and catalytic converters.

Fuel Management and Fire-safe Restoration Design

Prior to initiating construction of the proposed campground or other restoration areas, MROSD will prepare a site-specific fuel management plan for the campground area as part of the specific site planning and design that dictates which species of trees/shrubs should be removed or pruned, and which plants should be planted or maintained (i.e., conifers may be replaced with hardwoods to reduce the chance of torching and ember production and distribution). The plan will include measures above and beyond MROSD's standard fuel management plan, such as a strategically located visitor safety zone, which includes fuel conditions appropriate for a safety zone (i.e., large paved or graveled area such as a parking lot). This area will need to be inspected at least annually for compliance. The site-specific fuel management plan will apply to the campground, the former AFS housing area, and the summit areas, where the environmental restoration is proposed.

The fuel management plan will also identify indigenous plant materials and/or seed mixes at staging areas or along trails. Indigenous plants are ideal due to their low maintenance and drought and fire resistant characteristics.

The vegetation palette for the proposed restoration will identify native species that are shrubby or non-curing herbaceous cover (as opposed to grassy species), with little ignition potential. Plantings will be irrigated at least twice during the camping season to keep the moisture of the vegetation foliage high (keeping the dead material wet is not effective); if plantings cannot be irrigated twice a year, fuel volume will be reduced to meet the equivalent results in fire hazard. The spacing and design of the vegetation is more critical than the species planted. The restoration design will place plant species such that appropriate horizontal spacing occurs between masses of shrubs and specimen trees and appropriate vertical spacing will occur between tree branches, shrubs, and ground cover. This will discourage the creation of "fuel ladders"—a continuous fuel path by which a fire can climb from the ground to a shrub, to a tree, and ultimately produce and distribute embers than can start new fires far away.

The restoration design will identify a palette of appropriate native plant species that have a low fuel volume and high foliar moisture and do not have a tendency to produce and "hold" dead wood and which also have a proper growth form. Factors that must be considered in rating the fire performance of plants include:

- *Total volume. The greater the volume of plant material (potential fuel) present, the greater the fire hazard.*
- *Moisture content. The moisture content of plants is an important consideration; high levels of plant moisture can both lower fire risk and act as a heat sink if a fire occurs, reducing its intensity and spread.*
- *Amount and distribution of dead material. The amount of dead material in a given plant influences the total amount of water in the overall plant; the dead material is usually much drier than living tissue. Whereas dead material rarely has a moisture content higher than 25%, live foliage moisture content ranges from 60 to 80% for chaparral species in xeric conditions to a high of 200 to 400% for succulent plants or plants under irrigation.*
- *Size of leaves, twigs, and branches. Materials with large surface areas (such as needles, twigs, or large flat leaves) dry more rapidly under fire conditions than materials with lower surface ratios (such as branches and fleshy leaves).*
- *Geometry and arrangement of the plant (overall spatial distribution of the biomass). The shape of a plant and the way in which the biomass is distributed throughout the plant is important because this bulk density affects the air flow and heat transfer through the plant. The arrangement of material within the plant affects its fuel continuity and its tendency to undergo preheating and promote fire spread.*

Examples of plants that may be appropriate include (but are not limited to) the following: coffeeberry, madrone, coast live oak, bay, ceanothus, and toyon. Examples of species to remove include coyote brush, black sage, and sagebrush. The fuel management plan will include a maintenance component. The maintenance program will require annual removal of dead material and maintenance of the vertical and horizontal spaces that create a fire-safe design. Maintenance requirements are incorporated in the District guidelines.

Signage, Education, and Closure

Prior to opening the proposed campsite to the public, MROSD will install a signboard in a central and conspicuous location at the proposed campsite that addresses fire safety, re-states MROSD rules including prohibition of open fires, and identifies appropriate action and behavior during a wildfire. Specifically the signboard will identify where to go, how to stay safe, and location of call-boxes. Further, MROSD will send permitted campers additional information/training including statement of rules and location of call boxes in case of emergency.

MROSD will close the site during times of Red Flag Warnings to further reduce the chance of ignition due to visitor usage.

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4.7 AIR QUALITY

This section includes a summary of applicable regulations, existing air quality conditions, and an analysis of potential short-term and long-term air quality impacts of the proposed project. The method of analysis for short-term construction; long-term regional (operational), local mobile sources; and toxic air emissions is consistent with the Bay Area Air Quality Management District's (BAAQMD) Air Quality Guidelines (BAAQMD 2010a). In addition, mitigation measures are recommended, as necessary, to reduce significant air quality impacts.

Greenhouse gas emissions are evaluated separately, in Section 4.8.

4.7.1 EXISTING SETTING

The proposed project site is located in the western portion of Santa Clara County, California, in the San Francisco Bay Area Air Basin (SFBAAB) which is under the local jurisdiction of BAAQMD. BAAQMD's jurisdiction comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern portion of Sonoma, and the southwestern portion of Solano County. Air quality in this area is determined by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions. These factors along with applicable regulations are discussed below. The majority of information presented under the heading, "Climate, Topography, and Air Pollution Potential," is provided by BAAQMD's Air Quality Guidelines (BAAQMD 2010a) unless otherwise cited.

CLIMATE, TOPOGRAPHY, AND AIR POLLUTION POTENTIAL

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The Coast Range splits resulting in a western coast gap, the Golden Gate, and an eastern coast gap, the Carquinez Strait, which allow air to flow in and out of the SFBAAB and the Central Valley. Please note that most pollutants of concern (e.g., ozone) in the SFBAAB are of regional concern and, thus, the following discussion focuses on characteristics at this level. For example, the Santa Clara Valley is discussed below because pollutants emitted from the project area could affect conditions here and in other places in the region.

High Pressure Cell

The climate is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell. During the summer, the Pacific high pressure cell is centered over the northeastern Pacific Ocean resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below to the surface because of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold water band resulting in condensation and the presence of fog and stratus clouds along the Northern California coast.

In the winter, the Pacific high-pressure cell weakens and shifts southward resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.

During the summer, the large-scale meteorological condition that dominates the West Coast is a semi-permanent high pressure cell centered over the northeastern Pacific Ocean. This high pressure cell keeps storms

from affecting the California coast. Hence, the SFBAAB experiences little precipitation in the summer months. Winds tend to blow on shore out of the north/northwest.

Generally in the winter, the Pacific high weakens and shifts southward, winds tend to flow offshore, upwelling ceases and storms occur. During the winter rainy periods, inversions (layers of warmer air over colder air; see below) are weak or nonexistent, winds are usually moderate and air pollution potential is low. The Pacific high does periodically become dominant, bringing strong inversions, light winds and high air pollution potential.

Topography

The topography of the SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys and bays. This complex terrain, especially the higher elevations, distorts the normal wind flow patterns in the SFBAAB. The greatest distortion occur when low-level inversions are present and the air beneath the inversion flows independently of air above the inversion, a condition that is common in the summer time.

The only major break in California's Coast Range occurs in the SFBAAB. Here the Coast Range splits into western and eastern ranges. Between the two ranges lies San Francisco Bay. The gap in the western coast range is known as the Golden Gate, and the gap in the eastern coast range is the Carquinez Strait. These gaps allow air to pass into and out of the SFBAAB and the Central Valley.

Wind Patterns

During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San Jose when it meets the East Bay hills.

Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate or the San Bruno gap (i.e., low broad pass between Montara Mountain and San Bruno Mountain). For example, the average wind speed at San Francisco International Airport in July is about 17 knots (from 3 p.m. to 4 p.m.), compared with only 7 knots at San Jose and less than 6 knots at the Farallon Islands.

The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon. As the day progresses, the sea breeze layer deepens and increases in velocity while spreading inland. The depth of the sea breeze depends in large part upon the height and strength of the inversion. If the inversion is low and strong, and hence stable, the flow of the sea breeze will be inhibited and stagnant conditions are likely to result.

In the winter, the SFBAAB frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes are characterized by nighttime drainage flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the SFBAAB.

Temperature

Summertime temperatures in the SFBAAB are determined in large part by the effect of differential heating between land and water surfaces. Because land tends to heat up and cool off more quickly than water, a large-

scale gradient (differential) in temperature is often created between the coast and the Central Valley, and small-scale local gradients are often produced along the shorelines of the ocean and bays. The temperature gradient near the ocean is also exaggerated, especially in summer, because of the upwelling of cold ocean bottom water along the coast. On summer afternoons the temperatures at the coast can be 35ºF cooler than temperatures 15 to 20 miles inland. At night this contrast usually decreases to less than 10º.

In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large.

Precipitation

The SFBAAB is characterized by moderately wet winters and dry summers. Winter rains account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the SFBAAB to another even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys.

During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing are usually high, and thus pollution levels tend to be low. However, frequent dry periods do occur during the winter where mixing and ventilation are low and pollutant levels build up.

Air Pollution Potential

The potential for high pollutant concentrations developing at a given location depends upon the quantity of pollutants emitted into the atmosphere in the surrounding area or upwind, and the ability of the atmosphere to disperse the contaminated air. The topographic and climatological factors discussed above influence the atmospheric pollution potential of an area. Atmospheric pollution potential, as the term is used here, is independent of the location of emission sources and is instead a function of factors described below.

Wind Circulation

Low wind speed contributes to the buildup of air pollution because it allows more pollutants to be emitted into the air mass per unit of time. Light winds occur most frequently during periods of low sun (fall and winter, and early morning) and at night. These are also periods when air pollutant emissions from some sources are at their peak, namely, commute traffic (early morning) and wood burning appliances (nighttime). The problem can be compounded in valleys, when weak flows carry the pollutants upvalley during the day, and cold air drainage flows move the air mass downvalley at night. Such restricted movement of trapped air provides little opportunity for ventilation and leads to buildup of pollutants to potentially unhealthful levels.

Inversions

An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth, i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground. The highest air pollutant concentrations in the SFBAAB generally occur during inversions.

There are two types of inversions that occur regularly in the SFBAAB. One is more common in the summer and fall, while the other is most common during the winter. The frequent occurrence of elevated temperature inversions in summer and fall months acts to cap the mixing depth, limiting the depth of air available for dilution. Elevated inversions are caused by subsiding air from the subtropical high pressure zone, and from the cool marine air layer that is drawn into the SFBAAB by the heated low pressure region in the Central Valley.

The inversions typical of winter, called radiation inversions, are formed as heat quickly radiates from the earth's surface after sunset, causing the air in contact with it to rapidly cool. Radiation inversions are strongest on clear, low-wind, cold winter nights, allowing the build-up of such pollutants as carbon monoxide and particulate matter. When wind speeds are low, there is little mechanical turbulence to mix the air, resulting in a layer of warm air over a layer of cooler air next to the ground. Mixing depths under these conditions can be as shallow as 50 to 100 meters, particularly in rural areas. Urban areas usually have deeper minimum mixing layers because of heat island effects and increased surface roughness. During radiation inversions downwind transport is slow, the mixing depths are shallow, and turbulence is minimal, all factors which contribute to ozone formation.

Although each type of inversion is most common during a specific season, either inversion mechanism can occur at any time of the year. Sometimes both occur simultaneously. Moreover, the characteristics of an inversion often change throughout the course of a day. The terrain of the SFBAAB also induces significant variations among subregions.

Solar Radiation

The frequency of hot, sunny days during the summer months in the SFBAAB is another important factor that affects air pollution potential. It is at the higher temperatures that ozone is formed. In the presence of ultraviolet sunlight and warm temperatures, reactive organic gases and oxides of nitrogen react to form secondary photochemical pollutants, including ozone.

Because temperatures in many of the SFBAAB inland valleys are so much higher than near the coast, the inland areas are especially prone to photochemical air pollution.

In late fall and winter, solar angles are low, resulting in insufficient ultraviolet light and warming of the atmosphere to drive the photochemical reactions. Ozone concentrations do not reach significant levels in the SFBAAB during these seasons.

Sheltered Terrain

The hills and mountains in the SFBAAB contribute to the high pollution potential of some areas. During the day, or at night during windy conditions, areas in the lee sides of mountains are sheltered from the prevailing winds, thereby reducing turbulence and downwind transport. At night, when wind speeds are low, the upper atmospheric layers are often decoupled from the surface layers during radiation conditions. If elevated terrain is present, it will tend to block pollutant transport in that direction. Elevated terrain also can create a recirculation pattern by inducing upvalley air flows during the day and reverse downvalley flows during the night, allowing little inflow of fresh air.

The areas having the highest air pollution potential tend to be those that experience the highest temperatures in the summer and the lowest temperatures in the winter. The coastal areas are exposed to the prevailing marine air, creating cooler temperatures in the summer, warmer temperatures in winter, and stratus clouds all year. The inland valleys are sheltered from the marine air and experience hotter summers and colder winters. Thus, the topography of the inland valleys creates conditions conducive to high air pollution potential.

Pollution Potential Related to Emissions and Local Microclimate

Although air pollution potential is strongly influenced by climate and topography, the air pollution that occurs in a location also depends upon the amount of air pollutant emissions in the surrounding area or transported from more distant places. Air pollutant emissions generally are highest in areas that have high population densities, high motor vehicle use and/or industrialization. These contaminants created by photochemical processes in the atmosphere, such as ozone, may result in high concentrations many miles downwind from the sources of their precursor chemicals.

There are varying climatological and topographic conditions, and the resulting variations in air pollution potential, within inhabited subregions of the SFBAAB. Winds in the Santa Clara Valley are greatly influenced by the terrain, resulting in a prevailing flow that roughly parallels the valley's northwest-southeast axis. A north-northwesterly sea breeze flows through the valley during the afternoon and early evening, and a light south-southeasterly drainage flow occurs during the late evening and early morning. In the summer the southern end of the valley sometimes becomes a "convergence zone," when air flowing from the Monterey Bay gets channeled northward into the southern end of the valley and meets with the prevailing north-northwesterly winds.

Wind speeds are greatest in the spring and summer and weakest in the fall and winter. Nighttime and early morning hours frequently have calm winds in all seasons, while summer afternoons and evenings are quite breezy. Strong winds are rare, associated mostly with the occasional winter storm.

The air pollution potential of the Santa Clara Valley is high. High summer temperatures, stable air and mountains surrounding the valley combine to promote ozone formation. In addition to the many local sources of pollution, ozone precursors from San Francisco, San Mateo and Alameda Counties are carried by prevailing winds to the Santa Clara Valley. The valley tends to channel pollutants to the southeast. In addition, on summer days with low-level inversions, ozone can be recirculated by southerly drainage flows in the late evening and early morning and by the prevailing northwesterlies in the afternoon. A similar recirculation pattern occurs in the winter, affecting levels of carbon monoxide and particulate matter. This movement of the air up and down the valley increases the impact of the pollutants significantly.

Pollution sources are plentiful and complex in the Santa Clara Valley. The Santa Clara Valley has a high concentration of industry at the northern end, in the Silicon Valley. Some of these industries are sources of air toxics as well as criteria air pollutants. In addition, Santa Clara Valley's large population and many work-site destinations generate the highest levels of mobile-source emissions of any subregion in the SFBAAB.

The Mount Umunhum project area is located on the eastern side of the Santa Cruz mountain range which forms the west side of the Santa Clara Valley. The Santa Clara Valley is bounded by the Bay to the north and by mountains to the east, south and west. Temperatures are warm on summer days and cool on summer nights, and winter temperatures are fairly mild. The local meteorology of the Mt. Umunhum area is represented by measurements recorded at the Wrights station, which is situated at an elevation of 1,600 feet and is approximately 2 miles southwest of the Mount Thayer Summit. The normal annual precipitation, which occurs primarily from November through March, is approximately 46 inches (Western Regional Climate Center 2011). January temperatures range from an average minimum of 42.9°F to an average maximum of 52.4°F. July temperatures range from an average minimum of 55.4°F to an average maximum of 75.9°F (Western Regional Climate Center 2011). The peaks of Mount Umunhum and Mount Thayer, as well as the surrounding ridges, are frequently subject to high winds.

EXISTING AIR QUALITY - CRITERIA AIR POLLUTANTS

Concentrations of the following air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$), and lead are used as indicators of ambient air quality conditions. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents are available, they are commonly referred to as “criteria air pollutants.” A brief description of key criteria air pollutants in the SFBAAB is provided below. Emission source types, health effects are summarized in Table 4.7-1. Monitoring data applicable to the project site is provided in Table 4.7-2.

Table 4.7-1. Sources and Health Effects of Criteria Air Pollutants

Pollutant	Sources	Acute[1] Health Effects	Chronic[2] Health Effects
Ozone	Secondary pollutant resulting from reaction of ROG and NO_X in presence of sunlight. ROG emissions result from incomplete combustion and evaporation of chemical solvents and fuels; NO_X results from the combustion of fuels	increased respiration and pulmonary resistance; cough, pain, shortness of breath, lung inflammation	permeability of respiratory epithelia, possibility of permanent lung impairment
Carbon monoxide (CO)	Incomplete combustion of fuels; motor vehicle exhaust	headache, dizziness, fatigue, nausea, vomiting, death	permanent heart and brain damage
Nitrogen dioxide (NO_2)	combustion devices; e.g., boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines	coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis or pulmonary edema; breathing abnormalities, cough, cyanosis, chest pain, rapid heartbeat, death	chronic bronchitis, decreased lung function
Sulfur dioxide (SO_2)	coal and oil combustion, steel mills, refineries, and pulp and paper mills	Irritation of upper respiratory tract, increased asthma symptoms	Insufficient evidence linking SO_2 exposure to chronic health impacts
Respirable particulate matter (PM_{10}), Fine particulate matter ($PM_{2.5}$)	fugitive dust, soot, smoke, mobile and stationary sources, construction, fires and natural windblown dust, and formation in the atmosphere by condensation and/or transformation of SO_2 and ROG	breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, premature death	alterations to the immune system, carcinogenesis
Lead	metal processing	Reproductive / developmental effects (fetuses and children)	numerous effects including neurological, endocrine, and cardiovascular effects

Notes: NO_X = oxides of nitrogen; ROG = reactive organic gases.
1 "Acute" refers to effects of short-term exposures to criteria air pollutants, usually at fairly high concentrations.
2 "Chronic" refers to effects of long-term exposures to criteria air pollutants, usually at lower, ambient concentrations.
Sources: EPA 2011

Ozone

Ozone is a photochemical oxidant (a substance whose oxygen combines chemically with another substance in the presence of sunlight) and the primary component of smog. Ozone is not directly emitted into the air but is formed through complex chemical reactions between precursor emissions of reactive organic gases (ROG) and nitrogen oxides (NO_X) in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X are a group of gaseous compounds of nitrogen and oxygen that result from the combustion of fuels.

Emissions of ozone precursors ROG and NO_X have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. The California Air Resources Board's (ARB's) *2009 California Almanac of Emissions and Air Quality* (Almanac) provides state-wide air quality trends and includes specific trends for the five most urbanized air basins in the state. In the SFBAAB in particular, emissions of ozone precursors have decreased since 1975 and are projected to continue declining through 2020 (ARB 2009). In the SFBAAB peak –hour and 8-hour ozone levels have declined by nearly 18 percent during the last 20 years (ARB 2009).

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, and poisonous gas produced by incomplete burning of carbon in fuels, primarily from mobile (transportation) sources. In fact, 78% of the nationwide CO emissions are from mobile sources. The other 22% consists of CO emissions from wood-burning stoves, incinerators, and industrial sources.

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (U.S. Environmental Protection Agency [EPA] 2011).

The highest concentrations are generally associated with cold stagnant weather conditions that occur during the winter. In contrast to ozone, which tends to be a regional pollutant, CO problems tend to be localized. Emissions of CO have been declining in the San Francisco Bay Area Air Basin since 1975. Motor vehicles and other mobile sources are the largest sources of CO emissions in the SFBAAB. Emissions from motor vehicles have been declining, with the introduction of new automotive emission controls, despite increases in vehicle miles travelled (VMT). Commercial and industrial fuel combustion and electric generation contribute a significant portion of the stationary source CO emissions. Area-wide CO emissions are primarily from residential fuel combustion (including wood), waste burning, and fires (ARB 2009).

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X and are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local sources of NO_X emissions (EPA 2011).

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by condensation and/or transformation of SO_2 and ROG. Fine particulate matter ($PM_{2.5}$) includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less.

According to the *Almanac*, direct emissions of both PM_{10} and $PM_{2.5}$ have increased in the SFBAAB between 1975 and 2000 and are projected to increase through at least 2020. These emissions are dominated by area-wide sources, primarily fugitive dust sources. Emissions of directly emitted PM_{10} from diesel motor vehicles have been decreasing since 1990 even though population and VMT are growing, due to adoption of more stringent emission standards (ARB 2009).

AMBIENT AIR QUALITY - MONITORING STATION DATA AND ATTAINMENT DESIGNATIONS

Criteria air pollutant concentrations are measured at multiple monitoring stations in the SFBAAB. The closest monitoring stations to the project site are in Los Gatos and on Jackson Street in San Jose. In general, the ambient air quality measurements from these stations are the most representative of the air quality in the vicinity of the proposed project site. Table 4.7-2 summarizes the air quality data from the most recent 3 years.

Table 4.7-2. Summary of Annual Ambient Air Quality Data (2007–2009)[a]

	2007	2008	2009
Ozone[1]			
Maximum concentration-state (1-hr/8-hr, ppm)	0.084/0.065	0.122/0.097	0.102/0.082
Number of days state standard exceeded (1-hr/8-hr)	0/0	2/6	3/8
Number of days national standard exceeded (8-hr)	0	2	4
Respirable Particulate Matter (PM_{10})[b]			
Maximum concentration-state ($\mu g/m^3$)	69.1	57.3	43.3
Number of days state standard exceeded (measured/estimated[c])	3/18.1	1/6.1	0/0
Number of days national standard exceeded (measured/estimated[c])	0/0	0/0	0/0
Fine Particulate Matter ($PM_{2.5}$)[b]			
Maximum concentration-national ($\mu g/m^3$)	57.5	41.9	35.0
Number of days national standard exceeded (measured[6])	9	5	0

$\mu g/m^3$ = micrograms per cubic meter; ppm = parts per million.
[a] Data from Monitoring Station in Los Gatos.
[b] Data from Monitoring Station on Jackson Street in San Jose.
[c] Measured days are those days that an actual measurement was greater than the level of the state daily standard or the national daily standard. Measurements are typically collected every 6 days. Estimated days are mathematical estimates of how many days concentrations would have been greater than the level of the standard had each day been monitored.
Sources: *ARB 2010c*

Both California Air Resources Board (ARB) and the U.S. Environmental Protection Agency (EPA) use this type of monitoring data to designate areas according to attainment status for criteria air pollutants established by the agencies. The purpose of these designations is to identify those areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of the nonattainment designation, called nonattainment-transitional. The nonattainment-transitional designation is given to nonattainment areas that are progressing and nearing attainment. The most current attainment designations for Santa Clara County are shown in Table 4.7-3 for each criteria air pollutant.

Table 4.7-3. Ambient Air Quality Standards and Designations

Pollutant	Averaging Time	California		National Standards[1]		
		Standards[2,3]	Attainment Status[4]	Primary[3,5]	Secondary[3,6]	Attainment Status[7]
Ozone	1-hour	0.09 ppm (180 ìg/m^3)	N	–[8]	Same as Primary Standard	–[8]
	8-hour	0.070 ppm (137 ìg/m^3)	N	0.075 ppm (147 ìg/m^3)		N
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	A	35 ppm (40 mg/m^3)	–	U
	8-hour	9 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (56 ìg/m^3)	A	0.053 ppm (100 ìg/m^3)	Same as Primary Standard	U
	1-hour	0.18 ppm (338 ìg/m^3)		0.100 ppm (188 ìg/m^3)		–
Sulfur Dioxide (SO_2)	24-hour	0.04 ppm (105 ìg/m^3)	A	–	–	A
	3-hour	–	–	–	0.5 ppm (1300 ìg/m^3)	
	1-hour	0.25 ppm (655 ìg/m^3)	A	0.075 ppm (196 ìg/m^3)	–	
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 ìg/m^3	N	–[8]	Same as Primary Standard	U
	24-hour	50 ìg/m^3		150 ìg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 ìg/m^3	N	15.0 ìg/m^3	Same as Primary Standard	N
	24-hour	–	–	35 ìg/m^3		
Lead[9]	30-day Average	1.5 ìg/m^3	A	–	–	–
	Calendar Quarter	–	–	1.5 ìg/m^3	Same as Primary Standard	–
	Rolling 3-Month Avg.	–		0.15 ìg/m^3		
Sulfates	24-hour	25 ìg/m^3	A	**No National Standards**		
Hydrogen Sulfide	1-hour	0.03 ppm (42 ìg/m^3)	U			
Vinyl Chloride[9]	24-hour	0.01 ppm (26 ìg/m^3)	–			

Table 4.7-3. Ambient Air Quality Standards and Designations

Pollutant	Averaging Time	California		National Standards[1]		
		Standards[2,3]	Attainment Status[4]	Primary[3,5]	Secondary[3,6]	Attainment Status[7]
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer —visibility of 10 miles or more due to particles when the relative humidity is less than 70%.	U			

1 National standards (other than ozone, PM, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when 99% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The $PM_{2.5}$ 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the EPA for further clarification and current federal policies.

2 California standards for ozone, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, PM, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

3 Concentration expressed first in units in which it was promulgated [i.e., parts per million (ppm) or micrograms per cubic meter (ìg/m^3)]. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Unclassified (U): a pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.
Attainment (A): a pollutant is designated attainment if the state standard for that pollutant was not violated at any site in the area during a 3-year period.
Nonattainment (N): a pollutant is designated nonattainment if there was a least one violation of a state standard for that pollutant in the area.
Nonattainment/Transitional (NT): is a subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the standard for that pollutant.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7 Nonattainment (N): any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.
Attainment (A): any area that meets the national primary or secondary ambient air quality standard for the pollutant.
Unclassifiable (U): any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

8 The 1-hour ozone NAAQS was revoked on June 15, 2005. The annual PM_{10} NAAQS was revoked in October 2006.

9 ARB has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Source: ARB 2010a for ambient air quality standards; ARB 2010b for attainment designations

EXISTING AIR QUALITY - TOXIC AIR CONTAMINANTS

Concentrations of toxic air contaminants (TACs) are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. Two TACs relevant to the proposed project—diesel particulate matter (diesel PM) and naturally occurring asbestos (NOA)—are discussed separately below.

Diesel Particulate Matter

According to the California Almanac of Emissions and Air Quality (ARB 2009), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being PM from diesel-fueled engines (i.e., diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel

composition, lubricating oil, and whether an emission control system is present. Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, the ARB has made preliminary concentration estimates based on a PM exposure method. This method uses ARB emissions inventory's PM_{10} database, ambient PM10 monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient risk, for which data are available, in California. Diesel PM poses the greatest health risk among the ten TACs.

BAAQMD applied a regional air quality model using the 2005 emission inventory data to estimate excess cancer risk from ambient concentrations of important TAC species, including diesel PM, 1,3-butadiene, benzene, formaldehyde and acetaldehyde. The highest cancer risk levels from ambient TAC in the SFBAAB tend to occur in the core urban areas, along major roadways and adjacent to freeways and port activity. Cancer risks in areas along these major freeways are estimated to range from 200 to over 500 excess cases in a million for a lifetime of exposure (BAAQMD 2010a).

Existing Sources

Stationary Sources

According to the EPA Envirofacts Database, there are no stationary sources of toxic air contaminants on or adjacent to the Mount Umunhum project area (EPA 2011a).

Mobile Sources

Existing sources of TACs also include mobile sources (i.e., diesel-fueled internal combustion engines) on nearby roadways. According to the ARB, on-road diesel-fueled vehicles contribute approximately 38% of the statewide total of TAC emissions, with an additional 60% attributed to other mobile sources such as construction, mining, and agricultural equipment, and transport refrigeration units (ARB 2009,pp. 5-42).

Naturally Occurring Asbestos (NOA)

NOA was identified as a TAC in 1986 by ARB. NOA is located in many parts of California, including the Bay Area, and is commonly associated with ultramafic rocks, according to a special publication published by the California Geological Survey (California Geological Survey 2002). Asbestos is the common name for a group of naturally occurring fibrous silicate minerals that can separate into thin but strong and durable fibers. Ultramafic rocks form in high-temperature environments well below the surface of the earth. By the time they are exposed at the surface by geologic uplift and erosion, ultramafic rocks may be partially to completely altered into a type of metamorphic rock called serpentinite. Sometimes the metamorphic conditions are right for the formation of chrysotile asbestos or tremolite-actinolite asbestos in the bodies of these rocks, along their boundaries, or in the soil.

Asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, asbestos fibers may become airborne, causing air quality and human health hazards. Asbestos may be released to the air due to vehicular traffic on unpaved roads on which asbestos-bearing rock has been used as gravel, during grading for development projects, and at quarry operations. Natural weathering and erosion processes can act on asbestos bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed. (State of California 2008, p. 2)

Odors

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word strong to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

There are no major sources of odor in the project area.

4.7.2 REGULATORY SETTING

Air quality within the SFBAAB is regulated by such agencies as the EPA, ARB, and BAAQMD. Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

At the federal level, the EPA has been charged with implementing national air quality programs. The EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments made by Congress were in 1990.

The CAA required the EPA to establish national ambient air quality standards (NAAQS). As shown in Table 4.7-3, the EPA has established primary and secondary NAAQS for the following criteria air pollutants:

- ozone,
- CO,
- NO_2,
- SO_2,
- PM_{10},
- $PM_{2.5}$, and
- lead.

The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The EPA has responsibility to review all state SIPs to determine conformation to the mandates of the CAA, and the amendments thereof, and determine if implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

The ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required the ARB to establish California ambient air quality standards (CAAQS) (Table 4.7-3). The ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

Other ARB responsibilities include, but are not limited to, overseeing local air district compliance with California and federal laws, approving local air quality plans, submitting SIPs to the EPA, monitoring air quality, determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

LOCAL PLANS, POLICIES, REGULATIONS, AND LAWS

Bay Area Air Quality Management District

BAAQMD attains and maintains air quality conditions in the SFBAAB through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. BAAQMD's clean air strategy includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. BAAQMD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the CAA, CAAA, and the CCAA. Air quality plans applicable to the proposed project are discussed below.

As mentioned above, BAAQMD adopts rules and regulations. All projects are subject to the District's rules and regulations in effect at the time of construction. Specific rules applicable to the construction of the proposed project may include, but are not limited to:

Regulation 2, Rule 1, General Permit Requirements. Includes criteria for issuance or denial of permits, exemptions, appeals against decisions of the Air Pollution Control Officer (APCO) and BAAQMD actions on applications.

Regulation 5, Open Burning. Generally prohibits open burning, but also allows for exemptions such as agricultural burning, disposal of hazardous materials, fire training, and range, forest, and wildlife management.

Regulation 6, Rule 1, General Requirements. Limits the quantity of particulate matter in the atmosphere by controlling emission rates, concentration, visible emissions and opacity.

Regulation 7, Odorous Substances. Establishes general limitation on odorous substances and specific emission limitation on certain odorous compounds.

Regulation 8, Rule 3, Architectural Coatings. The purpose of this Rule is to limit the quantity of volatile organic compounds in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the District.

Regulation 8, Rule 40. Aeration of Contaminated Soil and Removal of Underground Storage Tanks.

Santa Clara County General Plan

The Health and Safety Element of the County General Plan contains several policies related to air quality. The following policies are relevant to the proposed project (Santa Clara County 1994):

Policy C-HS 1. Ambient air quality for Santa Clara County should comply with standards set by State and federal law.

Policy C-HS 2. The strategies for maintaining and improving air quality on a countywide basis, in addition to ongoing stationary source regulation, should include:

- augmented growth management, land use, and development policies that help achieve air quality standards;
- transit systems that provide feasible travel options;
- increased travel demand management and traffic congestion relief; and
- particulate and small scale emission controls.

Policy C HS-3. Countywide or multi-jurisdictional planning by the cities and County should promote efforts to improve air quality and maximize the effectiveness of implementation efforts. Guidance and assistance from the BAAQMD shall be sought in the preparation of coordinated, multi-jurisdictional plans as well as in environmental review of projects that have potential for regionally significant air quality impacts.

TOXIC AIR CONTAMINANTS

Air quality regulations also focus on TACs, or in federal parlance, hazardous air pollutants (HAPs). In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts may not be expected to occur. This contrasts with the criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established (Table 4.7-3). Instead, the EPA and ARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available

control technology for toxics (MACT and BACT) to limit emissions. These, in conjunction with additional rules set forth by BAAQMD, establish the regulatory framework for TACs.

Federal Hazardous Air Pollutant Programs

The EPA has programs for identifying and regulating HAPs. Title III of the CAAA directed the EPA to promulgate national emissions standards for HAPs (NESHAP). The NESHAP may differ for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (TPY) of any HAP or more than 25 TPY of any combination of HAPs; all other sources are considered area sources. The emissions standards are to be promulgated in two phases. In the first phase (1992–2000), the EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring MACT. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), the EPA is required to promulgate health risk–based emissions standards where deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

The CAAA also required the EPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1-3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

State and Local Toxic Air Contaminant Programs

TACs in California are primarily regulated through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB can designate a substance as a TAC. To date, ARB has identified over 21 TACs, and adopted the EPA's list of HAPs as TACs. Most recently, diesel PM was added to the ARB list of TACs.

Once a TAC is identified, the ARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

ARB has adopted control measures for diesel PM and more stringent emissions standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators). In February 2000, ARB adopted a new rule for public-transit bus fleets and emissions standards for new urban buses. These new rules and standards include all of the following elements:

- more stringent emission standards for some new urban bus engines, beginning with 2002 model year engines;
- zero-emission bus demonstration and purchase requirements applicable to transit agencies; and
- reporting requirements, under which transit agencies must demonstrate compliance with the public-transit bus fleet rule.

Recent and future milestones include the low-sulfur diesel fuel requirement and tighter emissions standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide. Over time, replacing older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1,3-butadiene, diesel PM) have been reduced significantly over the last decade and will be reduced further in California through regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of ARB's *Diesel Risk Reduction Plan*, diesel PM concentrations are expected to be reduced by 75% in 2010 and 85% in 2020 relative to the 2000 baseline level (ARB 2000:2). Adopted regulations are also expected to continue reducing formaldehyde emissions from cars and light-duty trucks. As emissions are reduced, the risks associated with exposure to the emissions are also expected to be reduced.

In 2005, the ARB published the *Air Quality and Land Use Handbook: A Community Health Perspective*, which provides guidance concerning land use compatibility with TAC sources (ARB 2005). While not a law or adopted policy, the handbook offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries dry cleaners, gasoline stations, and industrial facilities to help keep children and other sensitive populations out of harm's way. A number of comments on the Handbook were provided to the ARB by air districts, other agencies, real estate representatives, and others. The comments included concern over whether the ARB was playing a role in local land use planning, the validity of relying on static air quality conditions over the next several decades in light of technological improvements, and support for providing information that can be used in local decision making.

Odors

Although offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable stress among the public and often generating citizen complaints to local governments and BAAQMD. BAAQMD's Regulation 7 (Odorous Substances) establishes general limitations on odorous substances and specific emission limitations on certain odorous compounds.

4.7.3 IMPACTS AND MITIGATION MEASURES

METHOD OF ANALYSIS

Short-term construction-generated emissions of criteria air pollutants and ozone precursors were modeled using the Urban Emission Model 2007 Version 9.2.4 computer program (URBEMIS) (Rimpo and Associates 2008). URBEMIS was used to determine whether short-term construction-related emissions of criteria air pollutants would exceed recommended thresholds and where mitigation would be required. Modeling was based on project-specific data, when available, and the same construction parameters used in the traffic analysis. However, when project-specific information (e.g., pace in which construction activity would occur, types of equipment to be used) was not available, reasonable assumptions and default settings were used to estimate emissions of CAPs and precursors. A detailed list of modeling assumptions is provided in Appendix B.

The operational emissions (i.e., regional area- and mobile-source emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$) associated with operation of the proposed project were also estimated using URBEMIS, as recommended by BAAQMD, based on inputs from the project description and default model settings where project-specific information was not available. Regional mobile-source emissions for the proposed project were estimated based on trip generation rates provided in Section 4.1, Traffic and Circulation, and default settings and parameters contained in URBEMIS for Santa Clara County.

Local mobile-source impacts were evaluated in accordance with screening criteria established by BAAQMD and traffic information provided in Section 4.1, Traffic and Circulation (BAAQMD 2010a).

Construction-generated emissions of TACs were evaluated using BAAQMD's screening-level methodology for exposure of receptors to health risks associated with construction activity (BAAQMD 2010b). The screening methodology determines the setback distance between a receptor and construction activity at which exposure to dispersed concentrations of construction-generated emission of TACs would not result in levels of health risk exposure that would exceed BAAQMD's thresholds of significance for cancer risk (an excess cancer risk level exceeding 10 in one million) or for chronic and acute risk (Hazard Index greater than 1.0 at the MEI) (BAAQMD 2010b). Operational emissions of TACs were evaluated qualitatively based on the level of diesel PM and $PM_{2.5}$ emissions associated with project operation, the locations from which these emissions are generated, and the proximity to off-site sensitive receptors.

The potential for construction activity and operations associated with the project to result in the airborne entrainment of NOA was qualitatively assessed in accordance with BAAQMD guidance (BAAQMD 2010a). The potential for exposure of people to airborne asbestos associated with the demolition of the radio tower, vehicle maintenance building, and former housing buildings that have asbestos-containing materials is discussed in Section 4.6, Hazards and Hazardous Materials.

The assessment of odor-related impacts was based on the proximity of nearby receptors and the history of confirmed odor complaints for similar biomass power plants in the region, which is also in accordance with BAAQMD guidance.

THRESHOLDS OF SIGNIFICANCE

Per Appendix G of the CEQA Guidelines and BAAQMD recommendations, air quality impacts are considered significant if implementation of the proposed project under consideration would do any of the following:

- conflict with or obstruct implementation of the applicable air quality plan,
- violate any air quality standard or contribute substantially to an existing or projected air quality violation,
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable NAAQS or CAAQS (including releasing emissions that exceed quantitative thresholds for ozone precursors),
- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

As stated in Appendix G, the significance of criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. Thus, in accordance with guidance provided by BAAQMD (BAAQMD 2010a), implementation of the proposed project would result in significant air quality impact at a project level of analysis if:

- Average daily construction emissions would exceed 54 pounds per day (lb/day) of reactive organic gases (ROG), oxides of nitrogen (NO_X), or ($PM_{2.5}$ exhaust, or 82 lb/day of PM_{10} exhaust. These quantitative thresholds for PM_{10} and $PM_{2.5}$ only apply to exhaust emissions;
- The project would not implement BAAQMD Best Management Practices for controlling fugitive dust during construction;
- Operational emissions would exceed 54 lb/day or 10 tons per year (TPY) of ROG, NO_X, or $PM_{2.5}$ exhaust, or 82 lb/day or 15 TPY of PM_{10} exhaust;

- The project would cause an excess cancer risk level exceeding 10 in one million or a Hazard Index greater than 1.0 at the maximally exposed individual (MEI); or
- The project would result in an incremental increase in ambient levels of $PM_{2.5}$ (annual average) that is greater than 0.3 micrograms per cubic meter ($\mu g/m^3$)
- Expose sensitive receptors to excessive nuisance odors, such that 5 or more confirmed odor complaints are received per year over a three-year period.

IMPACTS AND MITIGATION MEASURES

Impact 4.7-1 **Generation of Construction Emissions of NO_X and PM_{10}.** Construction and demolition activities associated with the project would generate exhaust and evaporative emissions of ozone precursors, ROG and NO_X, PM_{10}exhaust, and $PM_{2.5}$ exhaust. Construction-generated emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust would not exceed BAAQMD's respective quantitative thresholds. Therefore, construction-generated emissions of ROG and NO_X, PM_{10}exhaust, and $PM_{2.5}$ exhaust would not substantially contribute to emissions concentrations that exceed the NAAQS or CAAQS and would not violate or contribute substantially to the SFBAAB's nonattainment status with respect to ozone or particulate matter. However, emissions of fugitive PM_{10} dust (not exhaust, as described above) emitted during demolition, excavation, earth movement, and other ground disturbance activities would be substantial. Thus, construction-related emissions of fugitive dust (PM_{10} and $PM_{2.5}$) could violate or contribute substantially to the SFBAABs nonattainment status with respect to PM_{10} and $PM_{2.5}$, expose sensitive receptors to substantial pollutant concentrations, and/or conflict with air quality planning efforts. This would be a **significant** impact.

Construction emissions are considered short term and temporary in duration, but have the potential to represent a significant impact with respect to air quality. Respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$) are among the pollutants of greatest concern with respect to construction activities. Particulate emissions from construction activities can lead to adverse health effects and nuisance concerns, such as reduced visibility and soiling of exposed surfaces. Particulate emissions can result from a variety of construction activities, including demolition, excavation, grading, vehicle travel on paved and unpaved surfaces, and vehicle and equipment exhaust. Construction emissions of PM_{10} can vary greatly depending on the level of activity, the specific operations taking place, the number and types of equipment operated, local soil conditions, weather conditions, and the amount of earth disturbance (e.g., site grading, excavation, cut-and-fill).

Emissions of ozone precursors, ROG and NO_X, are primarily generated from mobile sources and vary as a function of the types and number of heavy-duty, off-road equipment used and the intensity and frequency of their operation; and the number of vehicle trips per day associated with delivery of construction materials, the importing and exporting of soil, vendor trips, and worker commute trips. A large portion of construction-related ROG emissions also result from the application of asphalt and architectural coatings and vary depending on the amount of coatings and paving applied each day.

Maximum, daily construction emissions for the proposed project were estimated using URBEMIS. URBEMIS is designed to model construction emissions for projects based on land use and type, and disturbed acreage; and allows for the input of project-specific information. Project-generated emissions of criteria air pollutants (e.g., PM_{10}) and precursors (i.e., ROG and NO_X) were modeled based on information provided in the project description and default settings and parameters attributable to a recreational land use and the project's location in the SFBAAB. URBEMIS also divides construction activity into distinct construction phases: demolition, site grading, asphalt paving, and facility construction. Construction activities are anticipated to occur in three phases.

Phase I would begin in the fall of 2012 and last 6 to 9 months; Phase II would begin in the fall of 2014; and Phase III would begin as early as 2017. Table 4.7-4 summarizes the modeled average daily emissions of ROG, NO_X, PM_{10} and $PM_{2.5}$ associated with construction of the proposed project. The emission values presented in Table 4.7-4 represent the average daily emissions for each phase. These estimates are considered to be conservative because it is unlikely that these all of these activities under each phase (e.g., demolition, grading, asphalt paving, building construction) would occur simultaneously and at a consistent rate throughout the entire construction period. These estimates are also conservative because they assume demolition of the radar tower; if the District opts to retain the radar tower, the demolition-related emissions would be lower. Refer to Appendix B for a detailed summary of the URBEMIS modeling assumptions, inputs, and outputs.

Table 4.7-4. Summary of Average Daily Construction Emissions of Criteria Air Pollutants and Precursors

Construction Phase	Pollutant Emissions (lb/day)					
	ROG	NO_X	PM_{10} Exhaust [1]	PM_{10} Dust	$PM_{2.5}$ Exhaust [1]	$PM_{2.5}$ Dust [1]
Phase 1 – Structural Demolition (all structures exclusive of the housing area, includes buildings, foundations, sidewalks, etc., in the project area, including the radar tower, in order to be conservative)	3.9	32.4	1.8	2.1	1.8	0.6
Phase 2 – Landform and Habitat Restoration; Construction of Connector Trail to Bald Mountain; Construction of parking lot at Bald Mountain; Repairs to Mt. Umunhum Road	7.6	50.5	2.9	150.3	2.9	31.5
Phase 3 – Demolition of Former Housing Area; Construction of Two Paved Parking Lots and Staging Areas; Installation of Multi-Use Trail	3.6	26.4	0.9	6.4	0.9	0.9
Average Daily Emissions for Total Construction Period	4.5	32.1	1.8	63.9	1.8	13.4
BAAQMD Significance Thresholds (lb/day) (Average Daily Emissions)	54	54	82	—[2]	54	—[2]

Notes: BAAQMD = Bay Area Air Quality Management District; lb/day = pounds per day; ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = particulate matter with aerodynamic diameter less than 10 microns; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns.

Bold represents an exceedance of the applicable threshold.

[1] BAAQMD's construction-related thresholds for PM_{10} and $PM_{2.5}$ are for exhaust emissions of these pollutants. Therefore, PM_{10} and $PM_{2.5}$ emissions shown are only those associated with construction-related exhaust (e.g., construction worker vehicles, material delivery trucks, heavy-duty construction equipment).

[2] BAAQMD's does not have a quantitative threshold of significance for fugitive PM_{10} and $PM_{2.5}$ fugitive dust. These values are provided for disclosure purposes only.

Detailed assumptions and modeling output files are included in Appendix B.

Source: Modeling performed by Ascent Environmental, Inc. 2011.

As shown in Table 4.7-4, the maximum daily levels of construction-generated ROG, NO_X , PM_{10} exhaust, and $PM_{2.5}$ exhaust during all three phases would not exceed BAAQMD's respective thresholds of significance. Therefore, construction-generated levels of ROG, NO_X , PM_{10} exhaust, and $PM_{2.5}$ exhaust would not substantially contribute to emissions concentrations that exceed the NAAQS or CAAQS and would not violate or contribute substantially to the SFBAAB's nonattainment status with respect to ozone or particulate matter.

However, with respect to fugitive PM_{10} (and $PM_{2.5}$) dust, BAAQMD recommends inclusion of basic best practices to control fugitive dust emissions during construction, whether or not construction-related emissions would exceed applicable quantitative thresholds. The high winds experienced at the summits of Mount Umunhum and Mount Thayer increase the likelihood that dust from disturbed surfaces would become re-entrained into the air. BAAQMD's basic control measures are not included as part of the project description. For these reasons, construction-generated fugitive dust emissions would be considered a **significant impact**.

Mitigation Measure 4.7-1

MROSD and all construction contractors shall implement the following basic control measures during construction, per BAAQMD's Air Quality Guidelines:

- *All un-compacted exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall either be watered two times per day when average winds exceed 20 miles per hour (mph) or covered with a dust palliative (e.g., mulch, straw). If watered, watering shall be done at a frequency adequate to maintain minimum soil moisture of 12%. Moisture content can be verified by lab samples or moisture probe.*

- *All haul trucks transporting soil, sand, demolished building materials, or other loose material off-site shall be covered.*

- *Erosion control seed mix shall be planted in disturbed areas where appropriate as soon as possible and watered as needed for up to three years.*

- *During windy days, the simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.*

- *All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.*

- *All vehicle speeds on unpaved roads shall be limited to 15 mph.*

- *All roadways, driveways, and sidewalks that are planned as part of the project to be paved shall be completed as soon as possible. Any building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.*

- *Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measures (ATCM) Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage about this requirement shall be provided for construction workers and truck drivers at all access points.*

- *All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.*

- *Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.*

Level of Significance After Mitigation

Mitigation Measures 4.7-1a and 4.7-1b combined are estimated to reduce construction-related emissions of fugitive PM emissions by approximately 75%. This would result in the implementation of all BAAQMD-recommended measures to prevent fugitive dust emissions from adversely affecting offsite receptors. This impact would be reduced to a **less-than-significant** level with mitigation incorporated.

Impact 4.7-2 **Generation of Long-Term Operation-Related (Regional) Emissions of Criteria Air Pollutants and Precursor Emissions.** Operation of the proposed project would not result in mass emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ that exceed BAAQMD's respective quantitative thresholds of significance. Thus, long-term operational emissions of criteria air pollutant and precursors would not violate or contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations, and/or conflict with air quality planning efforts. This would be a **less-than-significant** impact.

Operation of the proposed project would result in long-term regional emissions of ROG, NO_X, and PM_{10}, and $PM_{2.5}$ associated with area sources, such as natural gas emissions, landscaping maintenance equipment, applications of architectural coatings, in addition to emissions from vehicle trips associated with visits by preserve users and staff. According to the traffic data used to prepare Section 4.1, Traffic and Circulation, the proposed project would generate approximately 338 daily trips during peak use on a summer weekend day.

The operational emissions (i.e., regional area- and mobile-source emissions of ROG, NO_X, and PM_{10}, and $PM_{2.5}$) associated with implementation of the proposed project were estimated using URBEMIS, as recommended by BAAQMD, based on inputs from the project description and default model settings where project-specific information was not available. Regional mobile-source emissions for the proposed project were estimated based on trip generation rates provided in the traffic study prepared for the project (Section 4.1, Traffic and Circulation), and default settings and parameters contained in URBEMIS for Santa Clara County. The project's operational emissions are presented in Table 4.7-5. Refer to Appendix B for a detailed summary of the URBEMIS modeling assumptions, inputs, and outputs.

Table 4.7-5. Summary of Project-Generated Operational Emissions

Source	Pollutant Emissions [lb/day, (TPY)]			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Average Daily Emissions (TPY)				
Area Sources	0.54	0.00	0.00	0.00
Mobile Sources	0.45	0.64	1.20	0.23
Total	0.99	0.64	1.20	0.23
BAAQMD Operational Significance Thresholds	10	10	15	10
Average Daily Emissions (lb/day)				
Area Sources	3.0	0.0	0.0	0.0
Mobile Sources	2.5	3.5	6.6	1.3
Total	5.4	3.5	6.6	1.3
BAAQMD Operational Significance Thresholds	54	54	82	54

Notes:
BAAQMD = Bay Area Air Quality Management District; lb/day = pounds per day; ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = particulate matter with aerodynamic diameter less than 10 microns; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; lb/day = pounds per day; TPY = tons per year.
Detailed assumptions and modeling output files are included in Appendix B.
Bold represents an exceedance of the applicable threshold.
Source: Modeling performed by Ascent Environmental, Inc. 2011.

As shown in Table 4.7-5, the operational emissions associated with implementation of the proposed project would not exceed the applicable BAAQMD-recommended thresholds of significance for ROG, NO_X, PM_{10}, or $PM_{2.5}$. As a result, the project would not violate or contribute substantially to an existing air quality violation or conflict with air quality planning in the SFBAAB. As a result, this impact would be **less than significant**.

Mitigation Measure 4.7-2

No mitigation measures necessary.

Impact 4.7-3	**Generation of Local Mobile-Source CO Concentrations.** Project-generated local mobile-source CO emissions would not result in or substantially contribute to concentrations that exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm. Therefore, this impact would be **less than significant**.

CO concentration is a direct function of motor vehicle activity, particularly during peak commute hours, and meteorological conditions. Under specific meteorological conditions, CO concentrations may reach unhealthy levels with respect to local sensitive land-uses such as residential areas, schools, and hospitals.

In accordance with BAAQMD guidance, however, emissions from project-generated vehicle traffic would not exceed the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm because the project is consistent with all applicable transportation plans and local congestion management plans, and because the project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour. As a result, this impact would be **less than significant**.

Mitigation Measure 4.7-3

No mitigation measures necessary.

Impact 4.7-4	**Exposure of Sensitive Receptor to Exhaust Emissions of Toxic Air Contaminants.** Construction and operation of the proposed project would result in increased health risk levels associated with short-and long-term emissions of diesel PM and other TACs. However, the incremental increase in health risk levels, including cancer risk and noncancer chronic risk, would not exceed applicable thresholds at nearby sensitive receptors. As a result, this impact would be **less than significant**.

The exposure of sensitive receptors to emissions of TACs from on-site sources during construction and operation of the proposed project are discussed separately below.

Short-term Construction-Related Exhaust Emissions

Construction-related activities associated with the proposed project would result in temporary diesel PM exhaust and $PM_{2.5}$ emissions from off-road, heavy-duty diesel equipment used for demolition, soil excavation and soil movement, site grading, and construction of a limited number of facilities. BAAQMD provides a screening-level methodology for exposure of receptors to construction-related health risks associated with development. BAAQMD's screening methodology determines the setback distance between a receptor and construction activity at which exposure to dispersed concentrations of construction-generated emission of TACs would not result in levels of health risk exposure that would exceed BAAQMD's thresholds of significance for

cancer risk (an excess cancer risk level exceeding 10 in one million) or for chronic and acute risk (Hazard Index greater than 1.0 at the MEI) (BAAQMD 2010b). The length of the setback distance is determined by the size of the area (or the size of the structure being developed) in which construction activity will take place. The methodology used to develop BAAQMD's screening levels for evaluating health risk from construction emissions follows standard modeling procedures and risk assessment practice. The calculations and modeling inputs used by BAAQMD to develop its screening levels were based on the most conservative assumptions and information available in order to ensure that the screening levels would in no way underestimate the level of health risk exposure to receptors located near active construction equipment (BAAQMD 2010b).

Areas of the project that would have the most intense activity by construction equipment would include the approximate 20-acre area on the Mount Umunhum summit and the approximate 3-acre area on the Mt. Thayer summit during the first construction phase (demolition). According to BAAQMD's screening methodology receptors located more than 100 meters (328 feet) from the Mt. Thayer summit and more than 175 meters (574 feet) from the Mount Umunhum summit would not be exposed to construction-generated TACs that would exceed applicable thresholds (i.e., an excess cancer risk level exceeding 10 in one million, and a Hazard Index greater than 1.0). The closest receptor to these locations is a residence that is approximately 400 feet west of, and downhill from, the Mount Thayer summit. Improvements to Mount Umunhum Road would also involve some construction equipment along various segments. This level of activity would not be intense or be performed in close proximity to any sensitive receptors. Therefore, the impact from construction-related exhaust emissions of TACs would be less than significant.

Long-Term Operation-Related Emissions of TACs

Diesel PM could also be occasionally generated on the project site by diesel trucks associated with any maintenance activities on the project site. However, because this activity would be infrequent, not occur for extended periods of time, and not occur in close proximity to sensitive receptors, emissions of diesel PM associated with project operations would not result in health risk that exceed applicable thresholds.

Also, the proposed project would not include the operation of any permitted stationary sources of TACs, including $PM_{2.5}$. The level of operational emissions of $PM_{2.5}$ would be approximately 1.3 lb/day, as shown in Table 4.7-4 above. Because almost all of the $PM_{2.5}$ associated with project operations would be from vehicle trips to and from the project site, these emissions would not be generated in any one particular location for any length of time and this mass emissions level is not anticipated to exceed 0.3 $\mu g/m^3$ at any location. In addition, the proposed project would not locate sensitive receptors in close proximity to an existing source of TACs. As a result, this impact would be **less than significant**.

Mitigation Measure 4.7-4

No mitigation measures necessary.

Impact 4.7-5	**Exposure of Sensitive Receptor to Fugitive Dust Emissions Containing Naturally Occurring Asbestos.** During construction-related earth movement activities, serpentine soils may be disturbed. Without appropriate controls, nearby sensitive receptors could be exposed to localized high levels of re-entrained fugitive PM10 dust, potentially including NOA. As a result, this impact would be considered **potentially significant**.

Long-term use of the proposed project would not include vehicle travel on unpaved roadways and trail would not be built with any NOA-containing materials. However, ground disturbance activities during site demolition,

earth movement, and construction would result in fugitive PM_{10} dust emissions. As stated in the setting above, some areas of the project site may contain serpentine or other ultramafic rock that is located in various parts of the Bay Area. These types of rock contain thin veins of asbestos that can become airborne when disturbed by construction equipment. According to a map prepared by the U.S. Geological Survey (USGS) and the California Department of Conservation Division of Mines and Geology, the project area, including areas near the summits of Mt. Umunhum and Mt. Thayer include serpentine rock or soils, which are considered to be "areas moderately likely to contain Naturally Occurring Asbestos" (California Department of Conservation 2000). Although geologic conditions are more likely for asbestos formation in particular areas identified by the map, the presence thereof is not certain.

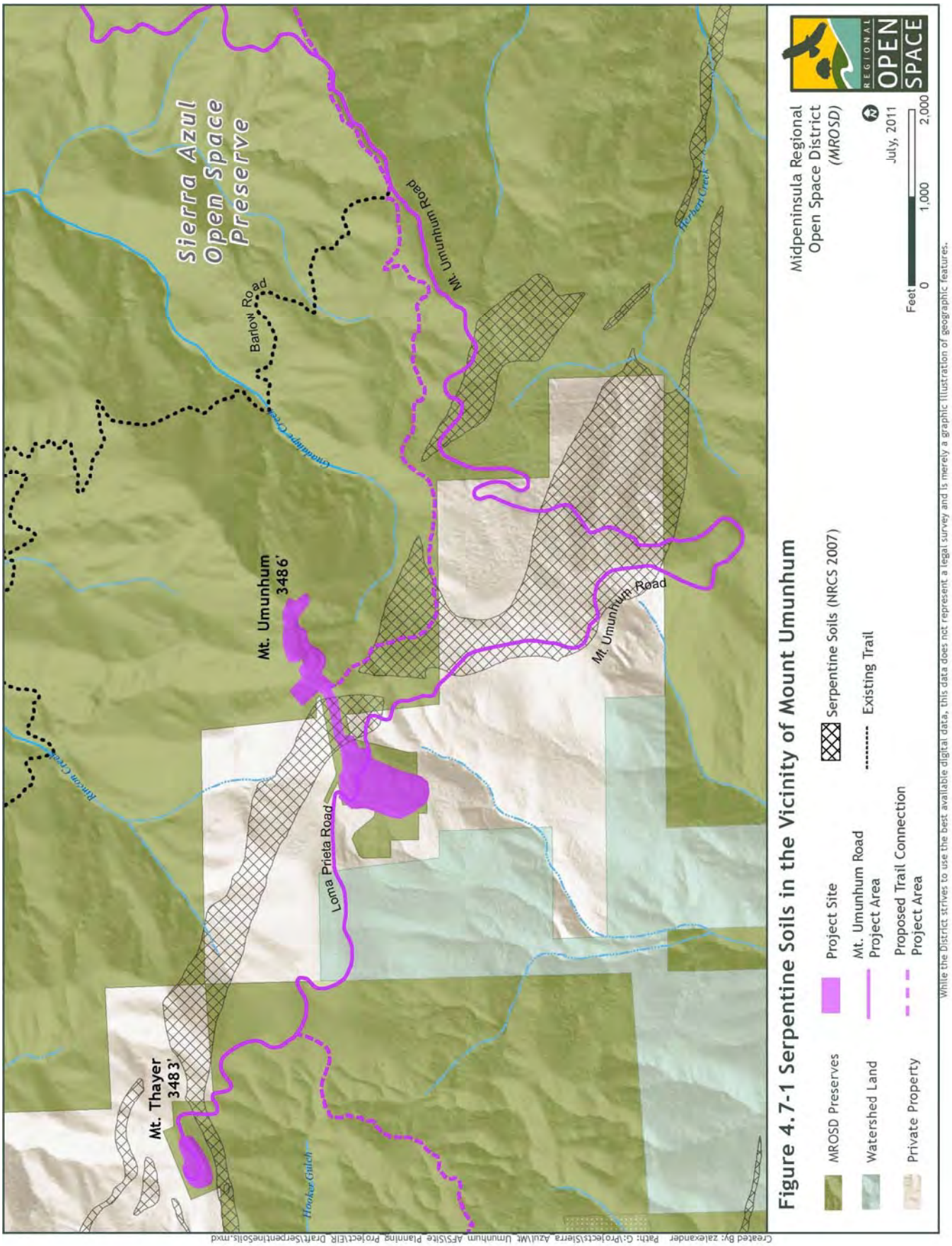
USGS-mapped locations of serpentine and ultramafic rock within the project area were confirmed on site by a geologist (Joyce, pers. comm., 2011) and occur in an approximately 200 meter wide band between the Mt. Umunhum summit and the former housing area. (See Exhibit 4.7-1) Areas within this zone are primarily intact native habitat and would not be disturbed as part of the project. However, the main, paved access road to the summit bisects the band of ultramafic rock, and debris removal and road bank stabilization would be required in this area. Detailed construction plans for the project have not been developed. During earth movement activity, the ultramafic/serpentine soils may be disturbed, potentially exposing workers and possible distant residents to NOA during project construction. Without appropriate controls, sensitive receptors near construction areas (e.g., off-site rural residences of which the closest is located approximately 400 feet west of, and downhill from, the Mount Thayer summit) could be exposed to localized high levels of re-entrained fugitive PM_{10} dust, potentially including NOA. As a result, this impact would be considered **potentially significant**.

Mitigation Measure 4.7-5

Utilizing a qualified geologist, project-related construction and grading would be sited to avoid ultramafic rock to the maximum extent feasible. If construction or grading in ultramafic substrates would be unavoidable, MROSD shall conduct an investigation to determine whether and where NOA is present. The site investigation shall include the collection of soil and rock samples by a qualified geologist. If the site investigation determines that NOA is present on the project site then MROSD shall comply with the requirements of BAAQMD's naturally occurring asbestos program by submitting an Asbestos Dust Mitigation Application and any other applicable notification forms to BAAQMD pursuant to BAAQMD's ATCM Inspection Guidelines Policies and Procedures. Completion of the Asbestos Dust Mitigation Application largely consists of the development of an asbestos dust control plan, which specifies measures for preventing or minimizing the generation of NOA-containing dust associated with track-out onto paved public roads, active storage piles, inactive disturbed surfaces and storage piles, traffic on un-paved surfaces and roads, earthmoving activities, off-site transport of materials, and stabilization of disturbed soil surfaces post construction. In order to fulfill the requirements of Section 93105 of the California Health and Safety Code, "Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations," the asbestos dust control plan shall specify measures, such as periodic watering to reduce airborne dust and ceasing construction during high winds, that shall be taken to ensure that no visible dust crosses the property line. Measures in the Asbestos Dust Control Plan may include but shall not be limited to dust control measures required by Mitigation Measure 4.7-1. MROSD shall submit the plan to BAAQMD for review and approval before construction. Upon approval of the asbestos dust control plan by BAAQMD, the MROSD shall ensure that construction contractors implement the terms of the plan throughout the construction period.

Level of Significance after Mitigation

Implementation of Mitigation Measure 4.7-5 would minimize the potential for area residents to be exposed to airborne NOA dust, and this impact would be reduced to a **less-than-significant** level.


Sierra Azul Open Space Preserve
Mt. Umunhum Road
Barlow Road
Mt. Umunhum 3486'
Mt. Umunhum Road
Loma Prieta Road
Mt. Thayer 3483'
Hooker Gulch
Herbert Creek
Figure 4.7-1 Serpentine Soils in the Vicinity of Mount Umunhum
MROSD Preserves
Watershed Land
Private Property
Project Site
Mt. Umunhum Road Project Area
Proposed Trail Connection Project Area
Serpentine Soils (NRCS 2007)
Existing Trail
Midpeninsula Regional Open Space District (MROSD)
July, 2011
Feet
0
1,000
2,000
While the District strives to use the best available digital data, this data does not represent a legal survey and is merely a graphic illustration of geographic features.
Created By: zalexander Path: G:\Projects\Sierra Azul\Mt Umunhum AFS\Site Planning Project\EIR Draft\SerpentineSoils.mxd

Impact 4.7-6	**Exposure of Sensitive Receptor to Odorous Emissions.** Construction and operation of the proposed project would not involve the addition of new odor sources into the area that would adversely affect off-site receptors or on-site recreational users. Therefore, this impact would be considered **less than significant**.

The occurrence and severity of odor impacts depends on numerous factors, including: the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. While offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and regulatory agencies. Projects with the potential to frequently expose a substantial number of members of the public to objectionable odors would be deemed to have a significant impact.

The construction of the proposed project would result in diesel exhaust emissions from on-site construction equipment. The diesel exhaust emissions would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. Thus, it is not anticipated that nearby receptors, which are located no closer than 400 feet away, would be exposed to noticeably strong concentrations of odorous diesel exhaust.

The project may also include the addition of four vault toilets: one as part of a campground, one at each of two paved parking areas, and one at the restored summit. Odors associated with vault toilets are not typically noticeable outside the structures or more than a short distance from them. Also, the vault toilets will be properly maintained by District staff and/or the campground host. Thus, odors associated with the vault toilets are not anticipated to adversely affect any off-site receptors or the experience of recreational users of the project. This impact would be considered **less than significant**.

Mitigation Measure 4.7-6

No mitigation measures necessary.

4.8 GLOBAL CLIMATE CHANGE

Emissions of greenhouse gases (GHGs) have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. The proper context for addressing this issue in an EIR is as a discussion of cumulative impacts, because although the emissions of one single project will not cause global climate change, GHG emissions from multiple projects throughout the world could result in a cumulative impact with respect to global climate change. In turn, global climate change has the potential to result in rising sea levels, which can inundate low-lying areas; to affect rainfall and snowfall, leading to changes in water supply; to affect habitat, leading to adverse effects on biological resources; and to result in other effects.

Therefore, the cumulative global climate change analysis presented in this section of the Draft EIR estimates and analyzes the GHG emissions associated with project-related construction activities and operation of the proposed project. The potential effects of global climate change on the project are also identified based on available scientific literature.

The analysis is presented here, rather than the cumulative impacts section of the Draft EIR (Chapter 5), because although the impact is cumulative, it is different from typical cumulative impact analyses. GHG is caused by emissions throughout the world, and to that end is an ultimate cumulative impact. The cumulative impact analysis in this Draft EIR, as it relates to other issues, is focused on a more local scale: the project combined with other projects within the resource area, the watershed, the air basin, and the like, depending on the resource issue. Therefore, this analysis focuses on the project's contribution to this global issue.

4.8.1 EXISTING SETTING

Cumulative impacts are the collective impacts of one or more past, present, and future projects that, when combined, result in adverse changes to the environment. In determining the significance of a proposed project's contribution to anticipated adverse future conditions, a lead agency should generally undertake a two-step analysis. The first question is whether the *combined* effects from *both* the proposed project *and* other projects would be cumulatively significant. If the agency answers this inquiry in the affirmative, the second question is whether "the proposed project's *incremental* effects are cumulatively considerable" and thus significant in and of themselves. The cumulative project list for this issue (climate change) comprises anthropogenic (i.e., human-made) GHG emissions sources across the globe, and no project alone would reasonably be expected to contribute to a noticeable incremental change to the global climate. However, legislation and executive orders on the subject of climate change in California have established a statewide context and a process for developing an enforceable statewide cap on GHG emissions. Given the nature of environmental consequences from GHGs and global climate change, CEQA requires that lead agencies consider evaluating the cumulative impacts of GHGs, even relatively small (on a global basis) additions. Small contributions to this cumulative impact (from which significant effects are occurring and are expected to worsen over time) may be potentially considerable and therefore significant.

This discussion presents the current state of climate change science and GHG emissions sources in California; a summary of applicable regulations; and a description of project-generated GHG emissions and their contribution to global climate change.

ATTRIBUTING CLIMATE CHANGE—THE PHYSICAL SCIENTIFIC BASIS

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. The earth has a much lower temperature than the sun and, thus, the sun emits short-wave radiation (e.g., solar) and the earth long-wave radiation (e.g., terrestrial). Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on Earth. Without the greenhouse effect, Earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is *extremely unlikely* that global climate change of the past 50 years can be explained without the contribution from human activities (Intergovernmental Panel on Climate Change [IPCC] 2007).

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 54% is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46% of human-caused CO_2 emissions remains stored in the atmosphere (Seinfeld and Pandis 1998).

Similarly, impacts of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and toxic air contaminants. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice it to say, the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or micro climates. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

ATTRIBUTING CLIMATE CHANGE—GREENHOUSE GAS EMISSION SOURCES

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial and agricultural emissions sectors (ARB 2010). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (ARB 2010). Emissions of CO_2 are byproducts of fossil fuel combustion. CH_4, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) is largely associated with agricultural practices and landfills. N_2O is also largely attributable to agricultural practices and soil management. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution, respectively, two of the most common processes of CO_2 sequestration.

State Greenhouse Gas Emissions Inventory

According to different ranking systems, California is the 12th to 16th largest emitter of CO_2 in the world (CEC 2006a). California produced 478 million gross metric tons of CO_2 equivalent (CO_2e) in 2008 (ARB 2010). CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, as described in Appendix C, "Calculation References," of the General Reporting Protocol of the California Climate Action Registry (CCAR) (CCAR 2009), 1 ton of CH_4 has the same contribution to the greenhouse effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2. Expressing emissions in CO_2e takes the contributions of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 37% of total GHG emissions in the state (ARB 2008). This sector was followed by the electric power sector (including both in-state and out-of-state sources) (24%) and the industrial sector (19%) (ARB 2010).

Local Inventory

The Bay Area Air Quality Management District (BAAQMD), which has jurisdiction over Santa Clara County and other counties in the San Francisco Bay Area, conducted a GHG emissions inventory for the 2007 base year. A summary of this regional GHG inventory is presented in Table 4.10-1. Santa Clara County has not developed a community-wide GHG inventory at the time of writing this Draft EIR.

Table 4.8-1. Summary of Regional Greenhouse Gas Emissions Inventory for the San Francisco Bay Area Air Basin (Base Year 2007)

End-Use Sector	Percent of Total Emissions	CO_2e (MMT/year)
Industrial/Commercial	36.40%	34.86
Residential Fuel Usage	7.12%	6.82
Electricity/Co-Generation[a]	15.87%	15.20
Off-Road Equipment	3.05%	2.92
Transportation	36.41%	34.87
Agriculture/Farming	1.16%	1.11
Total	**100%**	**95.8**

CO_2e = carbon dioxide equivalent; MMT/year = million metric tons per year.
[a] Includes emissions associated with the consumption of electricity imported to the region.
Sources: BAAQMD 2010a

ADAPTATION TO CLIMATE CHANGE

According to the IPCC, which was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, global average temperature is expected to increase by 3–7°F by the end of the century, depending on future GHG emission scenarios (IPCC 2007). Resource areas other than air quality and global average temperature could be indirectly affected by the accumulation of GHG emissions. For example, an increase in the global average temperature is expected to result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. According to the California Energy Commission (CEC 2006b), the snowpack portion of the State's water supply could potentially decline by 30–90% by the end of the 21st century. An increase in precipitation falling as rain rather than snow also could lead to increased potential for floods because water that would normally be held in the Sierra Nevada until spring could flow into the Central Valley concurrently with winter storm events. This scenario would place more pressure on California's levee/flood control system.

Another outcome of global climate change is sea level rise. Sea level rose approximately 7 inches during the last century and it is predicted to rise an additional 7–22 inches by 2100, depending on the future levels of GHG emissions (IPCC 2007). As the existing climate throughout California changes over time, the ranges of various plant and wildlife species could shift or be reduced, depending on the favored temperature and moisture regimes of each species. In the worst cases, some species would become extinct or be extirpated from the state if suitable conditions are no longer available. Climate change is also expected to lead to increased frequency and intensity of wildfire in California as a result of shifting precipitation patterns and temperature (CEC 2006c).

4.8.2 REGULATORY SETTING

GREENHOUSE GASES

The ways GHG emissions are being regulated and addressed at the federal, state, and local levels is summarized below. While some of the regulations and policies are not directly related to the proposed project, this regulatory setting is an overview of the approaches regulatory agencies are using to address global climate change.

Federal Plans, Policies, Regulations, and Laws

EPA is the federal agency responsible for implementing the Clean Air Act (CAA). The Supreme Court of the United States ruled on April 2, 2007 that CO_2 is an air pollutant as defined under the CAA, and that EPA has the authority to regulate emissions of GHGs. In response to the mounting issue of climate change, EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.

Proposed Greenhouse Gas Permitting Requirements on Large Industrial Facilities

On September 30, 2009, EPA proposed new thresholds for GHG emissions that define when CAA permits under the New Source Review and Title V operating permits programs would be required. The proposed thresholds would tailor these permit programs to limit which facilities would be required to obtain permits and would cover nearly 70% of the nation's largest stationary source GHG emitters—including power plants, refineries, and cement production facilities, while shielding small businesses and farms from permitting requirements.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement will provide EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO_2 per year. This publically available data will allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial greenhouse gases along with vehicle and engine manufacturers will report at the corporate level. An estimated 85% of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

National Program to Cut Greenhouse Gas Emissions and Improve Fuel Economy for Cars and Trucks

On September 15, 2009, EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) proposed a new national program that would reduce GHG emissions and improve fuel economy for all new cars and trucks sold in the United States. EPA proposed the first-ever national GHG emissions standards under the CAA, and NHTSA proposed Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act. This proposed national program would allow automobile manufacturers to build a single light-duty national fleet that satisfies all requirements under both Federal programs and the standards of California and other states.

Endangerment and Cause or Contribute Findings

On December 7, 2009, EPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). The Endangerment Finding is based on Section 202(a) of the CAA, which states that the Administrator (of EPA) should regulate and develop standards for "emission[s] of air pollution from any class or classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." The rule addresses Section 202(a) in two distinct findings. The first addresses whether or not the concentrations of the six key GHGs (i.e., carbon dioxide [CO_2], methane [CH_4], nitrous oxide [N_2O], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF_6]) in the atmosphere threaten the public health and welfare of current and future generations. The second addresses whether or not the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and therefore the threat of climate change.

The Administrator found that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are very likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

The Administrator also found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHGs fit within the CAA definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but rather allow EPA to finalize the GHG standards proposed earlier in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the CCAA, which was adopted in 1988.

Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way, and there is a real potential for severe adverse environmental, social, and economic effects in the long term. Because every nation emits GHGs and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

Assembly Bill 1493

In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493. AB 1493 requires that ARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by ARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, in 2004 ARB approved amendments to the California Code of Regulations (CCR) adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1) require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight rating less than 10,000 pounds that is designed primarily for the transportation of persons), beginning with the 2009 model year. Implementation of AB 1493 lapsed due to delays in receiving proper approvals from EPA to implement this law under the CAA. California received the necessary approvals June 30, 2009, however, the State has agreed to allow the federal government to implement similar legislation (see above discussion of National Program to Cut Greenhouse Gas Emissions and Improve Fuel Economy for Cars and Trucks).

Executive Order S-3-05

Executive Order S-3-05, which was signed by Governor Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea level. To combat those concerns, the Executive Order established total GHG emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80% below the 1990 level by 2050.

Assembly Bill 32, the California Global Warming Solutions Act of 2006

In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources.

Assembly Bill 32, Climate Change Scoping Plan

On December 11, 2008 ARB adopted its *Climate Change Scoping Plan* (Scoping Plan), which functions as a roadmap of ARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations (ARB 2008). The Scoping Plan contains the main strategies California will implement to reduce CO_2e emissions by 169 MMT, or approximately 30%, from the state's projected 2020 emissions level of 596 MMT of CO_2e under a business-as-usual scenario. (This is a reduction of 42 MMT CO_2e, or almost 10%, from 2002–2004 average emissions, but requires the reductions in the face of population and economic growth through 2020.) The Scoping Plan also breaks down the amount of GHG emissions reductions ARB recommends for each emissions sector of the state's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO_2e),
- the Low-Carbon Fuel Standard (15.0 MMT CO_2e),
- energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO_2e), and
- a renewable portfolio standard for electricity production (21.3 MMT CO_2e).

ARB has not yet determined what amount of GHG emissions reductions it recommends from local government land use decisions; however, the Scoping Plan does state that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions. ARB further acknowledges that decisions on how land is used will have large effects on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. The Scoping Plan states that the ultimate assignment to local government operations is to be determined (ARB 2008).

With regard to local land use planning, the Scoping Plan expects a reduction of approximately 5.0 MMT CO_2e from local land use changes associated with implementation of SB 375, discussed above. Also noteworthy is the fact that the Scoping Plan does not include any direct discussion about GHG emissions generated by construction activity.

Executive Order S-1-07

Executive Order S-1-07, which was signed by Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, at over 40% of statewide emissions. It establishes a goal that the carbon intensity of transportation fuels sold in California should be reduced by a minimum of 10% by 2020. This order also directed ARB to determine if this Low Carbon Fuel Standard could be adopted as a discrete early action measure after meeting the mandates in AB 32. ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

Senate Bill 1368

SB 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 required the California Public Utilities Commission (CPUC) to establish a GHG performance standard for baseload generation from investor-owned utilities by February 1, 2007. The CEC was also required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas fired plant. The legislation further requires that all

electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

Senate Bills 1078 and 107 and Executive Order S-14-08

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20% of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Energy Standard to 33% renewable power by 2020.

Senate Bill 97

As directed by SB 97, the Natural Resources Agency adopted Amendments to the CEQA Guidelines for greenhouse gas emissions on December 30, 2009. On February 16, 2010, the Office of Administrative Law approved the Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The Amendments became effective on March 18, 2010. This Draft EIR complies with these new guidelines.

Senate Bill 375

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS), which will prescribe land use allocation in that MPO's Regional Transportation Plan (RTP). ARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every 8 years, but can be updated every 4 years if advancements in emissions technologies affect the reduction strategies to achieve the targets. ARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG emission reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

SANTA CLARA COUNTY PLANS AND POLICIES

Santa Clara County General Plan

The Santa Clara County General Plan, adopted in 1994, contains several goals and policies related to the proposed project that would reduce GHG emissions and address global climate change (Santa Clara County 1994). Relevant policies from the County's General Plan are listed below.

Policy C-RC 9. Conservation should continue to be considered an integral component of local water "supply" resources, effectively minimizing the amount of supplemental supplies which must be obtained from other sources.

Policy C-RC 13. Use of reclaimed wastewater for landscaping and other uses, including groundwater recharge if adequately treated, should be encouraged and developed to the maximum extent possible.

Policy C-RC 77. Energy efficiency and conservation efforts in the transportation, industrial, commercial, residential, agricultural and public sectors shall be encouraged at the local, county (sub-regional), and regional level.

Policy C-RC 78. The objectives of the state energy plan should be implemented at the local and regional level through an overall strategy consisting of reducing transportation energy demand and oil-dependency; conserving energy in residential, commercial, agricultural, and industrial sectors; and increasing consumer and general public awareness through education.

Policy C-RC 79. Energy use and fossil fuel dependency in the transportation sector should be reduced by the following general means: growth management policies and implementation to minimize increases in the extent of the urbanized area and to promote balanced, compact urban development; land use and development standards which support alternative transportation modes; travel demand management, TDM, and transportation system operational efficiency; expanded transit service; and increased availability and use of alternative fuels.

Policy C-RC 80. Sub-regional/countywide planning for Santa Clara County should place major emphasis on the inter-related goals, strategies and policies for improving energy efficiency in transportation, air quality, and reducing traffic congestion.

Policy C-RC 81. Energy conservation in existing buildings and homes, particularly those pre-dating adoption of energy-efficiency building code standards, should be improved and encouraged.

Policy C-RC 82. Alternatives to non-renewable energy sources should be encouraged and implemented in the design of new buildings and incorporated in the redesign and reconstruction of older buildings.

Policy C-RC 84. Countywide efforts to promote energy efficiency and conservation awareness should be continued and coordinated through public utilities, community organizations, the educational system, industries, and government. Direction and assistance of local gas and electric utilities should be sought in the development of education programs.

Green Building Ordinance

The County of Santa Clara has adopted a Green Building Ordinance (Santa Clara County 2008). It is the policy of the County of Santa Clara Board of Supervisors that all County facility projects incorporate green building standards, as defined by the U.S. Green Building Council in their Leadership in Energy and Environmental Design (LEED) program. County facility projects affected by this policy include new buildings, renovations, and adaptive re-use of an existing facility, whether owned or leased. The proposed project would comply with the Green Building Policy and would meet appropriate LEED program goals for design and construction of all new buildings.

Cool Counties Climate Stabilization Declaration

In 2007, the Board of Supervisors signed the Cool Counties Climate Stabilization Declaration and established the following GHG reduction goals:

- Stop increasing the amount of emissions by 2010
- Decrease GHG emissions by 10 percent every 5 years from 2010 – 2050
- Reach an 80 percent reduction by 2050

Climate Change and Sustainability Program

Santa Clara County formed its Climate Change and Sustainability Program in July 2008. The initial focus of the program was to reduce GHG emissions in the County's facilities and operations and in the community. The

County of Santa Clara signed the Bay Area Climate Change Compact in March 2009. The Compact addresses green building, transportation, renewable energy, energy efficiency, green jobs, water, climate adaptation plans, public information campaign, waste diversion, and green municipal fleets. By signing the Compact, the County of Santa Clara committed to collaborating with regional partners to meeting goals outlined in the Compact. County policies that contribute to this effort include the Green Building Ordinance, adopted in 2008 (and discussed above).

More recently, in April of 2010 the County of Santa Clara adopted Policies on Sustainability which recognize the County's commitment to "building and maintaining a healthy and safe community for current and future generations through preserving natural resources and the environment, fostering a healthy economy and meeting the needs of all residents with respect and cultural awareness." The policies on sustainability develop public policy and programs that support and provide balance between a vibrant economy, healthy environment, and social equity. The County's Final Comprehensive Vehicle Policy also reduces GHG emissions by implementing an anti-idling policy which requires all County drivers turn off vehicle engines within specified time frames upon stopping at their destination (e.g., no more than 1 minute consecutively or periods of more than 5 minutes).

4.8.3 Impacts and Mitigation Measures

Method of Analysis

Both construction-and operation-related emissions associated with implementation of the proposed project were estimated using urban emissions software (URBEMIS) (Rimpo and Associates 2008), as recommended by BAAQMD, based on inputs from the project description and default model settings where project-specific information was not available. Regional mobile-source emissions for the proposed project were estimated based on trip generation rates provided in Section 4.10, Traffic and Circulation, and conservative estimates of the average trip length by visitors to the project area. These same parameters were used to estimate construction- and operation-related emissions of criteria air pollutants and precursors Section 4.2, Air Quality.

Indirect emissions are GHG emissions that would occur off-site at utility providers associated with the generation of electricity to serve a project, including electricity associated with conveyance of water to the project site. For the proposed project, any on-site demand for electricity or water conveyance would be powered with solar panels and/or propane. GHG emissions resulting from propane combustion were estimated using emission rates published by the California Climate Action Registry (CCAR 2009).

Thresholds of Significance

Per Appendix G of the CEQA Guidelines, climate change-related impacts are considered significant if implementation of the proposed project under consideration would do any of the following:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases

As stated in Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to determine the significance of GHG or climate change impacts. Pursuant to BAAQMD's 2010 CEQA Air Quality Guidelines (BAAQMD 2010b), the proposed project would result in a significant air quality impact if it would:

- Result in annual operational emissions greater than 1,100 metric tons per year (MT/yr) of CO_2e.

If annual emissions of operational-related GHGs exceed these levels, the proposed project would result in a cumulatively considerable contribution of GHG emissions and a cumulatively significant impact to global climate change. BAAQMD, or any other air district in the state, has not established a threshold of significance for evaluating construction-generated GHG emissions.

IMPACTS AND MITIGATION MEASURES

Impact 4.8-1	**Generation of GHG Emissions.** Implementation of the proposed project would result in generation of GHGs. However, because the project's operational emissions would be less than BAAQMD's threshold of significance, the project would not conflict with the goals of AB 32 or the goals of any local plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Thus, the project's contribution of GHG emissions would not be cumulatively considerable and this impact would be **less than significant**.

The proposed project would result in GHG emissions during construction (short-term, intermittent) and operation (long-term). GHG emissions from construction and operation are described separately below.

Short-Term Construction-Related Emissions

BAAQMD does not have an adopted significance threshold for GHG emissions from construction. GHG emissions from construction were estimated and are disclosed here for informational purposes.

Construction emissions are considered short-term and temporary in duration. GHG emissions are primarily generated from mobile sources and vary as a function of the types and number of heavy-duty, off-road equipment used and the intensity and frequency of their operation; and the number of vehicle trips per day associated with delivery of construction materials, the importing and exporting of soil, vendor trips, and worker commute trips.

Construction-generated GHG emissions were estimated using URBEMIS. URBEMIS is designed to model construction emissions for projects based on land use and type, and disturbed acreage; and allows for the input of project-specific information. Construction-related GHGs were modeled based on information provided in the project description and default settings. URBEMIS also divides construction activity into distinct construction phases: demolition, site grading, asphalt paving, and facility construction. Construction activities are anticipated to occur in three phases; timing and duration of all phases are funding-dependent and the following schedule is a best estimate: Phase I would begin in the fall of 2012 and last 6 to 9 months; Phase II would begin as early as fall of 2014; and Phase III would begin as early as 2017. GHG emissions would not differ substantially if any construction phase were to begin at a later time. Table 4.8-2 summarizes the mass level of GHG emissions by phase. Note that these emissions estimates are conservative because phases were assumed to overlap and because demolition-related emissions assumed removal of the radar tower (for the sake of a conservative model estimate). Refer to Appendix B for a detailed summary of the URBEMIS modeling assumptions, inputs, and outputs.

Table 4.8-2. Summary of Construction-Related GHG Emissions	
Construction Phase	**CO_2e (MT)**
Phase 1 – Structural Demolition of the Operations and Cantonment Areas (includes all buildings, foundations, sidewalks, etc., on site including the radar tower, in order to remain conservaite)	239
Phase 2 –Environmental Restoration; Construction of Connector Trail to Bald Mountain; Construction of Parking/Staging area at Bald Mountain; Repairs to Mt. Umunhum Road	348
Phase 3 – Demolition of Former Housing Area; Construction of Two Paved Parking Lots and Staging Areas; Installation of Multi-Use Trail	85
Total GHG Emissions During Construction Period (MT)	671
BAAQMD Significance Threshold	n/a

Notes: BAAQMD = Bay Area Air Quality Management District; CO_2e = carbon dioxide equivalent; GHG = greenhouse gas; MT = metric tons; n/a = not applicable.
Totals may not sum exactly due to rounding.
Detailed assumptions and modeling output files are included in Appendix B.
Source: Modeling performed by Ascent Environmental, Inc. 2011.

As shown in Table 4.8-2, construction of the proposed project would result in approximately 671 metric tons of CO_2e over the construction period. Because construction would occur over a finite period of time after which all construction-related GHG emissions would cease, and the construction phase would not be the dominant source of GHG emissions from the project, this quantity of emissions is not cumulatively considerable, and therefore would not substantially contribute to the cumulative impact of climate change.

Long-Term Operation-Related Emissions

GHG emissions would also be generated throughout the operational life of the proposed project. The net increase in operational emissions (regional area-, mobile-, and indirect-source emissions of GHGs) associated with implementation of the proposed project was estimated using URBEMIS, as recommended by BAAQMD, based on inputs from the project description. Regional mobile-source emissions for the proposed project were estimated based on trip generation rates provided in Section 4.1, Traffic and Circulation and default settings and parameters contained in URBEMIS. As stated in the project description, solar electricity may be generated on site. However, some propane may be used to provide additional electricity and/or to power pumps for the conveyance of water from neighboring private landowner(s). Emissions of GHGs associated with the combustion of propane were estimated using emission rates published by the California Climate Action Registry (CCAR 2009). The net increase in operational emissions is presented in Table 4.8-3. Please note that long-term operational-related energy needs may be meet through a combination of using energy from the grid, solar, and propane, but the exact details are not known at this time. If such were to occur, emission would be less than those summarized below in Table 4.8-3.

Table 4.8-3. Summary of Net Increase in Project-Generated Operational Emissions	
Source	**CO_2e (MT/year)**
Area Sources	0.3
Mobile Sources	688.4
Propane Consumption (for any electricity and water transport needs)	11.5
Net Change in Operational Emissions	**700.2**
BAAQMD Operational Significance Thresholds	1,100 (4.6 MT CO_2e/SP/year)

Notes: BAAQMD = Bay Area Air Quality Management District; GHG = greenhouse gas; CO_2e = carbon dioxide equivalent; GHG = greenhouse gas;
MT = metric tons; SP = service population.
Service population was assumed to be 112 employees and 0 residences.
Detailed assumptions and modeling output files are included in Appendix B.
Source: Modeling performed by Ascent Environmental, Inc. 2011.

As shown in Table 4.8-3, the operational emissions associated with implementation of the proposed project would be approximately 700 MT CO_2e/year. The project's operational GHG emissions would not exceed BAAQMD's threshold of 1,100 MT CO_2e/year. In addition, project-generated GHG emissions would not conflict with the goals of AB 32 or the goals of any local plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Thus, the project's contribution of GHG emissions would not be cumulatively considerable and this impact would be **less than significant**.

Mitigation Measure 4.8-1

No mitigation measures necessary.

Impact 4.8-2 **Impacts of Climate Change on the Environmental Restoration and Public Access Plan.** Climate change is expected to result in a variety of effects on the project area including changes in precipitation, increased risk of drought and landslides, and increased frequency and intensity of wildfire. Substantial negative effects on facility operations and structures could result; however the project includes attributes to enable it to adapt to or withstand these effects. This impact would be **less than significant**.

As discussed previously in Section 4.8.1, human-induced increases in GHG concentrations in the atmosphere have led to increased global average temperatures (global warming) through the intensification of the greenhouse effect, and associated changes in local, regional, and global average climatic conditions.

Although there is strong scientific consensus that global climate change is occurring and is influenced by human activity, there is less certainty as to the timing, severity, and potential consequences of the climate phenomena. Scientists have identified several ways in which global climate change could alter the physical environment in California (IPCC 2007, CEC 2006b, DWR 2006). These include:

- increased average temperatures;
- modifications to the timing, amount, and form (rain vs. snow) of precipitation;
- changes in the timing and amount of runoff;
- reduced water supply;
- more variable water reservoir levels;
- deterioration of water quality; and,
- elevated sea level.

These changes may translate into a variety of affects that may affect the project area, including but not limited to:

- increased frequency and intensity of wildfire as a result of changing precipitation patterns and temperatures;
- increased risk of flooding in roadside drainages and landslide associated with changes to precipitation patterns; and
- changes in composition, health, and distribution of terrestrial ecosystems

Although uncertainty exists to the precise levels of these impacts, there is consensus regarding the range, frequency, or intensity of these impacts that can be expected. Climate change is an issue on global scale and the affects described above are likely to occur whether or not the proposed project is adopted by the District. Drier conditions and warmer temperatures resulting from climate change may influence the type of plant and animal species that can be supported by the project area. While conditions change that make the area less suitable for some species, the area may become more suitable for others. Changes to the fire ecology regime may have the same effects. Because the project site is located sufficiently far above sea level (between 280-3,486 feet in elevation) it is not anticipated that the proposed project would be affected by sea level rise.

In determining whether these effects are adverse to an extent that they would be considered impacts, the objective of the proposed project shall be considered. Foremost, the proposed project does not involve the development of residences, office buildings, or commercial uses and it does not aim to directly generate new economic activity or serve the local economy. Instead, in its mission to preserve regional open space, the District's implementation of the proposed project would result in the current project area being used much in the same way that is it currently used, save for some additional low-intensity recreation.

More storm events or higher intensity storms, however, could result in more runoff and increase the likelihood of landslides along Mount Umunhum Road and recreational trails. This could limit recreational access to the site or even result in physical harm to drivers and hikers but usage levels are lower during periods of inclement weather.

Although allowing recreational access to the project site may result in exposure to such risks and hardships, the project would also include some features that enable it to avoid, adapt to, and be resilient in the face of climate change-associated impacts. These features include:

- Gates would be located along key points to allow for safe closure of Mt. Umunhum Road when needed , at entrances to roads closed to the public, and at parking/staging areas. These gates can be closed if the conditions become unsafe (e.g., snowfall, flooding of drainages, wildfire, or landslides).
- Environmental restoration efforts will recreate original drainage and elevational contours to the greatest extent feasible, and native vegetation will be planted, resulting in substantially less impermeable surface area. These features will help reduce storm water runoff during extreme storm events.
- Upgrades to the five miles of Mount Umunhum Road that provides access to the peaks would include replacement of existing and installation of new sections of guard rails in specific locations, which would help prevent motor vehicles and bicycles from leaving the roadway clearing accumulated gravel and debris from drainage features, which would facilitate storm water runoff during extreme storm events.
- Non-potable water would be stored on-site for fire protection (and horses).
- Campfires and smoking would be prohibited at the camp site and the camp site .
- Operation of the site is not highly dependent on the availability of water or electricity. The camp sites, if installed, would be rustic and would not include individual electric or water hook-ups, but non-potable

water would be available locally for all campers. Bathroom facilities would consist of vault toilets and would be lit by solar, motion-sensor lighting (see Section 3.5, Project Characteristics). Additionally, it has been noted that there are live power lines to the operations and former housing areas that the proposed project could use for energy needs. Inclusion of these features in the design and operation of the proposed project would reduce the extent and severity of climate change-related impacts to the project by providing methods for adapting to these changes. Therefore, this impact is considered **less than significant**.

Mitigation Measure 4.8-2

No mitigation measures necessary.

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4.9 NOISE

This section includes a description of acoustic fundamentals and the existing noise environment, a summary of applicable regulations, and analyses of potential short- and long-term noise impacts of the proposed project. Mitigation measures are presented to reduce significant noise impacts.

4.9.1 EXISTING SETTING

ACOUSTIC FUNDAMENTALS

Acoustics is the scientific study that evaluates perception, propagation, absorption, and reflection of sound waves. Sound is a mechanical form of radiant energy, transmitted by a pressure wave through a solid, liquid, or gaseous medium. Sound that is loud, disagreeable, unexpected, or unwanted is generally defined as noise. Common sources of environmental noise and noise levels are presented in Table 4.9-1.

Table 4.9-1. Typical Noise Levels

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
	110	Rock band
Jet flyover at 1,000 feet	100	
Gas lawnmower at 3 feet	90	
Diesel truck moving at 50 mph at 50 feet	80	Food blender at 3 feet, Garbage disposal at 3 feet
Noisy urban area, Gas lawnmower at 100 feet	70	Vacuum cleaner at 10 feet, Normal speech at 3 feet
Commercial area, Heavy traffic at 300 feet	60	
Quiet urban daytime	50	Large business office, Dishwasher in next room
Quiet urban nighttime	40	Theater, Large conference room (background)
Quiet suburban nighttime	30	Library, Bedroom at night, Concert hall (background)
Quiet rural nighttime	20	Broadcast/Recording Studio
	10	
Threshold of Human Hearing	0	Threshold of Human Hearing

Notes: dB=A-weighted decibels; mph=miles per hour
Source: Caltrans 2009

Sound Properties

A sound wave is initiated in a medium by a vibrating object (e.g., vocal chords, the string of a guitar, the diaphragm of a radio speaker). The wave consists of minute variations in pressure, oscillating above and below the ambient atmospheric pressure. The number of pressure variation cycles occurring per second is referred to as the frequency of the sound wave and is expressed in hertz.

Directly measuring sound pressure fluctuations would require the use of a very large and cumbersome range of numbers. To avoid this and have a more useable numbering system, the decibel (dB) scale was introduced. A sound level expressed in decibels is the logarithmic ratio of two like pressure quantities, with one pressure quantity being a reference sound pressure. For sound pressure in air the standard reference quantity is generally

considered to be 20 micropascals, which directly corresponds to the threshold of human hearing. The use of the decibel is a convenient way to handle the million-fold range of sound pressures to which the human ear is sensitive. A decibel is logarithmic; it does not follow normal algebraic methods and cannot be directly summed. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). A sound level increase of 10 dB corresponds to 10 times the acoustical energy, and an increase of 20 dB equates to a 100 fold increase in acoustical energy.

The loudness of sound perceived by the human ear depends primarily on the overall sound pressure level and frequency content of the sound source. The human ear is not equally sensitive to loudness at all frequencies in the audible spectrum. To better relate overall sound levels and loudness to human perception, frequency-dependent weighting networks were developed. The standard weighting networks are identified as A through E. There is a strong correlation between the way humans perceive sound and A-weighted sound levels (dBA). For this reason the dBA can be used to predict community response to noise from the environment, including noise from transportation and stationary sources. Sound levels expressed as dB in this section are A-weighted sound levels, unless noted otherwise.

Noise can be generated by a number of sources, including mobile sources (i.e., transportation) such as automobiles, trucks, and airplanes and stationary sources (i.e., nontransportation) such as construction sites, machinery, and commercial and industrial operations. As acoustic energy spreads through the atmosphere from the source to the receiver, noise levels attenuate (i.e., decrease) depending on ground absorption characteristics, atmospheric conditions, and the presence of physical barriers. Noise generated from mobile sources generally attenuate at a rate of 4.5 dB per doubling of distance. Stationary noise sources spread with more spherical dispersion patterns that attenuate at a rate of 6 to 7.5 dB per doubling of distance.

Atmospheric conditions such as wind speed, turbulence, temperature gradients, and humidity may additionally alter the propagation of noise and affect levels at a receiver. Furthermore, the presence of a large object (e.g., barrier, topographic features, and intervening building façades) between the source and the receptor can provide significant attenuation of noise levels at the receiver. The amount of noise level reduction (i.e., shielding) provided by a barrier primarily depends on the size of the barrier, the location of the barrier in relation to the source and receivers, and the frequency spectra of the noise. Natural (e.g., berms, hills, and dense vegetation) and human-made features (e.g., buildings and walls) may be used as noise barriers.

All buildings provide some exterior-to-interior noise reduction. A building constructed with a wood frame and a stucco or wood sheathing exterior typically provides a minimum exterior-to-interior noise reduction of 25 dB with its windows closed, whereas a building constructed of a steel or concrete frame, a curtain wall or masonry exterior wall, and fixed plate glass windows of one-quarter-inch thickness typically provides an exterior-to-interior noise reduction of 30–40 dB with its windows closed (Paul S. Veneklasen & Associates 1973, cited in Caltrans 2002).

Common Noise Descriptors

The intensity of environmental noise fluctuates over time, and several different descriptors of time-averaged noise levels are used. The selection of a proper noise descriptor for a specific source depends on the spatial and temporal distribution, duration, and fluctuation of both the noise source and the environment. The noise descriptors most often in relation to the environment are defined below (Caltrans 2009).

- Equivalent Noise Level (L_{eq}): The equivalent steady-state noise level in a stated period of time that would contain the same acoustic energy as the time-varying noise level during the same period (i.e., average noise level).
- Maximum Noise Level (L_{max}): The highest instantaneous noise level during a specified time period.
- Minimum Noise Level (L_{min}): The lowest instantaneous noise level during a specified time period.
- Day-Night Noise Level (L_{dn}): The 24-hour L_{eq} with a 10-dB penalty applied during the noise-sensitive hours from 10 p.m. to 7 a.m., which are typically reserved for sleeping.
- Community Noise Equivalent Level (CNEL): Similar to the L_{dn} described above with an additional 5-dB penalty applied during the noise-sensitive hours from 7 p.m. to 10 p.m., which are typically reserved for relaxation, conversation, reading, and watching television.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the L_{eq} descriptor listed above, which corresponds to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptors such as L_{dn} and CNEL, as defined above, and shows very good correlation with community response to noise.

Effects of Noise on Humans

Excessive and chronic exposure to elevated noise levels can result in auditory and non-auditory effects on humans. Auditory effects of noise on people are those related to temporary or permanent hearing loss caused by loud noises. Non-auditory effects of exposure to elevated noise levels are those related to behavioral and physiological effects. The non-auditory behavioral effects of noise on humans are associated primarily with the subjective effects of annoyance, nuisance, and dissatisfaction, which lead to interference with activities such as communications, sleep, and learning. The non-auditory physiological health effects of noise on humans have been the subject of considerable research attempting to discover correlations between exposure to elevated noise levels and health problems, such as hypertension and cardiovascular disease. The mass of research infers that noise-related health issues are predominantly the result of behavioral stressors and not a direct noise-induced response. The extent to which noise contributes to non-auditory health effects remains a subject of considerable research, with no definitive conclusions.

The degree to which noise results in annoyance and interference is highly subjective and may be influenced by several non-acoustic factors. The number and effect of these non-acoustic environmental and physical factors vary depending on individual characteristics of the noise environment such as sensitivity, level of activity, location, time of day, and length of exposure. One key aspect in the prediction of human response to new noise environments is the individual level of adaptation to an existing noise environment. The greater the change in the noise levels that are attributed to a new noise source, relative to the environment an individual has become accustomed to, the less tolerably the new noise source will be perceived.

With respect to how humans perceive and react to changes in noise levels, a 1 dB increase is imperceptible, a 3 dB increase is barely perceptible, a 6 dB increase is clearly noticeable, and a 10 dB increase is subjectively perceived as approximately twice as loud (Egan 2007). These subjective reactions to changes in noise levels was developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise and to changes in levels of a given noise source. It is probably most applicable to noise levels in the range of 50 to 70 dB, as this is the usual range of voice and interior noise levels.

Negative effects of noise exposure include physical damage to the human auditory system, interference, and disease. Exposure to noise may result in physical damage to the auditory system, which may lead to gradual or traumatic hearing loss. Gradual hearing loss is caused by sustained exposure to moderately high noise levels over a period of time; traumatic hearing loss is caused by sudden exposure to extremely high noise levels over a short period. Gradual and traumatic hearing loss both may result in permanent hearing damage. In addition, noise may interfere with or interrupt sleep, relaxation, recreation, and communication. Although most interference may be classified as annoying, the inability to hear a warning signal may be considered dangerous. Noise may also be a contributor to diseases associated with stress, such as hypertension, anxiety, and heart disease. The degree to which noise contributes to such diseases depends on the frequency, bandwidth, and level of the noise, and the exposure time (Caltrans 2009).

Vibration

Vibration is the periodic oscillation of a medium or object with respect to a given reference point. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous (e.g., operating factory machinery) or transient in nature (explosions). Vibration levels can be depicted in terms of amplitude and frequency, relative to displacement, velocity, or acceleration.

Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings (FTA 2006, Caltrans 2004). PPV and RMS vibration velocity are normally described in inches per second (in/sec).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA 2006). This is based on a reference value of 1micro (µ) in/sec.

The typical background vibration-velocity level in residential areas is approximately 50 VdB. Groundborne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels (FTA 2006).

Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Construction activities can generate groundborne vibrations, which can pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants (FTA 2006).

Construction vibrations can be transient, random, or continuous. Transient construction vibrations are generated by blasting, impact pile driving, and wrecking balls. Continuous vibrations result from vibratory pile drivers, large pumps, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment. Table 4.9-2 describes the general human response to different levels of groundborne vibration-velocity levels.

Table 4.9-2. Human Response to Different Levels of Groundborne Noise and Vibration	
Vibration-Velocity Level	**Human Reaction**
65 VdB	Approximate threshold of perception.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Notes: VdB = vibration decibels referenced to 1 ì inch/second and based on the root mean square (RMS) velocity amplitude.
Source: FTA 2006

EXISTING ENVIRONMENT

Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses types (e.g., parks, schools, historic sites, cemeteries, and recreation areas), including the proposed project (e.g., open space preserve), are also generally considered sensitive to increases in exterior noise levels. Places of worship and transit lodging, and other places where low interior noise levels are essential are also considered noise-sensitive. Those noted above are also considered vibration-sensitive land uses in addition to commercial and industrial buildings where vibration would interfere with operations within the building, including levels that may be well below those associated with human annoyance. Existing noise- and vibration- sensitive land uses in the project vicinity primarily include few off-site rural residences, the closest of which is located approximately 400 feet west of, and downhill from, the Mount Thayer summit. In addition, residences are located along Mt. Umunhum and Mt. Thayer Roads. (See Exhibit 4.9-1)

Sources and Ambient Levels

The existing noise environment in the project area is influenced by transportation noise from vehicle traffic on the local roadway system (e.g., Mt. Umunhum Road, Hicks Road) and other noise sources including, but not limited to, landscape maintenance activities at residential areas, dogs barking, people talking, birds, and infrequent aircraft flyovers. Roadway traffic is also considered a source of vibration in the project area.

An ambient noise survey was conducted on November 9, 2010. The purpose of the survey was to establish existing noise conditions on the project site and in the vicinity. Short-term measurements were taken at four locations in accordance with American National Standards Institute (ANSI) standards using a Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter (SLM). The SLM was calibrated before and after use with an LDL Model CAL200 acoustical calibrator. The equipment used meets all pertinent specifications of the ANSI for Type 1 SLMs (ANSI S1.4-1983[R2006]). Meteorological conditions during the measurement period were adequate for reliable noise measurements, with partly cloudy skies, temperature of approximately 54 °F, and light winds averaging 1 to 3 miles per hour (mph), and no precipitation. Refer to Table 4.9-3 for a summary of the measurement data. The short-term measurement data reflects a quiet noise environment, which is typical of open space areas.

Table 4.9-3. Summary of Existing Ambient Noise Level Measurements

Location Description	Start (Date/Time)	Stop (Date/Time)	dB	
			L_{eq}	L_{max}
Site 1: Northwest side of Mt. Thayer summit	November 9, 2010/ 11:05 am	November 9, 2010/ 11:20 am	41.1	60.2[1]
Site 2: On Mt. Umunhum summit near radio tower	November 9, 2010/ 12:30 pm	November 9, 2010/ 12:44 pm	35.4	51.7
Site 3: Near driveway entry to Hlebo residence (approximately 50 feet from centerline of Mt. Umunhum Road)	November 9, 2010/ 2:02 pm	November 9, 2010/ 2:14 pm	30.2	49.6
Site 4: On north side of Mt. Umunhum Road near property line of Rossetta Meyer Quene (approximately 12 feet north of centerline of Mt. Umunhum Road)	November 9, 2010/ 2:30 pm	November 9, 2010/ 2:41 pm	41.6	59.8[1]

Notes: dB = A-weighted decibels; L_{eq} = energy-equivalent noise level; L_{max} = maximum noise level; L_{min} = minimum noise level.
1 Please note that these L_{max} levels are associated with bird and bee activity near the microphone.

Source: Monitoring performed by Ascent Environmental, Inc. November 2010.

4.9.2 REGULATORY SETTING

Various private and public agencies have established noise guidelines and standards to protect citizens from potential hearing damage and other adverse physiological and social effects associated with noise. Applicable standards and guidelines are described below.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

The U.S. Environmental Protection Agency's (EPA's) Office of Noise Abatement and Control was originally established to coordinate Federal noise control activities. After its inception EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at more local levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to state and local governments. However, noise control guidelines and regulations contained in EPA rulings in prior years remain in place by designated Federal agencies where relevant.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

The State of California has adopted noise standards in areas of regulation not preempted by the Federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation.

Title 24 of the California Code of Regulations, also known as the California Building Standards Code, establishes building standards applicable to all occupancies throughout the state. The code provides acoustical regulations for both exterior-to-interior sound insulation as well as sound and impact isolation between adjacent spaces of various occupied units. Title 24 regulations state that interior noise levels generated by exterior noise sources shall not exceed 45 dB L_{dn}/CNEL, with windows closed, in any habitable room for general residential uses.

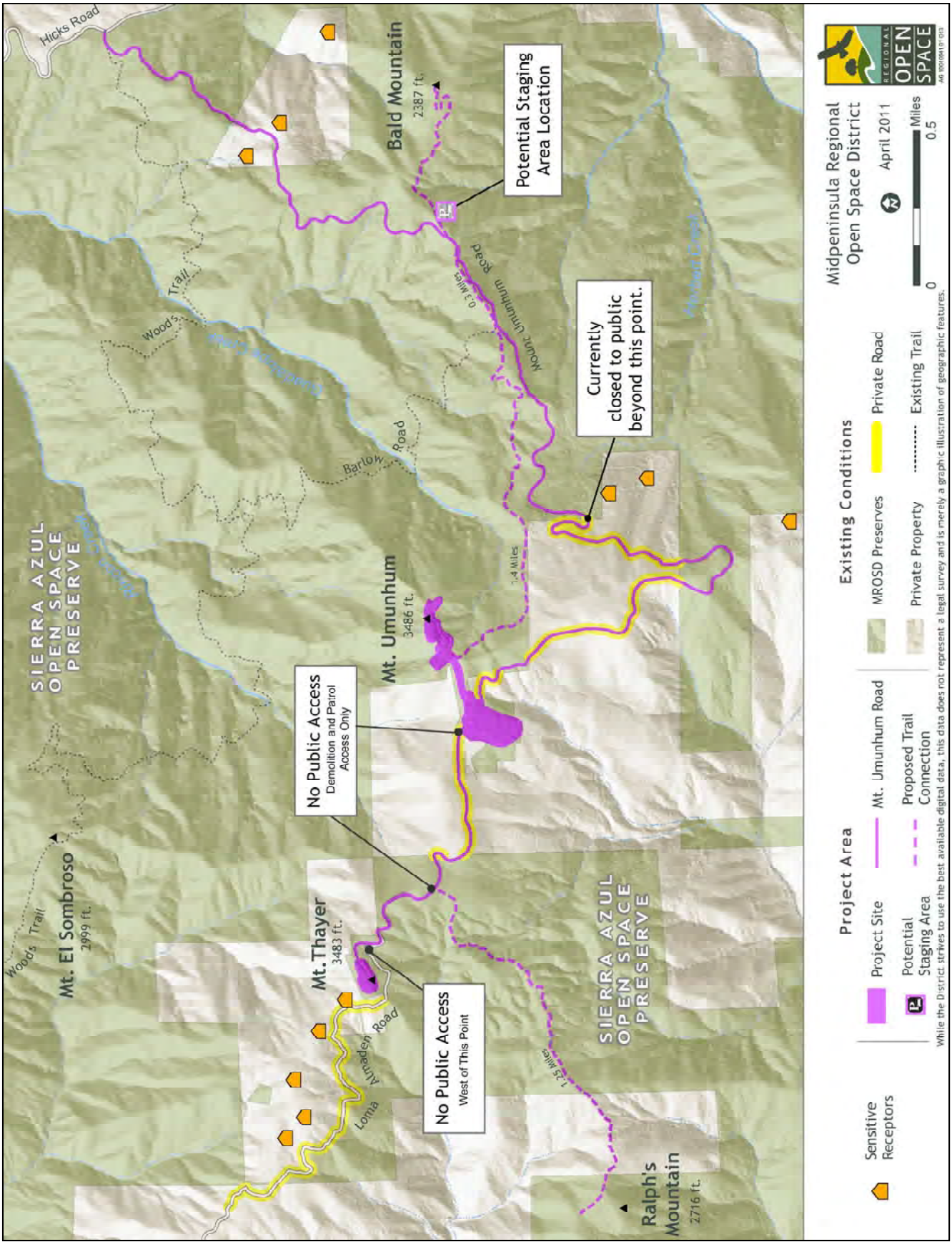


Exhibit 4.9-1 **Sensitive Receptors within Project Area**

Though not adopted by law, the *State of California General Plan Guidelines 2003*, published by the California Governor's Office of Planning and Research (OPR), provides guidance for the compatibility of projects within areas of specific noise exposure. Table 4.9-4 presents acceptable and unacceptable community noise exposure limits for various land use categories. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

Table 4.9-4. Noise Compatibility Guidelines

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dB)			
	Normally Acceptable[1]	Conditionally Acceptable[2]	Normally Unacceptable[3]	Clearly Unacceptable[4]
Residential - Single Family, Duplex, Mobile Home	<60	60-70	70-75	75+
Residential - Multiple Family	<65	65-70	70-75	75+
Transient Lodging, Motel, Hotel	<65	65-70	70-80	80+
School, Library, Church, Hospital, Nursing Home	<65	65-70	70-80	80+
Auditorium, Concert Hall, Amphitheater		<70		70+
Sports Arenas - Outdoor Spectator Sports		<75		75+
Playground, Neighborhood Park	<70		70-75	75+
Golf Courses, Stable, Water Recreation, Cemetery	<75		75-80	80+
Office Building, Business Commercial and Professional	<70	70-75	75+	
Industrial, Manufacturing, Utilities, Agriculture	<75	75-80	75+	

Notes: CNEL = Community Noise Equivalent Level; dB = A-weighted decibels; L_{dn} = day-night average noise level

1 Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

2 New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

3 New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

4 New construction or development should generally not be undertaken.

Source: State of California Governor's Office of Planning and Research 2003

LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Santa Clara County General Plan

The Noise Element of the County General Plan contains the following applicable strategies, policies, and implementation recommendations (Santa Clara County 1994):

Strategy #1: Prevent or Minimize Noise Conflicts

The ideal is a complete separation of noise sensitive uses from noise generating sources. Given that all types of land uses must coexist within the county's urban areas, the planning challenge is in achieving adequate noise compatibility. Land use planning and development review must carefully evaluate the noise producing potential of new development. Where that potential exceeds acceptable limits, steps must be taken to minimize impacts on both existing and projected surrounding uses.

Policies and Implementation

C-HS 24 Environments for all residents of Santa Clara County free from noises that jeopardize their health and well-being should be provided through measures which promote noise and land use compatibility.

C-HS 25 Noise impacts from public and private projects should be mitigated.

Implementation Recommendations

C-HS(i) 23 Project design review should assess noise impacts on surrounding land uses.

C-HS(i) 24 Where necessary, construct sound walls or other noise mitigations.

C-HS(i) 25 Prohibit construction in areas which exceed applicable interior and exterior standards, unless suitable mitigation measures can be implemented.

C-HS(i) 26 Require project-specific noise studies to assess actual and protected dB noise contours for proposed land uses likely to generate significant noise.

C-HS(i) 27 Take noise compatibility impacts into account in developing local land use plans.

Strategy #2: Provide Adequate Sound Buffers

Another approach to noise compatibility is providing noise buffers between noise sources and new projects. There are many noise reduction techniques which can be built into new development. This approach is most effective in large scale, mixed use or planned developments. Such techniques include locating noise sensitive buildings away from noise sources and using the natural topography and intervening buildings to shield noise sensitive uses. There are a number of techniques to minimize interior noise, including site planning, architectural design and construction standards, and noise barriers.

Within areas identified as being impacted by noise, it will be necessary to design projects to be compatible with the specific types of noise on the site. The best basis for this design is to plan to make the project compatible with the loudest individual noise sources that might affect the site.

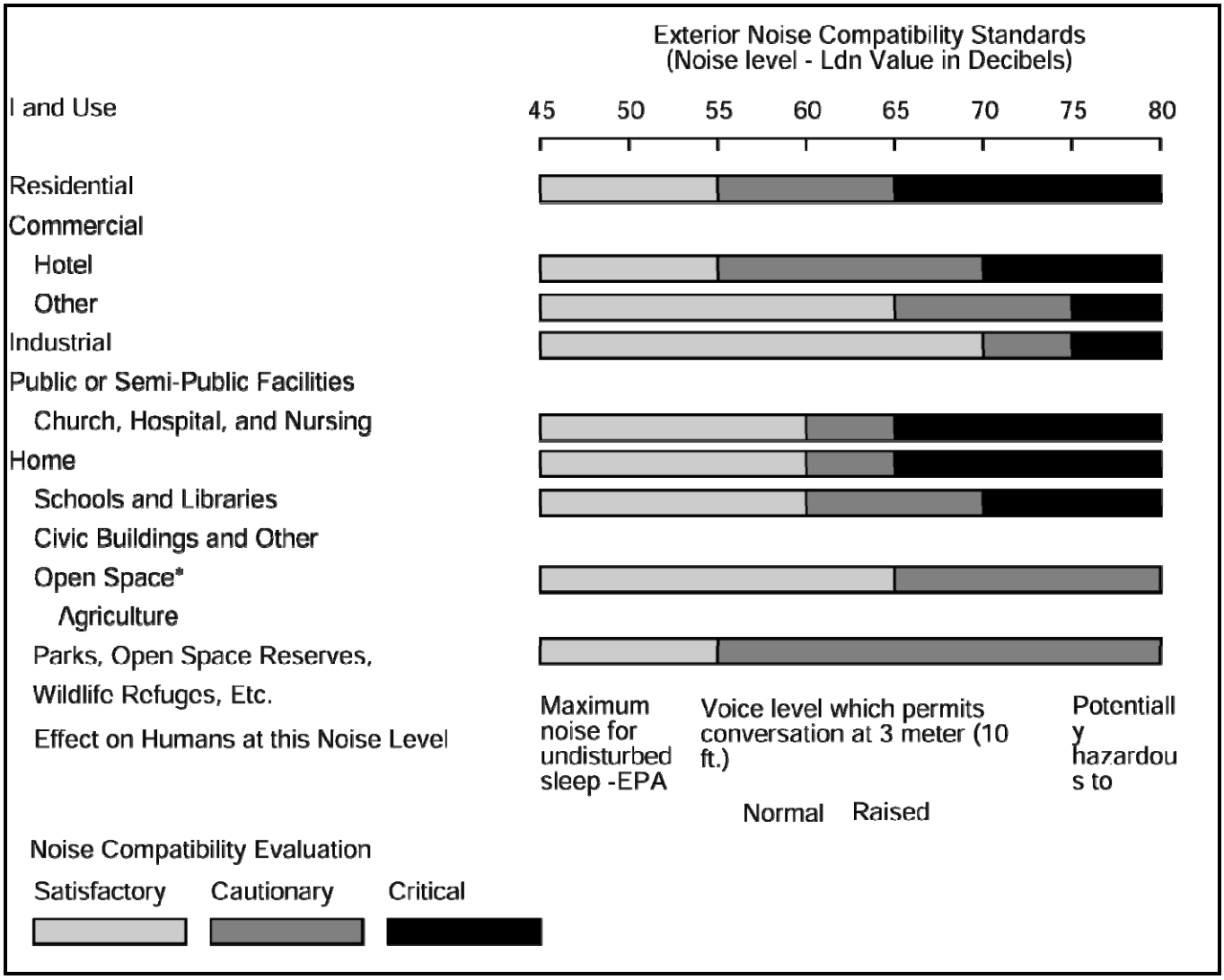
Policies and Implementation

C-HS 26 New development in areas of noise impact (areas subject to sound levels of 55 L_{dn} or greater) should be approved, denied, or conditioned so as to achieve a satisfactory noise level for those who will use or occupy the facility (as defined in Table 4.9-5 and Table 4.9-6). Please note that an interior noise level standard is not identified for the proposed project type as exterior noise levels are the only concern in regards to land use compatibility.

Implementation Recommendations

C-HS(i) 28 Incorporate acoustic site planning into the design of new development, particularly large scale, mixed use, or master planned development, through measures which may include: a. separation of noise sensitive buildings from noise generating sources; b. use of natural topography and intervening structure to shield noise sensitive land uses; and c. adequate sound proofing within the receiving structure.

Table 4.9-5. Exterior Noise Compatibility Standards for Land Uses in Santa Clara County



** For open space use, there are no critical noise levels listed. Homes in agricultural areas are not subject to the "Residential" standards. Public buildings in parks and open space areas shall meet noise standards as listed under "Public or Semi-Public facilities." For open space use, the maximum level of noise which a new land use may impose on neighboring open space shall be the upper limit of the "Satisfactory Noise Level"*

Source: Santa Clara County 1997

Table 4.9-6. Recommended Maximum Interior Noise Levels For Intermittent Noise		
	Use	**dBA**
Residential		45
Commercial		
	Hotel-Motel	45
	Executive Offices, Conference Rooms	55
	Staff Offices	60
	Restaurant, Markets, Retail Stores	60
	Sales, Secretarial	65
	Sports Arena, Bowling Alley, etc.	75
Industrial		
	Offices (same as above)	55-60
	Laboratory	60
	Machine shop, Assembly and others	75
	Mineral Extraction	75
Public or Semi-Public Facility		
	Concert Hall & Legitimate Theater	30
	Auditorium, Movie Theater & Church	45
	Hospital, Nursing Home & Firehouse (sleeping quarters)	45
	School Classroom	50
	Library	50
	Other Public Buildings	55
Source: Santa Clara County 1997		

Santa Clara County Noise Ordinance

The Santa Clara County Noise Ordinance (Chapter VII: Control of Noise and Vibration) contains the following applicable sections:

Sec. B11-192. Exterior noise limits.

(1) Maximum Permissible Sound Levels by Receiving Land Use.

(a) The noise standards for the various receiving land use categories as presented in Table 4.9-7 shall apply to all such property within any zoning district.

(b) No person shall operate or cause to be operated any source of sound at any location within the unincorporated territory of the county or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property either incorporated or unincorporated, to exceed:

(i) The noise standard for that land use as specified in Table 4.9-7 for a cumulative period of more than thirty (30) minutes in any hour; or

(ii) The noise standard plus five (5) dB for a cumulative period of more than fifteen (15) minutes in any hour; or

(iii) The noise standard plus ten (10) dB for a cumulative period of more than five (5) minutes in any hour; or

(iv) The noise standard plus fifteen (15) dB for a cumulative period of more than one (1) minute in any hour; or

(v) The noise standard plus twenty (20) dB or the maximum measured ambient, for any period of time.

Table 4.9-7. Exterior Noise Limits
(Levels not to be exceeded more than 30 minutes in any hour)

Receiving Land Use Category	Time Period	Noise Level (dBA)
One- and Two-Family	10:00 p.m.--7:00 a.m.	45
Residential	7:00 a.m.--10 p.m.	55
Multiple-Family Dwelling	10:00 p.m.--7:00 a.m.	50
Residential Public Space	7:00 a.m.--10:00 p.m.	55
Commercial	10:00 p.m.--7:00 a.m.	60
	7:00 a.m.--10:00 p.m.	65
Light Industrial	Any Time	70
Heavy Industrial	Any Time	75

(c) If the measured ambient level exceeds that permissible within any of the first four (4) noise limit categories above, the allowable noise exposure standard shall be increased in five dB increments in each category as appropriate to encompass or reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

(d) If the noise measurement occurs on a property adjacent to a different land use category, the noise level limit applicable to the lower land use category, plus five (5) dB, shall apply.

(e) If for any reason the alleged offending noise source cannot be shut down, the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance such that the noise from the source is at least ten (10) dB below the ambient in order that only the ambient level be measured. If the difference between the ambient and the noise source is five (5) to ten (10) dB, then the level of the ambient itself can be reasonably determined by subtracting a one-decibel correction to account for the contribution of the source.

(2) Correction for Character of Sound: In the event the alleged offensive noise contains a steady, audible tone such as a whine, screech or hum, or contains music or speech conveying informational content, the standard limits set forth in table B11-192 shall be reduced by five (5) dB.

(Ord. No. NS-517.18, 9-22-81; Ord. No. NS-517.54, §§ 9, 10, 6-8-93)

Sec. B11-193. Interior noise standards.

(1) Maximum Permissible Dwelling Interior Sound Levels:

(a) The interior noise standards for multifamily residential dwellings as presented in Table 4.9-8 shall apply, unless otherwise specifically indicated, within all such dwellings.

Table 4.9-8. Interior Noise Standards

Type of Land Use	Time Interval	Allowable Interior Noise Level (dBA)
Multifamily dwelling	10:00 p.m.-- 7:00 a.m.	35
	7:00 a.m.--10:00 p.m.	45

(b) No person shall operate or cause to be operated within a dwelling unit any source of sound or allow the creation of any noise which causes the noise level when measured inside a neighboring receiving dwelling unit to exceed:

(i) The noise standard as specified in Table 4.9-8 for a cumulative period of more than five (5) minutes in any hour; or

(ii) The noise standard plus five (5) dB for a cumulative period of more than one (1) minute in any hour; or

(iii) The noise standard plus ten (10) dB or the maximum measured ambient, for any period of time.

(c) If the measured ambient level exceeds that permissible within any of the noise limit categories above, the allowable noise exposure standard shall be increased in five-dB increments in each category as appropriate to reflect said ambient noise level.

(2) Correction for Character of Sound: In the event the alleged offensive noise contains a steady, audible tone such as a whine, screech or hum, or contains music or speech conveying information content, the standard limits set forth in table B11-193 shall be reduced by five (5) dB.

(Ord. No. NS-517.18, 9-22-81)

Sec. B11-194. Prohibited acts.

2.6. Construction/demolition.

(a) Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekdays and Saturday hours of 7:00 pm and 7:00 am, or at any time on Sundays or holidays, such that the sound there from creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance.

(b) Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum noise levels at affected properties will not exceed those listed in the following schedule:

(i) Mobile equipment. Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment:

	Single- and Two-Family Dwelling Residential Area	Residential Area Multifamily Dwelling	Commercial Area
Daily, except Sundays and legal holidays 7:00 a.m.--7:00 p.m.	75 dBA	80 dBA	85 dBA
Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

(ii) Stationary equipment. Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment:

	Single- and Two-Family Dwelling Residential Area	Residential Area Multifamily Dwelling	Commercial Area
Daily, except Sundays and legal holidays 7:00 a.m.--7:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

Sec. B11-196. Special provisions.

(4) Exemption From Exterior Noise Standards. The provisions of section B11-192 shall not apply to activities covered by the following sections:

(c) B11-194(2.6) construction/demolition;

(Ord. No. NS-517.18, 9-22-81)

4.9.3 VIBRATION CRITERIA

CEQA states that the potential for any excessive groundborne noise and vibration levels must be analyzed; however, it does not define the term "excessive" vibration. Numerous public and private organizations and governing bodies have provided guidelines to assist in the analysis of groundborne noise and vibration; however, the Federal, state, and local governments have yet to establish specific groundborne noise and vibration requirements. The following publications of the FTA and Caltrans are two of the seminal works for the analysis of groundborne noise and vibration relating to transportation and construction-induced vibration.

With respect to structural damage, Caltrans recommends that a level of 0.2 in/sec PPV not be exceeded for the protection of normal residential buildings, and that 0.1 in/sec PPV not be exceeded for the protection of old or historically significant structures (Caltrans 2004).

To address the human response to groundborne vibration, FTA has guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines recommend 65 VdB referenced to 1 microinch per second (µin/sec) and based on the RMS velocity amplitude for land uses where low ambient vibration is essential for interior operations (e.g., hospitals, high-tech manufacturing, laboratory facilities); 80 VdB for residential uses and buildings where people normally sleep; and 83 VdB for institutional land uses with primarily daytime operations (e.g., schools, churches, clinics, offices) (FTA 2006).

The Santa Clara County Noise Ordinance (Chapter VII: Control of Noise and Vibration) contains the following applicable section:

2.7. Vibration. Operating or permitting the operation of any device that creates a vibrating or quivering effect that:

(a) Endangers or injures the safety or health of human beings or animals; or
(b) Annoys or disturbs a person of normal sensitivities; or
(c) Endangers or injures personal or real properties.

4.9.4 IMPACTS AND MITIGATION MEASURES

METHOD OF ANALYSIS

To assess potential short-term (construction-related) noise and vibration impacts, sensitive receptors and their relative exposure were identified. Project-generated construction source noise and vibration levels were determined based on methodologies, reference emission levels, and usage factors from FTA's Guide on Transit Noise and Vibration Impact Assessment methodology (FTA 2006) and Federal Highway Administration (FHWA) Roadway Construction Noise Model User's Guide (FHWA 2006). Reference levels are noise and vibration emissions for specific equipment or activity types that are well documented and the usage thereof common practice in the field of acoustics.

Potential long-term (operation-related) noise impacts due to project-generated increases in traffic were assessed based on Caltrans' traffic noise analysis protocol and the technical noise supplement (Caltrans 2006 and 2009) and project-specific traffic data.

With respect to nontransportation noise sources (e.g., stationary) associated with project implementation, the assessment of long-term (operational-related) impacts was based on reconnaissance data, existing documentation, reference noise emission levels, and standard attenuation rates and modeling techniques. As stated above, reference levels are noise emissions for specific equipment or activity types that are well documented and the usage thereof common practice in the field of acoustics.

To evaluate relative significance, noise and vibration impacts were determined based on comparisons to applicable regulations and guidance provided by federal, state, and local agencies.

THRESHOLDS OF SIGNIFICANCE

In accordance with CEQA Guidelines Appendix G and Santa Clara County's General Plan and Municipal Code, noise impacts are considered significant if implementation of the proposed project under consideration would result in any of the following:

- Exposure of persons to or generation of noise levels in excess of applicable standards (e.g., long-term exposure of nearby off-site sensitive receptors to increased stationary-source (non-transportation) noise levels from project operations that exceed the exterior noise levels stated in the Santa Clara Noise Ordinance or increased transportation source noise levels that exceed the levels presented in the County's General Plan [See Table 4.9-5 of this document for existing receptors]);
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels (e.g., project-generated construction-related levels exceed Caltrans's recommended level of 0.2 in/sec PPV with respect to the prevention of structural damage for normal buildings [0.1 in/sec PPV for old or

historically significant buildings) or FTA's maximum acceptable level of 80 VdB with respect to human response for residential uses [i.e., annoyance] at nearby existing vibration-sensitive land uses);

- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project (e.g., long-term exposure of nearby sensitive receptors to increased stationary- or traffic source noise levels that exceed the levels presented in the Santa Clara Noise Ordinance and Table 4.9-5, respectively);
- A substantial temporary (or periodic) increase in ambient noise levels in the project vicinity above levels existing without the project (e.g., short-term exposure of nearby existing sensitive receptors to increased construction source noise levels during the noise-sensitive hours of the day);
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; or
- For a project within the vicinity of an active private airstrip, where the project would expose people residing or working in the project area to excessive noise levels.

ISSUES NOT DISCUSSED FURTHER

The project site is not located within an airport land use plan or within the vicinity (i.e., 2 miles) of public (including public use) airport or a private airstrip. Thus, the proposed project would not result in noise impacts related to the exposure of people residing or working in the project area to excessive aircraft-related noise levels. This issue is not discussed further in the Draft EIR.

IMPACTS AND MITIGATION MEASURES

Impact 4.9-1	**Long-Term Exposure of Existing Sensitive Receptors to Project-Generated Operational-Related Increases in Stationary Source Noise Levels.** Long-term on-site operational-related stationary-source noise would not result in the exposure of persons off-site to or generation of noise levels in excess of applicable standards, or create a substantial permanent increase in ambient noise levels in the project vicinity without the proposed project. In addition, on-site noise levels would be compatibility with the proposed use type. This impact is considered **less than significant.**

Implementation of the proposed project would not include any major sources of stationary noise. Minor sources could include a heating, ventilation, and air conditional (HVAC) system (e.g., electrical motors, pumps, air compressors, and fans) at the visitor's center, and various vehicular noise at parking lots at Mount Umunhum and Bald Mountain. These could result in noise levels of more than 100 dB at 3 feet from the source depending on the exact type and size of the HVAC unit and number of parking spaces. However, there are no existing off-site sensitive receptors within 3,000 feet of these proposed uses for which resultant noise levels would be approximately 40 dB, well below the applicable standard of 50 dB. In addition, noise sources (e.g., people talking) associated with the long-term use of the trail network and camping facilities would also not be anticipated to exceed any applicable standards due to their intermittent and infrequent nature and restrictions at the campsites during the more noise-sensitive hours of the day as described in the project description. Consequently, operation of the proposed project would not result in increased noise levels from stationary-sources that exceed the applicable standards (Santa Clara County Noise Ordinance) at existing off-site sensitive receptors In addition, with respect to the compatibility of the proposed project type, on-site noise levels would be anticipated to be well below the cautionary level (e.g., below 55 dB L_{dn} is considered satisfactory) as shown in Table 4.9-5 for "open space reserve". This is based on the ambient noise monitoring described in Table 4.9-3 that shows daytime L_{eq} levels that range from 30-41 dB coupled with the fact that nighttime noise levels would

be even lower. Therefore, long-term stationary-source noise levels would not result in the exposure of persons to or generation of noise levels in excess of applicable standards, or create a substantial permanent increase in ambient noise levels in the project vicinity without the proposed project. This impact is considered **less than significant**.

Mitigation Measure 4.9-1

No mitigation measures necessary.

Impact 4.9-2	**Exposure of Existing Sensitive Receptors to Excessive Groundborne Vibration from Project-Related Activities.** Construction- and operational-related project activities would not result in levels at the nearest sensitive land uses that exceed Caltrans's recommended level of 0.2 in/sec PPV with respect to the prevention of structural damage for normal buildings or FTA's maximum acceptable level of 80 VdB with respect to human response for residential uses (i.e., annoyance). Thus, implementation of the proposed project would not result in the exposure of existing off-site sensitive receptors to excessive groundborne vibration or noise levels. Therefore, this impact is considered **less than significant.**

Construction of the proposed project may result in varying degrees of temporary groundborne vibration and noise, depending on the specific construction equipment used and activities involved. Groundborne vibration and noise levels associated with various types of construction equipment and activities are summarized in Table 4.9-9. Based on the information provided in the project description and on the types of construction activities associated with the proposed project (e.g., demolition, site preparation, and building erection) it is expected that maximum groundborne vibration and noise levels would be associated with the use of trucks and jackhammers.

Table 4.9-9. Representative Groundborne Vibration and Noise Levels for Construction Equipment

Equipment	PPV at 25 feet (in/sec)[1]	Approximate L_v (VdB) at 25 feet[2]
Blasting	1.13	109
Large Dozer	0.089	87
Caisson Drilling	0.089	87
Trucks	0.076	86
Rock Breaker	0.059	83
Jackhammer	0.035	79
Small Dozer	0.003	58

[1] Where PPV is the peak particle velocity
[2] Where Lv is the root mean square velocity expressed in vibration decibels (VdB), assuming a crest factor of 4.
Source: FTA 2006

According to FTA, levels associated with the use of trucks (and jackhammers) are 0.076 (0.035) in/sec PPV and 86 (79) VdB at 25 feet. Based on FTA's recommended procedure for applying a propagation adjustment to these reference levels, construction-related project activities would not result in levels at the nearest sensitive receptor (i.e., rural residence at approximately 400 feet) that exceed Caltrans's recommended level of 0.2 in/sec PPV with respect to the prevention of structural damage for normal buildings or FTA's maximum acceptable level of 80 VdB with respect to human response for residential uses (i.e., annoyance). Long-term operation of

the proposed project would not result in any major sources of vibration. Thus, implementation of the proposed project would not result in the exposure of existing off-site sensitive receptors to excessive groundborne vibration levels. Therefore, this impact is considered **less than significant**.

Mitigation Measure 4.9-2

No mitigation measures necessary.

Impact 4.9-3	**Long-Term Exposure of Existing Sensitive Receptors to Project-Generated Operational-Related Increases in Traffic Source Noise Levels.** Implementation of the proposed project would not result in project-generated operational-related traffic source noise levels that exceed applicable standards at any existing off-site sensitive receptors. In addition, on-site noise levels would be compatibility with the proposed use type. Therefore, this impact is considered **less than significant.**

Project implementation would result in an increase in average daily traffic (ADT) volumes on affected roadway segments (e.g., Mt. Umunhum Road and Hicks Road) and, consequently, an increase in traffic source noise levels. According to the traffic analysis prepared for this project, the highest volume (2-way) under plus project conditions (e.g., existing traffic conditions plus those that would result with implementation of the proposed project) would be approximately 69 vehicles during the Saturday peak hour (Crane Transportation Group 2011). Based on Caltrans' traffic noise analysis protocol and the technical noise supplement (Caltrans 2006 and 2009), the worst-case modeled traffic noise level under plus project conditions 50 feet from the centerline would be less than 50 dB L_{dn}, which is well below the satisfactory exterior noise standards for all land use types (Table 4.9-5). Worst-case refers to the modeled noise level associated with the highest roadway volume reported in the traffic analysis. Please note that these results assume no natural or human-made shielding (e.g., vegetation, berms, walls, buildings). The extent to which existing land uses in the project vicinity are affected by existing traffic noise depends on their respective proximity to the roadways and their individual sensitivity to noise. In addition, with respect to the compatibility of the proposed project type, on-site noise levels would be anticipated to be well below the cautionary level (e.g., below 55 dB L_{dn} is considered satisfactory) as shown in Table 4.9-5 for "open space reserve". This is based on the ambient noise monitoring described in Table 4.9-3 that shows daytime L_{eq} levels that range from 30-41 dB coupled with the fact that nighttime noise levels would be even lower. Therefore, long-term traffic source noise would not result in the exposure of persons to or generation of noise levels in excess of applicable standards, or create a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the proposed project. As a result, this impact is considered **less than significant**.

Mitigation Measure 4.9-3

No mitigation measures necessary.

Impact 4.9-4	**Short-Term Exposure of Existing Sensitive Receptors to Project-Generated Increases in Construction Source Noise Levels.** Construction activities would be limited to the less noise-sensitive hours of the day (7:00 am to 7:00 pm) for which noise levels would not exceed the applicable standards. Thus, project-generated construction source noise levels would not result in the exposure of noise-sensitive receptors to a substantial temporary increase in ambient noise levels. Therefore, this impact is considered **less than significant**.

Construction noise levels in the vicinity of the proposed project would fluctuate depending on the particular type, number, and duration of usage for the varying equipment. The effects of construction noise largely depend

on the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise sensitive receptors, and the existing ambient noise environment in the receptor's vicinity. Construction generally occurs in several discrete stages, each phase requiring a specific complement of equipment with varying equipment type, quantity, and intensity. These variations in the operational characteristics of the equipment change the effect they have on the noise environment of the project site and in the surrounding community for the duration of the construction process.

To assess noise levels associated with the various equipment types and operations, construction equipment can be considered to operate in two modes, mobile and stationary. Mobile equipment sources move around a construction site performing tasks in a recurring manner (e.g., loaders, graders, dozers). Stationary equipment operates in a given location for an extended period of time to perform continuous or periodic operations. Operational characteristics of heavy construction equipment are additionally typified by short periods of full-power operation followed by extended periods of operation at lower power, idling, or powered-off conditions.

Additionally when construction-related noise levels are being evaluated, activities that occur during the more noise-sensitive evening and nighttime hours are of increased concern. Because exterior ambient noise levels typically decrease during the late evening and nighttime hours as traffic volumes and commercial activities decrease, construction activities performed during these more noise-sensitive periods of the day can result in increased annoyance and potential sleep disruption for occupants of nearby residential uses.

The site preparation phase typically generates the most substantial noise levels because the on-site equipment associated with grading, compacting, and excavation are the noisiest. Site preparation equipment and activities include backhoes, bulldozers, loaders, and excavation equipment (e.g., graders and scrapers). Erection of large structural elements and mechanical systems could require the use of a crane for placement and assembly tasks, which may also generate noise levels. Based on the information provided in the project description and on the types of construction activities associated with the proposed project (e.g., demolition, site preparation, and building erection) it is expected that maximum noise levels would be associated with the excavators, trucks, jackhammers, and an on-site concrete crusher. Noise emission levels from these types of construction equipment are shown in Table 4.9-10 below.

Based on the information provided in Table 4.9-10 and accounting for typical usage factors of individual pieces of equipment and activity types along with typical attenuation rates, on-site construction-related activities could result in hourly average noise levels of approximately 83 dB L_{eq} (85 dB L_{max}) at 50 feet and potentially exceed 59 dB L_{eq} (64 L_{max}) at the nearest sensitive receptor (i.e., rural residence at 400 feet). These levels would not exceed the applicable daytime standards (7:00 am- 7:00 pm) in the Santa Clara County Noise Ordinance (e.g., 60 dB L_{max} for stationary sources and 75 dB L_{max} for mobile source. In addition, as stated in the project description, construction activities would be limited to the daytime hours between 7:00 am and 7:00 pm except Sundays and legal holidays, and, thus, project-generated construction source noise levels would not exceed the more stringent nighttime and early morning (7:00 pm-7:00 am) standards. Project-generated increases in construction source noise levels would not exceed the applicable standards at off-site sensitive receptors., Project-generated construction source noise levels would not result in the exposure of noise-sensitive receptors to a substantial temporary increase in ambient noise levels. Therefore, this impact is considered **less than significant.**

Table 4.9-10. Noise Emission Levels from Construction Equipment	
Equipment Type	**Typical Noise Level (dBA) @ 50 feet**
Air Compressor	78
Asphalt Paver	77
Backhoe	78
Blasting	94
Compactor	83
Concrete Breaker/Crusher	82
Concrete Pump	81
Concrete Saw	90
Crane, Mobile	81
Dozer	82
Front-end Loader	79
Generator	81
Grader	85
Hoe Ram Extension	90
Jack Hammer	89
Pneumatic Tools	85
Rock Drill	81
Scraper	84
Trucks	74–81
Water Pump	81

Notes:
Assumes all equipment is fitted with a properly maintained and operational noise control device, per manufacturer specifications.
Noise levels listed are manufacture-specified noise levels for each piece of heavy construction equipment.
Source: FTA 2006

Mitigation Measure 4.9-4

No mitigation measures necessary.

4.10 TRAFFIC AND CIRCULATION

This analysis evaluates the local area circulation system operations. Existing operations, as well as those occurring with short-term increases in traffic conditions are first presented in the Setting section. The Impact section then presents significance criteria, expected project trip generation/distribution and resultant significant impacts. Measures are then presented to mitigate any significant project impacts.

4.10.1 EXISTING SETTING

STUDY AREA

Descriptions are provided of the roadways that will serve project traffic, existing volumes and current operating conditions. Transit service, pedestrian and bicycle facilities are also presented.

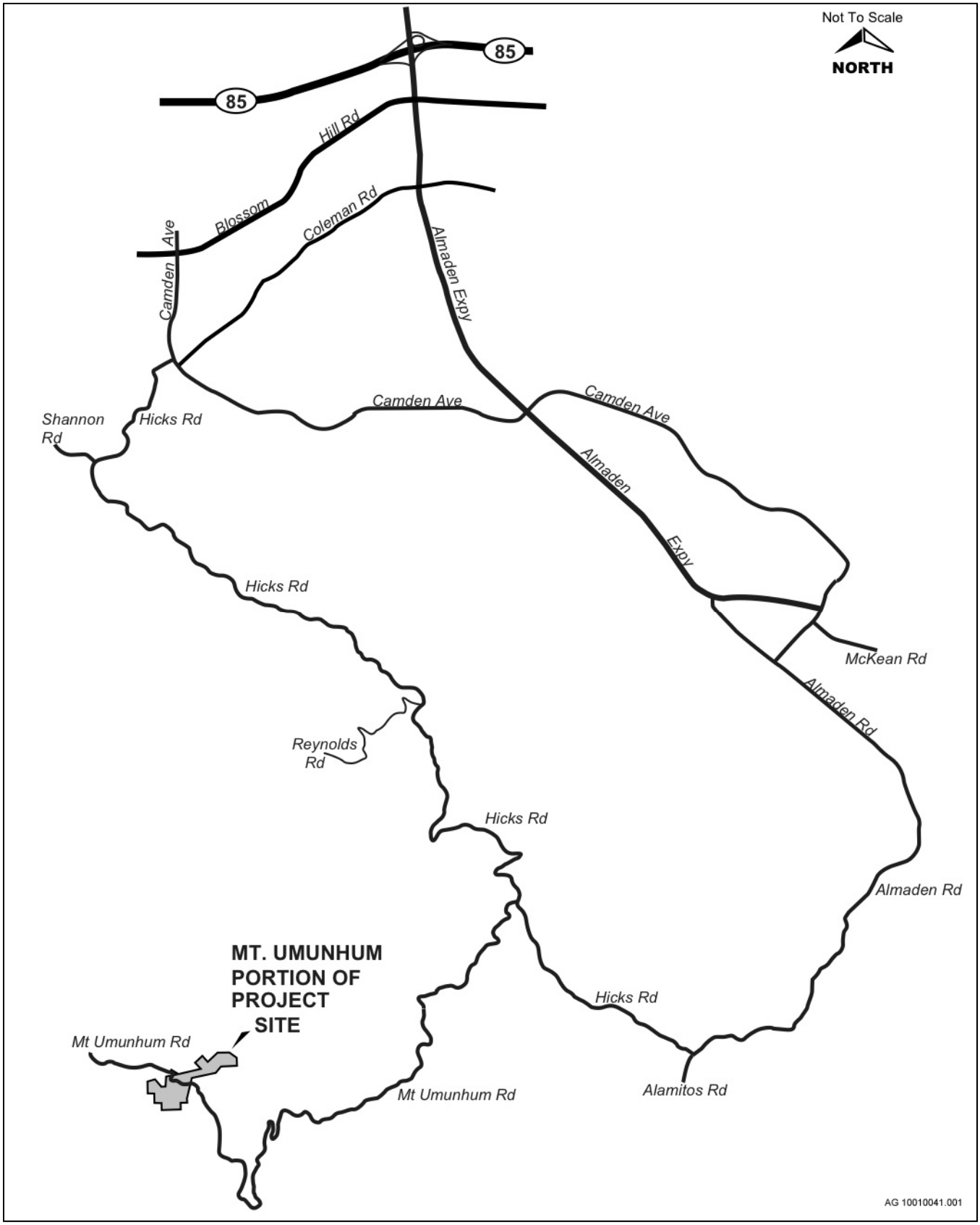
ROADWAY NETWORK

Access to Mount Umunhum would be provided by Mount Umunhum Road. Mount Umunhum Road extends uphill from Hicks Road, which provides access to other local roads as well as indirect access to the regional roadway network. Almaden Road also provides access to the Mount Umunhum Road area and intersects Hicks Road about two miles from the Hicks Road/Mount Umunhum Road intersection (see Exhibit 4.10-1). Each roadway is briefly described below.

Mt. Umunhum Road is a two-lane local road extending about five miles uphill from its intersection with Hicks Road to the entry gate of the former Almaden AFS. Mt. Umunhum Road was originally paved and improved in the late 1950s in conjunction with the establishment of the Almaden AFS at the top of Mt. Umunhum. Since closure of the base in 1980, the roadway has deteriorated in many sections. The first 9,260 feet (nearly 2 miles) from Hicks Road is currently open to the public for vehicle access, where a locked gate prevents further driving, Public hiking, biking, and equestrian access is allowed for an additional mile (approximately 3 miles from Hicks Road). At this point, “No Trespassing” signs alert the public they have reached the private property boundary and must proceed no further, but no gate exists at this boundary.

The first gate on Mt. Umunhum Road is immediately adjacent to: 1) the existing trailhead leading to Bald Mountain, 2) the location for the proposed gravel-surfaced parking area, and 3) the trailhead to the summit. Two additional locked gates along Mt. Umunhum Road are also in place, the second at 21,815 feet (approximately 4 miles) from Hicks Road and the third at its terminus, 26,324 feet (approximately 5 miles) from Hicks Road at the entrance to the former Almaden AFS at the summit. Gate access is only provided to local landowners, companies with telecommunications equipment at the top of the mountain, the Santa Clara County Fire Department and MROSD personnel.

Overall, Mt. Umunhum Road has an east-west uphill grade, one big loop to the south, and numerous horizontal curves. The paved roadway width ranges from less than 17 feet up to more than 20 feet. Approximately three miles of the roadway is at least 20 feet wide, and approximately 550 feet is less than 17 feet wide. Narrow roadway sections are typically due to debris falling on the road from adjacent hillsides. Intermittent paved and gravel pullouts are located along both the uphill and downhill lanes, most of which are full of rocks and soil. There are only a few locations with dirt shoulders. Steep drop-offs are present along one side of the road or the other in many locations. Drainage ditches are located along some sections of the road, but most are full of debris, as there has been little or no maintenance along the majority of the road for the past 30 years. Guardrails are provided along about 20 percent of the roadway length (5,012 feet), although none meet current standards. The roadway surface is in average condition between Hicks Road and the first gate. However, conditions deteriorate uphill of the first gate, with numerous potholes, surface cracking and narrower roadway widths.



Source: CTG 2011

Exhibit 4.10-1 **Project Area Map**

Mt. Umunhum Road has centerline striping and only one remaining speed advisory sign (downhill, for 25 miles per hour on the approach to a curve). Observed vehicle speeds in the higher quality (lower) section of the roadway ranged from 25 to 35 miles per hour. Mt. Umunhum Road is intersected intermittently by dirt roads/driveways, which provide access for local landowners.

Hicks Road is a two-lane rural road with numerous horizontal and vertical curves and minimal shoulders. The roadway extends about 6 miles in a general northwesterly and then northeasterly direction from Mt. Umunhum Road to an intersection with Camden Avenue, an arterial roadway in San Jose. It also continues about 2 miles southeast of Mt. Umunhum Road to an intersection with Alamitos Road. There is no development along Hicks Road in the vicinity of Mt. Umunhum Road. Observed speeds ranged from 25 to 35 miles per hour.

The Hicks Road/Mt. Umunhum Road intersection is stop sign-controlled on all approaches. The fourth leg of the intersection, opposite Mt. Umunhum Road, provides dirt road access to an equestrian staging and parking lot serving local hiking and equestrian trails associated with Almaden Quicksilver County Park.

Alamitos Road is a two-lane rural road in the vicinity of its T-intersection with Hicks Road. It dead ends about two miles to the southeast of the intersection, and extends to the community of New Almaden where it changes names to Almaden Road. Alamitos Road has numerous horizontal curves between Hicks Road and New Almaden. Almaden Road then continues northwest and provides access to Almaden Expressway..

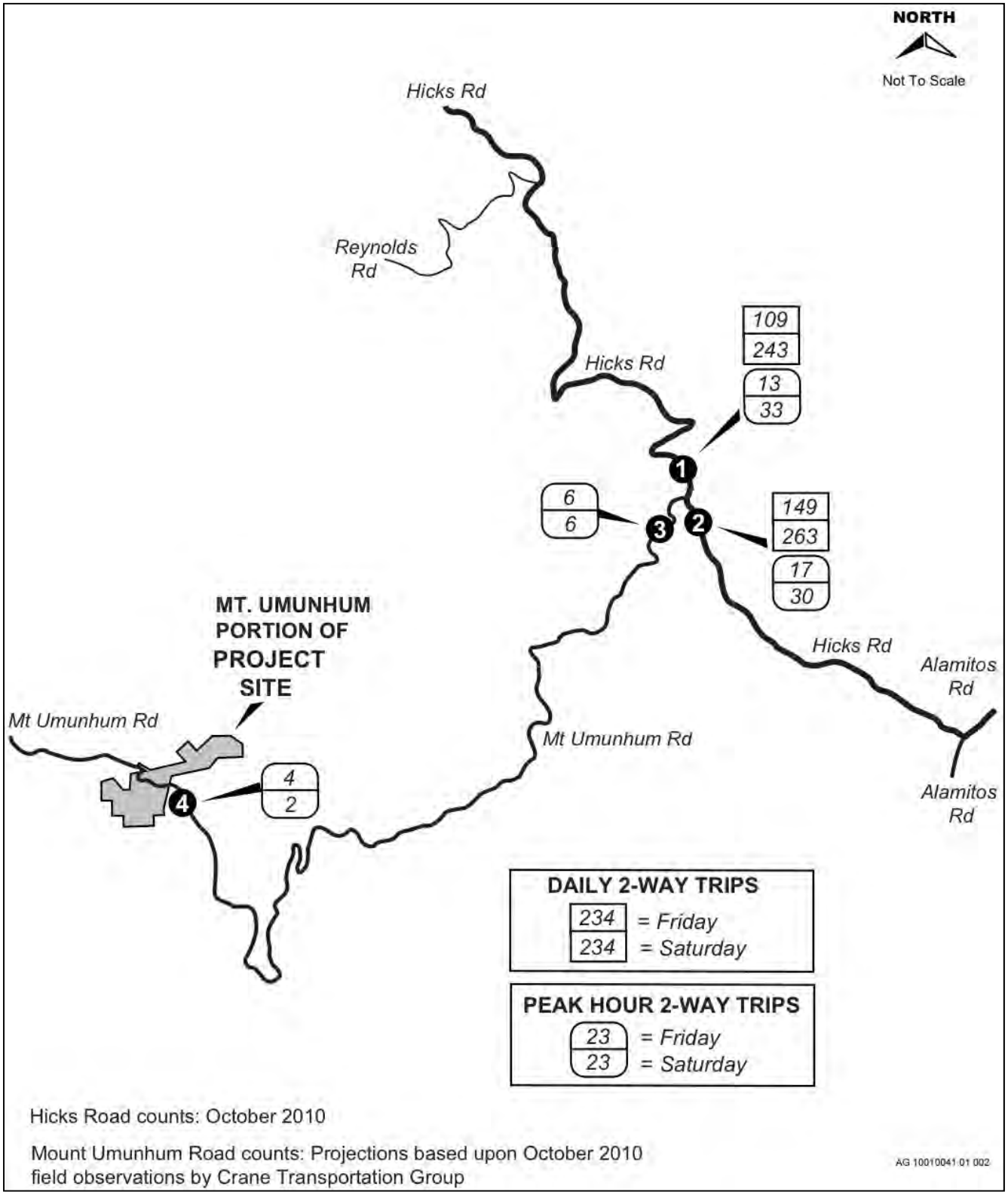
EXISTING CONDITIONS TRAFFIC VOLUMES

Weekday and weekend hourly directional counts were conducted on Hicks Road to the north and south of the Mt. Umunhum intersection on Thursday through Sunday, October 14-17, 2010. Results, presented in Exhibit 4.10-2 as well as in Tables 4.10-1 and 4.10-2, show that existing Hicks Road volumes are very low on either side of Mt. Umunhum Road. Daily volumes were highest on Saturday with 263 two-way vehicles (total traffic in both directions) south of Mt. Umunhum Road and 243 two-way vehicles north of Mt. Umunhum Road. The highest weekday volumes were on Friday, with 149 two-way vehicles south of Mt. Umunhum Road and 109 two-way vehicles north of Mt. Umunhum Road. The highest Saturday hourly two-way volume on either side of Mt. Umunhum Road was 33 vehicles (from 11:00 AM to noon), while the highest Friday hourly volume was 17 vehicles (from 2:00 to 3:00 PM). There was very little traffic before 10:00 AM or after 6:00 PM on any count day. Sunday volumes were similar to weekday volumes. Field observations also indicated no bike riders on Mt. Umunhum Road and some use of Hicks Road and Almaden Road by bike riders. However, there was no pedestrian traffic.

Table 4.10-1. Hicks Road Daily Traffic Count Results Thursday-Sunday October 14-17, 2010

Date	Vehicles South of Mt. Umunhum Road			Vehicles North of Mt. Umunhum Road		
	NB	SB	Total 2-Way	NB	SB	Total 2-Way
Thursday Oct. 14, 2010	66	79	145	54	69	123
Friday Oct. 15, 2010	69	80	149	48	61	109
Saturday Oct. 16, 2010	102	161	263	101	142	243
Sunday Oct. 17, 2010	80	90	170	41	62	103

Source: Crane Transportation Group



Source: CTG 2011

Exhibit 4.10-2 Existing Daily and Peak Hour 2-Way Traffic Volumes

Table 4.10-2. Hicks Road Hourly Traffic Count Results During Daylight Hours Friday & Saturday October 15 & 16, 2010

Time	Vehicles South of Mt. Umunhum Road						Vehicles North of Mt. Umunhum Road					
	Friday			Saturday			Friday			Saturday		
	NB	SB	Total 2-Way	NB	SB	Total 2-Way	NB	SB	Total 2-Way	NB	SB	Total 2-Way
7-8 AM	1	2	3	1	1	2	0	1	1	2	0	2
8-9 AM	1	1	2	2	3	5	1	1	2	13	1	14
9-10 AM	1	2	3	6	7	13	2	3	5	8	4	12
10-11 AM	3	7	10	7	20	27	1	1	2	5	25	30
11 AM-Noon	8	3	11	5	25	30	6	1	7	8	25	33
Noon-1 PM	5	5	10	4	8	12	1	5	6	9	12	21
1-2 PM	3	9	12	7	15	22	4	7	11	10	12	22
2-3 PM	9	8	17	12	15	27	4	8	12	7	8	15
3-4 PM	7	5	12	6	10	16	3	3	6	3	7	10
4-5 PM	4	4	8	12	7	19	4	4	8	6	8	14
5-6 PM	8	5	13	14	12	26	7	4	11	7	10	17
6-7 PM	3	6	9	7	6	13	1	7	8	1	7	8

Source: Crane Transportation Group

Mt. Umunhum Road volumes are currently very low based upon fall 2010 observations during numerous field surveys by Crane Transportation Group, the project traffic consultant. It is estimated that the average weekday daily two-way volume is ± 30 vehicles near Hicks Road and ± 12 to 14 vehicles at the top of the mountain. On a peak hour basis, it is estimated that two-way volumes are about four to six vehicles at the bottom of the mountain (near Hicks Road) and, at most, two to four vehicles near the top of the mountain.

Historical records show that in 1971 Mt. Umunhum Road had a daily two-way volume of about 190 vehicles when it was serving as the only paved access route to the Almaden Air Force Station. This volume included employee traffic going to the base, traffic from service family members living on the base running errands or traveling to other jobs in the San Jose region, as well as service/delivery trucks. It should also be noted that Mt. Umunhum Road accommodated all grading and construction-related worker and truck traffic associated with development of the Almaden Air Force Station.

EXISTING CONDITIONS ROADWAY SEGMENT OPERATING CONDITIONS

Analysis Methodology

The rural two-lane highway analysis methodology contained in the year 2000 *Highway Capacity Manual* (HCM) is utilized by the Santa Clara Valley Transportation Authority (VTA) (*2009 Annual Monitoring and Conformance Report*) to evaluate operating conditions along two-lane rural facilities in the project region. Operation is evaluated based upon a scale called "level of service" (LOS). Operation ranges from LOS A, indicating the highest quality of traffic service where motorists are able to travel at their desired speed, down to LOS F, indicating heavily congested flow with traffic demand exceeding capacity. However, this methodology is only applicable for facilities where the free flow speed is 45 miles per hour or greater. Therefore, this methodology would not be applicable for either Hicks Road or Mt. Umunhum Road and there is currently no methodology available to provide a level of service for facilities such as Hicks Road and Mt. Umunhum Road, where prevailing speeds range from 20 to only 35 miles per hour. Application of the HCM rural two-lane highway software to current low peak hour volumes on Hicks Road produces a projected LOS A operation. However, given the limitations of the

software program only applying to two-lane roadways/highway with higher speeds, this is not necessarily an accurate assessment.

Since neither Highway Capacity Manual, VTA, nor Santa Clara County currently have a level of service criteria evaluation procedure for curving two-lane hillside/mountain roads, one was developed for use in this study by the Registered Professional Traffic Engineer conducting this study based upon his 35+ years of experience. As shown in Table 4.10-3, LOS A operation would reflect 30 or fewer two-way vehicles on either road during any hour (or, on average, at most 1 vehicle every 2 minutes), with LOS C operation reflecting 90 or fewer two-way vehicles on either road during any hour (or, on average, 1 vehicle every 40 seconds). LOS C is usually used as the minimal acceptable operation for rural two-lane roadways with low traffic volumes. These relationships would be applicable for Hicks Road and the currently, higher-quality paved section of Mt. Umunhum Road below the gate.

Table 4.10-3. Rural 2-Lane Hillside/Mountain Road* Level of Service (Significant Horizontal Curves and Grades) Speed Range 25-35 Miles Per Hour**

Level of Service	Maximum 2-Way Hourly Traffic Flow (vph)***
A	30
B	60
C	90
D	110
E	120

* 9- to 10-foot travel lanes, at least 20 feet of clear space.
** Minimal fronting properties and driveways/some bike riders.
*** VPH = Vehicles per hour. Minimal heavy vehicles.
Source: Crane Transportation Group

Existing Operating Conditions

As shown in Table 4.10-4, Hicks Road in the vicinity of Mt. Umunhum Road currently experiences LOS A operation during weekday peak traffic hours and LOS A or B operation during Saturday peak traffic hours, while Mt. Umunhum Road currently experiences LOS A operation near Hicks Road during weekday or Saturday conditions.

Table 4.10-4. Roadway Level of Service Existing

Location	Friday Peak Hour				Saturday Peak Hour			
	Existing		Existing + Project		Existing		Existing + Project	
	Volumes (2-Way)	LOS[1]	Volumes (2-Way)	LOS	Volumes (2-Way)	LOS	Volumes (2-Way)	LOS
Mt. Umunhum Road								
Near Hicks Road	6	A	28	A	6	A	69	C
Near Top of Mountain	4	A	26	A	2	A	65	C
Hicks Road								
South of Mt. Umunhum Road	17	A	30	A	30	A	66	C
North of Mt. Umunhum Road	13	A	22	A	33	B	60	B

[1] LOS = Level of Service
Source: Crane Transportation Group

PEDESTRIAN AND BICYCLE CIRCULATION

There are no sidewalks or pathways adjacent to either Mt. Umunhum Road or Hicks Road near the intersection of Mt. Umunhum Road. There are only infrequent dirt shoulder areas that could be used as pedestrian refuge areas along both facilities. No pedestrians were observed along either road during numerous field surveys.

There are no Class I bike paths, Class II striped bike lanes or Class III signed bike routes along either Mt. Umunhum Road or Hicks Road near Mt. Umunhum Road. However, a few bike riders were observed along both Hicks Road and Almaden Road. Bike riders are required to share the road with auto traffic, which creates safety concerns at the numerous sharp curves along Hicks Road and, to a lesser extent, along Almaden Road. Grades on Hicks Road result in slow uphill bicycle traffic.

PUBLIC TRANSPORTATION

There is no public transportation along Hicks Road near Mt. Umunhum Road.

PLANNED IMPROVEMENTS

There are no roadway improvements planned for Hicks Road in the vicinity of Mt. Umunhum Road.

YEAR 2020 BASE CASE (WITHOUT PROJECT) CONDITIONS

Traffic Volumes

No traffic growth would be expected on Mt. Umunhum Road by 2020 without the proposed project. In addition, only minimal traffic increases would be expected on Hicks Road near Mt. Umunhum Road as no development is proposed in the area. A one percent per year increase to 2020 has been utilized for evaluation purposes; without new development spurring traffic growth, this is a conservative assumption. Exhibit 4.10-3 presents year 2020 Friday and Saturday daily and peak hour Base Case (without project) volumes on Mt. Umunhum Road and on Hicks Road in the vicinity of Mt. Umunhum Road.

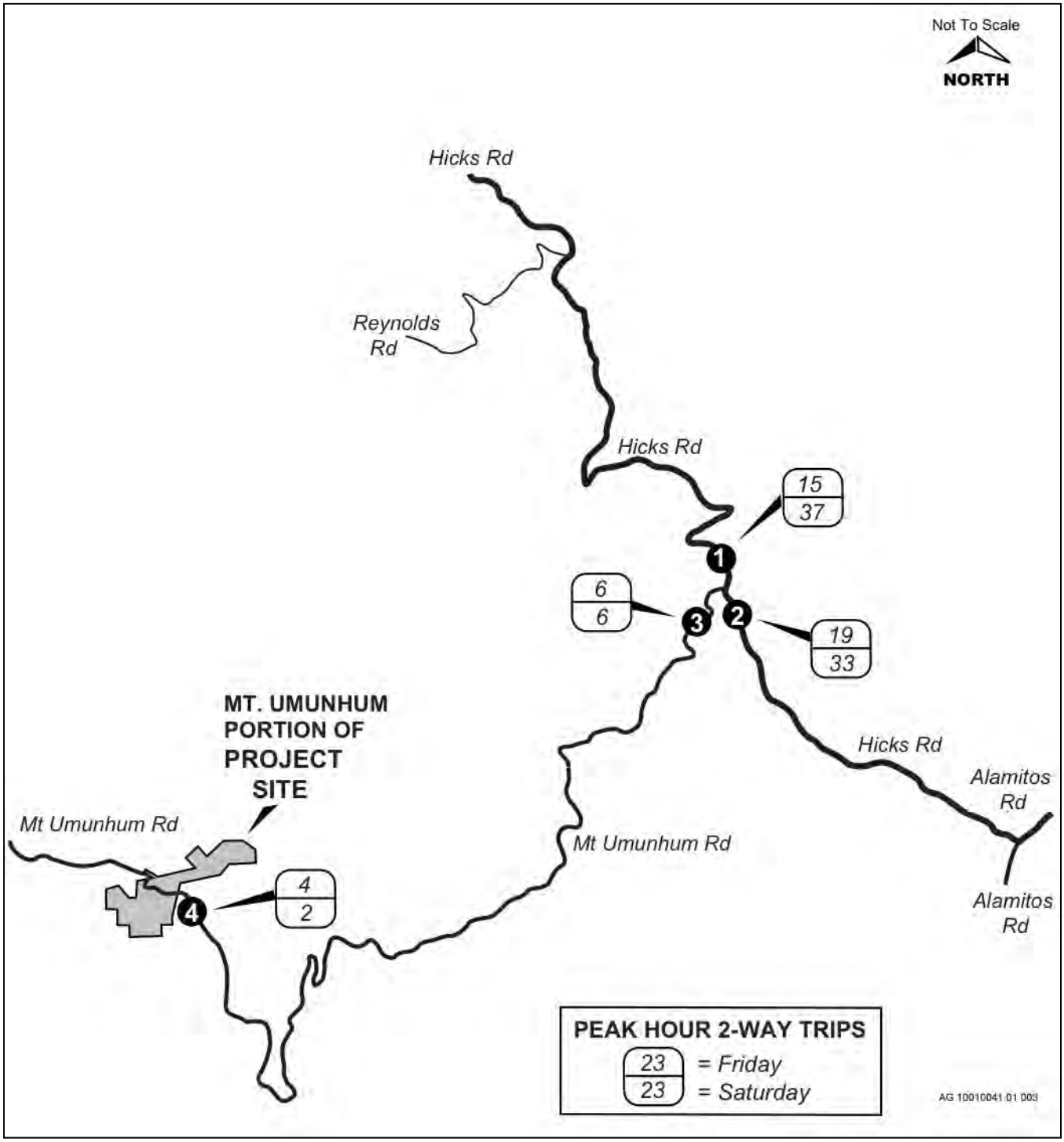
Roadway Operation

Table 4.10-5 shows that by 2020 the lower section of Mt. Umunhum Road would maintain LOS A operation with no expected increase in traffic, while Hicks Road in the vicinity of Mt. Umunhum Road would be expected to maintain LOS A or B operation.

Table 4.10-5. Roadway Level of Service Year 2020

Location	Friday Peak Hour				Saturday Peak Hour			
	Base Case		Base Case + Project		Base Case		Base Case+ Project	
	Volumes (2-Way)	LOS[1]	Volumes (2-Way)	LOS	Volumes (2-Way)	LOS	Volumes (2-Way)	LOS
Mt. Umunhum Road								
Near Hicks Road	6	A	28	A	6	A	69	C
Near Top of Mountain	4	A	26	A	2	A	65	C
Hicks Road								
South of Mt. Umunhum Road	19	A	32	B	33	B	69	C
North of Mt. Umunhum Road	15	A	24	A	37	B	64	C

[1] LOS = Level of Service
Source: Crane Transportation Group



Source: CTG 2011

Exhibit 4.10-3 Year 2020 Base Case Without Project Peak Hour 2-Way Traffic Volumes

4.10.2 REGULATORY SETTING

Existing transportation polices, laws, and regulations that would apply to the proposed project are summarized below. This information provides a context for the impact discussion related to the project's consistency with applicable regulatory conditions.

FEDERAL AND STATE

The project site and affected roadways are not located in the vicinity of any state or federal transportation facility. No federal or state regulations apply.

LOCAL

Review of the Santa Clara County General Plan 1995-2010 Book B, Part 3 (*Rural Unincorporated Area Issues & Policies*) Transportation shows two applicable strategies, as well as three policies and implementations.

A. RURAL AREA TRANSPORTATION STRATEGIES

1. Strategy #4 – Assure the Maintenance and Safety of Rural Roads

Rural roads are generally not designed to sustain the same levels of usage as most urban roads. Nevertheless, rural roads should be designed and built to standards that will assure driving safety and roadway adequacy. Roads should be designed with an understanding of the existing and planned development in the area served by those roads.

a. Minimizing Extraordinary Impacts and Costs

The roadway planning and design process should also seek opportunities to minimize both environmental impacts and expenditures to the County. Analysis of some road conditions in the rural area may indicate that road construction will incur extraordinary environmental impacts and/or costs to County government. In such cases, consideration should be given to what is to be gained from proceeding with those improvements compared with the environmental and fiscal costs. It should be noted that, as of this writing, there is no portion of Mt. Umunhum Road that will bear a cost to the County; it is privately owned and managed.

b. Policies and Implementation

R-TR 9: Rural roads should be designed and built to standards that will assure driving safety and provide access for emergency vehicles.

R-TR 10: As existing substandard County roadways are improved to current county standards, environmental and economic constraints should be taken into consideration.

R-TR 11: New development which would significantly impact private or public roads should be allowed only when safety hazards and roadway deterioration will be mitigated to a less than significant level.

c. Implementation Recommendations

R-TR(i) 12: Appropriate County standards should be used to evaluate roadways proposed for construction. (Implementors: County)

R-TR(i)13: County roadway standards should be updated/revised regularly to reflect current roadway conditions and vehicle fleet composition, including bicycles. (Implementors: County)

R-TR(i) 14: Monitoring and assessment of existing County roadways should continue to create a regularly updated repair list. (Implementors: County)

4.10.3 IMPACTS AND MITIGATION MEASURES

METHOD OF ANALYSIS

The Santa Clara Valley Transportation Authority has guidelines for evaluating urban roadway, freeway and rural highway operation in their *2009 Annual Monitoring and Conformance Report* (April 2010). However, none of the methodologies are applicable to determine a specific level of service for the specific character of Mt. Umunhum Road nor Hicks Road in the vicinity of Mt. Umunhum Road. Neither road has been evaluated by the VTA and neither road is part of the Congestion Management Plan (CMP) system. However, the previously detailed level of service analysis methodology developed by Crane Transportation Group was utilized for analysis purposes. LOS C will be the minimum acceptable operation, as it is in most rural jurisdictions. Driver and bike rider safety as well as acceptable emergency vehicle access will also be primary issues of concern.

THRESHOLDS OF SIGNIFICANCE

The following thresholds of significance are utilized in this analysis.

According to the State CEQA Guidelines (Appendix G), the project would have a significant impact if:

- It would cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e. result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).
- It would exceed, either individually or cumulatively, a level of service standard established by the County congestions management agency for designated roads or highways.
- It would substantially increase hazards due to a design features (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- It would result in inadequate emergency access.
- It would conflict with adopted policies, plans or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

PROJECT TRIP GENERATION AND DISTRIBUTION

Trip Generation

The amount of traffic activity associated with the proposed project would depend upon the level of development/restoration , activities, and amenities eventually provided as part of the proposed project. This may change over time as funding becomes available to the District to provide additional features (included as part of the analysis of this Draft EIR). It will also depend upon the level and timing of publicity and promotion provided by the District for the proposed project. It is likely that the project area would experience higher than steady state operation visitor levels during the months immediately after the opening. This would be due to built-up curiosity by local and regional residents to see the views and property that have been off limits for the last 25 years since the District purchased the property from the federal government.

In order to determine an order of magnitude trip generation that would be expected at the proposed project, traffic count surveys were conducted at the most comparable facility available in the South Bay Area for a tourist destination on top of a mountain: Mt. Hamilton and the U.C. Lick Astronomical Observatory visitor center parking facility. Mt. Hamilton is served by the State Route 130 (SR 130) highway, a two-lane roadway with significant horizontal curves and grades. SR 130 pavement width ranges from 16 to more than 20 feet. Shoulder

areas are infrequent and there are steep drop-offs along the road in many locations, most of which include guard rails. The last 10 miles of SR 130 proceeding up Mt. Hamilton travel through primarily undeveloped territory, similar to Mt. Umunhum Road and Hicks Road. At the top of Mt. Hamilton a two-lane driveway provides access to a parking lot serving the U.C. Lick Observatory visitor center. The center includes two large telescopes (one with scheduled half-hour tours), photo exhibitions, a gift shop, restrooms, classrooms and a post office. Other facilities located at the top of Mt. Hamilton include residences for Lick Observatory staff and visitors, maintenance facilities and a third (larger) telescope not typically open to the general public.

Hourly traffic counts were conducted over a 16-day period on SR 130 near the top of Mt. Hamilton as well as on the Lick Observatory visitor center driveway during late October and November 2010. See Tables 4.10-6 and 4.10-7 for detailed results; summarized results are presented in Table 4.10-8. A relationship was then drawn between traffic levels on SR 130 in relation to traffic levels on the visitor center driveway (see Table 4.10-9). Caltrans seasonal traffic count information for SR 130 was then utilized to adjust the October/November count data to midsummer (higher traffic volume) conditions. Based upon survey findings, Lick Observatory visitor center driveway volumes during the summer are projected to be as follows.

Table 4.10-6. Mt. Hamilton Daily Traffic Count Summary October/November 2010 Comparison of 2-Way Volumes on SR 130 Just West of Mt. Hamilton Versus Lick Observatory Visitor Center Driveway

Volumes	Oct. 28 Thu	Oct. 29 Fri	Oct. 30 Sat*	Oct. 31 Sun	Nov. 1 Mon	Nov. 2 Tue	Nov. 3 Wed	Nov. 4 Thu	Nov. 5 Fri	Nov. 6 Sat	Nov. 9 Tue	Nov. 10 Wed	Nov. 11 Thu	Nov. 12 Fri	Nov. 13 Sat	Nov. 14 Sun
SR 130 Just West & Downhill of Lick Observatory at Top of Mt. Hamilton																
Daily 2-Way	77	105	91	211	110	98	76	107	132	322	101	100	145	179	311	297
Up/Down**	40/37	57/48	36/55	92/119	55/55	49/49	40/36	55/52	71/61	158/164	49/52	48/52	75/70	96/83	153/158	138/159
Lick Observatory Visitor Center Driveway																
Daily 2-Way	47	62	82	178	87	92	82	101	116	346	72	66	121	116	298	244
Up/Down**	20/27	31/31	41/41	88/90	45/42	45/47	41/41	50/51	57/59	173/173	36/36	33/33	61/60	58/58	149/149	122/122
Peak Hour	25	11	18	32	13	15	13	17	20	54	11	15	19	24	60	51
% Visitor Center Driveway Traffic of Total Traffic on SR 130 West of Mt. Hamilton	61%	59%	90%	84%	79%	94%	108%	94%	88%	103%	71%	66%	83%	65%	96%	82%

* Rain
** Uphill/Downhill
Shaded Cells = Weekend Days
Source: All Traffic Data
Compiled by: Crane Transportation Group

Table 4.10-7. Mt. Hamilton 10 AM to 6 PM Traffic Count Summary October/November 2010 (Friday, Saturday & Sunday) Comparison of 2-Way Volumes on SR 130 Just West of Mt. Hamilton Versus Lick Observatory Visitor Center Driveway

	Friday			Saturday		Sunday	
	Oct. 29	Nov. 5	Nov. 12	Nov. 6	Nov. 13	Oct. 31	Nov. 14
Volumes on SR 130 Just West of Mt. Hamilton	68	80	126	271	269	179	245
Volumes on Lick Observatory Visitor Center Driveway	45	88	78	312	246	167	220
% Visitor Center Driveway Traffic of Total Traffic on SR 130 West of Mt. Hamilton	66%	110%	62%	115%	91%	93%	90%

Source: All Traffic Data
Compiled by: Crane Transportation Group

Table 4.10-8. Peak Summer Traffic 2-Way Volumes Lick Observatory Driveway		
	Daily	Peak Hour
Friday	116	22
Saturday	338	63
Sunday	244	59
Source: Crane Transportation Group – Seasonal Adjustment of October/November counts.		

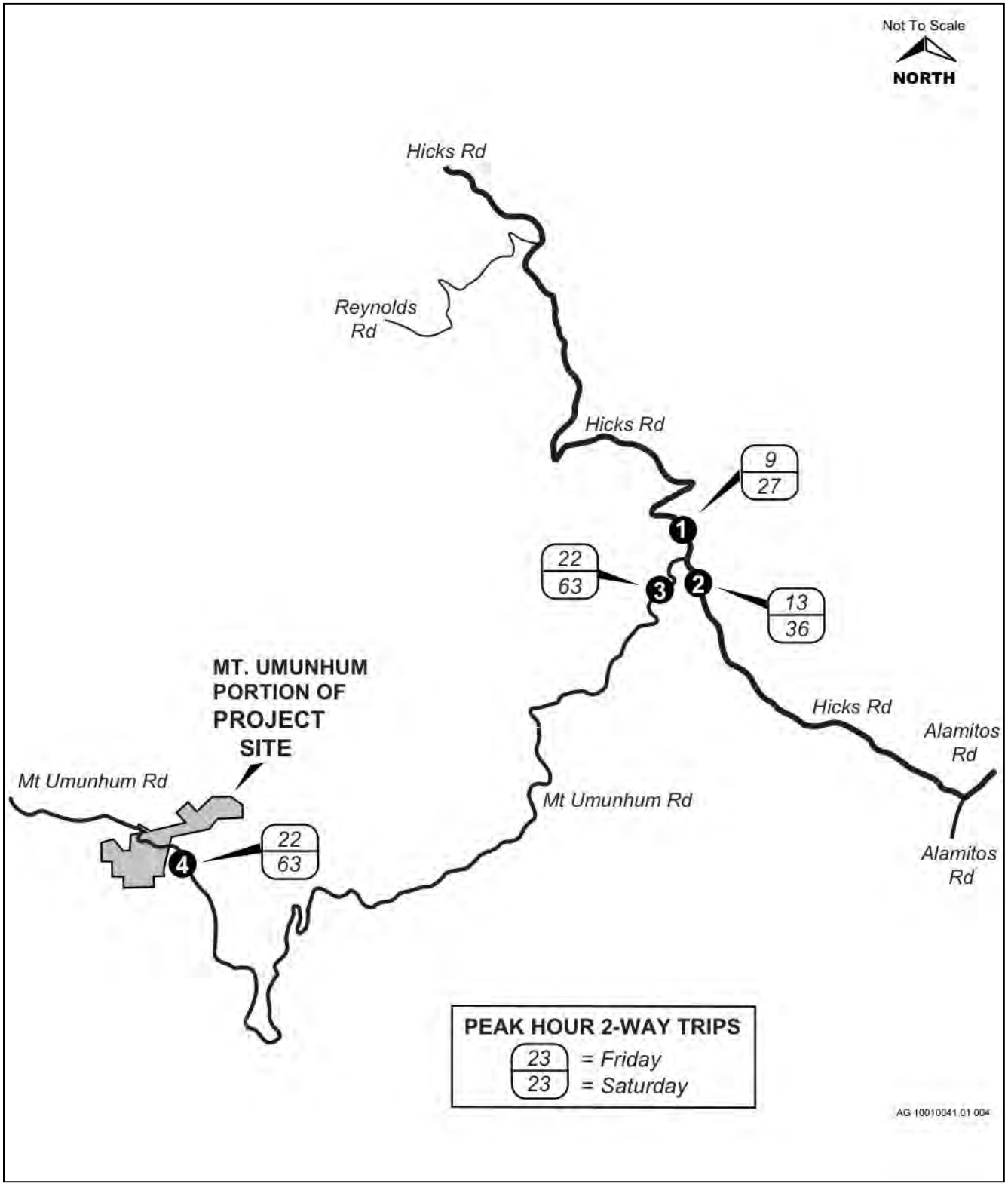
Table 4.10-9. Lick Observatory Visitor Center Driveway Volumes as Percent of SR 130 Volumes West of Mt. Hamilton – During Daylight Hours	
Friday	Saturday/Sunday
65%	90%
Source: Crane Transportation Group	

Observations by Crane Transportation Group of traffic/occupants accessing the Lick Observatory visitor center parking lot indicated that some people just parked to look at the view, while others went into the visitor center. Some entering the center only used the restroom facilities, while others also looked at the astronomy-related pictures and waited for one of the half-hour telescope tours. Overall, there was a wide mix in the reasons why people accessed the visitor center parking lot.

It is projected that Mt. Umunhum visitor levels could reach those of the traffic accessing the Lick Observatory visitor center parking lot. These levels might be expected to occur only if the project area would be developed to the maximum intensity evaluated in this DEIR. In order to conservatively evaluate the potential traffic-related impacts, the visitor traffic levels from Lick Observatory visitor center parking lot have been projected for Mt. Umunhum. These levels represent the traffic levels for steady state operation of the project area and, as mentioned above, would likely be exceeded the first months after the proposed project is complete. It should be noted that no horse staging facilities will be provided at the proposed project. Therefore, there will be no horse or other large trailers allowed on Mt. Umunhum Road. (Equestrians would access the project site on horseback via Mt Umunhum Road and/or the proposed trail connections.)

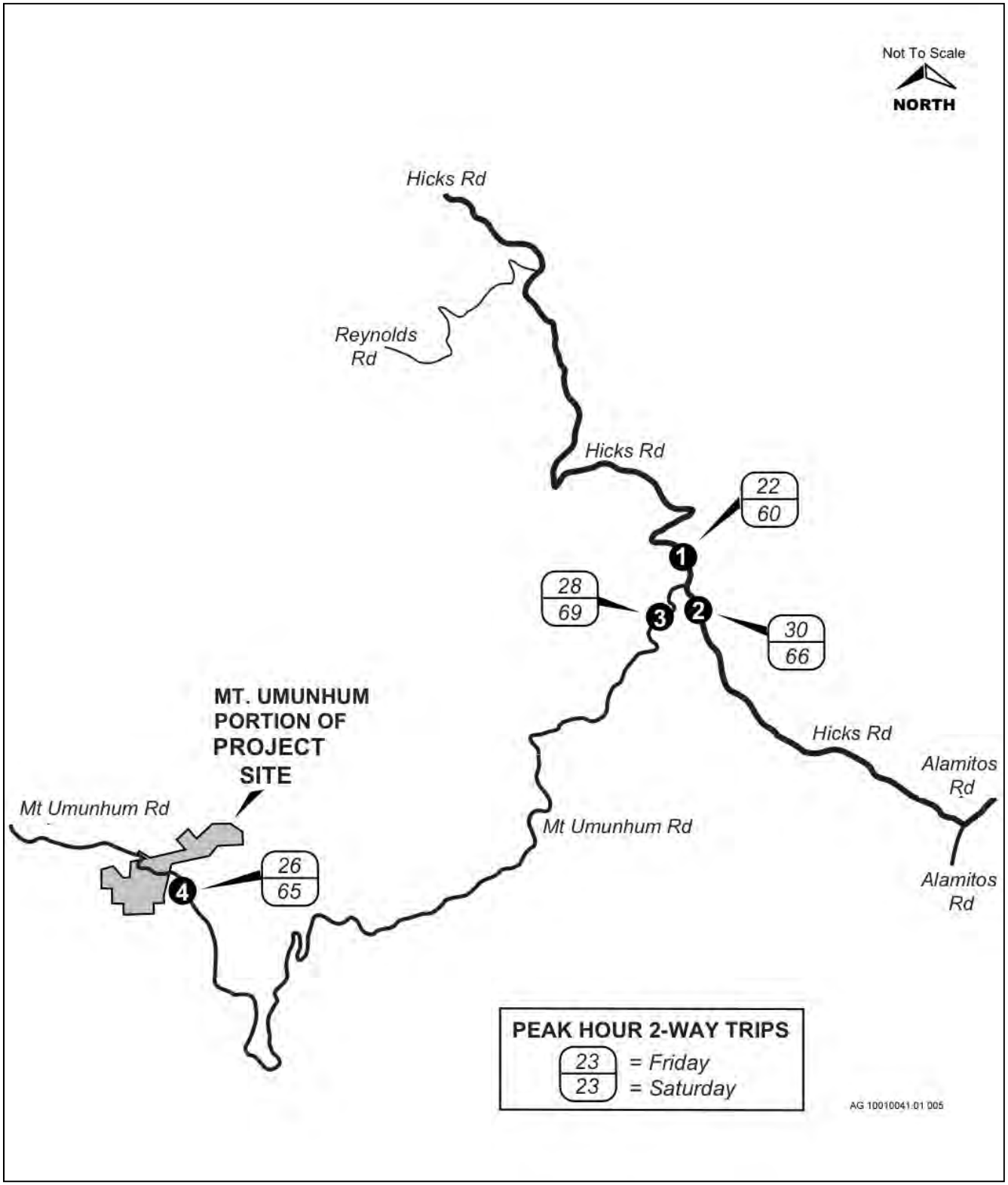
Project Traffic Distribution

All project-related traffic would use Mt. Umunhum Road to access Hicks Road. Based upon existing daily traffic counts on Hicks Road to the north and south of Mt. Umunhum Road, it would be expected that about 57 percent of project traffic would travel to/from the south on Hicks Road (to Almaden Road), with the remaining 43 percent traveling to/from the northeast on Hicks Road (towards Camden Avenue). The Friday and Saturday peak hour project traffic increments are presented in Exhibit 4.10-4. Resultant Existing + Project and year 2020 Base Case + Project volumes are presented in Exhibits 4.10-5 and 4.10-6, respectively.



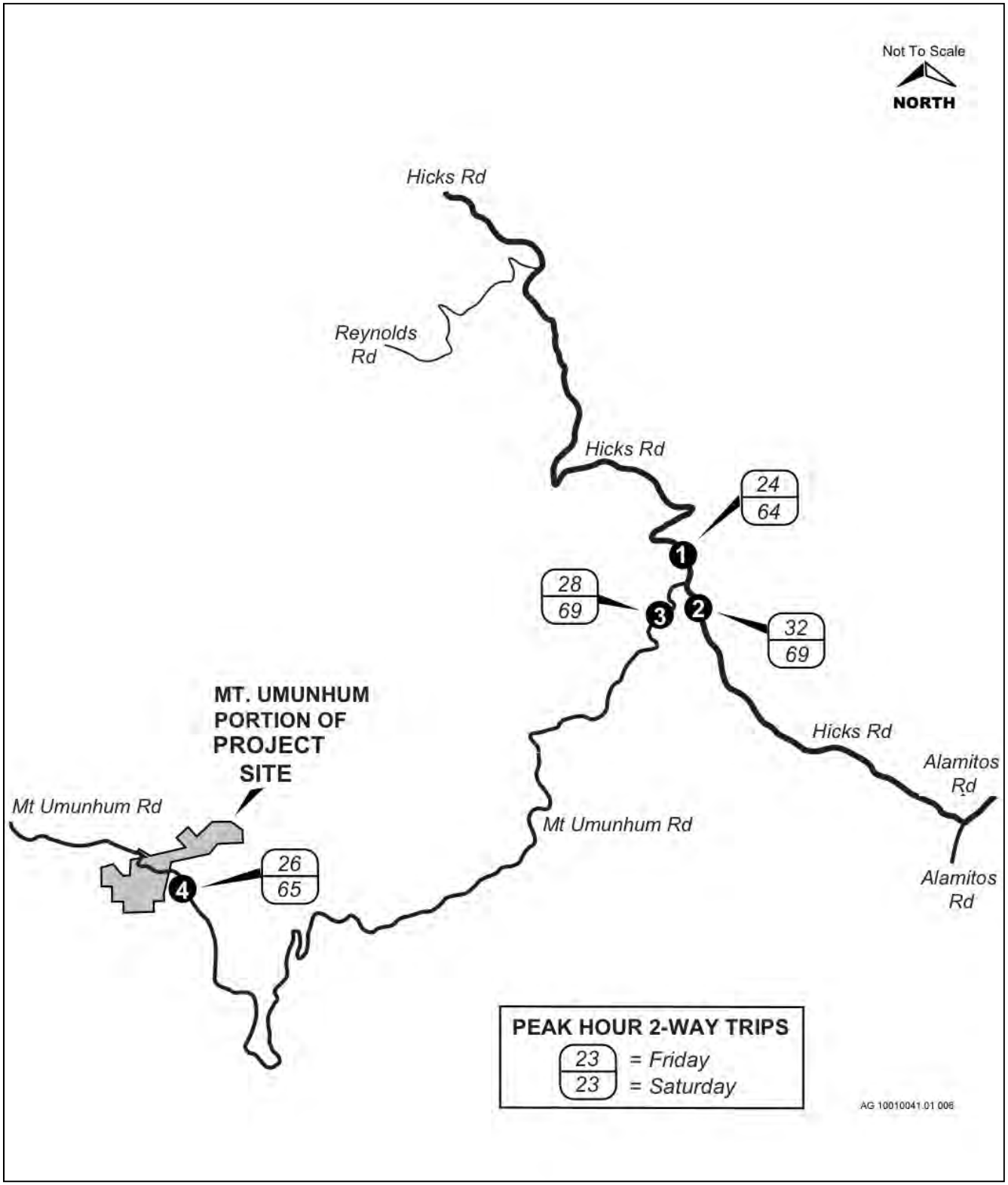
Source: CTG 2011

Exhibit 4.10-4. Master Plan Increment Peak Hour 2-Way Traffic Volumes



Source: CTG 2011

Exhibit 4.10-5. Existing Plus Project Peak Hour 2-Way Traffic Volumes



Source: CTG 2011

Exhibit 4.10-6. Year 2020 Base Case Plus Project Peak Hour 2-Way Traffic Volumes

Planned Improvements

The entire length of Mt. Umunhum Road would be resurfaced with potholes eliminated as part of the proposed project. Also, existing guardrails would be upgraded or replaced and additional guardrail provided. Pullouts and drainage features would be cleared of debris. Ultimate roadway, lane, and shoulder improvements would meet Santa Clara County Planning, Building, and Fire Department, or CAL FIRE standards, as described below.

1. Standards

County of Santa Clara Land Development Office standards indicate that Mt. Umunhum Road should have a minimum paved width of 18 feet with three-foot all weather shoulders on both sides of the road. Shoulders should be able to support full loading normally supported by the roadway itself. Paved width refers to asphalt paving. An all-weather shoulder can be either gravel or paved, but it must be able to support the same weight as the 18-foot-wide paved travel lanes.

Santa Clara County Fire Department standards state that 20 feet clear width is the minimum required for all fire department access roads. (Santa Clara County 2009) However, the width of secondary access roads may be reduced to less than 20 feet provided turnouts are installed adjacent to the roadway every 500 feet with a minimum dimension of 10 feet wide and 40 feet long, or as otherwise determined by the fire code official. The County Fire Department standards would likely apply to Mount Umunhum Road only if a visitor center (or other occupied structure) is developed on site. San Jose Fire (the primary fire response agency) drove Mt. Umunhum Road and indicated that the roadway provides adequate emergency vehicle access.

For comparison purposes, Caltrans State Route 130, which provides access to Mt. Hamilton and the Lick Observatory, has pavement width ranging from 16 to more than 20 feet for the last five miles leading to the top of the mountain. For the majority of this distance, the width is less than 20 feet.

IMPACTS AND MITIGATION MEASURES

Impact 4.10-1	**Construction Traffic.** Project construction activities would generate traffic associated with the delivery of materials and equipment to the project site and construction worker trips. In addition, trucks would be a safety concern for bike riders along these roads. Therefore, this impact would be considered **potentially significant.**

Demolition and construction would occur in several phases with the following characteristics.

1. Demolition of Existing Structures. These projections assume removal of the radar tower.
   - Time: 3-6 months
   - Staff: Up to 50 workers (with a possible 10 additional workers for 3 months)
   - Haul Trucks: 6 round trips per day

2. Construction of New Facilities
   - **Summit Area**
     - Time: 2-3 years
     - Staff: 5-10 workers including volunteers
     - Heavy earth moving equipment. One move-in/move-out event each construction season.

- **Mt. Umunhum Road Upgrade**

  Time: 3 months
  Staff: 5-10 workers
  Machinery for debris removal and haul trucks. Asphalt/concrete delivery trucks and paving machine/steamrollers. Paving machine/steamrollers stay on-site until job completion.

- **Paved Parking Lots (2)**

  Time: 3-4 weeks each
  Staff: 5-10 workers
  Asphalt/concrete delivery trucks and paving machine/steamrollers. Paving machine/steamrollers stay on-site until job completion.

It is projected for analysis purposes that the cut and fill program, associated with construction activities (including topographical re-contouring) would be balanced and require little or no soil removal or importation using the regional roadway network. In addition, the District has indicated that there may be up to 12,000 cubic yards of material in the drainage system along Mt. Umunhum Road that will require removal (at 15 cubic yards/truck this would result in 800 truck trips.) Two to three trucks would be utilized for hauling drainage system debris over a four- to five-week period. However, it is anticipated that this material would be used on-site as part of landform restoration, rather than off hauled to a dump site, thereby avoiding the use of the regional roadway network.

The most traffic-intensive phase of construction would be the demolition phase (3-6 months duration), which would involve up to 60 worker trips inbound to the site each morning and outbound from the site each late afternoon (each-way) and 20 two-way truck trips per day (20 inbound and 20 outbound). Although some of the 60 worker trips may occur during the early morning and/or peak hours, the 20 haul trips would be spread throughout the day. Therefore total peak hour trips would be fewer than peak hour operations-related trips (69 trips) identified in Table 4.10-4. Because the trips generated during demolition would be temporary (3-6 months) and would not decrease roadway operation below LOS C (See Table 4.10-4), project-related construction traffic would not adversely affect local roadway operation.

Trucks associated with demolition material removal, heavy equipment delivery and removal and construction material delivery would potentially result in some additional degradation to the existing paved surface of Mt. Umunhum Road.

Demolition and construction-related truck traffic may result in some degradation to Hicks Road/Alamitos Road and Almaden Road pavement. In addition, trucks would be a safety concern for bike riders along these roads.

Therefore, this safety-related impact would be considered **potentially significant**.

Mitigation Measure 4.10-1

MROSD shall implement the following mitigation measures to improve roadway condition/operation during and after construction. These measures would be required with or without removal of the radar tower.

- *Improve and repave Mt. Umunhum Road to increase vehicle accessibility after completion of demolition. In the interim, provide necessary temporary improvements (e.g. pothole repairs).*

- *Survey the demolition and construction truck route between Mt. Umunhum Road and Almaden Expressway (or Camden Avenue) before project initiation and after all work is completed. Provide repair as required to all road segments with documented pavement degradation due to project trucks.*

- *Post signs along the narrower two-lane sections of construction haul routes informing bike riders as well as local drivers of dates and times of potential truck traffic.*

- *Post signs of potential delay in advance of construction/excavation sites along Mt. Umunhum Road.*

- *Ensure communication links between truck drivers so they are aware when there will be uphill and downhill truck traffic at the same time on Mt. Umunhum Road and/or Hicks Road.*

- *Survey Mt. Umunhum Road on a weekly basis during all demolition off haul, excavated material haul and any fill importation to determine whether pavement condition remains adequate in all locations along Mt. Umunhum Road for safe truck traffic activity. If not, provide interim pavement repairs as needed.*

Level of Significance after Mitigation

Implementation of this mitigation measure would provide ongoing monitoring of any potential pavement degradation due to truck traffic, and would result in immediate repair to prevent unsafe auto or truck driving conditions. It would also allow identification of any construction traffic pavement impacts along roadways connecting Mt. Umunhum Road to the regional arterial roadway system. Communications between truck drivers would facilitate low speed truck movements at locations along Mt. Umunhum Road and Hicks Road with potential up and downhill truck meets. In addition, signage would alert local bike riders as well as local area drivers to anticipated times of potential project-related truck traffic activity. Therefore, this potentially significant traffic impact would be reduced to a **less-than-significant** level.

Impact 4.10-2	**Roadway Level of Service.** The proposed project would increase volumes on both Mt. Umunhum Road as well as along Hicks Road on both sides of Mt. Umunhum Road. Roadway level of service would change, but would not degrade to unacceptable levels during either weekday or weekend peak traffic conditions. Therefore, this impact would be considered **less than significant**.

The proposed project would be expected to increase two-way peak hour traffic on Mt. Umunhum Road by 22 vehicles during a weekday peak traffic hour, by 63 vehicles during a Saturday peak traffic hour and by 59 vehicles during a Sunday peak traffic hour. As shown in Table 4.10-4, resultant existing peak hour operation of Mt. Umunhum Road would be expected to remain LOS A on a weekday and change to LOS C on a Saturday. All are acceptable operation levels. Project traffic could access Mt. Umunhum Road from two different directions on Hicks Road, and would add no more than 13 weekday or 36 Saturday two-way vehicles per hour to any given segment of Hicks Road. Resultant weekday peak hour operation would be expected to remain LOS A both north and south of Mt. Umunhum Road. Resultant Saturday operation would be expected to change to LOS C south of Mt. Umunhum Road and to remain LOS B to the north of Mt. Umunhum Road. All are acceptable operation levels. Therefore, this impact would be considered **less than significant**.

Mitigation Measure 4.10-2

No mitigation measures necessary.

Impact 4.10-3	**Cumulative Roadway Level of Service, Year 2020.** The proposed project would increase volumes on both Mt. Umunhum Road as well as along Hicks Road on both sides of Mt. Umunhum Road. Roadway level of service would change, but would not degrade to unacceptable levels during either weekday or weekend peak traffic conditions. Therefore, this cumulative impact would be considered **less than significant**.

The proposed project would be expected to increase two-way peak hour traffic on Mt. Umunhum Road by 22 vehicles during a weekday peak traffic hour, by 63 vehicles during a Saturday peak traffic hour and by 59 vehicles during a Sunday peak traffic hour. As shown in Table 4.10-5, resultant year 2020 peak hour operation of Mt. Umunhum Road would be expected to remain LOS A on a weekday and change to LOS C on a Saturday. All are acceptable operation levels. Along Hicks Road in the vicinity of Mt. Umunhum Road, project traffic would split and add no more than 13 weekday or 36 Saturday two-way vehicles per hour to any given roadway segment. Resultant weekday peak hour operation would be expected to change to LOS B to the south of Mt. Umunhum Road, and remain LOS A to the north of Mt. Umunhum Road. Resultant Saturday operation would be expected to change from LOS B to LOS C both to the north and south of Mt. Umunhum Road. All are acceptable operation levels. Therefore, no cumulative impacts would occur, and the project's contribution to cumulative 2020 roadway LOS would be considered **less than significant**.

Mitigation Measure 4.10-3

No mitigation measures necessary.

Impact 4.10-4	**Public Transit, Bicycle or Pedestrian Facility Effects.** The proposed project would not be anticipated to conflict with adopted policies, plans or programs regarding public transit, bicycle or pedestrian facilities. However, mixing anticipated bicycle traffic with increased auto traffic on Mt. Umunhum Road and Hicks Road in the vicinity of the proposed project would result in significant safety concerns. However, implementation of the proposed bicycle safety signage program would ensure this impact is **less than significant**.

Public transit is not provided to the project site and the proposed project would not be expected to substantially increase the demand for public transit. Also, due to the dispersed residential origin of potential visitors, the time required to take transit to the site would greatly discourage much use of transit. It would also be highly unlikely that the local transit agency providing public transit to the proposed project site would be financially viable, given likely low ridership.

Mt. Umunhum Road and Hicks Road do not include bicycle or pedestrian facilities, and none are planned. Few, if any visitors would be expected to walk to/from the proposed open space and public access area along Mt. Umunhum Road and Hicks Road from the nearest housing (10+ miles away), especially if connecting trails were available as an alternative. The proposed project would provide hiking, biking, and equestrian trails at all locations along Mt. Umunhum Road as an alternative to pedestrian use of the roadway. However, some dedicated bicyclists would be expected to ride to the summit of Mt. Umunhum via Mt. Umunhum Road (based upon observation of bike riders traveling on SR 130 to the top of Mt. Hamilton). Bike riders would mix with auto traffic on Mt. Umunhum Road and Hicks Road (as they do on SR 130) and there are only infrequent pullouts or dirt shoulder areas where bike riders could pull out of the way of auto drivers. There would be occasions when auto drivers rounding curves could be confronted by slow moving bike traffic (particularly in the uphill direction). Due to the 9- to 10-foot-wide travel lanes on both Mt. Umunhum Road and Hicks Road and the lack of paved shoulders for the bike riders, auto drivers pulling around the bicyclists would need to partially

maneuver into the opposing direction travel lane. When this maneuvering is done on curves with limited sight lines, this would result in a significant safety concern. However, as indicated in Section 3, "Project Description," the MROSD would prepare a signage program for bicycle rider safety, which will include the following signs along Mt. Umunhum Road: "share the road" signs for auto/bicycle traffic, "no passing" signs and other warning signs for auto drivers that slow moving bike riders are a possibility (especially on approaches of uphill horizontal curves with obstructed visibility), 20 mile per hour speed limit signs on the approaches to all sharp curves or curves with restricted sight lines. In conjunction with the signage program, MROSD will consider providing rumble strips (partial lane width) on the approaches to select curves in order to obtain full driver attention to slow down. Implementation of the signage program would ensure that impacts to bike rider safety would be **less than significant**.

Mitigation Measure 4.10-5

No mitigation measures necessary.

Impact 4.10-5	**Safety – Guardrails and Reduced Possibility of Vehicle Diversion from Travel Lanes.**

The existing 5,012 lineal feet of existing guardrail along Mt. Umunhum would be upgraded or replaced to meet current County/Caltrans standards and supplemented with approximately additional 2,887 lineal feet of guardrail. Additional guardrail would be provided at locations at or near curves with significant embankment drop offs that were also judged to meet guardrail provision warrants contained in the *Roadside Design Guide*, Third Edition, by the American Association of State Highway and Transportation Officials (AASHTO 2006). Upgrading existing guardrail and provision of new guardrail would significantly reduce the chances for a driver to drive off the road and proceed down a steep slope at previous accident locations or in the vicinity of major curves along Mt. Umunhum Road. A secondary key to reduce the possibility of driving off the road is to post reduced vehicle speed signs on the approaches to all major curves and in other locations with steep embankment drop offs. MROSD's proposed roadway improvements include curve warning signs and reduced speed limit signs, as well as, potentially, pavement undulations in advance of all roadway segments adjacent to steep embankment drop offs to increase driver awareness and to slow vehicle speed. Therefore, this impact would be considered **less than significant**.

Mitigation Measure 4.10-5

No mitigation measures necessary.

Impact 4.10-6	**Safety – Roadway and Drainage Ongoing Maintenance.**

Mt. Umunhum Road would maintain acceptable capacity and safety for auto drivers and bicyclists, while improper maintenance of pavement surface, travel lane and shoulder widths as well as pullouts could result in significant operational and safety impacts. As described in Section 3 "Project Description," in order to ensure the improved roadway will remain safe for auto drivers and bike riders and will remain consistent, where feasible, with Santa Clara County roadway standards. The proposed project includes design and implementation of an ongoing roadway and drainage maintenance program for Mt. Umunhum Road. For example, MROSD will make sure the paved travel surface, including paved pullouts and drainage facilities, are clear of debris that might pose safety concerns for auto drivers and bike riders. The maintenance program will include ongoing field

surveys for debris and will identify road closure procedures prior to forecasted major storm events. MROSD will also annually review pavement surface conditions to identify the need for repair/repaving as required for safe bicycle/auto traffic flow. In coordination with the County of Santa Clara, MROSD will review any accidents along the road to determine additional measures that may prevent future accidents at the location of the collision. Implementation of the maintenance program ensures that safety-related impacts associated with roadway maintenance would be **less than significant**.

Mitigation Measure 4.10-6

No mitigation would be necessary.

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4.11 PUBLIC SERVICES

This section provides an overview of existing public services for the proposed project area, including fire and emergency medical response, and law enforcement. Impacts are evaluated in relation to increased demand for these public services associated with the proposed project and actions needed to provide the services that could potentially lead to physical environmental effects. As described later in this section, public service impacts related to parks and recreational facilities, schools, libraries, and other public facilities and public utilities are not evaluated in this Draft EIR because the project would have no effect on these resources.

4.11.1 EXISTING SETTING

FIRE PROTECTION AND EMERGENCY MEDICAL RESPONSE

Fire protection and emergency medical response services in the project area are provided by several entities through automatic aid and mutual aid agreements between the agencies. The agencies that provide fire and basic emergency medical response services in the project area include San Jose Fire Department (primary responder), the California Department of Forestry and Fire Protection (CAL FIRE), and Santa Clara County Fire Department. In addition, the MROSD maintains a fire program to assist these agencies with fire response. If a fire occurs on or is threatening District lands, District staff helps establish Incident Command if first on scene, evacuates or closes the Preserves for visitor safety, performs initial attack when safe and effective to do so, provides logistical assistance given staff knowledge of the property, monitors and attacks spot fires, and supplies additional water for primary agency engines.

San Jose Fire Department Station 28

San Jose City Fire Department Station 28 is located 19911 McKean Road, which is a couple blocks away from the Almaden Fire Station described above. Station 28 has two fire engines and one ambulance and responds to approximately 261 calls per year (average of calls from 2002 through 2008), of which approximately 18% of calls were fire related. San Jose Fire is currently the primary responding fire protection agency for emergencies at the project site.

CAL FIRE

CAL FIRE's mission is to serve and safeguard the people and to protect the property and resources of California. CAL FIRE provides all emergency response services (fire, medical, rescue, and disaster) to the public and provides leadership in the protection of life, property, and natural resources. CAL FIRE firefighters, fire engines, and aircraft respond to an average of more than 5,600 wildland fires and response to more than 350,000 other emergencies each year (CAL FIRE 2011). Much of Santa Clara County, including the project site, falls within a State Responsibility Area (SRA). SRAs are areas where CAL FIRE has responsibility for emergency services. The project site is within a Moderate to High Fire Hazard Severity Zone (CAL FIRE 2011).

CAL FIRE staffs 13 air attack bases and 9 helitack bases that allow aircraft to reach most fires within 20 minutes. CAL FIRE also has over 40 Look Outs, which are staffed by volunteers or by seasonal personnel. Most are staffed only during peak fire season, or during high fire danger times. On occasion some have been staffed throughout the fire season. However, there are no Look Outs in Santa Clara County. CAL FIRE has two stations in the vicinity of the project site, the Alma Helitack Base and the Almaden Fire Station, both part of the Santa Clara Unit of CAL FIRE's Northern Region (CAL FIRE 2011).

Alma Helitack Base

The Alma Helitack Base, located at 19650 Santa Cruz Highway in Los Gatos, responds to an average of 250 calls per year ranging from fires to rescues. Staffing at Alma consists of one pilot, two fire captains, and six seasonal firefighters. In addition to the helitack crew there is one fire engine staffed at Alma Station. Alma operates a UH-1H helicopter. Also operated out of Alma Helitack Base is the Helitender, which serves as a support vehicle for the helicopter. Alma Helitack has an initial attack response area of over three million acres of state lands and more than 200,000 acres of federal lands within its direct protection area. This area encompasses timber, brush, and grass fuel types and ranges geographically from San Francisco in the north, to the Monterey Bay in the south, and east to the Central Valley (CAL FIRE 2011).

Almaden Fire Station

The Almaden Fire Station, located at 20255 McKean Road in San Jose, is approximately 5 miles from the project site "as the crow flies" and approximately 12 miles driving. The Almaden Fire Station has four firefighters and one engine and responds to approximately 500 emergencies per year, 15 percent are fire-related (Almaden Valley Public Safety Advisor 2005).

Santa Clara County Fire Department

Santa Clara County Fire Department provides fire protection services for the communities of Campbell, Cupertino, Los Altos, Los Altos Hills, Los Gatos, Monte Sereno, Morgan Hill, and Saratoga, in California. The department also provides protection for the unincorporated areas adjacent to those cities. The Santa Clara County Fire Department has 16 fire stations, an administrative headquarters, a maintenance facility, five other support facilities, and more than 100 vehicles, to cover approximately 100 square miles (260 square km) and a population of over 210,000. The department employs over 265 fire prevention, suppression, investigation, administration, and maintenance personnel. The department's suppression force is also augmented by 40 volunteer firefighters. The Los Gatos Station, located at 305 University Avenue in Lost Gatos, is the nearest Santa Clara County Fire Department station to the project site (Santa Clara County Fire 2011).

LAW ENFORCEMENT

MROSD rangers are peace officers authorized to carry out duties in patrolling District preserves to promote visitor safety and protection of the natural resources of the preserves. The District has a total of 25 badged rangers (who have gone through Ranger Academy and wear a peace officer badge). In an emergency any or all of these personnel could be summoned to assist at an incident; however, nine rangers and one supervising ranger are stationed at the field office with normal patrol duties that cover Sierra Azul Open Space Preserve. Not all nine rangers are necessarily on duty at any given time. .

The Santa Clara County Sherriff's Office serves the communities of Cupertino, Los Altos Hills, Saratoga and the unincorporated areas of the County. The Sheriff's Office also maintains contracts with the Valley Transportation Authority and the Santa Clara County Parks Department for law enforcement services. The Sheriff's Office employs 1,429 sworn officers and 312 non-sworn personnel (Santa Clara County Sheriff's Office 2011). There are several specialized units and teams within the Sheriff's Office. These include Community Relations, Canine Unit, Search & Rescue (including Mounted), Dive Team, Traffic/Motorcycles, Off-Road Enforcement Team, Hostage Negotiation Team, SERT (Sheriff's Emergency Response Team), Crowd Control Unit, Intelligence/Vice and Bomb Squad. The Sheriff's Office also hosts or participates in several joint-agency task forces (Santa Clara County Sheriff's Office 2011).

The West Valley Division of the Sheriff's Office serves the site from its office at 1601 S. De Anza Boulevard, Cupertino. The West Valley Division provides 24 hour uniformed law enforcement patrol services for the contract cities of Saratoga, Cupertino and Los Altos Hills, as well as the unincorporated areas, including the Santa Cruz Mountain communities (Santa Clara County Sheriff's Office 2011).

4.11.2 REGULATORY SETTING

STATE

California Fire Code

The Office of the State Fire Marshal (OSFM) supports the mission of CAL FIRE by focusing on fire prevention. OSFM provides support through a wide variety of fire safety responsibilities including: regulating buildings in which people live, congregate, or are confined; by controlling substances and products which may, in and of themselves, or by their misuse, cause injuries, death and destruction by fire; by providing statewide direction for fire prevention within wildland areas; by regulating hazardous liquid pipelines; by reviewing regulations and building standards; and by providing training and education in fire protection methods and responsibilities. OSFM is responsible for ensuring implementation of the building standards set forth in the California Fire Code (Part 9 of Title 24 of the California Code of Regulations).

California Public Resources Code

The California Public Resources Code includes provisions that address fire prevention and minimum fire safety standards related to defensible space for industrial operations and other land uses in SRAs (California Public Resources Code Part 2, Chapters 1 and 2). Applicable fire safe regulations address road standards for fire equipment access, standards for signage, minimum water supply requirements for emergency fire use, and fuel breaks and greenbelts, among others.

California's Wildland-Urban Interface Building Code

California's Wildand-Urban Interface Building Code protects buildings from wildfires by addressing: (1) the removal of flammable materials from around buildings, and (2) constructing buildings with fire resistant materials. The list of materials covered includes: roof coverings, fire resistive wall and ceiling-floor assemblies, wall finish material, fire and non-fire related hardware, insulating products, fire doors, fire dampers, electrical appliances and devices. This code covers materials and construction methods for exterior wildfire exposure and is outlined in Chapter 7A of the California Building Code.

LOCAL

Santa Clara County Fire and Life Safety Regulations

The Santa Clara County Code Division B7 Fire Protection identifies specific fire safety regulations that apply to new development and construction. These regulations define the standards for building setbacks, maintenance of defensible space, emergency access, premises identification and signage, emergency water supply, fire hydrant/fire valve requirements, and overall fire protection. These standards only apply when (if) the visitors center is constructed on the site.

Fire Access Road Standards

Santa Clara County Fire Department standards require that 20 feet clear width is the minimum required for all fire department access roads. However, the width of secondary access roads may be reduced to less than 20 feet provided turnouts are installed adjacent to the roadway every 500 feet with a minimum dimension of 10 feet wide and 40 feet long, or as otherwise determined by the fire code official. County standards only apply when (if) the visitors center is constructed on the site. San Jose Fire staff drove Mt. Umunhum Road and indicated that the roadway currently provides appropriate emergency vehicle access. The proposed primary access road for the project (Mt. Umunhum Road) would be consistent with County Fire (if visitors center is constructed) and would remain accessible by San Jose Fire emergency vehicles.

Santa Clara County General Plan

The Santa Clara County General Plan 1995-2010, adopted in 1994, is a comprehensive document that guides Santa Clara County's growth and development and serves as the principal means of setting goals and overall policy direction for physical development and use of lands within the unincorporated area of the County.

Health and Safety Chapter

According to the Health and Safety Chapter of the General Plan, access, water supply, building materials, and vegetation removal are the four main areas of concern in protecting development from fire hazard in the rural unincorporated areas. The following policies of the Health and Safety Chapter are applicable to the proposed project:

R-HS 7 Areas of significant natural hazards, especially high or extreme fire hazard, shall be designated in the County's General Plan as Resource Conservation Areas, with generally low development densities in order to minimize public exposure to risks associated with natural hazards and limit unplanned public costs to maintain and repair public infrastructure.

R-HS 22 Adequate access and water supplies for fire safety shall be required for all new development, including building sites, subdivisions, and clustered development.

R-HS 23 Areas for which inadequate access is a general concern, either due to lack of secondary access, dead-end roads of excessive length, and substandard road design or conditions, should be examined to determine if there are means by which to remedy the inadequacies. Such means may include:

a. specific local area circulation plans to establish alternative access;

b. specific roadway improvements to remedy hazardous situations, financed by those most benefited by the improvements; and

c. traffic routing and controls to discourage the use of such roads by non-residents.

R-HS 28 Development projects shall be reviewed by the County Fire Marshall's Office for safety code compliance and should also be referred if necessary to the appropriate fire protection authority or district for further review and recommendations.

4.11.3 IMPACTS AND MITIGATION MEASURES

METHOD OF ANALYSIS

Impacts on public services that would result from the project were identified by comparing existing service capacity against future demand associated with project implementation. Evaluations of potential public service impacts are based on a review of documents pertaining to the proposed project area, consultation with appropriate agencies, a review of letters received during public scoping, and field review of the project site and surroundings.

THRESHOLDS OF SIGNIFICANCE

Pursuant to CEQA Guidelines Appendix G, a public services impact is considered significant if implementation of the proposed project under consideration would do any of the following:

- result in substantial adverse physical impacts associated with the provision of or need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for
  - fire protection,
  - police protection,
- create circumstances where existing services and facilities could not meet established performance standards (i.e., response times, provider per resident ratios).

ISSUES NOT DISCUSSED FURTHER

The proposed project would not include residential uses nor significant employment. Therefore, the project is not expected to result in substantial population growth that would increase the use of parks and recreational facilities, schools, libraries, or other public facilities; result in the need for new facilities; or increase the long-term demand for these services. As such, public service impacts related to parks and recreational facilities, schools, libraries, and other public facilities are not evaluated further in this Draft EIR.

The project would not adversely affect utilities. All typical utilities would be self contained. No substantial wastewater would be created; vault toilets would be used, with the septage cleaned out regularly by MROSD staff or private service providers and disposed at an approved facility. Water use would be insubstantial, and water would be trucked to the site occasionally, for storage and use on site. Regarding storm drainage, the site would be recontoured closer to its natural form, and would remove buildings, thereby decreasing impervious surface area; therefore, the proposed project would not result in increased stormwater runoff. Power would be provided by solar panels and possibly a small on-site propane tank, and possibly from existing live power lines. Regarding solid waste, no concessions would be provided as part of the project. Solid waste generation would not occur since no trash receptacles would be located onsite and all MROSD will require that visitors remove their trash on a “pack-in, pack-out’ basis. Thus, the project would not be expected to substantially affect landfill capacity. These issue areas will not be evaluated further in this Draft EIR.

IMPACTS AND MITIGATION MEASURES

Impact 4.11-1	**Increased Demand for Fire Protection and Emergency Medical Services.** Implementation of the proposed project would slightly increase the demand for fire protection and emergency medical services due to proposed new uses. The proposed project would be required to be designed and constructed consistent with the California Fire Code, applicable California Public Resources Code sections related to development in SRAs, California's Wildland-Urban Interface Code requirements and the fire and life and safety regulations of Santa Clara County. Therefore, this impact would be **less than significant**.

The project site would be primarily served by San Jose Fire Station 28. There are also two CAL FIRE fire stations in the vicinity of the project site, the Alma Helitack Base and the Almaden Fire Station. The project site is approximately 15 miles by road and less than five miles by air from the Alma Helitack Base. From the Almaden Fire Station, the project site is approximately 15 miles (by road) east.

The project design plans are required to incorporate all California Fire Code, applicable California Public Resources Code sections, California's Wildland-Urban Interface Building Code requirements, and Santa Clara County's fire and life safety regulations. The proposed project would include fire prevention signage, consistent with standard MROSD standard practice. If a campground is developed, the proposed water system supplying the fire hose would be required to meet specific pressure and water flow duration requirements, as dictated in the California Fire Code. Non-potable water for fire protection would be contained in an onsite tank. The proposed project also includes a centrally located, well-marked emergency callbox available in case of emergencies and may provide on-site 24-hour monitoring during camping season. See Section 4.6 "Hazards and Hazardous Materials" for a more detailed discussion related to fire hazard and on-site fire protection.

San Jose Fire staff drove Mt. Umunhum Road and indicated that it provides adequate emergency access. The proposed project includes improvements to Mt. Umunhum Road that would further increase emergency access, and, if a visitor center is constructed, would include improvements Santa Clara County standards. Furthermore, parking lots or designated landing zones at the summit would be designed to allow San Jose Fire and/or CAL FIRE helicopters to land. If a fire were to occur on the site, public users on the site would be able to evacuate either via Mt. Umunhum Road or via the proposed trail connection to Bald Mountain.

The project would be consistent with existing local and State fire codes and requirements, would include water tanks for fire suppression, would provide appropriate emergency vehicle access, would provide a helicopter landing zone, and provide adequate evacuation for users of the site. Campfires and smoking would be prohibited. The project would not include any components that would impede the current response times and in fact, would be expected to decrease response times due to improvements and emergency access on Mt. Umunhum Road. Therefore, the proposed project would result in a **less-than-significant** impacts related to increase the demand for fire protection facilities or equipment.

Mitigation Measure 4.11-1

No mitigation is necessary.

Impact 4.11-2	**Increased Demand for Law Enforcement Services.** Operation of the proposed project would not be expected to substantially increase the demand for law enforcement services. The project includes the implementation of site security measures to minimize new demands on law enforcement. Therefore, this impact would be **less than significant**.

With implementation of the proposed project and increased visitor use, the District anticipates that two additional rangers would be added to the current level of peace officer patrol to maintain existing service levels throughout the Sierra Azul Open Space Preserve. Based on discussions with the County Sheriff's Office, operation of the proposed project would not be expected to substantially or adversely affect law enforcement services currently serving the site. (Peterson 2011, pers. comm.)

Because the proposed project area is already served by the Santa Clara County Sheriff's Office and by the District's peace officer ranger staff, and the project would incorporate on-site security measures, it would not be expected to substantially increase the demand for law enforcement services or require new or expanded facilities or equipment. In addition, the proposed improvements to Mt. Umunhum Road would allow for decreased response times for law enforcement. For these reasons, the project's impacts on law enforcement services would be **less than significant**.

Mitigation Measure 4.11-2

No mitigation is necessary.

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5 CUMULATIVE IMPACTS AND GROWTH INDUCEMENT

5.1 INTRODUCTION TO THE CUMULATIVE IMPACTS ANALYSIS

This Draft Environmental Impact Report (Draft EIR) provides an analysis of cumulative impacts of the proposed Mount Umunhum Environmental Restoration and Public Access Project taken together with other past, present, and probable future projects producing related impacts, as required by Section 15130 of the California Environmental Quality Act Guidelines (State CEQA Guidelines). The goal of such an evaluation is twofold: first, to determine whether the combined impacts of all such projects would be cumulatively significant; and second, to determine whether the proposed project itself would cause a "cumulatively considerable" (and thus significant) incremental contribution to any such cumulatively significant impacts. (See State CEQA Guidelines Sections 15130[a]-[b], Section 15355[b], Section 15064[h], Section 15065[c]). Section 15130 of the State CEQA Guidelines states that "(t)he discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impacts to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact."

Mitigation measures are to be developed to reduce the project's contribution to cumulative effects to a less-than-significant level or otherwise to the degree it is feasible to do so. State CEQA Guidelines Section 15130(c) acknowledges that sometimes the only feasible method for mitigating or avoiding significant cumulative effects is to adopt ordinances or regulations that apply to all projects that contribute to the cumulative effect.

5.2 CUMULATIVE DEVELOPMENT ASSUMPTIONS

The State CEQA Guidelines Section 15130(b)(1) provide two approaches to analyzing cumulative impacts. The first is the list approach, which requires a listing of past, present, and probable future projects producing related or cumulative impacts. The second is the summary approach wherein the relevant projections contained in an adopted general plan or related planning document that is designed to evaluate regional or area-wide conditions are summarized.

The basis of the cumulative analysis varies by technical area. Overall, the cumulative context includes buildout of the County's General Plan through 2020. Planned projects are included where they can be quantified. However, the project site is in a fairly remote area of unincorporated Santa Clara County, no development is currently proposed or anticipated in the vicinity of the project. The Regional Water Quality Control Board is proposing to implement a mercury remediation project along Hicks Road in the Rancho de Guadalupe area of Sierra Azul Open Space Preserve. The MROSD-owned property lies within the former New Almaden Mercury Mining District. The project is expected to remove up to 1,000 cubic yards of sidecast mercury mining waste rock from MROSD lands to the Guadalupe Rubbish Company landfill which is located almost directly across Hicks Road from the removal location. The work will be done by one excavator, one bulldozer, a water truck, and dump trucks moving material from the former rock disposal area to the landfill in a period of about one week sometime during construction season 2013. This remediation project would not place substantial traffic on Hicks Road due to the proximity of the landfill to the removal site.

For the purposes of traffic and noise cumulative impacts, a one percent per year increase to 2020 has been utilized for evaluation purposes; without new development spurring growth, this is a conservative assumption. Air Quality relies on the growth assumptions in the BAAQMD 2010 Clean Air Plan. Other cumulative analyses, such as cultural resources, consider the potential loss of resources in a broader, more regional context.

5.3 CUMULATIVE IMPACTS

AESTHETICS

Impact 5-1	**Visual Resources.** The proposed project would not have a substantial adverse effect on visual resources. Therefore, the proposed project would not cause any incremental adverse impacts to visual resources. The project's contribution **would not be cumulatively considerable.**

Cumulative impacts to visual resources would occur where project facilities would be viewed in combination with other past, present, and future developments. The significance of cumulative visual impacts would depend upon a number of factors, including the degree to which the viewshed is altered; visibility to scenic resources is impaired due to either view obstructions or direct impacts to scenic resource features; and whether the project's visual contrast or dominance is increased due to changes in the viewed environment. The proposed project would not have adverse visual effects, as discussed in Section 4.1, Aesthetics. No cumulative development is proposed within the vicinity of the project and little to none is expected. The viewshed is therefore not expected to be substantially altered by cumulative development. Because the proposed project would not be expected to measurably contribute to significant cumulative visual resource impacts, the proposed project would result in **less-than-significant** cumulative visual resource impacts.

Mitigation Measure 5-1

No mitigation measures necessary.

CULTURAL RESOURCES

Impact 5-2	**Cultural Resource Impacts.** The proposed project could result in significant impacts to potential archaeological resources, including human remains. Although cumulative projects could affect the same resources, future development projects throughout the broader region, including the proposed project, would be required to participate in mitigation plans approved by the state resource agencies. Therefore, the project's contribution **would not be cumulatively considerable.**

Due to the nature of cultural resources, adverse impacts are site-specific and need to be determined on a project-by-project basis. Although no future development is anticipated in the vicinity of the project, with cumulative development county-wide, the number of significant cultural resources in the region may be diminished.

As discussed in Section 4.2, Cultural Resources, the proposed project has the potential to impact as-of-yet unknown archaeological resources, including human remains. Implementation of Mitigation Measures 4.2-1 and 4.2-2, which require construction monitoring and specific actions to be taken to reduce impacts to such resources if they are discovered during construction, would reduce project-specific impacts to a less-than-significant level. Other future developments throughout the County would be required to implement similar mitigation measures.

Because the proposed project would not be expected to measurably contribute to significant cumulative cultural resources impacts, the proposed project would result in **less-than-significant** cumulative cultural resource impacts.

Mitigation Measure 5-2

No mitigation measures necessary.

BIOLOGICAL RESOURCES

Impact 5-3	**Cumulative Biological Resource Impacts**. The proposed project would result in significant impacts on special-status plant and animal species. Although cumulative projects could affect the same resources, future development projects, including the proposed project, would be required to participate in mitigation plans approved by the federal and state resource agencies. Therefore, the project's contribution **would not be cumulatively considerable.**

As discussed in Section 4.3, Biological Resources, implementation of the proposed project would result in public access to wildlife habitats that have been long undisturbed by human activity. Allowing public access to the project site and along proposed trail corridors is unlikely to substantially adversely affect native wildlife or plant communities. Additionally, the project would not conflict with any approved habitat conservation plan or natural community conservation plans. These less-than-significant project impacts, in combination with cumulative development, would not be cumulatively considerable.

However, demolition, sealing, or other construction activities at existing on-site facilities could result in disturbance to active bat colonies that could affect the survival of young or adult bats. Loss of an active bat colony would be considered a significant project impact. However, with implementation of project mitigation measure 4.3-1, which requires surveys be conducted before structure demolition, consultation with DFG, and development of exclusion methods and compensatory mitigation if appropriate, project impacts would be reduced to less than significant.

Ground-disturbing activities related to trail construction, road improvements, or other construction activities could result in a substantial adverse effect on special-status plant and animal species. The potential loss of special-status species is considered a significant project impact. However, with implementation of project mitigation measure 4.3-2, which requires surveys be conducted, implementation of measures to avoid or minimize impacts in consultation with appropriate agencies, or compensatory mitigation, project impacts would be reduced to less than significant.

Although the likelihood is very unlikely, trail construction could require removal of riparian and wetland vegetation and could result in the placement of fill material into waters of the U.S. This is considered a significant project impact. With implementation of Mitigation Measure 4.3-3, which requires a wetland delineation and measures reduce impacts if wetlands are determined to be potentially present and cannot be fully avoided (including no net loss of habitat value), project impacts would be reduced to less than significant.

Although the project would create significant site-specific impacts, mitigation is required to avoid or reduce these impacts. Within the immediate project area, no development is planned or anticipated to occur. Nonetheless, future county-wide development projects, including the proposed project, would contribute to regional cumulative impacts on biological resources. As with the proposed project, future development would be required, by federal, State and local regulations, to participate in mitigation plans approved by the state

resource agencies for sensitive biological resources, which would avoid or minimize potential impacts, or replace affected resources within the larger regional context. Because the proposed project would not be expected to measurably contribute to significant cumulative biological resources impacts, the proposed project would result in **less-than-significant** cumulative biological resource impacts.

Mitigation Measure 5-3

No mitigation measures necessary.

HYDROLOGY AND WATER QUALITY

Impact 5-4	**Hydrology and Water Quality Impacts.** Although the project would cumulatively contribute to hydrology and water quality impacts, the contribution would not be considered cumulatively significant since measures are required to be in place to minimize or avoid project-related water quality and hydrology impacts on site. Because the proposed project would not be expected to measurably contribute to cumulative water quality and hydrology impacts, the proposed project **would not be cumulatively considerable**.

Far fewer additional impervious surfaces would be constructed on the project site than would be removed from the project site. Therefore, the total impervious area within the project site would decrease, and the project would not result in the substantial increase in erosion, siltation, or flooding of on- or off-site areas. This less-than-significant project impact, in combination with cumulative development, would not be cumulatively considerable.

Project construction activities (e.g., excavation, grading) could generate sediment, erosion, and other nonpoint source pollutants in on-site stormwater, which could drain to off-site areas. On-site earthmoving and soil stockpiling activities could result in sheet erosion during rain events. As discussed in Section 4.4, Hydrology and Water Quality, this would be a potentially significant project impact. Implementation of Mitigation Measure 4.4-1 requires appropriate regulatory approvals and permits and implementation of an approved SWPPP and other necessary engineering plans and specifications for pollution prevention and control during project construction. Because sufficient measures would be in place to prevent the release of pollutants in stormwater off-site and would substantially minimize erosion of on-site soils consistent with regulatory requirements, project impacts would be reduced to less than significant.

Although the project would require vehicles to park in designated areas, specific water quality protection measures have been included in the project design to prevent the discharge of pollutants in stormwater on- or off-site. The project could result in potentially significant water quality impacts. Project Mitigation Measure 4.4-3 requires implementation of appropriate design measures to adequately trap and treat discharged pollutants in designated parking areas. This would reduce project impacts to less than significant.

Although the project would cumulatively contribute to hydrology and water quality impacts, the contribution would not be considered cumulatively significant since measures are required to be in place to minimize or avoid project-related water quality and hydrology impacts on site. Similarly, future development would be required, by federal, State and local regulations, to implement site-specific mitigation. Because the proposed project would not be expected to measurably contribute to cumulative water quality and hydrology impacts, the proposed project would have **less-than-significant** cumulative water quality and hydrology impacts.

Mitigation Measure 5-4

No mitigation measures necessary.

GEOLOGY AND SOILS

Impact 5-5	**Geology and Soils Impacts.** The proposed project would result in potentially significant impacts related to erosion and slope stability, both of which are local, site specific impacts. Due to the localized nature of geology and soils impacts, the impacts would be confined to the project site and would not combine with any geologic or soil effects associated with development in other areas. Therefore, the project's incremental geology and soils impact **would not be considered cumulatively considerable**.

Project impacts related to geology and soils would be mitigated to a less-than-significant level. Furthermore, impacts related to geology and soils are site-specific and would not contribute to any geologic or soil effects associated with development in other areas. Project impacts would not be considered cumulatively significant since measures are required to be in place to minimize or avoid project-related geology and soils impacts on site. Similarly, future development would be required, by federal, State and local regulations, to implement site-specific mitigation. Because the proposed project would not contribute to cumulative geology and soils impacts, the proposed project would have **less-than-significant** cumulative geology and soils impacts.

Mitigation Measure 5-5

No mitigation measures necessary.

HAZARDS AND HAZARDOUS MATERIALS

Impact 5-6	**Hazards and Hazardous Materials Impacts.** The proposed project could contribute to significant cumulative impacts related to hazards and hazardous materials. However, with implementation of project mitigation measures the project's contribution **would not be cumulatively considerable.**

Although no future development is anticipated in the vicinity of the project, with cumulative development county-wide, including the proposed project, potential public health hazards associated with the discovery of unknown hazardous resources could occur. During project construction, workers could be exposed to hazardous materials as a result of improper handling or use; accident; environmentally unsound disposal methods; or fire, explosion, or other emergencies, resulting in adverse health effects. Operation of the proposed project would comprise hiking trails and campground facilities, and would not involve hazardous materials during the course of its daily operations.

The proposed project, as well as other cumulative development, is required to be consistent with federal, State, and local laws and regulations addressing hazardous materials management and environmental protection, including, but not limited to 49 CFR 173 and 177, and CCR Title 26, Division 6 for transportation of hazardous materials, and CCR Titles 8 and 22, Uniform Fire Code, and Division 20 of the California Health and Safety Code for routine use of hazardous materials. These regulations and codes must be implemented, as appropriate, and are monitored by the State and/or local jurisdictions, including Caltrans, the CHP, the Santa Clara County

Environmental Health Department, and the Santa Clara County Fire Department. Therefore, project impacts related to creation of significant hazards to the public or the environment would be less than significant.

The project would not interfere with an adopted emergency response plan. There would be adequate emergency vehicle access to the project site. Therefore, this project impact would be less than significant.

The proposed project would reduce existing potential for ignition of a wildfire by legitimizing public access to the site, monitoring activities, and substantially restricting common ignition sources. The proposed project would also provide appropriate emergency vehicle access, including helicopter access, and would provide appropriate escape routes. Implementation of the project would result in a less-than-significant impact related to wildland fire.

These less-than-significant project impacts, in combination with cumulative development, would not be cumulatively considerable.

However, small quantities of asbestos were documented in the shallow soils around the existing structures at the project site. Pesticides were also identified above acceptable levels. Excavation and construction activities in the area could result in the exposure of construction workers and the general public to existing hazardous materials contamination. This project impact is considered significant. As discussed in Section 4.6, implementation of project Mitigation Measure 4.6-1 would reduce potential hazards associated with exposure of construction workers and the public accessing the site to contaminated soil by requiring a testing program, which would identify the area of contamination, restrict construction activities within those areas, and remediate those contaminated areas consistent with state and federal regulations before any construction within those areas is allowed. These actions would reduce project impacts to a less-than-significant level.

Because compliance with these regulations is required, the implementation of the proposed project and other cumulative projects in the region would not result in a cumulatively considerable increase in the exposure of people to hazards and hazardous materials, and the proposed project would not be expected to measurably contribute to significant cumulative impacts, the proposed project would result in **less-than-significant** cumulative hazards and hazardous materials impacts.

Mitigation Measure 5-6

No mitigation measures necessary.

AIR QUALITY

Impact 5-7	**Cumulative Air Quality Impacts.** Mitigation measures included in this Draft EIR reduce the project-specific impacts related to fugitive dust and emissions resulting from construction, as well as impacts related to conflicts with air quality planning efforts, to a less-than-significant level. The project's contribution **would not be cumulatively considerable.**

The San Francisco Bay Area Air Basin (SFBAAB) is currently designated as a nonattainment area for both ozone and particulate matter. In addition, even though there is no "cumulative projects list", due to the location of the proposed project far from developable areas, there would likely be related projects within the SFBAAB. These could be considered influential in regards to air quality due to the regional nature of this resource area. Therefore, a significant cumulative impact could occur due to the current nonattainment status and related projects occurring in the SFBAAB. As discussed in Impact 4.7-1, project-generated construction-related emissions

of fugitive dust (PM_{10} and $PM_{2.5}$) could violate or contribute substantially to the SFBAABs nonattainment status, expose sensitive receptors to substantial pollutant concentrations, and/or conflict with air quality planning efforts. However, implementation of Mitigation Measure 4.7-1 would reduce this impact to a less-than-significant level. In addition, project-generated operational-related ozone precursor and particulate matter emissions would not exceed the applicable thresholds. All other project-level air quality impacts are localized in nature and would either be less than significant (i.e., Impact 4.7-3 and Impact 4.7-4) or reduced to a less-than-significant level with mitigation (Impact 4.7-5). Thus, the project's incremental contribution to this significant cumulative impact would not be cumulatively considerable and, thus, **less than significant**.

Mitigation Measure 5-7

No mitigation measures necessary.

CLIMATE CHANGE

Global climate change is inherently cumulative, given its global context; therefore, the discussion in Section 4.8 Climate Change already addresses cumulative impacts. Section 4.8 concludes that the project would not result in cumulatively considerable increase of greenhouse gases. Please refer to Section 4.8.

NOISE

Impact 5-8	**Cumulative Noise Impacts.** Noise and vibration are localized occurrences; therefore only projects in the direct vicinity of the project site are considered influential in regards to noise and vibration. No related projects are in the vicinity of the site, and implementation of the proposed project would result in less-than-significant project-specific impacts related to noise and vibration. The project's contribution **would not be cumulatively considerable.**

When determining whether the overall noise (and vibration) impacts from related projects would be cumulatively significant and whether the project's incremental contribution to any significant cumulative impacts would be cumulatively considerable, it is important to note that noise and vibration are localized occurrences; as such, they decrease rapidly in magnitude as the distance from the source to the receptor increases. Therefore, only those related projects that are in the direct vicinity of the project site are considered influential in regards to noise and vibration and would have the potential to be considered in a cumulative context with the project's incremental contribution.

There are no related projects (cumulative projects) in the direct vicinity of the project which would substantially add noise and vibration. In addition, implementation of the proposed project would result in less-than-significant impacts for the exposure of sensitive receptors to increased stationary-source noise, groundborne noise and vibration, traffic noise, or construction noise levels. Therefore, implementation of the proposed project would not result in a cumulatively considerable contribution to a cumulative impact. The impact is **less than significant**.

Mitigation Measure 5-8

No mitigation measures necessary.

TRAFFIC AND CIRCULATION

Impact 5-9	**Cumulative Roadway Level of Service, Year 2020.** The proposed project would increase volumes on both Mt. Umunhum Road as well as along Hicks Road on both sides of Mt. Umunhum Road. Roadway level of service would change, but would not degrade to unacceptable levels during either weekday or weekend peak traffic conditions. Therefore, traffic and circulation impacts **would not be cumulatively considerable.**

The proposed project would be expected to increase two-way peak hour traffic on Mt. Umunhum Road by 22 vehicles during a weekday peak traffic hour, by 63 vehicles during a Saturday peak traffic hour and by 59 vehicles during a Sunday peak traffic hour. As shown in Table 4.1-5, resultant year 2020 peak hour operation of Mt. Umunhum Road would be expected to remain LOS A on a weekday and change to LOS C on a Saturday. All are acceptable operation levels. Along Hicks Road in the vicinity of Mt. Umunhum Road, project traffic would split and add no more than 13 weekday or 36 Saturday two-way vehicles per hour to any given roadway segment. Resultant weekday peak hour operation would be expected to change to LOS B to the south of Mt. Umunhum Road, and remain LOS A to the north of Mt. Umunhum Road. Resultant Saturday operation would be expected to change from LOS B to LOS C both to the north and south of Mt. Umunhum Road. All are acceptable operation levels. Therefore, no cumulative impacts would occur, and the project's contribution to cumulative 2020 roadway LOS would be considered **less than significant**.

Mitigation Measure 5-9

No mitigation measures necessary.

PUBLIC SERVICES

Impact 5-10	**Public Services Impacts.** The proposed project is not anticipated to contribute significantly to the demand for public services (fire and police). Therefore, the proposed project's incremental contribution to public service demands **would not be considered cumulatively considerable.**

Cumulative development would increase the demands on fire and police protection services in the region. However, the proposed project would not be expected to substantially increase the demand for fire protection and facilities or equipment. The project would reduce existing potential for ignition of a wildfire by legitimizing public access to the site, monitoring activities, and substantially restricting common ignition sources. The proposed project would also provide appropriate emergency vehicle access, including helicopter access, and would provide appropriate escape routes. In addition, the project would incorporate on-site security measures and would include District peace officer patrol, and therefore would not be expected to substantially increase the demand for police protection facilities or equipment. Project impacts on fire and police services would be less than significant.

In addition, the adequacy of the existing and planned public service capabilities to meet a project's needs is a key component of the project review process conducted by Santa Clara County. Based on this review process, future development projects that exceed public service capabilities would be required to provide the necessary improvements to ensure cumulatively considerable public service impacts do not occur.

Because the proposed project would not be expected to measurably contribute to significant cumulative fire and police services impacts, the proposed project would result in **less-than-significant** cumulative public services impacts.

Mitigation Measure 5-10

No mitigation measures necessary.

5.4 GROWTH INDUCEMENT

PRC Section 2100(b)(5) specifies that growth-inducing impacts of a project must be addressed in an EIR. Section 15126(d) of the State CEQA Guidelines states that a proposed project is growth-inducing if it could "foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." Included in the definition are projects that would remove obstacles to population growth. Examples of growth-inducing actions include developing water, wastewater, fire, or other types of services in previously unserved areas, extending transportation routes into previously undeveloped areas, and establishing major new employment opportunities. The following is a summary of the direct and indirect growth-inducing impacts that could result with implementation of the project.

The proposed project includes conversion of a former military complex into a publically accessible open space area. The proposed project does not include development of housing that could accommodate new population growth or new permanent employment opportunities that could foster new growth. No extension or expansion of infrastructure is proposed that could accommodate future development. The proposed project would not result in substantial direct or indirect inducement of population growth.

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6 ALTERNATIVES

6.1 INTRODUCTION

6.1.1 CEQA REQUIREMENTS FOR ALTERNATIVES ANALYSIS

Section 15126.6(a) of the State CEQA Guidelines requires EIRs to describe "... a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason." This section of CEQA also provides guidance regarding what the alternatives analysis should consider. Subsection (b) further states the purpose of the alternatives analysis, as follows:

> Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

The State CEQA Guidelines further require that the alternatives be compared to the proposed project's environmental impacts and that the "no project" alternative be considered (CEQA Guidelines Section 15126.6[d][e]).

In defining "feasibility" (e.g.," ... feasibly attain most of the basic objectives of the project ..."), State CEQA Guidelines Section 15126.6(f)(1) states, in part:

> Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.

In determining what alternatives should be considered in the EIR, it is important to acknowledge the objectives of the project, the project's significant effects, and unique project considerations. These factors are crucial to the development of alternatives that meet the criteria specified in Section 15126.6(a). Although, as noted above, EIRs must contain a discussion of "potentially feasible" alternatives; the ultimate determination as to whether an alternative is feasible or infeasible is made by the lead agency's decision-making body, which for the proposed project is the MROSD Board of Directors. (See Pub. Resources Code, § 21081[a][3].)

6.1.2 RANGE OF ALTERNATIVES CONSIDERED

The range of alternatives to the project is addressed below in the discussion of "Alternatives Considered but not Analyzed in Detail." The State CEQA Guidelines (Section 15126.6(e)) require that, among other alternatives, a "no project" alternative be evaluated in comparison to the project and that it "discuss the existing conditions, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with the available infrastructure and community services." The no project alternative assumes that the structures associated with the former Almaden Air Force Station would remain onsite and would continue to deteriorate, and the site would remain restricted from public access.

6.1.3 FACTORS CONSIDERED IN IDENTIFYING PROJECT ALTERNATIVES

As discussed above, alternatives evaluated in an EIR need to consider the objectives of the project, and while the objectives cannot be so narrow as to limit consideration of alternatives, sometimes a project has conditions that naturally provide few feasible alternatives. For instance, a project proposing a wastewater treatment expansion may be limited by the area it serves, the embedded community infrastructure (sewer lines) constructed to the existing location, and limited treatment technology choices. Thus, only one or two alternatives may be available that are both feasible, and that reduce the impacts of the project. This sort of condition governs consideration of alternatives for the proposed project. In the case of the Mount Umunhum Environmental Restoration and Public Access Project, the primary reason the project is being proposed is because the project site is a mountain peak with extraordinary views that MROSD would like the public to experience, and it is owned by the District. The proposed project would not work at an alternative site because such a site does not exist. Also, CEQA states that the range of alternatives should include those that feasibly accomplish most of the project objectives and could avoid or substantially lessen one or more of the significant effects (Section 15126.6(c)). Therefore, the range of alternatives is further limited due to the fact that, because the proposed project involves environmental restoration with very little development and would be designed to minimize adverse effects to the environment, the proposed project would not result in significant impacts (with implementation of mitigation measures included in this Draft EIR). The proposed project, in this case, has limited residual impacts, all less than significant, so an alternative in this case is focused only on reducing the need to mitigate impacts in the first place, rather than substantially lessening or avoiding impacts, as this has already been accomplished by mitigation. Furthermore, the Draft EIR already addressed alternatives to a key element of the project; because MROSD chose to analyze the environmental impact associated with removal of the radar tower before making a specific recommendation, this Draft EIR evaluates both keeping and removing the tower at an equal level of analysis throughout Section 4. The project as analyzed throughout this Draft EIR has a "built-in" alternative. For all of these reasons, and due to the particular nature of the project, the range of alternatives considered in this Draft EIR is adequate.

As discussed in Section 3 (project description), the goal of the Mount Umunhum Environmental Restoration and Public Access Project is to establish a fiscally and environmentally sustainable visitor destination that aligns with the District's mission by balancing public access, enjoyment, and education with environmental restoration. This goal will be achieved through the following objectives:

- Create a destination that is accessible to and accommodates a broad range of user groups and introduces new visitors to open space.
- Remove or permanently cap physical hazards and restore the native landscape and habitat for wildlife as much as possible.
- Provide minimalist visitor amenities that complement and highlight the world-class views and open space experience.

- Provide ample, rich, and diverse trail experiences for hikers, bicyclists, and equestrians
- Highlight the rich natural and cultural history of the site through self-discovery and focused interpretive and educational opportunities.

6.2 SUMMARY OF ENVIRONMENTAL IMPACTS

The purpose of this section is to summarize the site-specific environmental constraints, as identified and discussed in Chapter 4, "Environmental Setting, Thresholds of Significance, Environmental Impacts, and Mitigation Measures," of this Draft EIR. Site-specific environmental constraints and their effects on the range of alternatives considered in this Draft EIR are discussed in the summary statements below. The summary statements discuss implementation of the proposed project at both potential sites in the same summary paragraph, unless otherwise noted. When necessary, the discussions for each potential project site are discussed separately.

As discussed in Section 4.1, "Aesthetics," the proposed project would result in less-than-significant impacts related to changes to a scenic vista, degrading the character of the project site, and increases in light and glare.

As discussed in Section 4.2, "Cultural Resources," the radar tower is likely not eligible for listing on the federal, State, or County register as a significant historic resource; however, because the tower is important to veterans and has been a geographic reference point for the region, MROSD considers the impact resulting from partial and full demolition of the tower to be potentially significant. (Retaining the tower would result in a less-than-significant impact.) Mitigation measures requiring interpretive displays and tours are included to reduce this impact to a less-than-significant level. No known archaeological resources exist on the project site; however, mitigation measures are included in the Draft EIR to reduce the potential for damage to unknown archaeological resources or human remains to a less-than-significant level.

As discussed in Section 4.3, "Biological Resources" demolition activities associated with the proposed project could result in potentially significant impacts to special-status bat species that could roost in the existing structures. Mitigation measures in this Draft EIR would be implemented to reduce the impacts to bats to a less-than-significant level. In addition, trail construction and other proposed ground disturbance could result in potentially significant impacts to other special status plant and wildlife species and habitats (including jurisdictional wetlands). The Draft EIR includes mitigation measures to reduce these impacts to a less-than-significant level. Recreational activities associated with project operation would result in a less-than-significant impact.

As discussed in Section 4.4, "Hydrology and Water Quality," ground disturbance associated with the proposed project could result in impacts to water quality related primarily to increased sediment in surface water runoff. Mitigation measures are included in this Draft EIR that would require preparation of a Storm Water Pollution Prevention Program (SWPPP), including best management practices (BMPs) that would reduce construction-related impacts to water quality to a less-than-significant level. The Draft EIR also includes mitigation measures to reduce potential impacts resulting from parking-lot-related pollutants entering the local drainages. Impacts related to hydrology and water quality are less than significant after implementation of mitigation measures included in this Draft EIR.

As discussed in Section 4.5, "Geology and Soils," implementation of the proposed project would result in less-than-significant impacts related to seismic hazards and expansive soils. However, due to the proximity of the radar tower to a slope that shows signs of landslide, the Draft EIR includes mitigation measures to reduce impacts to the structure (and subsequently reduce impacts related to public safety) by reducing the potential for landslides. Mitigation measures included in Section 4.4, Hydrology and Water Quality would reduce erosion-related impacts to a less-than-significant level. Trail design and construction would be consistent with MROSD

design standards, which would reduce potential impacts to trail users resulting from potential slope stability issues. With implementation of mitigation measures in this Draft EIR, impacts related to Geology and Soils are reduced to a less-than-significant level.

As discussed in Section 4.6, "Hazards and Hazardous Materials," soils in certain areas of the project site may contain elevated levels of pesticides associated with the former military use. The Draft EIR includes mitigation measures to reduce impacts to construction workers and open space users to a less-than-significant level. The proposed project would result in a less-than-significant impact related to handling and transport of hazardous materials. The proposed project would also result in a less-than-significant impact associated with increased risk of wildland fire.

As discussed in Section 4.7, "Air Quality," the Draft EIR includes mitigation measures to reduce potential impacts related to emissions during construction to a less-than-significant level. Mitigation measures in the Draft EIR would also reduce potential impacts related to naturally occurring asbestos (NOA) to a less-than-significant level. Air quality impacts associated with project operations would be less than significant.

As discussed in Section 4.8, "Global Climate Change," the proposed project is an open space use and would not generate substantial traffic or consume substantial energy and would generate greenhouse gases (GHG) that are below air district GHG thresholds of significance; therefore the project would result in a less-than-significant impact related to contribution to global climate change impacts.

As discussed in Section 4.9, "Noise," because construction activities associated with the proposed project would occur in accordance with restrictions included in the Santa Clara County Noise Ordinance, short-term construction activities associated with the proposed project would result in a less-than-significant impact. Furthermore, operation of the proposed public access plan would not generate substantial noise and would therefore not substantially increase noise levels above existing conditions. The proposed project would result in less-than-significant impacts related to noise.

As discussed in Section 4.10, "Traffic," the traffic generated by the construction and operation of the proposed public access plan would result in less-than-significant impacts related to the level of service on the local roadway network. This Draft EIR includes mitigation measures to reduce potentially significant impacts related to degradation of the roadway surface resulting from project construction to a less-than-significant level. Measures are also included in the project description to ensure impacts to bicycle and pedestrian safety are less than significant. The project description also includes measures to ensure that maintenance related impacts remain less than significant.

As discussed in Section 4.11, "Public Services," the proposed project would not substantially increase demand for police and fire protection, and the impact to these service providers would be less than significant.

6.3 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

State CEQA Guidelines Section 15126.6(c) provides that an EIR "should also identify any alternatives that were considered by the lead agency but rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination."

1. **No Public Access Alternative**. This alternative would include the restorative components of the proposed project, including demolition of all or most on-site structures, environmental restoration, and landform restoration. However, this alternative would not allow public access to the site and would not include any of the open-space-related facilities, including viewing areas, camp sites, benches and picnic tables, vault toilets, visitor center, trails, etc. No roadway improvements would occur under the No

Public Access Alternative. The No Public Access Alternative would likely result in a very slight reduction of project impacts associated with increasing human activity at the site (i.e., traffic, vehicle emissions, etc.). However, this alternative was dismissed from further consideration because it does not meet any of the project objectives, which seek to balance restoration with public access and education.

2. **No Structure Demolition Alternative.** This alternative would allow public access to the project site and would include similar amenities, but would not result in any demolition of structures. This would result in slightly fewer air quality- and noise-related impacts. However, MROSD considers this alternative to be infeasible because many of these structures are in very poor condition and are likely considered structurally unsound. Allowing the public to be near many of these structures could pose risk to human safety. Therefore, this alternative is dismissed from further consideration.

6.4 ALTERNATIVES CONSIDERED FOR DETAILED EVALUATION

6.4.1 DESCRIPTION OF ALTERNATIVES

Based on the requirements of State CEQA Guidelines §15126.6 and the project's objectives, the following alternatives to the proposed project were identified:

- No-Project Alternative,
- Limited Ground Disturbance Alternative,
- Reduced Amenities/Increased Restoration Alternative,
- Shuttle Alternative.

6.4.2 NO PROJECT ALTERNATIVE

State CEQA Guidelines Section 15126.6(e)(1) requires that the no project alternative be described and analyzed "to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." The no project analysis is required to discuss "the existing conditions at the time the notice of preparation is published…as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (Section 15126.6[e][2]). "If the project is . . . a development project on identifiable property, the 'no project' alternative is the circumstance under which the project does not proceed. Here the discussion would compare the environmental effects of the property remaining in its existing state against environmental effects which would occur if the project is approved. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this 'no project' consequence should be discussed. In certain instances, the no project alternative means 'no build' wherein the existing environmental setting is maintained. However, where failure to proceed with the project will not result in preservation of existing environmental conditions, the analysis should identify the practical result of the project's non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment." (Section 15126.[e][3][B].)

Because the project site is located on MROSD-owned land in a remote area in unincorporated Santa Clara County and is currently substantially developed with existing structures associated with a former military complex that have undergone structural abatement, it is not reasonably foreseeable that any "predictable actions by others" would occur on the site. Therefore, the No Project Alternative assumes the property would remain, more or less, within its existing state. The only changes that would occur would be further dilapidation of structures and further overgrowth of existing invasive plant species associated primarily with the former landscaping.

NO PROJECT

Description

Under the No Project Alternative, the site would remain substantially in its current state. No demolition of existing structures, no roadway improvements, no environmental restoration, no trails, no open space facilities, and no public access would occur at the site. Dilapidated and abated structures on the site would continue to fall apart and would eventually collapse. The project site would continue to become overgrown with vegetation currently growing onsite. Weedy species in the project area are currently being treated by California Department of Food and Agriculture and would continue to be treated. Roadways and paved areas would continue to crack and disintegrate.

Impacts of the No Project Alternative

CEQA requires that impacts to the environment resulting from a project (or alternative) should be measured as they relate to the baseline condition. In the case of this Draft EIR, the baseline condition is the date the NOP was released (December 13, 2010). Because the No Project Alternative would essentially preserve the current condition, the No Project Alternative would generally result in no impact to the environment. For example, the No Project Alternative would not generate any additional traffic, noise, or pollutant emissions. The No Project Alternative would not result in any construction-related damage to any cultural or biological resources and would not demolish any locally important structures. Aesthetically, the No Project Alternative would not appear substantially different from the existing project site. However, as structures continue to dilapidate, trespassers into the site who have been known to enter the buildings could face serious physical harm if those structures collapsed. Also, continued overgrowth of vegetation and continued dilapidation of the onsite structures could result in increased wildfire hazard, especially considering ongoing presence of trespassers at the site.

Conclusion

Under the No Project/No Development Alternative the current condition of the site would be maintained, for the most part, in perpetuity. The radar tower would be retained. Implementation of the No Project Alternative would generally not result in substantial adverse effects to the environment. No development would occur; therefore there would be no construction activities that could disturb soil, generate noise, emit pollutants, affect special-status plants and animals, or uncover archaeological resources. There would be no increased visitation at the site; therefore, no increased traffic or associated noise or air pollutant emissions. It is possible that allowing the project site to remain vacant could result in increased fire hazard compared to the proposed project and also potential increase to public-safety-related impacts associated with leaving unsafe structures on the site. It is also noted that this alternative would not avoid any significant environmental impacts associated with implementation of the proposed project (there are no significant impacts). Although this alternative may slightly reduce the level of impacts, since no construction- or operations-related activities would occur, the No Project Alternative does not meet any objectives of the proposed project and is therefore considered infeasible.

LIMITED GROUND DISTURBANCE ALTERNATIVE

Description

The project site is currently developed with former military structures and associated roadways, driveways, parking lots, etc. This alternative would include demolition of structures similar to the proposed project. (For purposes of comparison, it is assumed that, under this alternative, the MROSD would decide to treat the radar tower the same as it decides to treat the tower under the proposed project; therefore impacts related to the radar tower would be identical.) Although the proposed project remains substantially within the footprint of the existing developed area, the Limited Ground Disturbance Alternative would reduce the level of ground disturbance necessary under the proposed project by reducing the amount of environmental restoration (i.e. less replacement of non-native plants with native species), eliminating the landform restoration (no restoration of natural drainage), eliminating regional trail connections to Ralph's Mountain and Bald Mountain, and relocating the on-site multi-use trail to an existing paved roadway. Other proposed open space facilities would be, to the extent feasible, located within currently developed portions of the project site. Under this alternative, very little ground disturbance would be necessary.

Impacts of the Limited Ground Disturbance Alternative

The following discussion focuses only on the environmental issues discussed in the body of this Draft EIR. Environmental issues addressed in Section 1, Introduction are, not included, unless the alternative would result in an increased level of impact with respect to that specific environmental issue area.

Aesthetics

Similar to the proposed project, implementation of the Limited Ground Disturbance Alternative would include demolition of structures. It is assumed that the radar tower would be treated similar to the proposed project, so impacts related to tower removal (or retention) would be similar. Otherwise, the primary visual difference between the alternative and the proposed project is that the alternative does not include as much environmental restoration and no landform restoration. Although this alternative would not result in substantial adverse changes to the visual setting of the site or its surroundings, the environmental restoration and landform restoration associated with the proposed project would provide greater visual consistency with the visual context; therefore, the alternative would result in slightly greater impacts related to visual character of the project site. Light and glare impacts would be nearly identical. **(Greater, but not substantially)**

Cultural Resources

Project impacts related to cultural resources include potential impacts to unknown archaeological resources and/or human remains. Although the project impacts would be mitigated to a less-than-significant level, because the alternative would substantially reduce the amount of ground disturbance, the potential for uncovering an unknown resource would be further reduced. Therefore, the impacts related to the Limited Ground Disturbance Alternative would be slightly reduced. As mentioned above, impacts associated with the treatment of the radar tower are assumed to be identical to the proposed project. **(Less, but not significantly)**

Biological Resources

The proposed project could result in potential impacts to several special-status plant and wildlife species and habitats. These impacts are reduced to a less-than-significant level by implementing mitigation measures included in this Draft EIR. Most of the potential impacts are related to construction of trails. The Limited Ground Disturbance Alternative does not include construction of trails and would therefore avoid many of these

potentially significant impacts without the need for mitigation in many instances. On the other hand, this alternative results in less environmental restoration, which generally provides additional habitat for wildlife species. Therefore, although the Limited Ground Disturbance Alternative would eliminate the need for some of the necessary mitigation, it would also result in less environmental restoration, which reduces a biological benefit if the proposed project. Impacts related to biological resources are considered similar. **(Similar)**

Hydrology and Water Quality

Implementation of the Limited Ground Disturbance Alternative would reduce the potential for construction-related impacts associated with increased sediment in project site runoff. However, because the alternative does not eliminate all ground disturbance, the alternative would require similar mitigation to the proposed project for reducing impacts to surface water runoff. Furthermore, the alternative also includes parking areas. Therefore, the alternative would also require mitigation similar to the proposed project to reduce the potential for oil and grease from parking areas to be carried by surface runoff into local drainage ways. The impacts are therefore considered similar. **(Similar)**

Geology and Soils

As discussed above, it is assumed that the treatment of the radar tower would be identical under the alternative and the proposed project; therefore, impacts related to structural integrity of the tower and slope stability would be the same between the project and the alternative. Furthermore, the proposed project would not result in substantial adverse effects related to soil erosion or seismic-related impacts. Therefore, impacts related to geology and soils would be similar between the proposed project and the Limited Ground Disturbance Alternative. **(Similar)**

Hazards and Hazardous Materials

Implementation of the Limited Ground Disturbance Alternative would require similar mitigation as the proposed project for handling and disposal of soils containing elevated levels of pesticides. Similar to the proposed project, implementation of the alternative would not result in substantial adverse effects associated with handling and transport of hazardous materials or with increased risk of wildland fire. **(Similar)**

Air Quality

Although the Limited Ground Disturbance Alternative would result in less disturbed soil, the alternative would still require similar mitigation measures as the proposed project to reduce construction-related emissions. Similar mitigation measures would also be required to reduce potential impacts related to NOA. Operational emissions resulting from implementation of the alternative would be similar to the proposed project. Therefore, overall impacts related to air quality would be similar. **(Similar)**

Climate Change

The operational intensity of the Limited Ground Disturbance Alternative would be almost identical to the proposed project. The only difference may be slightly fewer visitors (therefore slightly fewer auto trips) due to the lack of regional trail connections and the fact that the site would not be as appealing having less environmental restoration and no landform restoration. However this difference would likely be negligible. The Limited Ground Disturbance Alternative would result in similar climate-change-related impacts compared to the proposed project. **(Similar)**

Noise

The proposed project would not result in substantial adverse noise-related effects during construction or operation. Implementation of the Limited Ground Disturbance Alternative would result in less overall ground-related construction. Although noise generated by the alternative during construction would likely be slightly less than the proposed project, because the proposed project would result in less-than-significant noise-related

impacts, and because operational noise levels would be very similar, the relative noise-related impacts of the alternative, overall, would be similar. **(Similar)**

Traffic

Although implementation of the Limited Ground Disturbance Alternative would result in less overall ground disturbance, because the proposed project anticipates that nearly all soil transport would occur on-site, the construction-related traffic associated with the alternative, as it affects the local and regional roadway network, would be similar to the proposed project. Traffic generated during operation of the alternative would be very similar to the proposed project (possibly slightly less due to the lack of regional trail connection and the reduced appeal due to less environmental restoration and no landform restoration). Implementation of the Limited Ground Disturbance Alternative would require the same bicycle/pedestrian mitigation measures as the proposed project, as well as the same roadway maintenance measures to ensure long-term roadway safety. The traffic-related impacts between the proposed project and the Limited Ground Disturbance Alternative would be similar. **(Similar)**

Public Services

The Limited Ground Disturbance Alternative would result in the same demand for fire and police protection services as the proposed project. Impacts would therefore be similar. **(Similar)**

Conclusion

The Limited Ground Disturbance Alternative would result in very similar impacts to the proposed project in almost all environmental issue areas. The only slight differences would occur with respect to Aesthetics and Cultural Resources. The alternative would result in slightly greater impacts related to aesthetics because it does not include the same level of environmental restoration as the proposed project and therefore would not "fit in" as well with the surrounding natural context. The alternative results in slightly less potential to impact unknown cultural resources on the site because it would disturb substantially less soil that could contain such resources; however, the alternative would still require similar mitigation as included in this Draft EIR for the proposed project. Overall, impacts between the proposed project and the Limited Ground Disturbance Alternative would be similar. **(Similar)**

REDUCED AMENITIES/INCREASED RESTORATION ALTERNATIVE

Description

During the Draft EIR scoping process, a few public comments were received expressing concern related to the proposed campground use, including the potential to increase risk of wildland fire. Although the Draft EIR has indicated that no substantial adverse effects would result from the proposed campground, this Reduced Public Facilities Alternative would eliminate public amenities, including restrooms (except for a single vault toilet structure), visitors center, picnic tables, etc. In place of these amenities, this alternative would increase environmental restoration. The Reduced Amenities/Increased Restoration Alternative would result in a more "natural" appearing site, than under the proposed project. The alternative would include the same trails and trail connections included under the proposed project. The alternative would require a similar level of demolition and construction as the proposed project. Operational intensity (i.e., number of visitors and amount of traffic generated) is assumed to be fairly similar to the proposed project, since it may attract fewer of the visitors more inclined to use the amenities, but it could also attract more visitors that prefer more pristine settings. As assumed under the Limited Ground Disturbance Alternative, it is assumed that MROSD would select the same radar tower option for this alternative as it would for the proposed project; therefore, impacts associated with the radar tower would be identical.

Impacts of the Reduced Amenities/Increased Restoration Alternative

Aesthetics

Similar to the proposed project, implementation of the Reduced Amenities/Increased Restoration Alternative would include demolition of structures. It is assumed that the radar tower would be treated similar to the proposed project, so impacts related to tower removal (or retention) would be similar. Otherwise, the primary visual difference between the alternative and the proposed project is that the alternative does not include as many built features (i.e. visitors center, picnic tables, etc.) and includes more environmental restoration. However the proposed project already includes substantial environmental restoration, including landform restoration. Although implementation of this alternative may appear to be slightly better integrated with the surrounding natural context, it would not appear substantially different from the proposed project. This alternative would result in similar impacts related to the visual character of the project site. Light and glare impacts would be substantially similar (although there would be slightly reduced lighting associated with elimination of visitors center, which would use limited security lighting, and the campground, which would involve use of flash lights and electric lanterns). Overall the impact would be similar. **(Similar)**

Cultural Resources

Project impacts related to cultural resources include potential impacts to unknown archaeological resources and/or human remains. The project impacts would be mitigated to a less-than-significant level. The Reduced Amenities/Increased Restoration Alternative would involve a similar area of ground disturbance and would therefore result in a similar potential to damage a previously undiscovered archaeological resources and/or human remains. The alternative would require similar mitigation as the proposed project. **(Similar)**

Biological Resources

The proposed project could result in potential impacts to several special-status plant and wildlife species and habitats. These impacts are reduced to a less-than-significant level by implementing mitigation measures included in this Draft EIR. Most of the potential impacts are related to construction of trails. The Reduced Amenities/Increased Restoration Alternative also includes the trail connections and would therefore share many of these potentially significant impacts and would require the same mitigation measures required for the proposed project in this Draft EIR. This alternative would result in slightly increased environmental restoration than the proposed project. Although this might provide slightly better habitat, the proposed project already includes substantial environmental restoration, including landform restoration; therefore, any difference in impact associated with the level of restoration would be negligible. Overall, impacts to biological resources would be similar. **(Similar)**

Hydrology and Water Quality

Compared to implementation of the proposed project, because the overall disturbance area would be similar, implementation of the Reduced Amenities/Increased Restoration Alternative would result in similar potential for construction-related impacts associated with increased sediment in project site runoff. It would require similar mitigation to the proposed project for reducing impacts to surface water runoff. Furthermore, the alternative also includes parking areas. Therefore, the alternative would also require mitigation similar to the proposed project to reduce the potential for oil and grease from parking areas to be carried by surface runoff into local drainage ways. It is also noted that, although the alternative would result in the elimination of the proposed campground, the campground would not be expected to increase potential for ignition of wildland fires (no campfires or smoking allowed) and would therefore not adversely affect local water reservoirs, due to fire-related water quality impacts. The alternative does not avoid any significant impacts to the environment associated with the proposed campground. The impacts are therefore considered similar. **(Similar)**

Geology and Soils

As discussed above, it is assumed that the treatment of the radar tower would be identical under the alternative and the proposed project; therefore, impacts related to structural integrity of the tower and slope stability would be the same between the project and the alternative. Furthermore, the proposed project would not result in substantial adverse effects related to soil erosion or seismic-related impacts. Therefore, impacts related to geology and soils would be similar between the proposed project and the Reduced Amenities/Increased Restoration Alternative. **(Similar)**

Hazards and Hazardous Materials

Implementation of the Reduced Amenities/Increased Restoration Alternative would require similar mitigation as the proposed project for handling and disposal of soils containing elevated levels of pesticides. As mentioned above, under Hydrology and Water Quality, implementation of the proposed project, which includes a campground, would not result in increased risk of wildland fire; therefore, implementation of the Reduced Amenities/Increased Restoration Alternative would not reduce or avoid any project impacts associated with wildland fires, and, in fact, would result in similar impacts. **(Similar)**

Air Quality

The Reduced Amenities/Increased Restoration Alternative would require a similar level of construction, including area of ground disturbance, as the proposed project; therefore, the alternative would require similar mitigation measures. Similar mitigation measures would also be required to reduce potential impacts related to NOA. Operational emissions resulting from implementation of the alternative would be similar to the proposed project. Therefore, impacts related to air quality would be similar. **(Similar)**

Climate Change

The operational intensity of the Reduced Amenities/Increased Restoration Alternative would be almost identical to the proposed project. The alternative would result in similar climate-change-related impacts compared to the proposed project. **(Similar)**

Noise

The proposed project would not result in substantial adverse noise-related effects during construction or operation. Implementation of the Reduced Amenities/Increased Restoration Alternative would result in similar level of construction as the proposed project; therefore, short-term construction-related noise would be very similar. In addition, operational noise levels would be very similar. The relative noise-related impacts of the alternative would be similar. **(Similar)**

Traffic

Construction-related traffic associated with the Reduced Amenities/Increased Restoration Alternative would be very similar to the proposed project. Traffic generated during operation of the alternative would also be very similar to the proposed project. Implementation of the Reduced Amenities/Increased Restoration Alternative would include the same bicycle/pedestrian features as the proposed project, as well as the same proposed roadway maintenance measures to ensure long-term roadway safety. The traffic-related impacts between the proposed project and the alternative would be similar. **(Similar)**

Public Services

The Reduced Amenities/Increased Restoration Alternative would result in the same demand for fire and police protection services as the proposed project. Impacts would therefore be similar. **(Similar)**

Conclusion

Because the proposed project and Reduced Amenities/Increased Restoration Alternative include similar areas of disturbance, require similar levels of construction, and are operationally nearly identical, the impacts would be similar in every environmental issue area. **(Similar)**

SHUTTLE ALTERNATIVE

Description

The MROSD Board of Directors requested that the Draft EIR evaluate an alternative to the project that utilizes shuttle transport up Mt. Umunhum Road, rather than visitors accessing the summit in their own personal vehicles. The intent of this alternative would be to reduce vehicle trips and associated air emissions and noise, and also to increase bicycle and pedestrian safety. The Shuttle Alternative includes eliminating the two paved parking areas included in the proposed project and constructing a new staging area at Pheasant Road to allow for shuttle staging. This would be the only physical difference from the proposed project. (Shuttle service from the Jacques Ridge staging area was considered but eliminated because the existing facility is not large enough to handle the necessary parking capacity, and topographic constraints prevent adequate expansion.)

Because the alternative would require construction of a new parking lot (as opposed to repaving of existing parking lots under the proposed project), the amount of undisturbed land necessary for development would increase compared to the proposed project.

Under the Shuttle Alternative, two shuttles would run simultaneously, passing each other such that they arrive at the top and bottom every hour. Daily operation would be on weekends and holidays only from 9am to ½ hour after sunset, per the closing regulations for all other District preserves. During peak summer hours, the shuttle service would operate over 12 hours per day. Shuttles would be sized similar to airport shuttles (as opposed to a large bus) with a passenger capacity of approximately 24. Assuming a maximum of 24 passengers per one-way trip and 12 one-way trips per day, the shuttle service would be able to transport a maximum of 288 visitors to the summit during a long summer day. Note that the number of visitors during the peak season may exceed 288 in a day. Shuttle operation would be limited to April through November (or until the first major winter storm, whichever is first). The project site would be closed to shuttles December through March but open year-round to vehicle access by special permit only. Shuttles would be electric, or run on biodiesel, compressed natural gas or other gasoline-alternative fuel type.

It should be noted that, although the Shuttle Alternative is analyzed in detail below, the feasibility of the Shuttle Alternative is questionable due to the potential inability of two shuttles to meet visitor demand and also due to potential funding limitations.

Impacts of the Shuttle Alternative

Aesthetics

Except for the difference in proposed parking areas, the development of the project site under the Shuttle Alternative would appear nearly identical to the proposed project. Impacts related to Aesthetics would be very similar. **(Similar)**

Cultural Resources

Project impacts related to cultural resources include potential impacts to unknown archaeological resources and/or human remains. The project impacts would be mitigated to a less-than-significant level. The Shuttle Alternative would require slightly greater raw land disturbance than the proposed project, due to the need to construct a new staging area for shuttle service. Therefore, there would be slightly greater potential under the Shuttle Alternative to damage undiscovered archaeological resources and/or human remains. The Alternative would require mitigation similar to the mitigation included in this Draft EIR for the proposed project. Overall, the potential for impacts would be slightly greater. **(Greater, but not substantially)**

Biological Resources

The proposed project could result in potential impacts to several special-status plant and wildlife species and habitats. These impacts would be reduced to a less-than-significant level by implementing mitigation measures included in this Draft EIR. Most of the potential impacts are related to construction of trails. The Shuttle Alternative also includes the trail connections and would therefore share many of these potentially significant impacts and would require the same mitigation measures required for the proposed project in this Draft EIR. This alternative would result in slightly increased disturbance area than the proposed project due to the need to construct a new staging area for shuttle service; however, this area does not appear to contain sensitive habitat for special-status species. Overall, impacts to biological resources would be similar. **(Similar)**

Hydrology and Water Quality

Compared to implementation of the proposed project, because the overall disturbance area would be similar, implementation of the Shuttle Alternative would result in similar potential for construction-related impacts associated with increased sediment in project site runoff and would require similar mitigation to the proposed project for reducing impacts to surface water runoff. Similar to the proposed project, the Shuttle Alternative would also include parking areas. Therefore, the alternative would also require mitigation similar to the proposed project to reduce the potential for oil and grease from parking areas to be carried by surface runoff into local drainage ways. The impacts are considered similar. **(Similar)**

Geology and Soils

As discussed above, it is assumed that the treatment of the radar tower would be identical under the alternative and the proposed project; therefore, impacts related to structural integrity of the tower and slope stability would be the same between the project and the alternative. Furthermore, the proposed project would not result in substantial adverse effects related to soil erosion or seismic-related impacts. Therefore, impacts related to geology and soils would be similar between the proposed project and the Shuttle Alternative. **(Similar)**

Hazards and Hazardous Materials

Implementation of the Shuttle Alternative would require similar mitigation as the proposed project for handling and disposal of soils containing elevated levels of pesticides. Shuttles would not require any on-site fueling stations and would not otherwise involve handling or transportation of hazardous materials during operation. Impacts related to hazards and hazardous materials would be similar to the proposed project. **(Similar)**

Air Quality

The Shuttle Alternative would require a similar level of construction, including a slightly larger area of ground disturbance, as the proposed project; therefore, the alternative would require similar mitigation measures. Similar mitigation measures would also be required to reduce potential impacts related to NOA. Even though the Shuttle Alternative would result in fewer vehicle miles traveled, and therefore reduced emissions, it is anticipated that, because the average visitor would still need to travel from their origin to a parking lot not that far (relative to the overall trip) from the summit, the reduction in vehicle miles traveled (and associated

emissions) would not be substantial. Because the proposed project would result in a less-than-significant impact related to operational emissions, the impact reduction would be negligible, and the overall impact is considered similar. **(Similar)**

Climate Change

As discussed above, under Air Quality, even though the Shuttle Alternative would result in fewer vehicle miles traveled, and therefore reduced green house gas emissions, it is anticipated that, because the average visitor would still need to drive a fair distance to the staging area, the reduction in vehicle miles traveled (and associated emissions) would not be substantial. Because the proposed project would result in a less-than-significant impact related to global climate change, the impact reduction would be negligible, and the overall impact is considered similar. **(Similar)**

Noise

The proposed project would not result in substantial adverse noise-related effects during construction or operation. Implementation of the Shuttle Alternative would result in similar level of construction as the proposed project; therefore, short-term construction-related noise would be very similar. In addition, operational noise levels would be very similar. The relative noise-related impacts of the alternative would be similar. **(Similar)**

Traffic

Construction-related traffic associated with the Shuttle Alternative would be very similar to the proposed project. Traffic generated during operation of the alternative would also be very similar to the proposed project. Because visitors would board the shuttle after being on Hicks Road for only 1.5 miles, the Shuttle Alternative would remove some of the project-related traffic from Hicks Road. The proposed project would result in less-than-significant effects related to the level of service of local roadways and intersections; therefore, the impact related to roadway and intersection level of service would be similar. In addition, regarding bicycle/pedestrian safety, implementation of the Shuttle Alternative would reduce potential conflicts between vehicles and bicycle/pedestrian traffic by removing nearly all of the vehicles from the roadway during the peak operating season of the open space facility. Implementing this alternative would reduce the impact related to bicycle and pedestrian safety further than the safety features included in the project description of this Draft EIR, not only because fewer vehicles would use the road, but also because a regular shuttle driver would presumably be more attuned to bicyclists and pedestrians than someone only occasionally visiting the area. Therefore, although the Shuttle Alternative would not substantially reduce the impact (the project impact is less than significant), it would result in a slight reduction. **(Less, but not significantly)**

Public Services

The Shuttle Alternative would result in the same demand for fire and police protection services as the proposed project. Impacts would therefore be similar. **(Similar)**

Conclusion

Because the proposed project and Shuttle Alternative would require similar levels of construction, the construction-related impacts, such as impacts related to construction-related noise, air quality, traffic, and water quality, would be similar, although there would be slightly greater potential for the Shuttle Alternative to damage previously undiscovered archaeological resources and/or human remains (due to the increased disturbance area resulting from the new staging area). Furthermore, although the Shuttle Alternative would result in a slight reduction in vehicle mile traveled, overall, the operations-related impacts associated with air quality, noise, and roadway level of service, are very similar. However, although mitigation measures are

included in this Draft EIR to reduce project impacts related to bicycle/pedestrian safety to a less-than-significant level, implementation of the Shuttle Alternative would further reduce potential impacts by removing the majority of vehicles from the roadway during the peak season. Given the slightly greater potential for impacts to unknown archaeological resources and slightly reduced impacts related to bicycle/pedestrian safety, the overall impact of the Shuttle Alternative is similar compared to the proposed project. **(Similar)**

SUMMARY OF THE COMPARATIVE EFFECTS OF THE ALTERNATIVES

Table 6-1 summarizes the environmental analysis comparing the proposed project with all of the project alternatives.

Table 6-1. Comparison of Environmental Impacts of Alternatives in Relation to the Proposed Project

Environmental Topic	Proposed Project	No Project Alternative	Limited Ground Disturbance Alternative	Reduced Amenities/Increased Restoration Alternative	Shuttle Alternative
Aesthetics	LTS	NI – Similar	LTS – Slightly Greater	LTS – Similar	LTS – Similar
Cultural Resources	LTSM	NI – Slightly Reduced	LTSM – Slightly Reduced	LTSM – Similar	LTSM – Slightly Greater
Biological Resources	LTSM	NI - Slightly Reduced	LTSM – Similar	LTSM – Similar	LTSM – Similar
Hydrology and Water Quality	LTSM	NI - Slightly Reduced	LTSM – Similar	LTSM – Similar	LTSM – Similar
Geology and Soils	LTSM	NI - Slightly Reduced	LTSM – Similar	LTSM – Similar	LTSM – Similar
Hazards and Hazardous Materials	LTSM	NI - Similar	LTSM – Similar	LTSM – Similar	LTSM – Similar
Air Quality	LTSM	NI - Slightly Reduced	LTSM – Similar	LTSM – Similar	LTSM – Similar
Climate Change	LTS	NI - Slightly Reduced	LTS – Similar	LTS – Similar	LTS – Similar
Noise	LTS	NI - Slightly Reduced	LTS – Similar	LTS – Similar	LTS – Similar
Traffic	LTSM	NI - Slightly Reduced	LTSM – Similar	LTSM – Similar	LTSM – Slightly Reduced
Public Services	LTS	NI - Slightly Reduced	LTS – Similar	LTS – Similar	LTSM – Similar

Impact Status:
S/U = Significant and Unavoidable Impact
PS = Potentially Significant Impact
LTSM = Less than Significant Impact after Mitigation
LTS = Less Than Significant Impact
NI = No Impact

- Significantly Reduced = Alternative avoids or reduces a significant impact of the proposed project
- Slightly Reduced = Alternative reduces the level of impact of the proposed project, but not significantly
- Similar = Impact equivalent to the proposed project
- Slightly Greater = Alternative results in an impact that is greater than the proposed project, but not a significant impact.
- Greater = Alternative results in a significant impact that would not occur under the proposed project

6.5 ENVIRONMENTALLY SUPERIOR RADAR TOWER OPTION AND ALTERNATIVE

6.5.1 ENVIRONMENTALLY SUPERIOR RADAR TOWER OPTION

This Draft EIR evaluated the potential for environmental impacts resulting from three options for the existing radar tower: 1) retain and seal the structure onsite; 2) remove majority of structure but leave a publically accessible foundation; and 3) remove entire structure and environmentally restore the footprint. Unfortunately there is not a clear environmentally superior option for the radar tower. Because the radar tower is not considered to be eligible for listing on the federal, State, or County historic register, demolition of the radar tower would not be considered a significant impact. Furthermore, because the radar tower appears "out of context" with the surrounding natural environment and would not appear very consistent with the proposed open space use, retaining the radar tower is less aesthetically desirable than removing the tower (although leaving the publically accessible foundation of the tower under Option 2 would be more consistent than leaving the tower in its entirety). Demolition of the radar tower would require a fairly large construction effort resulting in substantial dust generation and requiring many truck trips to haul off materials, which also emit diesel pollutants. However, mitigation measures are included in this Draft EIR to reduce the impacts related to tower demolition to a less-than-significant level. Retention of the tower also requires mitigation to reduce hazards associated with the nearby slope. While it is tempting to view Option 2 as environmentally superior because it is a "compromise" between full retention and full removal of the radar tower, Option 2 would more likely be the least environmentally superior option because, whereas Option 1 avoids all of the emissions and noise associated with demolition of the tower and Option 3 avoids the aesthetic issues and slope stability issues of Option 1, Option 2 does not avoid any of the environmental impacts of either of the other two options. That said, however, the degree to which Option 2 is environmentally inferior to the other two options is negligible, and Option 2 should be considered by the District equally along with the other two radar options. No option is considered environmentally superior.

6.5.2 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Under the No Project/No Development Alternative the current condition of the site would be maintained, for the most part, in perpetuity. Implementation of the No Project Alternative would generally not result in substantial adverse effects to the environment. No development would occur; therefore there would be no construction activities that could disturb soil, generate noise, emit pollutants, affect special-status plants and animals, or uncover archaeological resources. There would be no increased visitation at the site; therefore, no increased traffic or associated noise or air pollutant emissions. It is possible that allowing the project site to remain vacant could result in increased fire hazard compared to the proposed project and also potential increase to public-safety-related impacts associated with leaving unsafe structures on the site. It is also noted that this alternative would not avoid any significant environmental impacts associated with implementation of the proposed project (there are no significant impacts). Although this alternative may slightly reduce the level of impacts, since no construction- or operations-related activities would occur, the No Project Alternative does not meet any objectives of the proposed project.

The Limited Ground Disturbance Alternative would result in very similar impacts to the proposed project in almost all environmental issue areas. The only slight differences would occur with respect to Aesthetics and Cultural Resources. The alternative would result in slightly greater impacts related to aesthetics because it does not include the same level of environmental restoration as the proposed project and therefore would not "fit in" as well with the surrounding natural context. The alternative results in slightly less potential to impact unknown cultural resources on the site because it would disturb substantially less soil that could contain such resources; however, the alternative would still require similar mitigation as included in this Draft EIR for the proposed

project. Overall, impacts between the proposed project and the Limited Ground Disturbance Alternative would be similar.

Because the proposed project and Reduced Amenities/Increased Restoration Alternative include similar areas of disturbance, require similar levels of construction, and are operationally nearly identical, the impacts would be similar in every environmental issue area.

Because the proposed project and Shuttle Alternative include similar areas of disturbance and require similar levels of construction, the construction-related impacts, such as impacts related to construction-related noise, air quality, traffic, and water quality, would be similar, although there would be slightly greater potential for the Shuttle Alternative to damage previously undiscovered archaeological resources and/or human remains due to the need to construct a new staging area. Furthermore, although the Shuttle Alternative would result in a slight reduction in vehicle miles traveled, overall, the operations-related impacts associated with air quality, noise, and roadway level of service are very similar. However, although the Project Description includes measures to ensure project impacts related to bicycle/pedestrian safety are less than significant, implementation of the Shuttle Alternative would further reduce potential impacts by removing the majority of vehicles from the roadway during the peak season. Given the slightly greater potential for impacts to unknown archaeological resources and slightly reduced impacts related to bicycle/pedestrian safety, the overall impact of the Shuttle Alternative is similar compared to the proposed project.

Although the No Project Alternative would not avoid or substantially reduce any environmental impacts of the proposed project, it would result in a greater reduction than the other three alternatives and would therefore be considered the environmentally superior alternative; however, CEQA requires that if the No Project alternative is identified as the environmentally superior alternative, another alternative must be selected from the range as the environmentally superior. In this case, all three of the other alternatives result in similar impacts to the proposed project because the proposed project itself involves minimal development, includes environmental restoration, and is designed to be low impact. Consequently, with implementation of proposed mitigation measures, the proposed project results in no significant impacts to the environment. Therefore, none of the Alternatives avoids or substantially reduces a significant impact of the proposed project. Furthermore, because the level of impact is similar between the proposed project and all of the Alternatives (except for No Project), there is no clear environmentally superior alternative aside from the No Project Alternative.

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7 ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ABAG	of Bay Area Governments
AC&W	Aircraft Control and Warning
ADA	Americans with Disabilities Act
ADC	Aerospace Defense Command
ADT	average daily traffic
AEP	Annual Exceedence Probability
AFS	Air Force Station
ANSI	American National Standards Institute
APCO	Air Pollution Control Officer
APE	area of potential effect
APS	Alternative Planning Strategy
ARB	California Air Resources Board
ATCM	Airborne Toxics Control Measure
AWACS	Airborne Warning and Control System
BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology for toxics
BMPs	best management practices
BUIC	Backup Interceptor Control Center
CAA	federal Clean Air Act
CAAA	federal Clean Air Act Amendments of 1990
CAAQS	California ambient air quality standards
CAFE	Corporate Average Fuel Economy
Cal/OSHA	California Department of Industrial Relations, Division of Occupational Safety and Health Administration
CalARPP	California Accidental Release Prevention Program
CalFire	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CBC	California Building Standards Code
CCAA	California Clean Air Act
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CEQ	Civil Engineering Quarters

CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH_4	methane
CMP	Congestion Management Plan
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CTR	California Toxics Rule
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibel
dBA	A-weighted sound levels
DEIR	Draft Environmental Impact Report
DFG	California Department of Fish and Game
DHS	California Department of Health Services
diesel PM	diesel particulate matter
District	Midpeninsula Regional Open Space District
DOT	U.S. Department of Transportation
Draft EIR	Draft Environmental Impact Report
DTSC	California Department of Toxic Substance Control
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency
ESA	federal Endangered Species Act
ESLs	environmental screening levels
FEIR	final EIR
FEMA	Federal Emergency Management Agency
FIP	Federal Implementation Plan

FIRMs	flood insurance rate maps
FUDS	Formerly Used Defense Sites
GATR	Ground to Air Transmitter Receiver
GHGs	greenhouse gases
GSA	General Services Administration
GWP	global warming potential
HAPs	hazardous air pollutants
HCM	*Highway Capacity Manual*
HFCs	hydrofluorocarbons
HMCD	Hazardous Materials Compliance Division
HVAC	ventilation, and air conditional
IBC	International Building Code
ICBM	Intercontinental Ballistic Missile
in/sec	inches per second
JPA	Joint Powers Authority
lb/day	pounds per day
LDL	Larson Davis Laboratories
L_{dn}	Day-Night Noise Level
LEED	Leadership in Energy and Environmental Design
L_{eq}	Equivalent Noise Level
L_{max}	Maximum Noise Level
L_{min}	Minimum Noise Level
LOS	level of service”
MACT	maximum available control technology for toxics
MBTA	Migratory Bird Treaty Act
MCLs	Maximum Contaminant Levels
MEI	maximally exposed individual
MJ-LHMP	multi-jurisdictional Local Hazard Mitigation Plan
MLD	Most Likely Descendant
MMT/year	million metric tons per year
mph	miles per hour

MPOs	Metropolitan Planning Organizations
MROSD	Midpeninsula Regional Open Space District
msl	mean sea level
MT	metric tons
MT/yr	metric tons per year
N_2O	nitrous oxide
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NEHRP	National Earthquake Hazards Reduction Program
NESHAP	national emissions standards for HAPs
NFIP	National Flood Insurance Program
NHTSA	National Highway Traffic Safety Administration
NO	nitric oxide
NO_2	Nitrogen Dioxide
NOA	naturally occurring asbestos
NOP	notice of preparation
NORAD	North American Aerospace Defense
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NTR	National Toxics Rule
OES	Office of Emergency Services
OPR	California Governor's Office of Planning and Research
OSFM	Office of the State Fire Marshal
OSHA	Occupational Safety and Health Administration
ozone	photochemical smog
PAH	polycyclic aromatic hydrocarbons
PDM	Pre-Disaster Mitigation
PFCs	perfluorocarbons
PM_{10}	Respirable Particulate Matter
$PM_{2.5}$	fine particulate matter
ppm	parts per million
PPV	peak particle velocity
proposed project	Mount Umunhum Environmental Restoration and Public Access Plan Project

RCBP	radio carbon years before present
RCRA	Resource Conservation and Recovery Act of 1976
RMS	root-mean-square
ROG	reactive organic gases
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Boards
SAGE	Semi-Automatic Ground Environment
SCS	Sustainable Communities Strategy
SF_6	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SJWW	San Jose Water Works
SIP	State Implementation Plan
SLM	sound level meter
SO_2	Sulfur Dioxide
SR	State Route
SR 130	State Route 130
SRA	State Responsibility Area
SVOCs	semi-volatile organic compounds
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TMDL	total maximum daily load
TPH	Petroleum Hydrocarbons
TPY	tons per year
UBC	federal Uniform Building Code
UFC	Uniform Fire Code
USACE	U.S. Army Corps of Engineers
VdB	vibration decibels
VMT	vehicle miles travelled
VPH	vehicles per hour
VTA	Santa Clara Valley Transportation Authority

µ	1micro
µg/m^3	micrograms per cubic meter
µin/sec	microinch per second

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