

APPENDIX **C**

Cultural Resources



SAN FRANCISCO PLANNING DEPARTMENT

MEMO

Historic Resource Evaluation Response

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

MEA Planner: Jessica Range
Project Address: **Significant Natural Resource Areas Management Plan:
 Sharp Park Golf Course, Pacifica**
Block/Lot: N/A
Case No.: 2005.1912E
Date of Review: February 8, 2011
Planning Dept. Reviewer: Shelley Caltagirone
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PROPOSED PROJECT Demolition Alteration

PROJECT DESCRIPTION

The project is the implementation of the San Francisco Recreation and Parks Department’s Significant Natural Resource Areas Management Plan. The plan establishes goals and objectives for 32 Natural Areas, including Sharp Park Golf Course located in Pacifica. The specific goals and objectives are listed fully in Chapters 2 and 3 of the Sharp Park Golf Course Historical Resources Evaluation (HRE) report. In summary, the proposed project would convert about 19 acres of the golf course to Natural Area to facilitate restoration of the Laguna Salada and wildlife habitats associated with the property. Both the lagoon and pond would be excavated extensively and the dredge spoils would be used to raise Holes 10, 14, 15, and 18, creating upland habitat on the east edge of Laguna Salada. Thirteen acres of the golf course would be converted to upland habitat along the east side of the lagoon and would require that Holes 10 and 13 are slightly shortened or narrowed. A dispersal corridor between the lagoon and the pond would be constructed with upland features and would necessitate closing Hole 12 of the golf course. A post and rail fence would also be installed along the seawall to the west of the lagoon, with additional fencing around the wetland complex to discourage human and pet intrusion.

PRE-EXISTING HISTORIC RATING / SURVEY

The golf course and the clubhouse were separately designated as historic landmarks for the City of Pacifica in 2009. The property is not listed on the state or national registries. The property is considered a “Category A” (Known Historic Resource) property for the purposes of the Planning Department’s California Environmental Quality Act (CEQA) review procedures.

HISTORIC DISTRICT / NEIGHBORHOOD CONTEXT

The 411-acre golf course is located in the town of Pacifica in San Mateo County. It borders the Pacific Ocean and is bisected by Highway 1. Thirteen fairways, the clubhouse, and Laguna Salada are located to the west of the highway, and the four remaining fairways are located to the east of the highway.

1. **California Register Criteria of Significance:** A building may be an historical resource if it meets any of the California Register criteria listed below. If more information is needed to make such a determination please specify what information is needed. *(This determination for California Register Eligibility is made based on existing data and research provided to the Planning Department by the above named preparer / consultant and other parties. Key pages of report and a photograph of the subject building are attached.)*

Event: or Yes No Unable to determine
Persons: or Yes No Unable to determine
Architecture: or Yes No Unable to determine
Information Potential: Further investigation recommended.
District or Context: Yes, may contribute to a potential district or significant context.
If yes, period of significance: 1929-1932

The Planning Department concurs with Tetra Tech's determination that the subject property appears to be eligible for listing on the California Register for its significance under Criteria 1 (Events) and 3 (Architecture). The golf course's development is associated with the broader event of the golden age of golf in the US and in California. The course is also an important example of a seaside golf course designed by a master landscape architect, Alister Mackenzie. Please refer to Section 5.2 of the HRE report for a full analysis of the resource's historical significance.

2. **Integrity** is the ability of a property to convey its significance. To be a resource for the purposes of CEQA, a property must not only be shown to be significant under the California Register criteria, but it also must have integrity. To retain historic integrity a property will always possess several, and usually most, of the aspects. The subject property has retained or lacks integrity from the period of significance noted above:

Location: Retains Lacks **Setting:** Retains Lacks
Association: Retains Lacks **Feeling:** Retains Lacks
Design: Retains Lacks **Materials:** Retains Lacks
Workmanship: Retains Lacks

The resource retains sufficient integrity in all aspects of its character to convey its historical significance. Please refer to Section 5.3 of the HRE report for a full analysis of property's integrity.

3. **Determination** of whether the property is an "historical resource" for purposes of CEQA.
 No Resource Present (*Go to 6 below.*) Historical Resource Present (*Continue to 4.*)

4. **If the property appears to be an historical resource**, would the proposed project materially impair the resource (i.e. alter in an adverse manner those physical characteristics which justify the property's inclusion in any registry to which it belongs)?

- The project would not cause a substantial adverse change in the significance of the resource such that the significance of the resource would be materially impaired. (*Continue to 5 if the project is an alteration.*)
- The project is a significant impact as proposed. (*Continue to 5 if the project is an alteration.*)

The Planning Department fully concurs with the impacts analysis provided by Tetra Tech in Section 5.4 of the HRE report. In summary:

Project Impacts:

- Raising Holes 10, 14, 15, and 18 *would not cause a significant impact* on the character-defining features of the golf course and the holes would remain in their original locations and the visual character of their fairways would only be minimally affected.
- The closure of Hole 12 *would cause a significant impact* to the historic resource as the work would eliminate an original hole and fairway on the west side of the course. Its removal would significantly alter the original golf course design and boundaries.
- The proposed fencing would add a modern element to the golf course but would not harm the character or setting of the resource. This addition to the landscape *would not cause a significant impact* to the historic resource.
- Modifying approximately 13 acres of the golf course to create upland habitat along the east side of the lagoon would require slightly shortening or narrowing Holes 10 and 13. This alteration would significantly alter the character of these original fairways. Therefore, the work *would cause a significant impact* to the historic resource.

Alternative Project Impacts:

- The recreation analysis of the SNRAMP EIR proposes a mitigation measure (Option 1) that would create a new hole on the east side of Highway 1 as a replacement for Hole 12. This would result in a total of 13 holes on the west side of the highway and five holes on the east side. This arrangement would not maintain the historic balance of holes on either side of the highway and would change the historic boundaries of the course. This *would cause a significant impact* to the original design of the historic resource.
- The recreation analysis of the SNRAMP EIR proposes a mitigation measure (Option 2) that would create a new hole on the west side of Highway 1 as a replacement for Hole 12. While the mitigation measure would change the layout of the holes, this alternative mitigation measure would restore some of the elements that Mackenzie had implemented in his original design by placing the new holes in areas of the course where holes were historically placed. The proposed holes would also be in keeping with the historic boundaries of the golf course. Because of the restorative aspect of the work, this mitigation *would cause a less than significant impact* to the resource.

The project would result in significant impacts to several character-defining features of the golf course, including Holes 10, 12, and 13.

5. **Character-defining features** of the building to be retained or respected in order to avoid a significant adverse effect by the project, presently or cumulatively, as modifications to the project to reduce or avoid impacts. Please recommend conditions of approval that may be desirable to mitigate the project's adverse effects.

The character-defining features of the property are:

- The original features and design of the clubhouse;
- The original features and design of the permanent maintenance building; and,
- The original features and design of the golf course, including the 12 original holes (current holes 1, 2, 3, 8, 9, 10, 11, 13, 14, 15, 17, and 18), the original landscape features, and the cypress tree plantings that line the fairways.

Documentation of the historic cultural landscape by a qualified architectural historian should be completed before the commencement of any landscape alterations, as described in Chapter 6 of the HRE report. However, documentation of the resource will not mitigate the impacts of the project to Holes 10, 12, and 13 to a less than significant level.

6. **Would the proposed project have an adverse effect on off-site historical resources, such as adjacent historic properties?**

Yes No Unable to determine

There are no identified off-site historical resources that would be affected by the project.

SENIOR PRESERVATION PLANNER REVIEW

Signature: Tina Tam
Tina Tam, Senior Preservation Planner

Date: 2/15/2011

cc: Linda Avery, Recording Secretary, Historic Preservation Commission
Virnaliza Byrd / Historic Resource Impact Review File

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SAN FRANCISCO PLANNING DEPARTMENT

MEMO

Historic Resource Evaluation Response

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

MEA Planner: Jessica Range
Project: **Significant Natural Resource Areas Management Plan:
Mount Davidson**
Block/Lot: N/A
Case No.: 2005.1912E
Date of Review: January 12, 2011
Planning Dept. Reviewer: Shelley Caltagirone
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PROPOSED PROJECT Demolition Alteration

PROJECT DESCRIPTION

The project is the implementation of the San Francisco Recreation and Parks Department’s Significant Natural Resource Areas Management Plan. The plan establishes goals and objectives for 32 Natural Areas, including Mount Davidson. The specific plan actions for this site are primarily vegetation changes to maintain the health of the existing forest. The work would include the removal of a portion of the existing invasive tree species, including approximately 1,600 of the estimated 11,000 blue gum eucalyptus trees, and the introduction of native plant species. There are no proposed changes to the hardscape features of the natural area (i.e. retaining walls and steps).

PRE-EXISTING HISTORIC RATING / SURVEY

The property is not currently listed on any local, state, or national registries. The property is considered a “Category B” (Properties Requiring Further Consultation and Review) property for the purposes of the Planning Department’s California Environmental Quality Act (CEQA) review procedures due to the age of the park and structures.

HISTORIC DISTRICT / NEIGHBORHOOD CONTEXT

Mount Davidson Natural Area is in south-central San Francisco south of Portola Drive in the Miraloma neighborhood. Forests cover approximately 30 acres of the 40-acre Natural Area and the area contains WPA-era retaining walls and staircases. It is also the location of the Mount Davidson cross erected in 1929 (the cross has been privately owned since 1997 and is not considered part of the Mount Davidson Natural Area). Please refer to the attached “Mount Davidson WPA-Era Retaining Walls & Stairs” DPR form, Sections P3a and B10, for a full description of the site and associated structures and their historic context.

- 1. California Register Criteria of Significance:** A building may be an historical resource if it meets any of the California Register criteria listed below. If more information is needed to make such a determination please specify what information is needed. *(This determination for California Register*

Eligibility is made based on existing data and research provided to the Planning Department by the above named preparer / consultant and other parties. Key pages of report and a photograph of the subject building are attached.)

- Event: or Yes No Unable to determine
Persons: or Yes No Unable to determine
Architecture: or Yes No Unable to determine
Information Potential: Further investigation recommended.
District or Context: Yes, may contribute to a potential district or significant context.
If yes, period of significance: 1885-1943

The WPA-era staircases and retaining walls located at Mount Davidson were evaluated by Tetra Tech for eligibility for listing on the California Register. These hardscape features were found to be eligible for listing on the California Register under Criterion 1 (Event) and 3 (Architecture) for their association with WPA/New Deal Construction. The Planning Department concurs with the findings presented in the attached DPR form, Section B10. (See form for full evaluation of these features.)

Tetra Tech also prepared a memorandum¹ describing the history of the urban forest located at Mount Davidson and the establishment of the city park in this location. Based upon this information the Planning Department finds that the Mount Davidson natural area is potentially eligible for listing on the California Register under Criteria 1 (Event) and 2 (Persons) as an ethnographic landscape. Although further research is required to establish a full historic context for the site, Mount Davidson is a prominent topographical feature in San Francisco that has historically held special natural and cultural significance for the city. The site is associated with local philanthropist Adolph Sutro, with an annual Easter ceremony established in 1923, and with the early development of natural areas dedicated to recreational use within San Francisco. For these reasons, the natural area will be considered a historic resource for the purposes of this review.

Sutro, known for his Comstock Lode engineering and as a philanthropist, and specifically his conservationist activities, purchased the Mount Davidson (then known as Blue Mountain) property in 1881 and began planting the forest circa 1885. This activity occurred around the same time that Sutro was helping to organize the first California Arbor Day held in 1886. The original forest was planted with pine, cypress, and eucalyptus trees; however, over time the eucalyptus have begun to dominate and have occasionally been thinned to retain the diversity of the forest. The property was transferred to A.S. Baldwin in 1909. During this time the mountain was given the name 'Mount Davidson', and the first public trails were established on the property. In 1923 the first Easter ceremony was held at the top of the mountain, beginning the tradition which continues through today. The property was finally purchased by the City in 1927 and the land was dedicated as a city park in 1929. In the same year as the park dedication, a permanent cross was constructed at the mountaintop for the yearly Easter services. As noted above the park became the site of a WPA-era work project between 1936-1943. Based upon these facts, the period of significance for the potential historic landscape would

¹ Memorandum regarding "Summary of History of Trees on Mount Davidson Taken from Research Conducted for DPR 523 Forms for Mount Davidson WPA-era Walls and Stairs" to Sophie Hayward, Planning Department, from Julia Mates, Historian, Tetra Tech, Inc. dated August 10, 2010.

appear to be 1885-1943, beginning with the forest planting and extending through to what appears to be the last major improvement project for the park.

-
2. **Integrity** is the ability of a property to convey its significance. To be a resource for the purposes of CEQA, a property must not only be shown to be significant under the California Register criteria, but it also must have integrity. To retain historic integrity a property will always possess several, and usually most, of the aspects. The subject property has retained or lacks integrity from the period of significance noted above:

Location: Retains Lacks
Association: Retains Lacks
Design: Retains Lacks
Workmanship: Retains Lacks

Setting: Retains Lacks
Feeling: Retains Lacks
Materials: Retains Lacks

Other than the expected weathering of outdoor landscape features, the retaining wall and staircases have retained a high level of integrity in all aspects of their significance. Although a full survey of the site has not been conducted, the historic landscape also appears to be intact and to display the same range of vegetation first established in Sutro Forest in 1885. As is expected in a living landscape, the forest has grown over time; however this change does not diminish the integrity of the site.

-
3. **Determination** of whether the property is an "historical resource" for purposes of CEQA.

No Resource Present (*Go to 6 below.*)

Historical Resource Present (*Continue to 4.*)

-
4. **If the property appears to be an historical resource**, would the proposed project materially impair the resource (i.e. alter in an adverse manner those physical characteristics which justify the property's inclusion in any registry to which it belongs)?

The project would not cause a substantial adverse change in the significance of the resource such that the significance of the resource would be materially impaired. (*Continue to 5 if the project is an alteration.*)

The project is a significant impact as proposed. (*Continue to 5 if the project is an alteration.*)

Staff has reviewed the proposed project and found that the work will not result in any significant changes to the historic landscape or its hardscape features. The selective tree removal will help to restore the historic balance of tree species within the forest and will preserve its historic character. Moreover, the historic landscape's use as a public park will be preserved. Therefore, the project will not cause a substantial adverse change in the significance of the resource.

5. **Character-defining features** of the building to be retained or respected in order to avoid a significant adverse effect by the project, presently or cumulatively, as modifications to the project to reduce or avoid impacts. Please recommend conditions of approval that may be desirable to mitigate the project's adverse effects.

The character-defining features of the Mount Davidson historic landscape appear to be the WPA-era hardscape retaining walls and stairs; the Sutro forest, composed of pine, cypress, and eucalyptus trees; and, the Mount Davidson cross.

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6. **Would the proposed project have an adverse effect on off-site historical resources, such as adjacent historic properties?**

Yes No Unable to determine

There are no identified historic resources at the perimeter of the Mount Davidson natural area. The project would not directly or indirectly affect any off-site historic resources.

SENIOR PRESERVATION PLANNER REVIEW

Signature: *Tina Tam*
Tina Tam, Senior Preservation Planner

Date: 2-10-2011

cc: Linda Avery, Recording Secretary, Historic Preservation Commission
Viraliza Byrd / Historic Resource Impact Review File

SC: G:\DOCUMENTS\Cases\CEQA\EIR\Significant Natural Resource Areas Management Plan\Mt. Davidson_HRER.doc

Historical Resources Evaluation Report

For the

Sharp Park Golf Course Part of the Natural Areas City and County of San Francisco Pacifica, San Mateo County

January 2011

Prepared for:

City and County of San Francisco Planning Department
Major Environmental Analysis
1650 Mission Street, Suite 400
San Francisco, California 94103

Prepared by:

Tetra Tech, Inc.
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(All photographs are by Tetra Tech, Inc., unless otherwise noted.)

APPENDIX

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| A | DPR 523 Forms |
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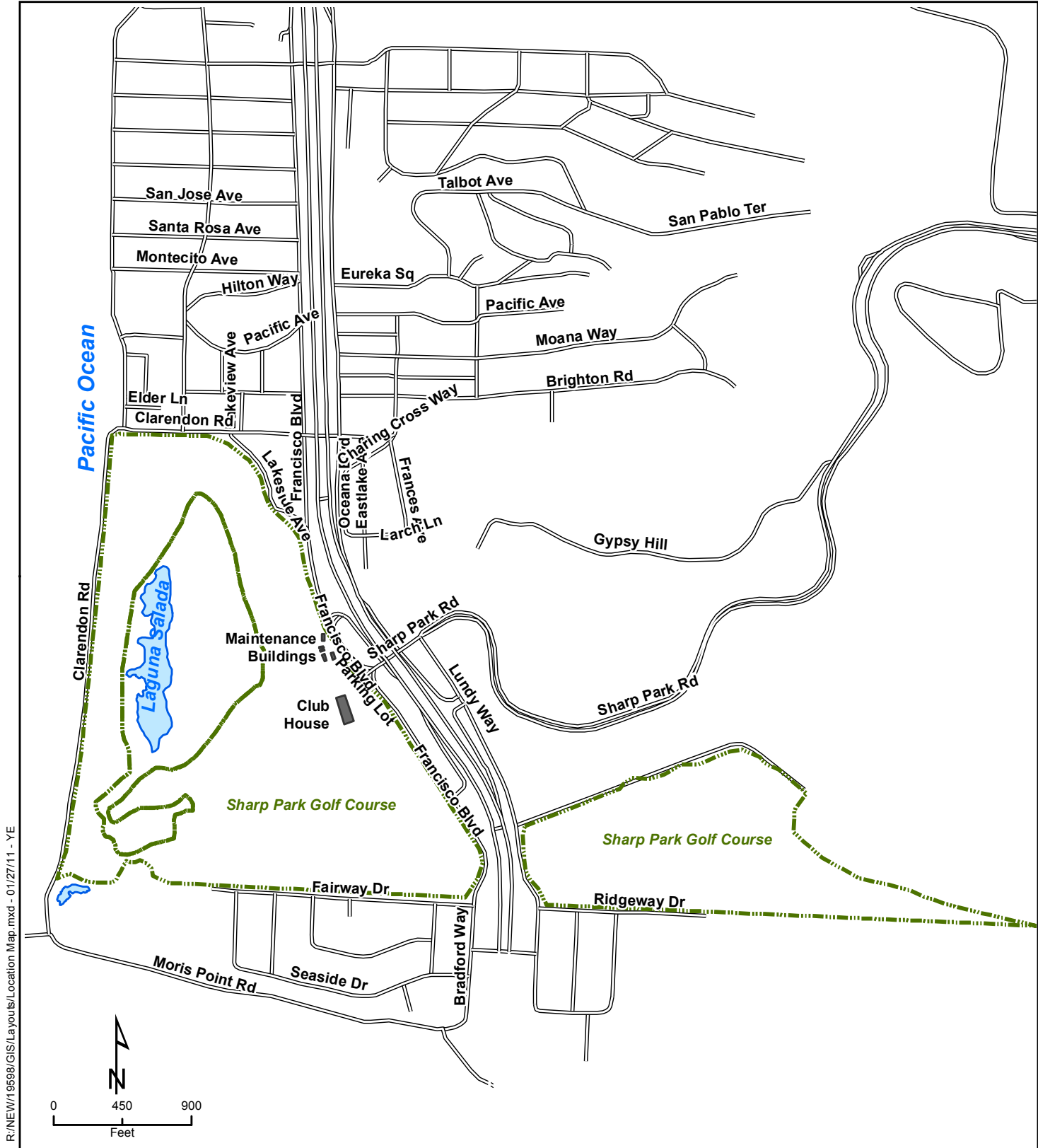
CHAPTER 1

SUMMARY OF FINDINGS

In response to public concerns raised during the California Environmental Quality Act (CEQA) scoping process for the Significant Natural Resource Area Management Plan (SNRAMP) Environmental Impact Report (EIR), this Historical Resources Evaluation (HRE) addresses Sharp Park Golf Course as a designed historic landscape. CEQA requires that the lead agency for the project, the City and County of San Francisco Planning Department Major Environmental Analysis (MEA), determine the impact that implementing the SNRAMP may have on historical resources at Sharp Park Golf Course. MEA and the San Francisco Recreation and Park Department (SFRPD) are preparing an EIR for this project, for which this HRE will be a technical background report. Tetra Tech prepared this HRE, in accordance with Section 15064.5(a)-(b) of the CEQA guidelines and using the criteria outlined in Section 5924.1 of the California Public Resources Code and Section 15126.4 of the CEQA guidelines. The report identifies known or potential historical resources at Sharp Park Golf Course that could be impacted by the project and assesses potential impacts on those resources. The report also proposes measures to mitigate any substantial adverse changes to historical resources. The location of the Golf Course is shown in Figure 1.

Based on the scoping comments from the Initial Study, Tetra Tech and MEA established the project's area of potential effects (APE) as the footprint of the Sharp Park Golf Course¹ (Figure 2). Tetra Tech's historian identified the built environment resources within the APE that could be potentially impacted by this project. These resources constitute the survey population properties for this study, which are Sharp Park Golf Course, including the course itself, maintenance buildings, and clubhouse.

¹The term "area of potential effect" is associated with historic resources studied in compliance with the National Historic Preservation Act, Section 106 and its regulation in Title 36, Code of Federal Regulations, Section 800. APE is used in this document to define the geographical area that the SNRAMP EIR project may directly or indirectly impact. This report is prepared for the project's compliance under CEQA and use of APE should not be taken to imply that the SNRAMP EIR project is a federal undertaking that must comply with Section 106.



Location Map

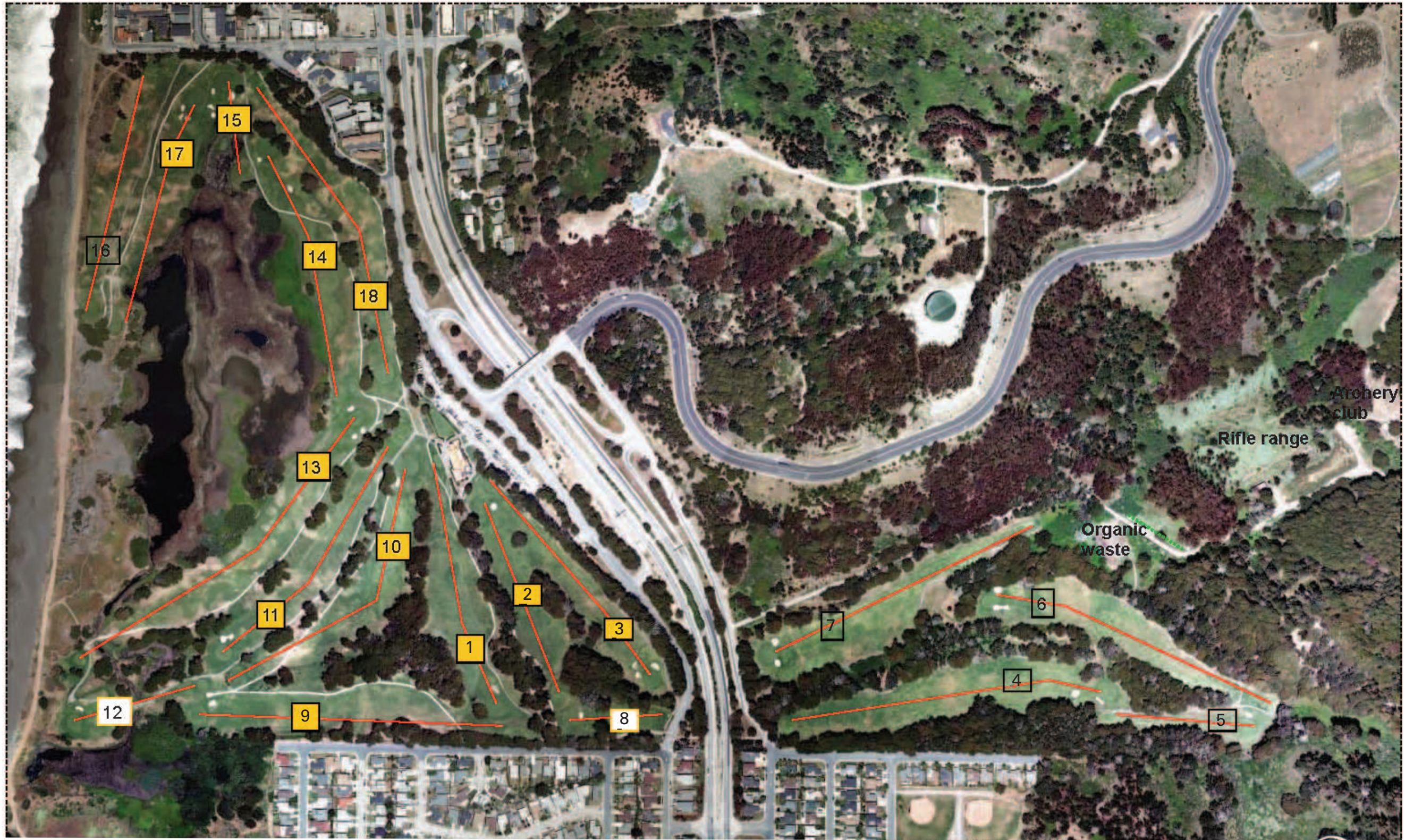
Legend



Sharp Park Golf Course Boundary

Pacifica, California

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Legend



Original holes



Built after 1941



Modified original holes

Existing Golf Course

Pacifica, California



Figure 2

Tetra Tech inventoried and evaluated the golf course to assess whether it should be considered a historical resource for the purposes of CEQA, that is, whether it is listed on, determined eligible for listing on, or appears to meet the criteria for listing on the California Register of Historical Resources (CRHR) or the National Register of Historic Places (NRHP).

Tetra Tech concludes that Sharp Park Golf Course appears to meet the criteria for listing on the CRHR and NRHP and should be considered a historical resource for the purposes of CEQA. Furthermore, the project would cause a substantial adverse change to the Sharp Park Golf Course because some of the project activities would diminish the historic integrity of the property. Therefore, mitigation measures are proposed in this document.

CHAPTER 2

PROJECT DESCRIPTION

2.1 PROJECT OVERVIEW

While San Francisco is by and large a densely developed urban area, fragments of unique plant and animal habitats, known as Natural Areas, have been preserved in San Francisco and Pacifica, in the parks that are managed by the SFRPD. In the late 1990s, the SFRPD developed a Natural Areas Program to protect and manage these Natural Areas for the natural and human values they provide. The Natural Areas Program mission is to preserve, restore, and enhance the remnant Natural Areas and to promote environmental stewardship of these areas. On January 19, 1995, the San Francisco Recreation and Park Commission approved the first SNRAMP.

Over the course of several years, the SFRPD developed a new SNRAMP (SFRPD 2006), with a final draft plan based on the 1995 plan and published in February 2006. This SNRAMP contains detailed information on the biology, geology, and trails within 32 Natural Areas, all of which are in San Francisco except Sharp Park, which is in Pacifica. The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years. The proposed project is the SFRPD's implementation of the SNRAMP.

2.2 PROJECT OBJECTIVES

Summarized below are the goals and objectives of the SNRAMP.

Conservation and Restoration Goals

- To identify existing natural resources;
- To maintain viable populations of all special status species;
- To maintain and enhance native plant and animal communities;
- To maintain and enhance local biodiversity;

- To reestablish native community diversity, structure, and ecosystem function where degraded;
- To improve Natural Area connectivity; and
- To decrease the extent of invasive exotic species cover.

Education Goals

- To provide services that will enable all age groups to better understand the values of the Natural Areas, including ecosystem functions and socioeconomic values;
- To provide opportunities for service learning to students in the San Francisco Unified School District; and
- To provide diverse outdoor classroom opportunities.

Research Goals

- To provide a research framework and research opportunities to schools and universities that will lead to an enhanced understanding of the natural systems and an informed adaptive management approach;
- To contribute to the scientific understanding of local natural systems; and
- To contribute to the field of restoration ecology and other applied sciences.

Stewardship Goals

- To develop and support opportunities for public stewardship of Natural Areas;
- To foster neighborhood stewardship and volunteer groups; and
- To provide diverse opportunities for participation by stewardship groups.

Recreation Goals

- To provide opportunities for passive recreational uses (e.g., hiking and nature observation) that are compatible with conservation and restoration goals and
- To improve and develop a recreational trail system that provides the greatest amount of accessibility while protecting natural resources.

Monitoring Goals

To establish a long-term monitoring program to:

- Identify the species on which monitoring should focus;
- Detect increases and declines in abundance, distribution, or health of special status species;
- Detect significant changes in acreage of native communities, wildlife habitats, and invasive species;
- Detect significant increases and declines in native species richness;

- Assess success of restoration in achieving conservation and restoration goals; and
- Provide an adaptive management framework for evaluating changes (e.g., conceptual model).

Design and Aesthetic Goals

- Where possible, to develop aesthetically pleasing landscapes that are consistent with surrounding landscapes and that create natural transitions, especially where adjacent parklands and traditionally landscaped areas abut Natural Areas;
- To maintain and develop viewpoints and viewsheds to enhance park experiences; and
- Where possible, to design and maintain landscapes to discourage the accumulation of trash and illegal encampments.

Safety Goal

- To design and maintain landscapes that promotes public safety.

2.3 PROJECT LOCATION

The 411-acre Sharp Park is in the town of Pacifica in San Mateo County. The park borders the Pacific Ocean and is bisected by Highway 1. Thirteen fairways, the Sharp Park Golf Course clubhouse, and Laguna Salada are on the western side of Highway 1; the four remaining fairways are on the eastern side of Highway 1. Figure 1 is a map of Sharp Park Golf Course.

CHAPTER 3

PROPOSED PROJECT

Recommended Sharp Park Management Actions that include Sharp Park Golf Course in general are as follows:

- Implement improvements to protect and enhance the California red-legged frog and San Francisco garter snake at Laguna Salada, including the following:
 - Create shallow pools within existing wetlands,
 - Continue monitoring red-legged frogs and San Francisco garter snakes,
 - Remove tires from Horse Stable Pond,
 - Install signs and barriers to keep dogs out of Horse Stable Pond
- Separate the small peninsulas within Laguna Salada from the mainland by small canals,
 - Restore Sanchez Creek by deepening the channel, expanding the creek corridor upstream, and installing buffer zones to limit human disturbance;
- Raise the area directly east of Laguna Salada to prevent flooding and plant with willows and other native vegetation to provide snake and frog basking sites, and to provide nesting habitat for riparian birds;
- Work with golf course staff to minimize use of chemicals;
- Educate golf course staff about the importance of identifying California red-legged frogs, San Francisco garter snakes, and forktail damselflies and their habitats;
- Work with golf course maintenance staff to incorporate native plants within bank stabilization efforts along Sanchez Creek where it flows through the golf course.

The following specific project activities would impact Sharp Park Golf Course:

- The areas that are currently open water within the lagoon and Horse Stable Pond would be deepened by two to three feet, and parts of the eastern portions of the lagoon and pond would be excavated extensively to restore open water habitat and to ensure that ample edge habitat consisting of open water/emergent vegetation interface would persist for the foreseeable future. Excavated dredge spoils appropriate for use as golf course substrate materials would be used on-site to raise Holes 10, 14, 15, and 18 and to create the upland habitat on the east edge of Laguna Salada. A dispersal corridor between the lagoon and the pond would be constructed with upland features designed to support the San Francisco garter snake; this action would necessitate closing Hole 12 of the Sharp Park Golf Course.
- A post and rail fence would also be installed along the seawall to the west of the lagoon, with additional fencing around the wetland complex to discourage human and pet intrusion into the restored habitat area.

The proposed project would convert about 19 acres of the Sharp Park Golf Course to Natural Area to facilitate Laguna Salada restoration. To restore California red-legged frog and San Francisco garter snake habitat at Laguna Salada, approximately 13 acres of the golf course would be modified to create upland habitat along the east side of the lagoon to provide critically important San Francisco garter snake upland habitat, to discourage frogs from depositing egg masses in locations where the resulting tadpoles may end up being stranded and to allow for the creation of new wetlands to compensate for those filled during the restoration process. This would primarily affect the layout of the golf course Holes 13 and 14, directly east of Laguna Salada. Holes 10 and 13 would be slightly shortened or narrowed, and Hole 12 would be removed. This habitat corridor would be approximately six acres, bringing the total of modified area at the golf course to about 19 acres. This change would affect the playability of the course.

The EIR for the project identifies mitigation to reduce this recreation impact on Sharp Park Golf Course. In order to create a habitat corridor between Horse Stable Pond and Laguna Salada, one of two potential mitigation measures would be implemented. These measures are detailed below.

Recreation Mitigation Measure, Option 1. The SFRPD would coordinate with a golf course consultant and would restore the playability of the Sharp Park Golf Course. One possible approach is the creation of a new Hole 7 east of Highway 1. Under this option, there would be a total of 13 holes on the west side of the Highway 1 and five holes on the east side. The bunkering and sculptured contouring would be characteristic of the design and strategy aesthetics of Alister Mackenzie, the famous golf-architect who had designed several courses in the US and abroad. The SFRPD would use a professional golf course architect to design the new and reconfigured holes and fairways, while distinguishing the new holes from the original historic holes.

Recreation Mitigation Measure, Option 2. The SFRPD would coordinate with a golf course consultant and would restore the playability of the Sharp Park Golf Course. Under this option, the golf course would be reconfigured to include 15 holes on the west side of Highway 1 and three holes on the east side. Two new holes and fairways would be created on the coast side of the course, to the west of Laguna Salada. The bunkering and sculptured contouring would be characteristic of the design and strategy aesthetics of Alister Mackenzie, the famous golf-architect who had designed several courses in the US and abroad. The SFRPD would use a professional golf course architect to design the new and reconfigured holes and fairways, while distinguishing the new holes from the original historic holes.

CHAPTER 4

RESEARCH AND FIELD METHODOLOGY

Tetra Tech conducted preliminary research at the City and County of San Francisco Planning Department and the City of Pacifica Planning Department to determine whether any previous studies or evaluations had been conducted for Sharp Park Golf Course. We also reviewed the NRHP and California Inventory of Historic Resources, as the golf course would automatically be eligible for listing on the CRHR and would be considered a historical resource for the purposes of CEQA if it was listed in the NRHP. None of the state or national registers identified Sharp Park Golf Course as a historical resource.² The golf course and the clubhouse were separately designated as historic landmarks for the City of Pacifica in 2009.³

Tetra Tech inventoried the golf course for recordation on DPR 523 forms and conducted research for this HRE in March and April 2010. We prepared a historic context to address the themes and background for the property, which we evaluated under the CRHR and NRHP criteria on the DPR 523 forms; the latter criteria applied because properties that are listed on or eligible for listing on the NRHP are automatically eligible for listing on the CRHR. Historical research was conducted at the San Francisco Public Library History Center and its general collections, California Historical Society, San Mateo County Public Library (various branches), and the City of Pacifica Planning and Economics Department. Research revealed that the relevant themes and context for discussing the significance of the golf course as a designed historic landscape include the growth and development of golf in San Francisco. The relevant period for the themes and context, as they relate to the survey population, is the early to mid-twentieth century.

²National Park Service, National Register Information System, online database <http://www.nr.nps.gov/> and <http://www.nationalregisterofhistoricplaces.com>.

³Elizabeth Claycomb, City of Pacifica Planning and Economic Development Department, personal communication with Julia Mates, Tetra Tech March 8, 2010.

4.1 AREA OF POTENTIAL EFFECT

Tetra Tech and MEA established as the APE for this project the footprint of Sharp Park Golf Course, which has boundaries on both the east and west sides of the Highway 1. This APE includes all of the buildings and structures within the golf course boundaries.

4.2 HISTORICAL OVERVIEW

The following overview provides historic background to the project area and historic context for the golf course and includes a discussion of the development of golf in San Francisco. This historic context summarizes the context provided in the inventory and evaluation form in the appendix.

4.3 HISTORY OF SHARP PARK GOLF COURSE

Sharp Park Golf Course is on the former Mexican Rancho land of San Pedro. A portion of this land, 410 acres, was eventually owned by George Sharp, a prominent San Francisco attorney and corporate counsel for the Ocean Shore Railroad in the late 1880s.⁴ When Sharp died in early 1882, the land was left to his wife, Honora. She died in 1905, and the land was left to her trustees, Ruben Lloyd and Adolph Spreckles, both members of the San Francisco Parks Commission. Spreckles sold his share of the property to the City and County of San Francisco in 1916 for 10 dollars in gold, and, after Lloyd passed away in 1917, the remaining shares of the land were bequeathed by the estate to the City of San Francisco.⁵ The property was stipulated to be used for a park and recreation only.

The City and County of San Francisco commissioned Alister Mackenzie to design the course. Having worked on other seaside golf courses in Great Britain, Mackenzie believed that “golf in its early days was always played on commons or links land which bordered the sea. The natural characteristics of this type of land made it easily the most suitable for the game.”⁶ Mackenzie stated that Sharp Park, being constructed on land reclaimed from the sea “now has a great resemblance to real links land.”⁷ Jack Fleming, the City’s golf course overseer appointed by the Parks Commission, was Mackenzie’s assistant during the project. In the mid-1930s, Robert Hunter was appointed to supervise construction of the course.⁸

The location of Sharp Park Golf Course posed a challenge. The parcels of land designated for the course were next to the Pacific Ocean, and the land was composed of barren sand dunes and a lagoon. In order to construct the golf course and build up fairway grades, the Sharp Park site was dredged. The natural lagoon, Laguna Salada, remained within the golf course, and the design incorporated it by surrounding it with

⁴Sharp Park Golf Course occupies only 120 acres of this land.

⁵Sharp Park Golf Course Web site: <http://www.sharpparkgc.com/>.

⁶Alister Mackenzie, *The Spirit of St. Andrews* (1995 Published Posthumously Sleeping Bear Press, Chelsea, Michigan, p. 246).

⁷Mackenzie, *The Spirit of Saint Andrews*, pp. 171-172.

⁸National Golf Foundation Consulting, Inc., *Sharp Park Golf Course* (City of San Francisco, California, no date), p. 84. On file at City and County of San Francisco Park and Recreation Department vertical files, labeled “Miscellaneous Documents, Golf Course History.”

fairways. Construction began on the course in 1929, and it took fourteen months to dredge the area around Laguna Salada marsh. Sharp Park Golf Club opened in 1932, after two delays due to drainage problems on the course from winter rains.⁹

The original layout of the golf course included Holes featuring multiple tees (Holes 2, 5, and 14), double fairways (Holes 5 and 10), cross bunkering (Hole 16), fairways in sand dunes (Holes 3 and 7), and several holes bordering Laguna Salada (Holes 4, 5, 8, 9, 10, and 11). Cypress trees dotted the setting.¹⁰

When constructed, the course used well water for irrigation. In the 1930s, the Works Progress Administration (WPA) installed a water pipeline for the course that extended from the San Bruno County Jail reservoir to a concrete pressure-reducing tank, 20 feet wide by 150 feet long. This pipeline provided water to the course for irrigation and for drinking until it was abandoned in place in 2008. The line extended through the canyon to the east of the course through the Hole 7 fairway.¹¹

Golf courses have been called living things in the sense that they are mostly constructed of living elements, such as grass and trees, which grow and change over time. Soil erodes, changing the pitch of slopes; trees grow or are replanted, and the holes cannot be played as they were originally. Advancements in playing equipment also change the game.¹²

Courses are redesigned, replaced, or remodeled for two reasons; the first is to improve the layout of the course, the second is to adjust the course for advances in golf technology. Redesigning golf courses involves rerouting and adjusting holes. In golf course architecture, restoring courses is considered to be the act of bringing a course back to, or closer to, its original state.¹³ At the same time, there are technological advances in the game of golf (balls, clubs, and mowing techniques) that advance and therefore result in alteration of the course to maintain playability. By the late 1920s, golf course designers accepted the idea that both natural and technological advances are factors, among others, that make it necessary to continuously improve golf courses, in order to maintain the strategy of the game.

4.3.1 Changes to the Course

The layout of Sharp Park Golf Course has undergone several alterations to accommodate natural changes in the landscape because of the course's location along the Pacific Ocean shoreline. The course was also modified to accommodate the anticipated realignment of Highway 1.

⁹Joe Faulkner, *Sharp Park*, 1970, www.sfpublic.golf.com.

¹⁰Daniel Wexler, *The Missing Links: America's Greatest Lost Golf Course & Holes* (Sleeping Bear Press, Chelsea, Michigan, 2000), pp. 114-115.

¹¹Clyde Healy, Assistant City Engineer, *Report of Clyde E. Healy, Assistant City Engineer, City of San Francisco and Coordinator of WPA Projects*, (San Francisco, October 1935-1939), p. 53.

¹²Graves and Cornish, *Golf Course Design* (John Wiley & Sons, Inc, New York, 1998), pp. 127, 131-132.

¹³Graves and Cornish, *Golf Course Design*, pp. 131-132.

The first major alteration was in 1941, when a seawall or berm was constructed to keep the ocean from reaching and flooding the course. To make room for the berm, the two original oceanside Holes 3 and 7 were moved inland. Another alteration was removing the lagoon and the second fairway at original Hole 10 (current Hole 14). Course modifications also included the installation of a 4,000-gallon pump to help with annual flooding of Laguna Salada, rerouting fairways for holes on the east side of Highway 1, and modest alterations, such as renumbering and shortening some of the original fairways. More recent changes involved lengthening fairways and adding and rebuilding tee boxes from 1985 until 1994.

The original design of the course had three holes on the east side of what was a county road, in front (on the west side) of the clubhouse, as shown in Figure 3. Around 1943, the county road was improved and rerouted to become Highway 1, which no longer passed the west side of the club house but was now on the east side. Although Highway 1 was not realigned until sometime after 1940, the designers of the course knew the course would have to be modified to accommodate the road (Figure 3). In 1932, Jack Fleming, in writing about the course in the *San Francisco Call-Bulletin*, described it as being “at present along the edge of the county road which is planned to re-locate.” Other, more minor alterations included changing sand trap shapes, filling in sand traps with grass, and rerouting fairways in 1962 and 1963. Between 1985 and 1994, several tees were lengthened and tee boxes were added or enlarged in order to accommodate female players and to accommodate larger numbers of golfers. Concrete cart paths were constructed along the back nine holes by 1996.

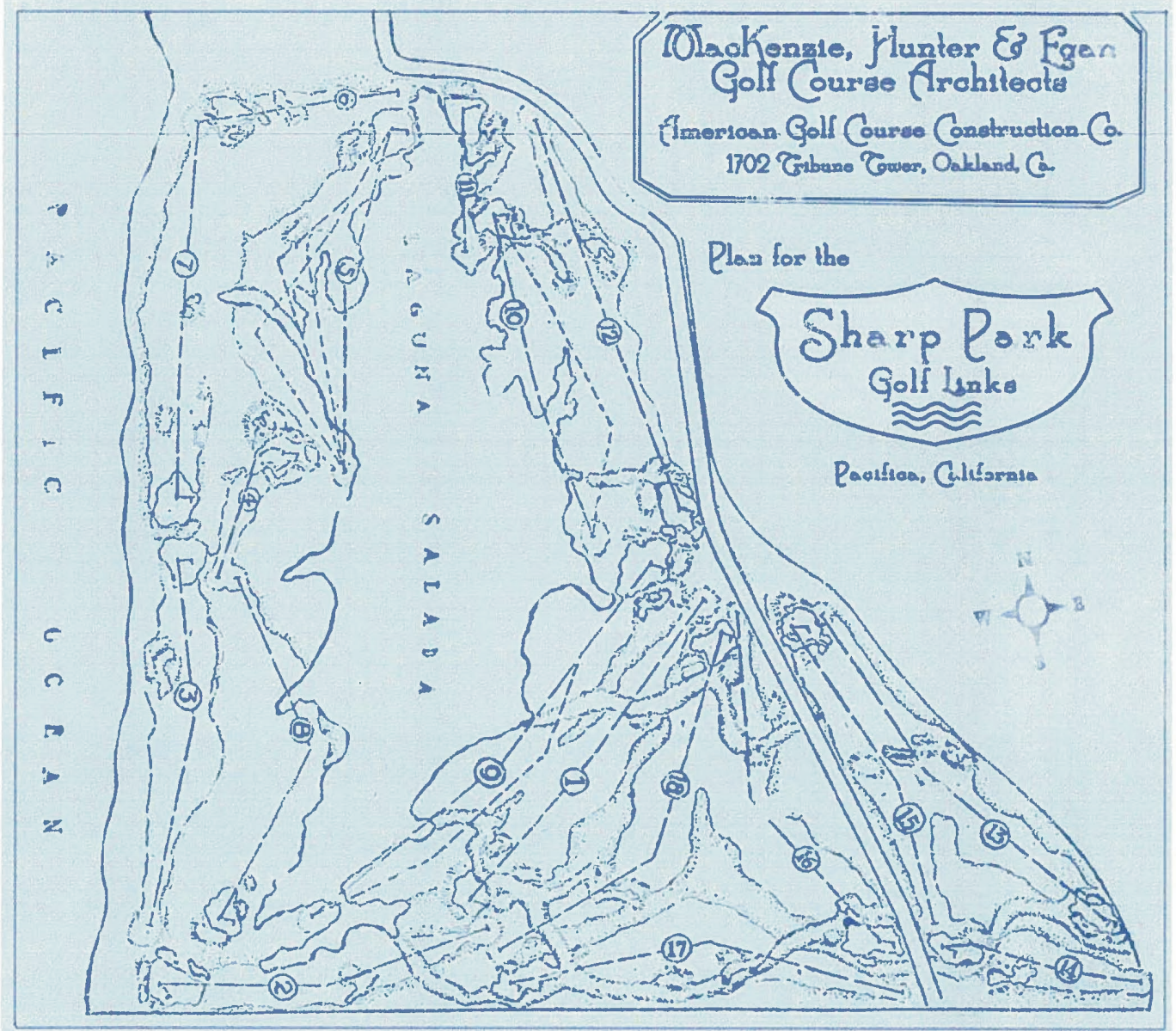
There has been a strong desire to maintain the original design layout of the course to the greatest extent. Many of the alterations have been forced by the natural changes in the landscape, with only a few changes made to accommodate advanced technology in golf clubs and ball construction. The goal has been to make the necessary modifications while preserving Sharp Park’s function as a golf course, laden with elements of challenge and surprise, and to maintain playability.

4.3.2 History of Public Golf in San Francisco

The game of golf came to California in the late 1800s, and the first course was constructed in southern California at the Riverside Country Club in 1891. The first northern California golf course, a three-hole course built in 1893, was at the Burlingame Country Club. The first course to be constructed in San Francisco was the private San Francisco Golf Club in 1895.¹⁴

¹⁴Neal Hotelling, *Pebble Beach Golf Links: The Official History* (Sleeping Bear Press, Chelsea, Michigan, 1999), p. 20.

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Original Plan for Sharp Park Golf Course

Pacifica, California

While golf courses at private country clubs were gaining in popularity, golfers unable to afford the high prices of country clubs had very few places to play. In the early 1900s, avid golfers and wealthy members of private clubs, Jack Neville and Vincent Whitney, approached John McLaren, Supervisor of Golden Gate Park, about constructing a municipal golf course. Neville and Whitney then began designing San Francisco's first municipal golf course, Lincoln Park.¹⁵ Lincoln Park remained the only San Francisco municipal golf course for 23 years, until the construction in 1925 of Harding Park, designed by Sam Whiting and Willie Watson.

The popularity of golf in San Francisco reflected the popularity of the sport within the entire country, and peaked during the 1920s. Often called "the golden age of golf," the sport grew in popularity during the late 1910s through the early 1930s, with many well-designed courses constructed during this period. Within the City of San Francisco, Lincoln Park and Harding Park were the only two public golf courses in San Francisco and, on weekends, they were overrun with golfers. The City decided to use the land in San Mateo County, formerly owned by George Sharp, for a third public golf course, named for the former landowner. Alister Mackenzie was commissioned to design the course, assisted by Jack Fleming, Superintendent of Maintenance for Golf Courses and Bowling Greens in San Francisco. Supervision of construction was given to Chandler Eagan, with whom Mackenzie had worked on Pebble Beach Golf Links in 1929.¹⁶ In 1930, Robert Hunter, Jr., was appointed the superintendent for the remaining ten months of the course's construction. Willis Polk and Company architect Angus McSweeney prepared plans for the golf clubhouse.

Alister Mackenzie

Alister Mackenzie was born in Scotland in 1870. He served as the Alwoodley Golf Club Green Chairman in the early 1900s, assisting golf architect H. S. Colt with the design of the golf course in Leeds.¹⁷ Mackenzie continued to work with Colt on other courses, and, in 1925, he established his own golf architecture firm and designed golf courses in Great Britain, Uruguay, Australia, Argentina, Canada, and the US.¹⁸ Mackenzie's best work in America was done between 1928 and 1933. By the time Mackenzie was commissioned to work on Sharp Park, he was living in the Bay Area. He died in 1934.¹⁹

Mackenzie's concept of an ideal hole in perfect surroundings was one surrounded by sand dunes next to the seashore.²⁰ Mackenzie felt that the success of golf course construction depended entirely on making the best use of natural features and devising

¹⁵Joe Faulkner, 1970, p. 5; although the course was constructed in the early 1900s, it was not expanded to a full 18-hole course until 1917.

¹⁶Bo Links and Richard Harris. *Mackenzie's Sharp Park Under Siege*. Golf Club Atlas Web site: <http://golfclubatlas.com/in-my-opinion/sharp-park>

¹⁷Geoff Shackelford, *Grounds for Golf: the History and Fundamentals of Golf Course Design* (St. Martin's Press, New York, 2003), p. 154.

¹⁸Cornish and Whitten, *The Architects of Golf*, p. 81.

¹⁹Honorable Julie Lancelle, Bo Links, and Jeffrey Phillips, *Sharp Park Golf Course*, The Cultural Landscape Foundation, July 2009.

²⁰Mackenzie, *Golf Architecture*, p, 28.

artificial ones indistinguishable from nature.²¹ He also contended that a golf course must offer adventure in order to hold interest for continuous play. His courses provided interesting challenges for golfers, regardless of their skill level. Mackenzie's firm was also known for its original and distinctive bunkers, with irregular shapes and each with its own design.²² He often had the overall vision for design of his courses and left the details to those who worked with him, such as Egan. George Shackelford, in his book *Grounds for Golf*, describes Mackenzie as a master designer and offers that Mackenzie's secret to creating unique courses was his talent for routing.²³ Mackenzie designed his hole layout and sequencing on natural ground contours, not on any prescribed sequencing. Distinctive bunkering, the use of small hillocks around greens, and exciting hole locations were Mackenzie's trademark. As Shackelford describes, while many architects try to create a special course, Mackenzie "could figure out how best to fit holes onto a property and situate a golf course to evoke a comfortable, settled, connection to the ground. His course routings are always functional and original but rarely do they fight the contours of the property."

Mackenzie's notable US golf course designs were Cypress Point Golf Club, California (1928), Augusta National Golf Club, Georgia (1932), and Pasatiempo Golf Club, California (1929). Mackenzie was commissioned by the City and County of San Francisco to design Sharp Park Golf Course in 1929.

According to Geoffrey Cornish and Ron Whitten, golf architects and authors of the book, *The Architects of Golf*, post-World War II golf course designers were influenced most by Mackenzie's philosophies.²⁴

Sharp Park Golf Course Clubhouse

The two-story clubhouse was designed the prestigious design firm of Willis Polk and Company, a highly respected architectural firm, responsible for many architectural masterpieces throughout northern California. Examples are the Palace of Fine Arts and the Hobart Building in San Francisco and the Water Temple in Sunol. The firm was also instrumental in rebuilding San Francisco after the 1906 earthquake. After Polk died in 1924, his firm developed the plans for the Sharp Park Golf Course Clubhouse, the chief architect of which was Angus McSweeney. The building was constructed by the Works Progress Administration, and a plaque on the clubhouse states, "Improved by Works Progress Administration 1935-1936." The clubhouse, designed in the Mission style of architecture, has undergone a few alterations over time.

²¹Mackenzie, *Golf Architecture*, p. 29.

²²Shackelford, *Grounds for Golf*, p. 155.

²³"Routing" is a golf term used to describe the path the course follows from the first tee to the 18th hole; Shackelford, *Grounds for Golf*, p. 156.

²⁴Geoffrey S. Cornish and Ronald E Whitten, *The Golf Course* (New York: The Rutledge Press 1981), p. 8.

CHAPTER 5

FINDINGS AND CONCLUSIONS

Tetra Tech prepared this HRE using the criteria outlined in Section 5924.1 of the California Public Resources Code, as well as Section 15126.4 of the CEQA guidelines. The report identifies historical resources that could be impacted by the SNRAMP project and assesses potential impacts on the Sharp Park Golf Course.

5.1 EVALUATION CRITERIA

The criteria for identifying historical resources under CEQA are in Section 15064.5(a)(2)-(3) of the CEQA guidelines, which provide the criteria from Section 20524.1 of the California Public Resources Code. According to the CRHR (California Code of Regulations Title 14, Chapter 11.5), properties listed on or formally determined to be eligible for listing on the NRHP are automatically eligible for listing on the CRHR. The CRHR criteria are largely based on the NRHP criteria, which are codified in 36 CFR, Part 60, and are explained in guidelines published by the Keeper of the National Register.²⁵ Resources must be at least 50 years old in order to be eligible for listing on the NRHP or the CRHR.

National Parks Service Preservation Brief 36 defines a cultural landscape as “a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other values.” There are four general types of cultural landscape, one of which is the historic designed landscape. National Parks Service *National Register Bulletin 18*, “How to Evaluate and Nominate Designed Historic Landscapes,” defines a historic designed landscape as one that “has significance as a design or work of art; was consciously designed and laid out by a master gardener, landscape architect, architect, or horticulturalist to a design principle, or an owner or other amateur using a recognized style or tradition in response or reaction to a recognized style or tradition; has a historical association with a significant person, trend, or event, etc. in landscape

²⁵The most widely accepted guidelines are contained in the US Department of Interior, National Park Service, “Guidelines for Applying the National Register Criteria for Evaluation,” *National Register Bulletin 15* (US Government Printing, Washington, DC, 1991, revised 1995 through 2002).

gardening or landscape architecture; or a significant relationship to the theory or practice of landscape architecture.” *Bulletin 18* goes on to list golf courses as an example of grounds designed or developed for outdoor recreation or sports that fall under the category of a designed historic landscape. Therefore, Sharp Park Golf Course is being evaluated for its historic significance as a designed historic landscape.

Historic significance is judged by applying NRHP Criteria A through D and CRHR Criteria 1 through 4. The NRHP guidelines state that a historic resource’s “quality of significance in American history, architecture, archeology, engineering and culture” is determined by meeting at least one of the following, (properties may be significant at the local, state, or national level):

Criterion A: Association with events or trends significant in the broad patterns of our history;

Criterion B: Association with the lives of significant individuals;

Criterion C: A property that embodies the distinctive characteristics of a type, period, or method of construction that represents the work of a master, or that possesses high artistic values;

Criterion D: Has yielded, or is likely to yield, information important to history or prehistory.

In general, Criterion D is used to evaluate historic sites and archaeological resources.

“Integrity” is determined through applying seven factors to the historical resource: location, design, setting, workmanship, materials, feeling, and association. All of these aspects must be considered in order to determine whether a landscape retains enough of its important historic characteristics and features to convey its historically significant appearance or associations. Because landscape features change over time, a landscape need not retain all of the original features it had during its period of significance, but it must retain the essential features and characteristics that make its historic character clearly recognizable.²⁶

The CRHR criteria closely parallel those of the NRHP. Each resource must be determined to be significant at the local, state, or national level under one of four criteria (paraphrased below) in order to be determined eligible:

Criterion 1: Resources associated with important events that have made a significant contribution to the broad patterns of our history.

Criterion 2: Resources associated with the lives of persons important to our past.

²⁶National Park Service, “How to Evaluate and Nominate Designed Historic Landscapes,” *National Register Bulletin No. 18*, p. 6, Web site: [www. http://www.nps.gov/history/nr/publications/bulletins/pdfs/nrb18.pdf](http://www.nps.gov/history/nr/publications/bulletins/pdfs/nrb18.pdf).

Criterion 3: Resources that embody the distinctive characteristics of a type, period, or method of construction, or represents the work of a master.

Criterion 4: Resources that have yielded, or may be likely to yield, information important in prehistory or history.²⁷

As with NRHP Criterion D, Criterion 4 is generally used to evaluate historic sites and archaeological resources.

The CRHR definition of integrity and its special considerations for certain properties are slightly different from those for the NRHP. Integrity is defined as “the authenticity of an historical resource’s physical identity evidenced by the survival of characteristics that existed during the resource’s period of significance.” The CRHR further states that eligible resources must “retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance,” and the CRHR lists the same seven aspects of integrity used for evaluating properties under the NRHP criteria.

5.2 EVALUATION

Tetra Tech concludes that Sharp Park Golf Course appears to meet the criteria for listing on the CRHR and NRHP and should be considered a historical resource for the purposes of CEQA.

The following provides a summary of Sharp Park Golf Course’s historic significance. It is evaluated on the DPR 523 forms in the appendix.

Sharp Park Golf Course appears to meet the criteria for listing on the NRHP for its significance under Criteria A and C and for listing on the CRHR under Criteria 1 and 3. (See the DPR 523 form for the evaluation of this property under NRHP Criteria B and D, along with the evaluation of the property under CRHR Criteria 2 and 4.)

The property’s period of significance is from 1929 to 1932, which represent the construction dates for the course’s original design.

Sharp Park Golf Course is significant under Criterion A/1 because its construction is associated with the need within San Francisco for a third municipal golf course. The construction and development of Sharp Park Golf Course was a direct result of the overcrowding at Harding and Lincoln Park municipal courses and the City’s desire to build a third course to accommodate San Francisco golfers. The construction of Sharp Park Golf Course represents a development pattern within the City of San Francisco and within the US in general, in which golf was an increasingly popular sport. The years between 1910 and the late 1930s have been called the “golden age of golf” in the US due to the fact that many of the great golf course architects designed courses during

²⁷California Public Resources Code, Sections 4850 through 4858; California Office of Historic Preservation, “Instructions for Nominating Historical Resources to the California Register of Historical Resources,” August 1997.

this period. Many of the courses, like Sharp Park Golf Course, are still in use today. The construction of Sharp Park Golf Course is directly associated with the growing popularity of recreational golf within the US during the early twentieth century.

Sharp Park Golf Course is significant under Criterion C/3 for its architecture and landscape architecture—a public golf course constructed between 1929 and 1932, embodying distinctive characteristics of a seaside golf course. This period is often called “the golden age of golf” because of the popularity of the game and the increase in golf courses constructed in the US. Sharp Park Golf Course contains many distinctive elements of its type, a golf course constructed on the oceanside, on sandy dunes, with original seaside holes that provide water hazards as part of the game. The course was designed by a well-known architect, with nuances, style, and innovation that enhanced golf courses constructed during this period in the US, many of which were private. The original layout of the golf course included holes featuring multiple tees, double fairways, cross bunkering, fairways in sand dunes, and several holes bordering Laguna Salada. Cypress trees dotted the setting. Although the course has been modified, it is common to modify a living landscape, although efforts to keep the fairways’ general original course design were always in effect. Twelve of the original 18 holes are part of the current design, and two fairways are original but without original greens.

The golf course is also the work of a master. While there are other examples of Mackenzie’s work that are more well known, Sharp Park Golf Course is an example of his idea of the perfect surroundings for a golf course—holes surrounded by sand dunes next to the seashore. Although alterations have been made to the course, during the period of significance the course retained Mackenzie’s routing, surprise elements, and hole and fairway locations.

The clubhouse is a good example of an Eclectic architectural style, with Mission and Spanish elements, improved by the Works Progress Administration during the Great Depression. The clubhouse was built to serve the golfers of Sharp Park Golf Course, is directly associated with the golf course, and is considered a historical character-defining feature of the golf course. It is a good representation of its architectural type and period, and its alterations have not diminished its historic integrity, as discussed below. The golf course clubhouse has consistently been used as a clubhouse for Sharp Park golfers, as was its original purpose. The presence of the golf course clubhouse helps to convey the historic character of the entire golf course.

In rare instances, buildings and landscape features themselves can serve as sources of important information about historic construction materials or technologies (Criterion D/4); however, the Sharp Park Golf Course does not appear to be a principal source of information in this regard.

5.3 INTEGRITY

Integrity of a historic resource is measured by applying seven factors: location, design, setting, workmanship, materials, feeling, and association. Sharp Park Golf Course, including the clubhouse and maintenance building, has retained a sufficient level of

integrity in all measures. Although the course has been modified over time, the golf course is in its historic location and retains much of its historic appearance, except that the ocean is no longer visible from the course. Still present are the lagoon, the east and west locations of the holes, and the fairway, which were all elements of the original design. Mackenzie designed the course with interesting challenges for golfers, regardless of their skill level, which is still true of the current course. Man-made features that have been added, such as the seawall, do not diminish the historic integrity of the course because the land and its location were important to Mackenzie's design; thus, the course is still authentic to Mackenzie's plan. The course retains its integrity of design, workmanship, and materials, which provide it with a similar sense of feeling and association to its period of significance.

The clubhouse retains most of its historic design features, and original or in-kind materials illustrate the workmanship that went into its design. Modifications, such as additions to the dining area and replaced windows, have not reduced the overall historic character of the building that give it the sense of feeling and association to its period of significance.

Sharp Park Golf Course's character-defining features are the original features and design of the clubhouse, the original permanent maintenance building, and the course's original layout, including the 12 remaining original holes (current holes 1, 2, 3, 8, 9, 10, 11, 13, 14, 15, 17 and 18) and original landscape features. The cypress trees that line the fairways also contribute to its significance, although none of the specific shrubs or trees on the property are considered contributors. The property's noncontributing features are the practice green, the maintenance trailers, the cart paths, the four holes that were moved to the east side of Highway 1, and other alterations that occurred after the period of significance.

The permanent maintenance building is part of the original construction of the golf course and retains its original integrity. The cypress trees that line the fairways also contribute to its significance, although none of the specific shrubs or trees on the property are considered contributors. Together, these features contribute to the golf course's historic significance and must be present to do so. The property's noncontributing features are the practice green, the maintenance trailers, the cart paths, and the four holes that were moved to the east side of Highway 1. These noncontributing features are those that were constructed or added after the period of significance, or, as in the case of the maintenance trailers, are temporary structures.

5.4 IMPACTS ANALYSIS AND MITIGATION MEASURES

CEQA guidelines Section 15064.5(b) states that "a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." The following provides reference to the project description in Section 2 as it relates to Sharp Park Golf Course and an impacts analysis for the golf course as a historic resource.

The SNRAMP project activities will be situated at and next to the eastern and western part of Sharp Park Golf Course and will not be near either the clubhouse or maintenance building. Therefore, none of the project components or construction will cause a substantial adverse change to these contributing buildings on this property such that they will be materially impaired or unable to continue to convey their significance. Potential impacts on this property would be on the designed historic landscape itself.

As part of the proposed project, some of the activities that will take place when implementing the SNRAMP will have the following direct potential impacts on Sharp Park Golf Course:

Impact HR-1. Excavated dredged spoils appropriate for use as golf course substrate materials would be used on-site to raise Holes 10, 14, 15, and 18 and to create the upland habitat on the east edge of Laguna Salada. Raising Holes 10, 14, and 15 would not have a significant impact on the historical character-defining features of the golf course because the holes would remain in place and alterations would be to elevate the holes, which would not impact the historic integrity of the fairways. There would be a less than significant impact on these holes from this proposed project activity.

Impact HR-2. The closure of Hole 12 (historic Hole 2) would have significant impacts on the historic character-defining features of the golf course because it would eliminate a hole and fairway on the west side of the course, along the ocean. Hole 2 was originally designed as a 262-yard fairway and a par 4. The hole was shortened in the early 1960s and was renumbered. Although Hole 12 has been altered from its original design, its closure and conversion to coastal/shrub habitat is a significant impact on the golf course because the Hole 12 area was included as part of the golf course design since the original construction of the course. The hole had always been at the edge of the lagoon or backed against the seawall. Using the area for habitat conservation and not as part of the golf course changes the boundaries of the golf course and its historic design. Closing Hole 12 would therefore be a significant impact. Implementing Mitigation Measure 1 (Document Historical Resources), as described in Section 5.0, would record the golf course following the Secretary of the Interior's *Standards for the Treatment of Historic Properties and Guidelines for the Treatment of Cultural Landscapes*. Because implementing Mitigation Measure 1 would not reduce this impact, there would still be a significant impact on the historic resource.

Impact HR-3. A post and rail fence would also be installed along the seawall, to the west of the lagoon, with additional fencing around the wetland complex to discourage human and pet intrusion into the restored habitat area. This fence would alter the visual appearance of the seawall and would add a modern element to the golf course. The seawall is not an original feature of the golf course but was constructed during the golf course's period of significance and would be a modern element within the historic setting of the course. The construction of a fence would add a modern element to the course but would not alter a historic character-defining feature. Therefore, constructing a fence would not have a significant impact on the golf course.

Impact HR-4. Modifying approximately 13 acres of the golf course to create upland habitat along the east side of the lagoon to provide critically important San Francisco garter snake upland habitat would require slightly shortening or narrowing Holes 10 and 13 (historic Holes 18 and 9). The habitat corridor would be approximately six acres, bringing the total of modified area at the golf course to about 19 acres. This would have a significant impact on the historic character-defining features, historic Holes 18 and 9, because these holes and fairways would be narrowed and shortened. Fairways have been altered in the past at Sharp Park Golf Course. Implementing Mitigation Measure 1 (Document Historical Resources) would record the golf course in its existing condition under the Secretary of the Interior's *Standards for the Treatment of Historic Properties and Guidelines for the Treatment of Cultural Landscapes*. It would serve as a record of the changes on the golf course through time, including the alterations on fairways and holes due to varying natural conditions. Implementing this mitigation measure would not reduce this impact to less than significant because modifying the historic character-defining features would still constitute a significant impact on the golf course, a historic resource.

Impact HR-5. The recreation analysis in the SNRAMP EIR proposes a mitigation measure (Recreation Mitigation Measure, Option 1) that would create a new hole on the east side of Highway 1, as a replacement for Hole 12. This reconfiguration would result in a total of 13 holes on the west side of Highway 1 and five holes on the east side. Adding another hole on the east side of the freeway diminishes the historic integrity of the landscape because it changes the balance of holes that were originally on the east and west side of Highway 1 and creates a hole in an area that was not originally planned and not originally part of the Mackenzie-designed course. Adding another hole on the east side of the course, in an area that would change the historic boundaries of the golf course design, would be a significant impact on Sharp Park Golf Course, a historic resource. Implementing Mitigation Measure 1 (Document Historical Resources), as described in Section 5.0, would record the golf course following the Secretary of the Interior's *Standards for the Treatment of Historic Properties and Guidelines for the Treatment of Cultural Landscapes*. Because implementing Mitigation Measure 1 would not reduce this impact, there would still be a significant impact on the historic resource.

Impact HR-6. The recreation analysis in the SNRAMP EIR proposes a mitigation measure (Recreation Mitigation Measure, Option 2) that would create a new hole on the west side of Highway 1, as a replacement for Hole 12. This reconfiguration would result in a total of 15 holes on the west side of Highway 1 and three holes on the east side. This alternative mitigation measure would be beneficial to the Sharp Park Golf Course because it would restore some of the elements that Mackenzie had implemented in his original design of this course, such as coast side holes. This mitigation measure would change the layout of the holes, but the new holes would be in areas of the course where Mackenzie situated holes in his original design, and would be in keeping with the historic boundaries of the golf course. Impacts on Sharp Park Golf Course, if this version of the mitigation measure were implemented, would be less than significant.

CHAPTER 6

MITIGATION

Mitigation Measure 1, Document Historical Resources—The SFRPD would document or retain a consultant to document Sharp Park Golf Course before any construction work or modifications to the course. The National Park Service has published some guidance for the preservation of cultural landscapes in *Preservation Brief 36: Protecting Cultural Landscapes, Planning, Treatment and Management of Historic Landscapes* and in the more complete Secretary of the Interior’s *Standards for Treatment of Historic Properties Guidelines for the Treatment of Cultural Landscapes*. The appropriate level of documentation would be selected by a qualified professional who meets the standards for history, architectural history, or architecture (as appropriate) set forth by the Secretary of the Interior’s Professional Qualification Standards, (36 CFR, Part 61). The documentation will consist of the following:

- Full sets of measured drawings depicting existing or historic conditions of the Sharp Park Golf Course;
- Digital photographs (does not have to be large-format negatives) of Sharp Park Golf Course;
- A written history and description of Sharp Park Golf Course and its alterations.

The professional historian will prepare the documentation and will submit it for review and approval by the San Francisco Planning Department’s Preservation Specialist. The documentation will be disseminated to the San Francisco Library History Room and the SFRPD Headquarters.²⁸

²⁸Note that in most cases the use of drawings, photographs, and displays does not mitigate the physical impact caused by demolishing or destroying a historical resource (14 CCR, Section 15126.4[b]). However, CEQA requires that all feasible mitigation be undertaken even if it does not mitigate below a level of significance. Recordation serves a legitimate archival purpose; Office of Historic Preservation, *How Can Substantial Adverse Change be mitigated?* California State Parks Web site: www.ohp.parks.ca.gov.

CHAPTER 7

QUALIFICATIONS

Julia Mates Historian/Architectural meets the History and Architectural History professional qualifications as outlined by the federal government in Title 36, Code of Federal Regulations, Part 61. Ms. Mates prepared this HRE with assistance from Cultural Resource Specialists Erin King and Frank Stipe. Ms. Mates reviewed project information, assessed known and potential historical resources, and prepared the text for this report. Ms. Mates has a Masters Degree in History/Public History and ten years of experience conducting historic resource projects.

Ms. King assisted with field recordation of the Sharp Park Golf Course. She has an MA, RPA, and over nine years of experience.

Mr. Stipe assisted with peer review of the designed historic landscape report. Mr. Stipe has an MA, RPA, and over ten years of experience.

APPENDIX A

DPR 523 FORMS

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 3S

Other Listings _____
Review Code _____ Reviewer _____ Date _____

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*Resource Name or # (Assigned by recorder) Sharp Park Golf Course

P1. Other Identifier: Sharp Park Golf Course

*P2. Location: Not for Publication Unrestricted

*a. County San Mateo

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad San Francisco South Date 1956 (photorevised 1999) T _____; R _____; ___ ¼ of Sec _____; _____ B.M.

c. Address Sharp Park Drive / Francisco Boulevard City Pacifica Zip 94404

d. UTM: (give more than one for large and/or linear resources) Zone _____; _____ mE/ _____ mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

Intersection of Sharp Park Drive and Francisco Boulevard. Sharp Park Drive, heading west, dead ends at golf course.

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The Sharp Park Golf Course (SPGC) is an 18-hole, 120-acre golf course in the town of Pacifica in San Mateo County. The golf course borders the Pacific Ocean, is bisected by Highway 1, and contains the natural Laguna Salada lagoon, wetlands, and associated vegetation. The course is owned and maintained by the City of San Francisco Recreation and Parks Department. The clubhouse is at the east side of the property, overlooking the course, as shown in Photograph 1, below. (See Continuation Sheet)

*P3b. Resource Attributes: (List attributes and codes) HP29: Landscape Architecture; HP13: Clubhouse; HP35: New Deal Public Works Project

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Clubhouse, camera facing southeast, April 9, 2010.

*P6. Date Constructed/Age and Sources:

Historic Prehistoric Both

1931/ City of San Francisco Historic Records

*P7. Owner and Address:

City and County of San Francisco

*P8. Recorded by: (Name, affiliation, address)

Julia Mates/Erin King

Tetra Tech, Inc.

555 Market Street, 15th Floor

San Francisco, CA 94105

*P9. Date Recorded: March 4, 2010

*P10. Survey Type: (Describe)

Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Tetra Tech, Inc., "Historical Resources Evaluation Report for Sharp Park Golf Course SFRPD Natural Resources Areas," 2011.

*Attachments: NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

DPR 523A (1/95)

*Required Information

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*NRHP Status Code 3S

*Resource Name or # (Assigned by recorder) Sharp Park Golf Course

B1. Historic Name: Sharp Park Golf Course

B2. Common Name: Sharp Park Golf Course

B3. Original Use: Golf course and clubhouse and maintenance building B4. Present Use: Golf course and clubhouse and maintenance building

*B5. Architectural Style: Eclectic with elements of Spanish and Mission Revival

*B6. Construction History: (Construction date, alteration, and date of alterations) Course: built 1929-1932; alterations 1941, 1962; lengthening some tees 1985-1994 / Clubhouse: built 1932; early improvements 1935-1936; enclosed dining area and additional dining space 1994

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Course: Alister Mackenzie / Clubhouse: Agnus McSweeney b. Builder: Course: Unknown / Clubhouse: Unknown, improvements WPA

*B10. Significance: Theme Golf Area San Francisco

Period of Significance 1929-1932 Property Type Golf Course and Clubhouse Applicable Criteria A / 1 & C / 3

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Sharp Park Golf Course, including the clubhouse, appears to meet the criteria for listing in the National Register of Historic Places (NRHP) for its significance under Criteria A and C. Furthermore, this property has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the California Environmental Quality Act (CEQA) Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and the property appears to meet the significance criteria as outlined in these guidelines. Therefore, it is a historical resource for the purposes of CEQA. (See Continuation Sheet.)

(Sketch Map with north arrow required.)

See Continuation Sheet.

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References: Neal Hotelling, *Pebble Beach Golf Links: The Official History*, (Chelsea, MI: Sleeping Bear Press, 1999); *Sharp Park & Pro Shop Plans*, (San Francisco Planning Department 1994); Sharp Park Golf Course Website: <http://www.sharpparkgc.com>; Alister Mackenzie, *The Spirit of St. Andrews*, (Chelsea, MI: Sleeping Bear Press, 1995); City and County of San Francisco, Board of Park Commissioners, *Map. Sharp Park Municipal Golf Course, Salada Beach, San Mateo County, California*, on file at City of Pacifica Planning Department; Harris, Richard. Pacifica Planning Commission Meeting correspondence 2009, on file at City of Pacifica Planning Department; San Francisco, California; National Golf Foundation Consulting, Inc. *Sharp Park Golf Course*, City of San Francisco, CA, no date on file at San Francisco Parks and Recreation Department files titled Miscellaneous Documents, Golf Course History; Dr. Michael J. Hurzdan, *Golf Course Architecture: Evolutions in Design, Construction, and Restoration Technology*, Second Edition, (Hoboken, NJ: and see footnotes.

B13. Remarks:

*B14. Evaluator: Julia Mates

*Date of Evaluation: March 2010

(This space reserved for official comments.)

P3a. Description (continued)

Along with the 18-hole course, the facility includes a large clubhouse, practice green, and maintenance area. The course and clubhouse were completed in April 1932. Access to the facility is from Sharp Park Road; a chain link fence, trees, and bushes establish the property's boundaries. A parking lot is adjacent to the east side of the clubhouse. The course's front nine holes are on the southern and eastern sides of the course. Some of the front nine holes (holes 4 through 7) are on the east side of Highway 1 and are accessed by a tunnel under the highway. The back nine holes are located on the western and southern sides of the property. Routing of the course is accomplished with fairways running parallel to each other and divided by mature cypress trees. The fairways are surrounded by concrete cart paths. A natural lagoon, Laguna Salada, is located at the western end of the course, and four holes (14 through 17) play around the lagoon. The southern end of the lagoon is traversed by a bridge. A seawall divides the course from the ocean on the west side of the course. **Photograph 2, 3, and 4** are representative photos of the golf course.

The golf course has undergone alterations since its construction, including lengthening, relocating and renumbering fairways, infilling some sand dunes with grass, construction of a seawall/berm dividing the ocean from the course, lengthening tees, adding tee boxes, and re-routing the course to accommodate the alignment changes in Highway 1.

The two-story clubhouse has an irregular footprint with multiple wings. The clubhouse is shown in **Photographs 5, 6, 7, 8, 9 and 10**. It sits on a concrete foundation and is clad in stucco. The building is topped with a cross gable roof with multiple-level, cross-gabled roof wings that run on a north-south axis. The roof is sheathed in red clay tiles and is moderately pitched with no eave overhang. There are two extended entrances on the north axis, one facing east and the other facing west. An extension off the south end of the building is a modest addition, constructed in 1994.¹ The clubhouse was constructed in the Eclectic architectural style with elements of Spanish Revival and Mission styles, popular in California during the 1920s. Architect Agnus McSweeney, an associate at the San Francisco architectural firm started by Willis Polk, designed the building that was constructed by the Works Progress Administration (WPA). A plaque on the clubhouse states, "Improved by Works Progress Administration 1935-1936." Exterior details include a variety of sizes of fixed and vertical hung sliding sashes. Many windows on the building appear to have been replaced with modern sashes, with the exception of the windows on the east façade which are original wood, vertical hung and casement sashes. There are circular vents, some covered with wrought iron bars and others in the form of Mission Style canals in some of the gables. There are four chimneys along the roof line that are sheathed in stucco. A driving range is north of the clubhouse, and maintenance buildings are on the northeast side of the course.

The north wing faces the practice green. There is secondary entrance at the first floor of this north side that contains a set of original double wood doors with fixed center sashes covered by metal security grilles. The windows on this side of the building are comprised of replacement metal sliding sashes and original one-over-one hung wood sashes. There is a small north facing patio at the second story that is accessed through a set of paired, glazed doors, with multiple panes of rectangular glass.

¹ *Sharp Park Restaurant & Pro Shop plans for proposed work*, dated October 1994, on file at City of Pacifica Planning Department, Permit No. 1327994.

The east side of the building faces the parking lot and contains the main entrance to the club from the lot. This side has a projecting first story with a recessed, round arched entrance with a decorative iron work and gates set into the arch. The front doors are a set of original, paired glazed doors with multiple panes of rectangular glass, flanked by sets of fixed, windows with multiple panes of rectangular glass.

The western side of the clubhouse faces the golf course, and serves as the main façade. The main entrance on this side is recessed with an extended arch. Flanking the arch are two piers, sided in smooth stucco. A pair of original, wood doors identical to those at the east side of the building serve as the front doors. Metal security grilles cover the windows of these doors. The remainder of this west side features a ribbon of six large, replacement floor-to-ceiling windows. Each set of three windows flanks a central, wood door with multiple glass panes.

The south side of the building is an extension, constructed in 1994, that faces the current Hole 2 fairway. It has large, modern, fixed windows, and little architectural relief.

A compound of temporary and one permanent building serves as the maintenance area for the golf course and is north of the clubhouse, on the east end of the property, atop a small hill. This maintenance area is surrounded by trees and metal fencing. Most of the structures within the maintenance area are temporary storage containers; the only permanent building is a large, one-story barn that rests on a concrete foundation, and is topped with a front gable roof with shallow eaves with exposed wood roof rafter tails. **(Photograph 11)**. The walls of this building are clad in vertical shiplap redwood. At both the north and south sides of the building are two over-head mounted wood doors. Fenestration along the building consists of original awning sashes with wood muntins. This barn is currently used for storage and is original to the course.

B10. Significance (continued)

History of Sharp Park Golf Course

Sharp Park Golf Course is located on the former Mexican Rancho land of San Pedro. A portion of this land, 410-acres, was eventually owned by George Sharp, prominent San Francisco attorney and corporate counsel for the Ocean Shore Railroad in the late 1880s.² When Sharp passed away in early 1882, the land was left to his wife, Honora. She passed away in 1905 and the estate land was left to her trustees, Ruben Lloyd and Adolph Spreckles, both members of the San Francisco Parks Commission. Spreckles sold his share of the property to the City and County of San Francisco in 1916 for 10 dollars in gold, and, after Lloyd passed away in 1917, the remaining shares of the land were bequeathed by the estate to the San Francisco.³ The property was stipulated to be used for park and recreational purposes only.

Alister Mackenzie was commissioned by the City and County of San Francisco to design the course. Having worked on other seaside golf courses in Great Britain, Mackenzie believed that “golf in its early days was always played on commons or links land which bordered the sea. ...the natural characteristics of this type of land made it easily the most suitable for the game.”⁴ Mackenzie stated that Sharp Park, being constructed on land reclaimed

² Sharp Park Golf Course is located on only 120 acres of this land.

³ Sharp Park Golf Course website: <http://www.sharpparkgc.com/>.

⁴ Alister Mackenzie, *the Spirit of St. Andrews*, (Chelsea, MI: Sleeping Bear Press 1995), 246.

B10. Significance (continued)

from the sea “now has a great resemblance to real links land.”⁵ Jack Fleming, who was the Parks Commission-appointed City golf course overseer, served as Mackenzie’s assistant during the project. In the mid-1930s, Robert Hunter was appointed to supervise construction of the course.⁶

The location of Sharp Park Golf Course posed a challenge. The parcels of land designated for the course were adjacent to the Pacific Ocean and the land was composed of barren sand dunes and a lagoon. In order to construct the golf course and build up fairway grades, the Sharp Park site was dredged. The natural lagoon, Laguna Salada, remained within the golf course, and the design incorporated it by surrounding it with fairways. Construction began on the course in 1929, and dredging the area around Laguna Salada marsh took 14 months. Sharp Park Golf Club opened in 1932, after two delays due to drainage problems on the course from winter rains.⁷

The original layout of the golf course included holes featuring multiple tees (holes 2, 5, and 14), double fairways (holes 5 and 10), cross bunkering (hole 16) fairways in sand dunes (holes 3 and 7) and several holes bordering the inland lake (hole 4, 5, 8, 9, 10, and 11). Cypress trees dotted the setting.⁸

When originally constructed, the course used well water for irrigation. In the 1930s, the WPA installed a water pipeline for the course that extended from the San Bruno county jail reservoir to a concrete pressure reducing tank, 20 feet wide by 150 feet long. This pipeline provided water to the course for irrigation and for drinking until it was abandoned in place in 2008. The line extended through the canyon to the east of the course through the current Hole 7 fairway.⁹

Golf courses have been called living things in the sense that they are mostly constructed of living elements, such as grass and trees, which grow and change over time. Soil erodes, changing the pitch of slopes; trees grow or are replanted, and the holes cannot be played as they were originally. Advancements in playing equipment also change the game.

Courses are redesigned, replaced, or remodeled for two reasons; the first is to improve the layout of the course, the second is to adjust the course for advances in golf technology. Redesigning golf courses involves rerouting and adjusting holes. In golf course architecture, restoring courses is considered to be the act of bringing a course back to, or closer to, its original state. At the same time, there are technological advances in the game of golf (balls, clubs, and mowing techniques) that advance and therefore result in alteration of the course to maintain playability. By the late 1920s, golf course designers accepted the idea that both natural and technological advances are factors, among others, that make it necessary to continuously improve golf courses, in order to maintain the strategy of the game.

⁵ Mackenzie, *the Spirit of Saint Andrews*, 171-172.

⁶ National Golf Foundation Consulting, Inc., *Sharp Park Golf Course*, (City of San Francisco, CA, no date), 84, On file at City and County of San Francisco Park and Recreation Department vertical files *Miscellaneous Documents, Golf Course History*.

⁷ Joe Faulkner, *Sharp Park*, 1970, www.sfpublic.golf.com.

⁸ Daniel Wexler, *the Missing Links: America’s Greatest Lost Golf Course & Holes*, (Chelsea, Michigan: Sleeping Bear Press 2000) 114-115.

⁹ Clyde Healy, Assistant City Engineer, *Report of Clyde E. Healy, Assistant City Engineer, City of San Francisco and Coordinator of WPA Projects*, (San Francisco: October 1935-1939), 53.

B10. Significance (continued)

Changes to the Course

The layout of Sharp Park Golf Course has undergone several alterations to accommodate natural changes in the landscape because of the course's location along the Pacific Ocean shoreline. The course was also modified to accommodate the anticipated realignment of Highway 1.

The first major alteration was in 1941, when a seawall or berm was constructed to keep the ocean from reaching and flooding the course. To make room for the berm, the two original oceanside Holes 3 and 7 were moved inland. Another alteration was removing the lagoon and the second fairway at original Hole 10 (current Hole 14). Course modifications also included the installation of a 4,000-gallon pump to help with annual flooding of Laguna Salada, rerouting fairways for holes on the east side of Highway 1, and modest alterations, such as renumbering and shortening some of the original fairways. More recent changes involved lengthening fairways and adding and rebuilding tee boxes from 1985 until 1994.

The original design of the course had three holes on the east side of what was a county road, in front (on the west side) of the clubhouse, as shown in Figure 3. Around 1943, the county road was improved and rerouted to become Highway 1, which no longer passed the west side of the club house but was now on the east side. Although Highway 1 was not realigned until sometime after 1940, the designers of the course knew the course would have to be modified to accommodate the road (Figure 3). In 1932, Jack Fleming, in writing about the course in the San Francisco Call-Bulletin, described it as being "at present along the edge of the county road which is planned to relocate." Other, more minor alterations included changing sand trap

Historic Contexts

Golf Course Design

Modern golf has its roots in Scotland beginning in the mid-fifteenth century on hilly grazing land along the coastline covered with fescues, broom, and other links plants. Early golf courses in the United States were referred to as "golf links" because they were designed in the tradition of Scottish links—the sandy seaside wasteland that links the ocean with the arable soil inland is the location where the Scottish used to construct golf grounds.¹⁰ Holes were placed in an area that afforded interesting play, and aside from removing tall brush, little was done to modify the grounds. By the turn of the century, golf was becoming an important sport and golf course architecture was becoming a respected profession. Several early courses constructed in the United States during the mid to late nineteenth century were designed by professional golfers from Great Britain. Interest in golf evolved in the US during the late nineteenth and early twentieth centuries and increased in popularity during the post-World War II years.¹¹

Prior to the 1920s, golf courses were designed by prominent players, not golf architects. Golf course architecture was a full time profession in the 1920s, and it was a period of growing prosperity for the US, a time when construction costs, real estate values, and interest rates were low. The 1920s have been called the Golden Age of

¹⁰ Graves and Cornish, *Golf Course Design*, 3; Neal Hotelling, *Pebble Beach Golf Links: the Official History* (Michigan: Sleeping Bear Press, 1999), 13.

¹¹ Tom Fazio, *Golf Course Designs*, (New York: Harry N. Abrams, Inc. 2000), 98-100.

B10. Significance (continued)

golf course style in America and the 1920s saw the style of golf courses enhance immeasurably.¹² By the mid-1930s, golf construction regained popularity and many municipalities hired course architects to design golf courses. During the Great Depression era, the federal WPA program was used to provide workers to build these public courses.¹³

Because golf courses are both natural and manmade, it is common for golf courses to be redesigned over time. Courses are redesigned, replaced, or remodeled for two primary reasons to accommodate for advances in golf technology and to improve the layout of the course to accommodate the natural changes that occur within a natural landscape such as vegetation growth, soil erosion, and changes in slope pitch.

History of Public Golf in San Francisco

The game of golf came to California in the late 1800s and the first course was constructed in Southern California at the Riverside Country Club in 1891. The first Northern California golf course was at the Burlingame Country Club, a three hole golf course, built in 1893. The first golf course to be constructed in San Francisco was the San Francisco Golf Club in 1895.¹⁴

While golf courses at private country clubs were gaining in popularity, golf courses for golfers unable to afford the high prices of country clubs had very few places to play. In the early 1900s, avid golfers and wealthy members of private clubs, Jack Neville and Vincent Whitney, approached John McLaren, Supervisor of Golden Gate Park, about constructing a municipal golf course. Neville and Whitney then began designing San Francisco's first municipal golf course, Lincoln Park.¹⁵ Lincoln Park remained the only San Francisco municipal golf course for 23 years until the construction of Harding Park. Harding Park, designed by Sam Whiting and Willie Watson, was constructed in 1925.

The popularity of golf in San Francisco peaked during the 1920s. Lincoln Park and Harding Park were the only two golf courses in San Francisco and, on weekends, they were overrun with golfers. The City decided to use the land in San Mateo County, formerly owned by George Sharp, for the location of a third public golf course, named for the former land owner. Alister Mackenzie, the famous golf architect who had designed several courses in the US and abroad, was commissioned to design the course. Mackenzie was assisted by Jack Fleming, Superintendent of Maintenance for Golf Courses and Bowling Greens in San Francisco. Supervision of construction was given to Chandler Eagan, with whom Mackenzie had worked on Pebble Beach Golf Links in 1929.¹⁶ In 1930, Robert Hunter Jr. was appointed the superintendent of construction for the course for the remaining ten months of construction. Willis Polk and Company architect Agnus McSweeney was hired to prepare plans for the construction of the golf clubhouse.

¹² Geoffrey S. Cornish and Ronald E. Whitten, *the Architects of Golf*, (Harper Collins Publishers: New York 1993.), 84.

¹³ Cornish and Whitten, *the Architects of Golf*, 106.

¹⁴ Neal Hotelling, *Pebble Beach Golf Links: The Official History*, (Chelsea, MI: Sleeping Bear Press, 1999), 20.

¹⁵ Joe Faulkner, 1970 5; Although the course was constructed in the early 1900s, it did not consist of a full 18 holes until 1917 when the course expanded to a full 18 hole course.

¹⁶ Bo Links and Richard Harris. *Mackenzie's Sharp Park Under Siege*.

B10. Significance (continued)

Alister Mackenzie

Alister Mackenzie was born in Scotland in 1870 and received a medical degree. He served as the Alwoodley Golf Club Green Chairman in the early 1900s, assisting golf architect H.S. Colt with the design of that golf course in Leeds.¹⁷ Mackenzie continued to work with Colt on other courses, and, in 1925, he established his own golf architecture firm and designed golf courses in Great Brittan, Uruguay, Australia, Argentina, Canada, and the US.¹⁸ Mackenzie's best work in America was done between 1928 and 1933 prior to his death in 1934.¹⁹ By the time Mackenzie was commissioned to work on Sharp Park, he was living in the Bay Area.

Mackenzie's concept of an ideal hole in perfect surroundings was a hole surrounded by sand dunes next to the seashore.²⁰ Mackenzie felt that the success of golf course construction depended entirely on making the best use of natural features and the devising of artificial ones indistinguishable from nature.²¹ He also contended that a golf course must offer adventure in order to hold interest for continuous play. His courses provided interesting challenges for golfers, regardless of their skill level. Mackenzie's firm was also known for its original and distinctive bunkers with irregular shapes, each with its own individual design.²² Mackenzie often had the overall vision for design of his courses, and left the details to be created by those who worked with him, such as Eagan.

George Shackelford, in his book *Grounds for Golf*, describes Mackenzie as a master designer and offers that Mackenzie's secret to creating unique courses was his talent for routing.²³ Mackenzie designed his hole layout and sequencing on natural ground contours, not on any prescribed sequencing. Distinctive bunkering, the use of small hillocks around greens and exciting hole locations were Mackenzie's trademark. As Shackelford describes, while many architects try to create a special course, Mackenzie "could figure out how best to fit holes onto a property and situate a golf course to evoke a comfortable, settled, connection to the ground. His course routings are always functional and original but rarely do they fight the contours of the property."

Mackenzie's notable US golf course designs were Cypress Point Golf Club, California (1928), Augusta National Golf Club, Georgia (1932), and Pasatiempo Golf Club, California (1929). Mackenzie was commissioned by the City and County of San Francisco to design Sharp Park Golf Course in 1929. According to Geoffrey Cornish and Ron Whitten, golf architects and authors of the book, *The Architects of Golf*, it was Mackenzie's philosophies that most influenced post-World War II designers.²⁴

¹⁷ Geoff Shackelford, *Grounds for Golf: the History and Fundamentals of Golf Course Design*, (New York: St. Martin's Press, 2003), 154.

¹⁸ Cornish and Whitten, *the Architects of Golf*, 81.

¹⁹ Honorable Julie Lancelle, Bo Links, and Jeffrey Phillips, *Sharp Park Golf Course*, The Cultural Landscape Foundation, July 2009.

²⁰ Mackenzie, *Golf Architecture*, 28.

²¹ Mackenzie, *Golf Architecture*, 29.

²² Shackelford, *Grounds for Golf*, 155.

²³ Shackelford, *Grounds for Golf*, 156.

²⁴ Geoffrey S. Cornish and Ronald E Whitten, *The Golf Course*, (New York: The Rutledge Press 1981), 8.

B10. Significance (continued)

Agnus McSweeney

The prestigious design firm of Willis Polk and Company was chosen as the clubhouse architect at Sharp Park. Willis Polk and Company was a highly respected architectural firm, responsible for many architectural masterpieces throughout Northern California. Willis Polk, the architect credited for such masterpieces as the Palace of Fine Arts, the Hobart Building and the Sunol Water Temple as well as the rebuilding San Francisco after the 1906 earthquake, died in 1924. His architectural firm carried on in his tradition and developed the plans for the Sharp Park Golf Clubhouse. The chief architect in charge of the project was Angus McSweeney.

Evaluation

Significance

The following provides an evaluation of the Sharp Park Golf Course under each NRHP and California Register of Historical Resources (CRHR) criteria. The property's period of significance is from 1929 to 1932, and represents the period from start of the property's construction to its completion.

Sharp Park Golf Course appears to meet the criteria for listing on the NRHP for its significance under Criteria A and C and for listing on the CRHR under Criteria 1 and 3.

Sharp Park Golf Course is significant under Criterion A/1 because its construction is associated with the "golden age of golf" in the US, during the late 1910s through the 1930s, a time of great popularity for the sport and a period during which golf architects designed many courses throughout the US. The trend in popularity of golf during this period is also reflected in the history of the golf within San Francisco, because during the early 1920s, the City had the need for a third municipal golf course. The construction and development of Sharp Park Golf Course was a direct result of the overcrowding at Harding Park and Lincoln Park municipal courses and the City's desire to build a third course to accommodate San Francisco golfers.

Sharp Park Golf Course is significant under Criterion C/3 for its architecture and landscape architecture—a public golf course constructed between 1929 and 1932, embodying distinctive characteristics of a seaside golf course. This period is often called "the golden age of golf" because of the popularity of the game and the spike in golf courses constructed in the US. Sharp Park Golf Course contains many distinctive elements of its type, a golf course constructed on the oceanside, on sandy dunes, with original seaside holes that provide water hazards as part of the game. The course was designed by a well-known architect, with nuances, style, and innovation that enhanced golf courses constructed during this period in the US, many of which were private. The original layout of the golf course included holes featuring multiple tees, double fairways, cross bunkering, fairways in sand dunes, and several holes bordering Laguna Salada. Cypress trees dotted the setting. Although the course has been modified, it is common to modify a living landscape, although efforts to keep the fairways' general original course design were always in effect. Twelve of the original 18 holes are part of the current design, and two fairways are original but without original greens.

B10. Significance (continued)

The golf course is also the work of a master. While there are other examples of Mackenzie's work that are more well known, Sharp Park Golf Course is an example of his idea of the perfect surroundings for a golf course—holes surrounded by sand dunes next to the seashore. Although alterations have been made to the course, during the period of significance the course retained Mackenzie's routing, surprise elements, and hole and fairway locations.

The clubhouse is a good example of an Eclectic architectural style, with Mission and Spanish elements, improved by the WPA during the Great Depression. The clubhouse is associated with the golf course and is considered a historic character defining feature of the golf course.

Finally, in rare instances, buildings and landscape features themselves can serve as sources of important information about historic construction materials or technologies (Criterion D/4); however, the Sharp Park Golf Course does not appear to be a principal source of information in this regard.

Integrity

Integrity of a historic resource is measured by applying seven factors: location, design, setting, workmanship, materials, feeling, and association. Sharp Park Golf Course, including the club house and maintenance building has retained a sufficient level of integrity in all measures, with the exception of setting, because the seawall now obstructs the view of the ocean from the course. The CRHR definition of integrity is "the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance."

The CRHR goes on to state that eligible resources "must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance," and then it lists the seven aspects of integrity. Although the course has been modified over time, the golf course is in its historic location and retains much of its historic appearance, with the exception of the fact that the ocean is no longer visible from the course. Still present are the lagoon, the east and west locations of the holes, and the freeway bisection, which were all elements of the original design. Mackenzie designed the course with interesting challenges for golfers, regardless of their skill level, which is still true of the current course. Man-made features that have been added, such as the seawall, do not diminish the historic integrity of the course because the land and its location was important to Mackenzie's design; thus, the course is still authentic to Mackenzie's plan. The course retains its integrity of design, workmanship, and materials that provide it with a similar sense of feeling and association to its forty-four years period of significance.

The clubhouse retains most of its historic design features; original or in-kind materials illustrate the workmanship that went into its design. Modifications, such as additions to the dining area and replaced windows, have not reduced the overall historic character of the building that give it the sense of feeling and association to its period of significance.

B10. Significance (continued)

Sharp Park Golf Course's character-defining features are the original features and design of the clubhouse, the original permanent maintenance building, and the course's original layout, including the 12 remaining original holes (current holes 1, 2, 3, 8, 9, 10, 11, 13, 14, 15, 17 and 18) and original landscape features. The cypress trees that line the fairways also contribute to its significance, although none of the specific shrubs or trees on the property are considered contributors. The property's noncontributing features are the practice green, the maintenance trailers, the cart paths, the four holes that were moved to the east side of Highway 1, and other alterations that occurred after the period of significance.

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*Resource Name or # (Assigned by recorder) Sharp Park Golf Course

*Recorded by Julia Mates/Erin King *Date March 4, 2010 Continuation Update

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Sean Sweeny, Sharp Park Golf Course, personal communication with Julia Mates, Tetra Tech, April 28, 2010.

Photographs (continued):



Photograph 2: Southern-most hole and fairway, camera facing north
3/4/2010



Photograph 3: Western portion of golf course, Fairway No. 12,
camera facing east, 3/4/2010



Photograph 4: Fairway No. 3, camera facing south, 3/4/2010



Photograph 5: East side of clubhouse, camera facing northwest
3/4/2010



Photograph 6: Fairway No. 10, camera facing west, 3/4/2010



Photograph 7: East entrance to clubhouse, camera facing west, 3/4/2010



Photograph 8: South side of clubhouse, camera facing northeast
3/4/2010



Photograph 9: North side of clubhouse, camera facing south, 3/4/2010

Photographs (continued):

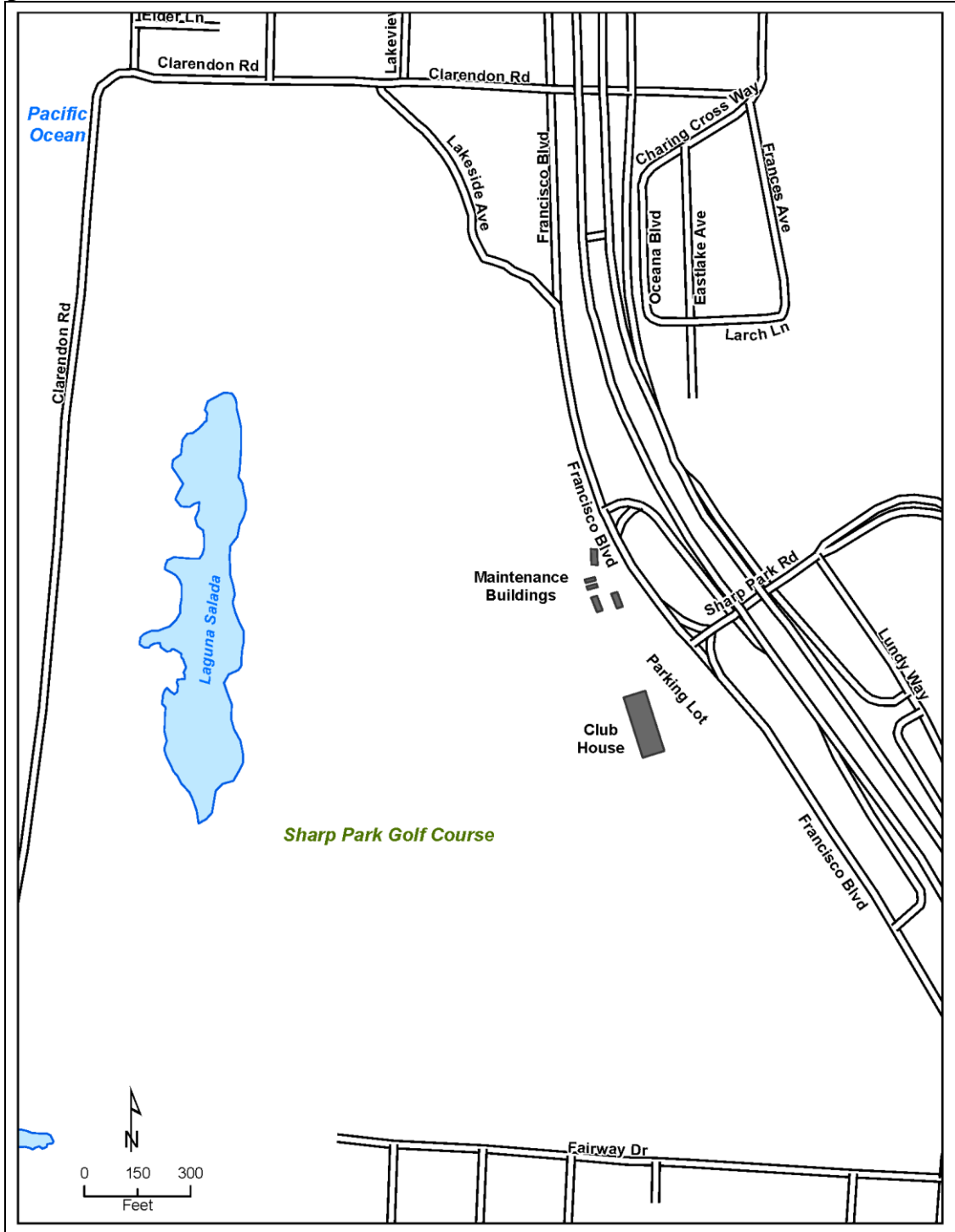


Photograph 10: West side of clubhouse, camera facing southeast
3/4/2010



Photograph 11: Maintenance building, camera facing southeast, 3/4/2010

Location Map



Archaeological Sensitivity Assessment

for the

Significant Natural Resource Areas

San Francisco and San Mateo Counties, California

Submitted to:

City and County of San Francisco Planning Department
Major Environmental Analysis
1650 Mission Street, Suite 400
San Francisco, California 94103
Case No. 2005.0912E

Prepared by:

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December 2010

ABSTRACT

This assessment summarizes the factors that contribute to the archaeological sensitivity of 32 Significant Natural Resource Areas managed by the City and County of San Francisco's Recreation and Park Department. These areas are primarily within the City and County of San Francisco; one, Sharp Park, is in San Mateo County. The assessment was completed in support of the Environmental Impact Report analyzing the environmental effects of implementing a management plan for these Natural Areas. Research included records searches through the Northwest Information Center, a literature and archival review, an examination of historic maps, and a review of materials housed by the Staff Archaeologist at San Francisco Planning Department's Major Environmental Analysis Division. Little to no previous surveys or archaeological resources have been documented in the Natural Areas. This assessment addresses the potential for surface and subsurface archaeological resources only. Built environment and historical landscape resources were addressed in a separate document.

In total, nine Natural Areas were found to have a high level of archaeological sensitivity, nine have a moderate level as well as the Whiskey Hill portion of the Golden Gate Park Oak Woodlands Natural Area, and 14 have a low level (including the Lily Pond, Oak Woodlands, and Strawberry Hill portions of Golden Gate Park Oak Woodlands Natural Area).

Distribution of the Natural Areas Across Archaeological Sensitivity Levels

| Archaeological Sensitivity | Natural Areas | |
|----------------------------|---|---|
| Low | <ol style="list-style-type: none"> 1. Billy Goat Hill 2. Brooks Park 3. Dorothy Erskine Park 4. Duncan-Castro 5. Edgehill Mountain 6. Fairmount Park 7. Golden Gate Heights Park 8. Golden Gate Park Oak Woodlands (Lily Pond, Oak Woodlands, and Strawberry Hill areas only) | <ol style="list-style-type: none"> 9. Grandview Park 10. Hawk Hill 11. Kite Hill 12. Lakeview/Ashton Mini Park 13. Rock Outcrop 14. Twin Peak |
| Moderate | <ol style="list-style-type: none"> 1. 15th Avenue Steps 2. Bayview Park 3. Bernal Hill 4. Buena Vista Park 5. Corona Heights | <ol style="list-style-type: none"> 6. Everson/Digby 7. Golden Gate Park Oak Woodlands (Whiskey Hill area only) 8. India Basin Shoreline Park 9. Mount Davidson 10. Tank Hill |
| High | <ol style="list-style-type: none"> 1. Balboa Park 2. Glen Canyon Park 3. Interior Greenbelt 4. Lake Merced | <ol style="list-style-type: none"> 5. McLaren Park 6. O'Shaughnessy Hollow 7. Palou-Phelps 8. Pine Lake 9. Sharp Park |

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1. INTRODUCTION

This report was prepared for the San Francisco Recreation and Park Department (SFRPD). It documents the archaeological resources inventory for the San Francisco Significant Natural Resource Areas Management Plan (SNRAMP) and assesses the archaeological sensitivity of each Natural Area. The inventory is based solely on previous surveys and studies, and no archaeological survey was conducted. There are 32 Natural Areas within San Francisco and one Natural Area in Pacifica in San Mateo County. This assessment addresses only archaeological resources and is meant to support the cultural resource impact analysis included in the associated project EIR (Tetra Tech 2010); buildings and structures are addressed in a separate report (Mates 2010).

1.1 SAN FRANCISCO SIGNIFICANT NATURAL RESOURCE AREAS MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT REPORT

The Natural Areas are scattered mostly throughout the central and southern portions of San Francisco and constitute approximately four percent of the total city area; one Natural Area is in Pacifica (Figure 1-1). The areas range in size from less than one acre to almost 400 acres and include such popular locations as Twin Peaks and portions of Glen Canyon Park. While mostly owned by the SFRPD, some remnant Natural Areas are managed by other public and private entities. Some of these properties may eventually be transferred to the SFRPD. Detailed maps of each Natural Area depicting the designated management areas can be found in Appendix B of the associated project EIR (Tetra Tech 2010) as well as in Chapter 6 of the SNRAMP itself (SFRPD 2006). The *Significant Natural Resource Areas Management Plan, Final Draft* (SFRPD 2006) is incorporated by reference into this description of the project.

1.2 METHODOLOGY

In order to complete the archaeological sensitivity assessment, cultural resources records were reviewed and archives and literature were researched.

1.2.1 Cultural Resources Records Searches

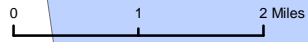
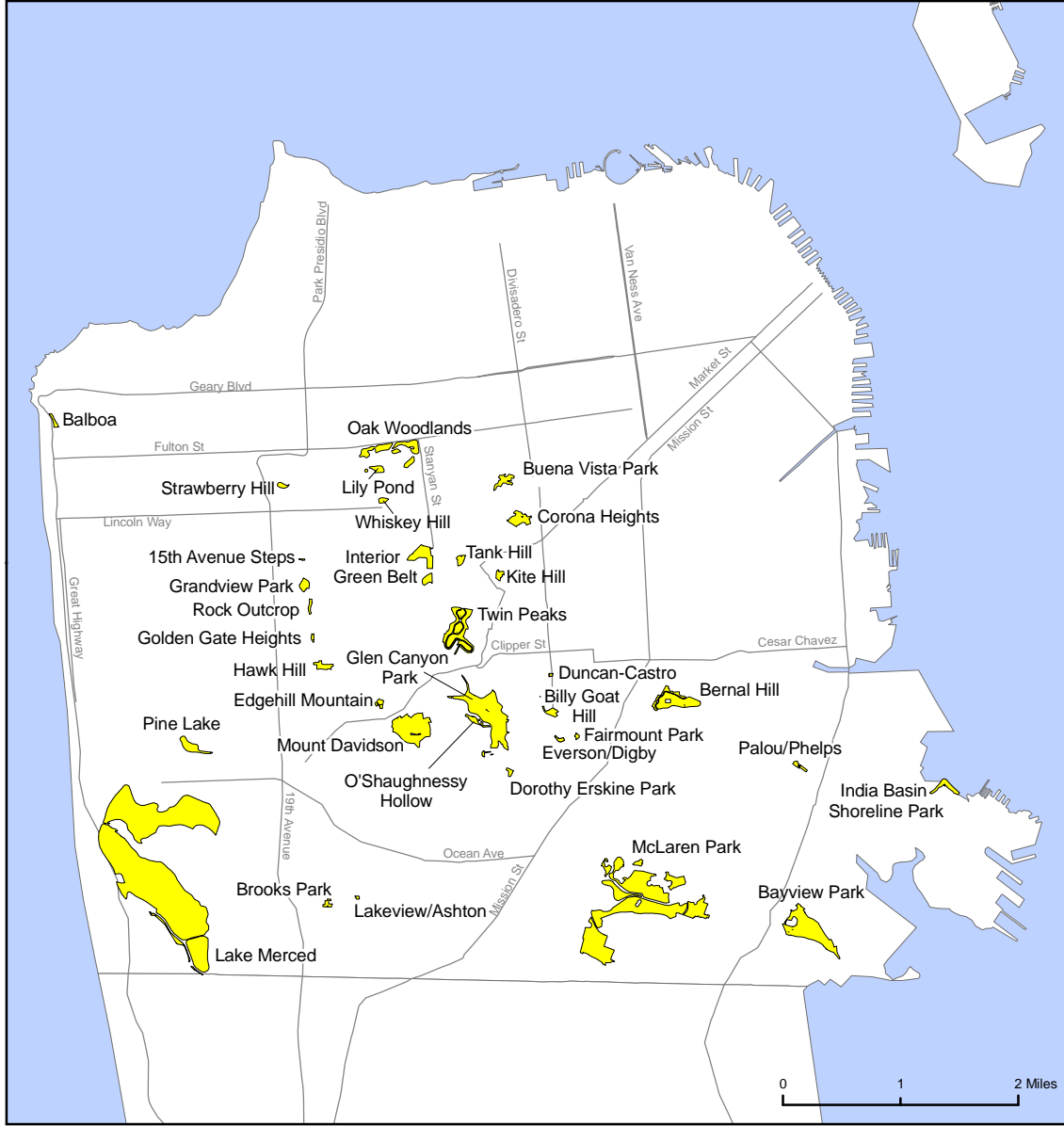
Tetra Tech searched records through the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University for each of the Natural Areas and a 400-meter buffer around each (NWIC file numbers 07-1792, 08-0414, and 09-0630). The records search was done initially for the purposes of the EIR and in order to determine whether a subject parcel or its environs have been previously surveyed for cultural resources and whether any sites or historic buildings have been identified and recorded. In addition historic maps were consulted, and two directories of cultural resources were reviewed: Office of Historic Preservation's Historic Properties Directory and the California Inventory of Historical Resources.

1.2.2 Archival/Literature Research

Tetra Tech staff reviewed the records search results and conducted additional research based on past local projects in the San Francisco Major Environmental Analysis' (MEA) archaeology library and at local libraries. This included reviewing MEA's geographic information system (GIS) database, historic maps, site records, reports, and general history library.

Tetra Tech previously completed an archaeological properties assessment for the San Francisco Public Utilities Commission's San Andreas Pipeline No. 3 project in western San Francisco (King 2008). As part of that effort and in order to illustrate the types of archaeological resources potentially within

R:\NEW\19598\GIS\Layouts\Cultural Resources\Sensitivity Assessment\NaturalAreas.mxd - 08/02/10 - EK



The 32 Natural Areas total approximately 1,107 acres and range in size from 0.3 acres (15th Avenue Steps) to 395 acres (Lake Merced).

Legend

- Natural Area
- Roadway

Natural Areas

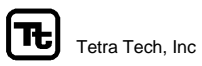


Figure 1-1

that project's developed CEQA Area of Potential Effect (C-APE), Tetra Tech staff conducted a general review of archaeological sites within the same study area used here. Much of this work and the understanding of site types and associated environmental settings were reviewed and incorporated into this sensitivity assessment.

1.2.3 Qualities of Archaeologically Sensitive Areas

Several elements contribute to the archaeological sensitivity of an area. Primarily, these elements are prehistoric and historic natural settings, historic and modern disturbances, and density and patterning of recorded archaeological resources. The potential for buried archaeological resources is also affected by landscape evolution, such as erosion, subsidence, and deposition.

Natural settings suggest to the researcher areas that would have been desirable settlement or activity areas for humans. The more resources available at or near a location, the more attractive the location would have been.

Disturbances and landform evolution can contribute to the destruction or preservation of an archaeological site. Although urban development is typically considered destructive of sites due to large-scale excavations or cuts made into landforms, it can also bury sites, effectively capping and protecting the resource from further disturbance.

The evolution of a landform can have similar effects when periods of sedimentation occur, burying sites sometimes tens of meters beneath the new surface. However, landform evolution can also include periods of erosion where the landform and archaeological materials deposited on them are removed. Similar effects are experienced during periods that lack sedimentation, when the site can become deflated (removal of the sediment matrix within the site, leaving only the artifacts). Further, the age of the landform contributes to the archaeological potential. It is generally accepted that humans did not occupy North America, particularly the California coast, before approximately 12,000 years ago; therefore, buried landforms that are Pleistocene (1.8 million years to 11,800 cal BP) in age are less likely to contain subsurface archaeological resources. Landforms that formed during the Holocene (10,500 cal BP to the present) are conversely more likely to include archaeological resources (Meyer and Rosenthal 2007:15).

The distribution and density of recorded archaeological resources can be more problematic in determining the archaeological sensitivity of an area. The archaeological record can suggest the potential for additional sites to exist, and the distribution pattern of the sites can also suggest the likelihood of unrecorded sites. For instance, if a stream corridor or other specific habitat is particularly dense with sites in one portion of a region, the potential for similar areas to include sites is increased. However, it is important to note that the archaeological record includes the biases of survey coverage, survey technique, records accuracy, and ground surface visibility, which can limit the ability to identify sites. Surveys are typically limited to defined project areas, so large portions of regions, if not most regions, are unsurveyed, as will be seen in the discussion here regarding the minimal survey coverage of the Natural Areas. Ground surfaces can be paved, landscaped, or heavily vegetated, limiting the ability of archaeologists to identify surface sites. If the survey techniques used do not account for subsurface resources, these sites can be missed as well. An additional problem with the archaeological record is the accuracy of site records, particularly older records or accounts of sites that were produced without the benefit of modern mapping techniques. In these instances, the "official" location of a site may simply be an approximate location.

1.3 CEQA AREA OF POTENTIAL EFFECT AND PROJECT STUDY AREA

A C-APE for archaeological resources is defined as those surface and subsurface areas that may be disturbed as a result of proposed. Additionally, a C-APE is expanded to include the boundaries and depths of any archaeological sites documented within or partially within the area of direct impact. For the proposed SNRAMP, the C-APE would encompass all areas where ground-disturbing activities would occur, as well as staging areas for those activities. Ground-disturbing activities include construction, trail creation and maintenance, new planting or plant removal, and activities that could contribute to erosion.

To better understand the likelihood for archaeological sites to occur within the C-APE, a larger project study area was established, similar in geologic and prehistoric environmental context and modern development. The area includes the northern end of the San Francisco Peninsula subregion (the Peninsula), from the intersection of Interstate Highways 280 and 380 (I-280 and I-380) in northern San Mateo County, and extending north to the Golden Gate Strait. Covering the area are the 7.5-minute United States Geological Survey (USGS) quadrangles Montara Mountain, San Mateo, San Francisco South, San Francisco North, Point Bonito, Hunters Point, and Oakland West. Expanding the project study area outside the C-APE allows for a more informed assessment of the possibility for unidentified archaeological resources to exist within the C-APE and what types of resources, such as prehistoric village sites and historic locales, may be anticipated.

2. ENVIRONMENTAL SETTING

The Natural Areas are described as oases surrounded by historic and modern urban development, providing some of the remaining natural habitats on the Peninsula. Vegetation within the parks include native and introduced species, notably eucalyptus groves. Surrounding areas include turf and greens at the Sharp Park Golf Course in Pacifica and others in San Francisco, isolated patches of introduced annual weeds, and vegetation, such as lawns, flower beds, and ornamental trees and shrubs associated with homes and yards near the parks. With the exception of Sharp Park, most historic watercourses have been covered by modern development. Detailed descriptions of each Natural Area, including geologic, biological, and hydrological descriptions, are included in the SNRAMP (SFRPD 2006). These are summarized below, with specific attention given to factors that may influence archaeological preservation or human attraction to the area. Reconstruction of the historic and prehistoric environmental settings of the Natural Areas is critical to assessing the likelihood of historic and prehistoric use of the areas, as well as the potential for the archaeological indicators of those activities to remain intact.

2.1 CLIMATE

The climate of the project area is classified as Mediterranean, characterized by seasonal precipitation of wet mild winters and dry summers (Golden Gate Weather Service 2008; Ritter 2008; SFRPD 2006). The project area is west of the Coast Range. While the Coast Range provides a wind buffer to the east, the areas west of the Coast Range are unprotected and experience cool marine winds and more summer fog. Summers in the study area experience cool marine air and persistent coastal clouds and fog. Specifically, within San Francisco, Twin Peaks acts as a prominent dividing point for the summer coastal fog. West-facing slopes receive substantial fog and strong winds while the east-facing slopes receive more sun and warmth (SFRPD 2006:6.8-1). Spring and fall often bring the warmest and most cloud-free periods to San Francisco. Rainfall during the spring is infrequent, while it is considered rare between May and September, when often only around one inch of rainfall accumulates. During winter, the polar jet stream and associated periodic storms reach into the lower latitudes of the Mediterranean zones, bringing rain to the San Francisco region. Most rain falls between November and March, predominantly in the western portion of the Peninsula. The combination of climate patterns with the variable topography of the area produces strong microclimates. Temperatures are generally moderate, with a comparatively small range of temperatures between the winter low and summer high (Golden Gate Weather Service 2008; Ritter 2008; SFRPD 2006).

2.2 TOPOGRAPHY AND GEOLOGY

The Natural Areas are spread primarily across southern and central San Francisco and are varied in their topography and geology. Descriptions of each are included in Section III of the associated project EIR (Tetra Tech 2010) as well as in the SNRAMP itself (SFRPD 2006). In general, the parks are underlain by Franciscan bedrock, and soils reflect the local bedrock condition. In most, a thick rocky soil is present over the Franciscan bedrock, but in others disturbed soils, including cut and fill material, is present. Fill depths vary greatly across the Peninsula. Erosion is common within the Natural Areas but is not necessarily active year-round. Such processes are intensified by steep slopes, road cuts, paved surfaces, and pedestrian traffic (SF Environment 2006; SFRPD 2006:3-1–3-2).

Historic-era explorers noted that the western areas of the Peninsula were dominated by sand dunes (Shoup and Baker 1981:9); most of San Francisco west of Twin Peaks is underlain by dune sand. Where the topography is relatively flat, the sand is deep and is not especially prone to erosion when undisturbed or vegetated. In steeper areas (such as Grandview Heights) the sand is shallow, is underlain by impermeable

bedrock, and is easily disturbed. In these areas erosion is more commonplace. More loamy soils tend to be less easily eroded than clean sandy soils due to their ability to hold water longer and develop deeper deposits and more dense vegetation (SFRPD 2006:3-2).

These dunes would have played a critical role in the formation and post-depositional processes of archaeological sites within the natural areas in this portion of the study area. The sand dunes of the Peninsula and San Francisco originated on the Pleistocene coastal plain, when sea level was at the 100-meter (328-foot) isobath, approximately 15,000 BP (Atwater et al. 1977; NPS 2002). Historically, they extended from Lake Merced north to Point Lobos and then east through the San Miguel Hills and what is now Golden Gate Park to the bay shore (SFRPD 2006:3-4). Older Aeolian sandstones underlie the Peninsula from Lake Merced south to Colma Creek Valley (city of San Mateo area) (SFRPD 2006:3-2). As sea levels rose and eventually stabilized, between 15,000 and 6000 BP, sand from the plain was transported to the beaches of the now modern coastline, where it was blown over the coastal hills to form the historic San Francisco sand dune complex composed of Sirdak sand (Atwater et al. 1977; NPS 2002; SFRPD 2006). Wind-driven processes such as this can cause both erosion and sediment deposition, typically of fine sand, silt, and clay. The wind-driven movement of materials can easily deflate an archaeological site, bury and obscure it, destroy its stratigraphy, or sandblast artifacts, altering their appearance. Deposits initially laid on the windward side of a dune are immediately subjected to deflation, while artifacts laid near the peak can be subject to deflation and be transported to the leeward side, where they can become buried. Deposits originating on the leeward side of a sand dune are more likely to be buried and preserved by sand drift (Schiffer 1983, 1987; Waters 1992).

Although the Natural Areas have the same general geological setting, the overlying soils and topography that can contribute to archaeological preservation are more specific to each area. of the effects of development and occurrence of bedrock outcrops that may have been prehistorically or historically quarried are also specific to each Natural Area. The following descriptions of each park's specific geologic and topographic setting are derived from SFRPD (2006).

15th Avenue Steps: The 15th Avenue Steps Natural Area includes unexposed Franciscan chert bedrock overlain by dune sand. A chert quarry once existed near the southern end of the area. Slopes are extensively steep and a landslide scar is present in the northeast portion of the Natural Area (SFRPD 2006:6.16-1).

Balboa: The Balboa Natural Area is composed entirely of a loose sand dune formation directly across the Great Highway from the Pacific Ocean. It is a beach and dune sand terrace at the base of a Franciscan sandstone bluff. The area has been restored since 2002 from prior use as a construction staging area. The sand used to form the dune is redeposited material from beneath the De Young Museum, and vegetation was planted between 2003 and 2005. The redeposited sand was mixed with the staging area surface, and some of these hardpan areas may still be present beneath the sand (SFRPD 2006:6.22-1).

Bayview Park: Bayview Park Natural Area is atop a peak in the southeast corner of the city, overlooking San Francisco Bay. Soils consist of very gravelly sandy loam and fine sandy loam. Outcrops of chert and sandstone occur throughout the park, and bedrock is exposed in several areas along the main paved path. A history of anthropogenic ground surface disturbance is evidenced by benched slopes, old road grades, and very large soil slumps. The southeastern slope has been terraced. The northern slope is eroding rapidly in several locations due to water runoff. In one erosional area a landslide has

occurred near the base of the area's slope and the northern boundary . It appears to extend from an old rock quarry that is now an escarpment. Disturbances are apparent above the quarry, as well as remnant stockpiles on the quarry floor, and suggest the topsoil and sandy subsoil have been stripped from the rock surface (SFRPD 2006:6.17-1–6.17-2).

Bernal Hill: The Bernal Hill Natural Area includes Franciscan chert and greenstone bedrock overlain by slope debris. The chert bedrock occurs in outcrops at the lower elevations of the park and is decomposed in areas. A remnant of a redeveloped quarry is present on the south side of the area, and a large soil slip is in the northwest corner. An ancient terrace is also present at the east end of the park, covered by sandy soil and slope debris (SFRPD 2006:6.21-1).

Billy Goat Hill: The Billy Goat Hill Natural Area is underlain by Franciscan chert, sandstone, and volcanic greenstone bedrock. The greenstone bedrock mostly lies beneath a thin rocky slope debris soil and is exposed on the northern edge of the park. It is referred to as pillow lava due to its rounded shape, formed by an underwater volcanic eruption. At the top of the hill is a chert exposure with a thin debris deposit over it. At the southern end of the park ancient terraces are underlain by sandstone. Debris deposits on the terraces are evidence of shallow soil slips in this area. Erosion, particularly in denuded areas, can be extensive in this Natural Area (SFRPD 2006:6.9-1).

Brooks Park and Lakeview/Ashton Mini Park: These two small Natural Areas are discussed together given their proximity and similar setting. Brooks Park sits atop an east-west trending bedrock ridge, with less than one-foot of sandy soil overlying Franciscan sandstone at its center. Exposures of the erodible sandstone are observable throughout the park. Slope debris and thick sandy soils several feet thick are present at the bases of slopes along the edges of the park. An area of thin fill has been placed in the southwest corner of the park where a soil slip is also present. Quarried areas of Franciscan sandstone bedrock are also present within the northwest and southeast corners. The Lakeview/Ashton Mini Park (also referred to colloquially as Orizaba Rocks) is at the highest point of the same bedrock ridge and is also composed primarily of Franciscan sandstone. Similar to Brooks Park, the center of the park includes the peak of the outcrop, while the edges include a less than 0.3-meter-deep layer of sandy soil. Slope debris and weathered sandstone bedrock accumulates on the slopes of the park (SFRPD 2006:6.6-1–6.6-2).

Buena Vista Park: This park is composed of a moderately steep hill of historic dune sand. A small area of chert is present in the northeast corner of the Natural Area. Wind and water erosion is considered moderate and is exacerbated by paved roads and sandy foot trails (SFRPD 2006:6.10-1, 6.10-10).

Corona Heights: Corona Heights Natural Area is near the center of San Francisco and is almost entirely underlain by Franciscan chert bedrock, with smaller areas of Franciscan sandstone and greenstone in the lower elevations of the northwest portion. Thin rocky slope debris covers most of the bedrock. Bedrock slopes are very steep, with ancient soil slips present on most of the hillsides, as well as steep escarpments on the northern and southern edges. The amphitheater at the center of the Natural Area is a former quarry and is bare ground today (SFRPD 2006:6.11-1).

Dorothy Erskine Park: Like most of the other Natural Areas, Dorothy Erskine Park is underlain by Franciscan chert bedrock. Primarily, slope debris of a thin rocky soil overlies the bedrock. Bedrock

outcrops occur along the northern and eastern edges of the northeast corner, as well as at the top of the hill where soils are thin. The northern boundary is dominated by shallow soil slips (SFRPD 2006:6.24-1).

Duncan-Castro: The Duncan-Castro Natural Area is underlain entirely by layered Franciscan chert bedrock. Thin rocky soil overlies the bedrock in areas. Folded chert layers are exposed along the south side as well as the escarpment along the west side of the area. Below the escarpment are landslide deposits and slope debris. Bedrock exposures and shallow slips of the soil are common (SFRPD 2006:6.12-1).

Edgehill Mountain: This Natural Area is underlain by Franciscan chert bedrock covered by a thin rock layer of slope debris. The steep terrain of the area leads to soil slips and rock falls throughout the park and bedrock has been exposed in elongated scarps along the south-facing hillside and along road cuts for bordering streets (SFRPD 2006:6.25-1).

Everson/Digby: Soils in the Everson/Digby Natural Area are thin, usually less than 30 centimeters deep. The area is underlain by Franciscan bedrock, which is evident in outcrops. Slopes are steep, with a terrace running east-west along the middle of the site (SFRPD 2006).

Fairmount Park: The Fairmount Park Natural Area is underlain by Franciscan chert and greenstone bedrock. The chert bedrock is primarily in the southern portion, where loamy soils of varied depths dominate. The greenstone bedrock is primarily in a band across the southern half of the northern portion. Slope debris covers this area. Sandy soils are mapped in the northern and most southern portions. Roadcuts along the eastern edge of the Natural Area have exposed the bedrock, while eroded slopes are present in the central and southwestern portions (SFRPD 2006:6.26-1).

Glen Canyon Park and O'Shaughnessy Hollow: Given their proximity, these two parks are discussed together. Both are within an area called the San Miguel Hills and gain elevation from south to north. The canyon for which Glen Canyon Park is named drops 107 meters over a horizontal distance of 1.6 kilometers, creating very steep slopes that lead down to Islais Creek. Franciscan chert underlies both parks, interbedded with very thin layers of shale. Less common in the parks is Franciscan sandstone with interbedded shale. Large areas of outcropping bedrock occur in the northwest and northeast rims of the canyon and along O'Shaughnessy Boulevard between the two parks. In fact, these outcrops are some of the city's largest. Franciscan greenstone has also been mapped along the southwest boundary of these parks. Soils are typically thin, with high rock content, but in flatter areas soils can include deep layers of eroded soils and fill material (SFRPD 2006:6.3-1–6.3-2, 6.3-4).

Golden Gate Park Oak Woodlands (including Whiskey Hill, Lily Pond, and Strawberry Hill): The Oak Woodlands Natural Area's topography was likely altered when it was planted around the 1870s. Similar effects likely occurred when much of the native vegetation of Golden Gate Park was removed and the park was landscaped. Slopes within the park are often the result of grading and park management. Most soils are from the historic dune complex and are susceptible to erosion. In addition to sandy soils, chert outcrops and stabilized sand dune formations are found throughout Golden Gate Park. Whiskey Hill is a classic example of the latter. The ground surface is composed of moderately compacted silty fine sand. However, at the base of the windward north face of the hill, the sand is looser and has been exposed by erosion. No bedrock is exposed in Whiskey Hill, and borings indicate at least 150 feet of sand and other loose sediment rests above Franciscan bedrock here. The Lily Pond area is a

flatter sand dune than Whiskey Hill. Slopes are moderate to gentle on all sides. A quarried lake, Lily Pond, is next to the area. Strawberry Hill is surrounded by Stow Lake. Most of the island is a hill composed of Franciscan chert overlain by dune sand that ranges in depth from a few inches at the top to several feet at the base. Chert exposures, sandstone, and a mixture of rocky material are present, particularly on the leeward south face of the hill (SFRPD 2006:6.15-1–6.15-3).

Grandview Park, Rock Outcrop, Golden Gate Heights Park, and Hawk Hill: Given the proximity and similar geologic setting of these Natural Areas, they are discussed together here. All of these parks sit atop a remnant ridgeline of the historic sand dune complex that once covered western San Francisco. Grandview Park includes chert overlain by these dune sands, as well as chert exposures. The peak of the park's hill exhibits extensive erosion, with exposed tree roots and bare ground. Exposed sand that erodes, particularly during storms, is also present within the southern and eastern slopes. Rock Outcrop Natural Area is composed primarily of a Franciscan chert outcrop with steep faces. Inclusions of sandstone and conglomerate and deposits of colluvium and fill are also present. Very little erosion has been noted, primarily due to the nature of the dominating chert outcrops. Golden Gate Heights Natural Area includes areas of exposed chert and chert outcrops but is predominantly sandy soils. Erosion has been primarily caused by public use. Hawk Hill soils are entirely dune sand, which is easily eroded. Installation of retaining walls has limited the extent of erosion (SFRPD 2006:6.5-1–6.5-2).

India Basin Shoreline Park: The India Basin Shoreline Park is along the southern bayshore of San Francisco, near Hunters Point. Wetland restoration was completed in 2002, which included creation of a salt marsh. The park is entirely within a filled area that created an unnatural shoreline. Adjacent to the park, bay waters are at most 10 feet deep and the mudflats here are exposed at low tides (SFRPD 2006:6.18-1).

Interior Greenbelt: This Natural Area is underlain by Franciscan chert and sandstone bedrock. Sandy soil covers the bedrock on the northern and eastern slopes with bedrock outcrops and small scarps. Near the center of the area, a loamy soil of varying depths is present. An ancient fault or shear zone is evidenced by a prominent valley along the northwest boundary of the area. The fault or shear has eroded with time to develop a narrow straight cleft in the bedrock. Shallow soil slips occur along the valley walls (SFRPD 2006:6.23-1).

Kite Hill: The Kite Hill Natural Area is underlain almost completely by Franciscan chert and greenstone, with thin rocky soils atop the bedrock. Greenstone is concentrated along the western border at the base of the hill. Chert is primarily at the top of the hill, where there are chert knobs, and within terraces facing east. Bedrock slopes are very steep, and ancient landslide scarps are evident on most hillsides. Shallow slips are common, evidenced by debris deposits at the base of the terraces (SFRPD 2006:6.13-1).

Lake Merced: Lake Merced was originally a brackish bay open to the Pacific Ocean. But during the Late Pleistocene and Early Holocene, the area became sedimented as a result of sea level rise, and a sand barrier formed, creating the lake. In 1852 the barrier was breached as a result of an earthquake, reopening the lake to the saltier ocean water. A sand bar reformed in the 1880s and a dam was constructed in the 1950s as a more permanent barrier (Shoup and Baker 1981:7-8). Similar incidents of sedimentation and breaching no doubt occurred in prehistory as well. Today, the lake is further divided into North, East, South, and Impound Lakes by berms constructed in the late 1800s and 1950s. Soils are primarily fill

material and Sirdak sands. Lakeshore slopes are fairly steep. In the northern and eastern terraces of the park, soils are underlain by bedrock, while deep sand dune areas are present in the south and west portions of the park (SFRPD 2006:6.1-2). In fact, Aeolian sandstones older than the northern dune system underlie the study area from Lake Merced south to the City of San Mateo (SFRPD 2006:3-2).

McLaren Park: McLaren Park Natural Area includes a portion of a ridgeline that extends east to include Bayview Park. Slopes on the north face are more gradual than those on the south face of the hill that makes up the park. The northeast corner of the Natural Area contains loamy soils that vary in depth atop recent sand and silt sediments. In the rest of the northern half of the park is partially decomposed bedrock with thin rocky soils. Exposures of the bedrock are few, but greenstone has been mapped along the western slope, serpentine at the ridgetop and northeast corner of the park, and sandstone along most of the eastern slope. The ridgetop knolls are eroding, and soil creep has been noted on the east-facing slopes in the most northern areas of the park. A portion of the park in the northwest corner included a sandstone quarry face nine meters high. In the southern half of the park the same thin rocky soil is present as in the northern half, but there are also numerous greenstone and sandstone outcrops. Historic quarrying is evidenced by terraces in the extreme southwest corner. In the most eastern parts of the southern half, animal burrows and periodic fires have created soil slip over an area of old road fill. The soil slip continues downslope, south to two outcrops of conglomerate. Most of the southern half of the McLaren Park Natural Area includes the Gleneagles International Golf Course, which has likely altered the natural topography there. Greenstone outcrops and terracing are noticeable along the northern and southern boundaries, respectively, of the course. At the southernmost edge of the Natural Area is an extensive hillside soil slump (SFRPD 2006:6.19-1–6.19-3).

Mount Davidson: Mount Davidson is the highest point in San Francisco. The park is underlain predominantly by Franciscan chert, with Franciscan sandstone in the northern corners of the park and Franciscan greenstone in the lower elevations of the southern slope. Outcrops of the chert do occur throughout the park (SFRPD 2006:6.2-1–6.2-2). Soils at Mount Davidson are a mixture of fine sandy loam, sandy loam, and gravelly loam (SFRPD 2006:3-2).

Palou-Phelps: This Natural Area is dominated by a steep hill that rises to the east and south, creating steep slopes and escarpments. It is underlain by sandstone bedrock that is decomposing in areas to a thick rocky soil. Erosion in one area has created a six-meter drop-off along the northeast boundary (SFRPD 2006:6.20-1).

Pine Lake: The Pine Lake Natural Area is within an elongated valley with steep wooded walls, the lake being at the western end. Underlying soils are sandy and susceptible to erosion. An escarpment parallels the northern shoreline of the lake, and a dog play area is east of the Natural Area in an open field (SFRPD 2006:6.7-1).

Sharp Park: Coastal Sharp Park Natural Area includes a public golf course, creeks, an extensive lagoon and associated wetlands, and an extensive canyon. It borders Sweeney Ridge and extends west to the Pacific Ocean. Soils are loamy with sand, fill, and disturbed areas closer to the ocean. The canyon that forms the eastern and upper portion of the park consists of Franciscan sandstone overlain by approximately one foot of gravelly sandy loam. Franciscan greenstone is present in the northern and eastern areas of the park. In the upper canyon are thin, gravelly, sandy loam soils underlain by Franciscan

sandstone. Active and extensive erosion, landslides, and soil creep toward the west have been identified in this area of the park (SFRPD 2006:6.4-1–6.4-3).

Tank Hill: The Tank Hill Natural Area is also entirely underlain by Franciscan chert bedrock with a thin layer of rocky soil over it. There is a concrete foundation pad for a historic Spring Valley Water Company water tank (no longer present) in the southern portion of the area where the Franciscan bedrock is altered to a mostly buried greenstone that extends south to an outcrop near the southern and eastern boundaries of the park. A thin layer of slope debris is present within the northwest corner, where there is a fault-sheared bedrock mixture of sandstone, chert, claystone, and shale. The eastern and northern slopes are exceedingly steep and ancient landslide scarps form most of the hillside in these areas. Debris deposits at the base of the slopes evidence common shallow soil slips and slope raveling. On the southeast slope an area of steep, weathered, and eroded chert is exposed (SFRPD 2006:6.14-1).

Twin Peaks: The Twin Peaks Natural Area is near the geographic center of San Francisco and offers the second highest peak in the city. The two peaks are within the northern portion of the San Miguel Hills. Soils consist of a very gravelly sandy loam and a fine sandy loam lay over Franciscan bedrock. Roadcuts in the area have exposed chert and sandstone outcrops that range from five to fifteen feet in height. Spoils from these roadcuts were placed on the downslope side of the road. Erosion is primarily contained to along trails and where public use has degraded the ground surface. Ground surfaces are bare on the northwest-facing slope of the southern peak as well as at the top of the northern peak (SFRPD 2006:6.8-1–6.8-2).

2.3 HYDROLOGY

Specific discussions of the hydrologic setting of the natural areas are included in Sections III and V.H of the project EIR (Tetra Tech 2010), as well as in the SNRAMP (SFRPD 2006). The hydrology of an area affects the likelihood of it to have been prehistorically or historically occupied, and the potential for erosion to have affected the preservation of archaeological sites. Many of the Natural Areas do not have water bodies, but the following have natural or man-made water bodies: Bayview Park (proposed detention basin/seasonal wetland), Lake Merced, Pine Lake, India Basin Shoreline Park (San Francisco Bay), Golden Gate Park Oak Woodlands (Stow Lake), McLaren Park, Glen Canyon Park and O'Shaughnessy Hollow (Islais Creek), and Sharp Park (Sanchez Creek and Laguna Salada wetland complex). Numerous creeks, tributaries, wetlands, bay mudflats, tidal marsh, and lagoons once existed across the Peninsula and along the shorelines (SFEI 2010; USGS 1896). Several creeks begin in, are next to, or flow through a Natural Area. Similarly those Natural Areas along the bay shore or coastline are next to or in what was once marsh, lagoon, or mudflat habitat. Most of these creeks and habitats have been covered by modern development or are filled or otherwise altered.

Floods and drought likely occurred historically among the historic water bodies within the study area. Similar to wind-driven processes, hydrologic processes can affect archaeological sites postdepositionally. Overflow of lakes, rivers, and streams can result in fluvial flooding of nearby archaeological sites (Schiffer 1983, 1987; Sundborg 1967:335). They can also result in slope wash, alluvial fans, or colluvial deposits that can bury and preserve a site if activity occurs quickly and briefly. Erosion can result from streams and rivers cutting away at their banks, which can undercut the land and possibly destroy a site. Sometimes sites in what eventually becomes a waterway are eroded away by the flowing water, unless the flow is gentle enough to merely cover the site with alluvial sediment eroded from upstream. Rising groundwater levels, as would have been the case along sea and bay shores during periods of sea level rise, could submerge the lower reaches of a deposit.

Additionally, sea levels affect a region's coastline through erosion and inundation. Along the Peninsula's coast, old coastlines would have been located offshore, as noted above. The larger landmass would have offered a larger area available for settlement and use (Schiffer 1983, 1987).

The hydrology of the Natural Areas is specific to each. Those that possess significant hydrologic processes, historically and today, are discussed below; however, all of the areas exhibit erosion by water or public use. The hydrology of the Natural Areas not discussed below primarily consists of surface runoff.

Glen Canyon Park and O'Shaughnessy Hollow: At the bottom of the canyon within Glen Canyon Natural Area flows Islais Creek on its way to San Francisco Bay. This is one of the few historic creeks that still flow through the city. However, the watershed of Islais Creek is today limited to Glen Canyon Park, 80 percent smaller than its historic extent. Overland flow and some hillside seeps feed the creek but also deposit eroded sediment. The additional sediment reduces stream flow, which can lead to periodic flooding and has reduced the historically open water channel (SFRPD 2006:6.3-1–6.3-3).

India Basin Shoreline Park: Given the proximity of this Natural Area to San Francisco Bay, hydrology at India Basin Shoreline Park is primarily tidal action (SFRPD 2006:6.18-1).

Interior Greenbelt: Water accumulates in the prominent valley of this Natural Area. The valley drains the higher slopes of Mount Sutro. The creek that is formed runs only in the early spring or after substantial rainfall (SFRPD 2006:6.23-1).

Lake Merced: The Lake Merced Natural Area includes the largest expanse of wetland in San Francisco and the largest freshwater lake between Point Reyes and southern San Mateo County. Water today in the lake is lower than historic levels due to watershed alterations. Historic levels since 1935 have fluctuated between 6.4 and 11.28 meters amsl (SFRPD 2006:6.1-1–6.1-3). Lake Merced is fed by an underground spring and, historically, up to nine creeks (USGS 1896) and their tributaries, some of which originated near 19th Avenue. Modern topographic maps (USGS 1995) indicate that none of the streams and creeks currently flow directly to the water body. Prehistorically, the lake would have provided a source of freshwater and aquatic subsistence resources for human populations. As discussed above, Lake Merced was originally a brackish bay, fed by streams flowing to the Pacific Ocean, but during the late Pleistocene and early Holocene the area became sedimented as a result of sea level rise, and a sand barrier formed, creating the lake. In 1852, the barrier was breached as a result of an earthquake, reopening the lake to the saltier ocean water until a dam was constructed in the 1950s. In the past 100 years, the lake has been reduced to a series of three water bodies, separated by mudflats as a result of stream rechanneling and lake filling (Shoup and Baker 1981: 7-8).

Golden Gate Park Oak Woodlands: The Lily Pond portion of this Natural Area is next to a quarried lake (SFRPD 2006:6.15-3). It is unclear when the lake, also referred to as Lily Pond, was created. Stow Lake surrounds the Strawberry Hill portion of the Natural Area (SFRPD 2006:6.5-3). It is unclear when this man-made lake was created or by what methods.

McLaren Park: Three springs on the northern slope of McLaren Park and Sunnydale Creek historically fed Yosemite Creek. Sunnydale Creek was fed by springs on the southern slope of McLaren Park. Yosemite Creek would then flow southeast from the park to Visitacion Bay. A marsh associated with Yosemite Creek is still present within the park, as are several ponds. Also within the northern

portion of the park is Gray Fox Creek, which flows north from the ridgeline and empties into McNab Lake in the northwest portion of McLaren Park. Seeps are present throughout the park (SFRPD 2006:6.19-1–6.19-3).

Pine Lake: The Pine Lake Natural Area includes Pine Lake itself, also known as Laguna Puerca in what is now Stern Grove. Laguna Puerca was fed by one creek historically (USGS 1896). Modern topographic maps (USGS 1995) indicate that the creek does not currently flow directly to the water body. Prehistorically, the creek would have provided a source of freshwater and aquatic subsistence resources for populations.

Sharp Park: There are seeps throughout Sharp Park and two major water features. The Natural Area includes free-flowing Sanchez Creek and brackish Laguna Salada. The creek originates on the ridge above the park and flows through the upper canyon to an irrigation reservoir, then through the golf course to a pond near the Pacific Ocean. The water is then pumped into the ocean via an automated system. Creek banks of expansive clay have been reinforced with ready-mix concrete where it flows through Sharp Park Golf Course. In segments that are not reinforced, undercutting and exposed roots have been noted. There is also evidence of dredging of the creek. Historically, Laguna Salada was similar to other coastal tidal lagoons that trapped winter runoff until levels topped adjacent dunes to connect the lagoon to the ocean. Construction of Sharp Park Golf Course modified the lagoon with a levee that prevents the exchange of tidal water. Today, a man-made channel drains the brackish water from the lagoon to the same pond that Sanchez Creek drains to (SFRPD 2006:6.4-1–6.4-2).

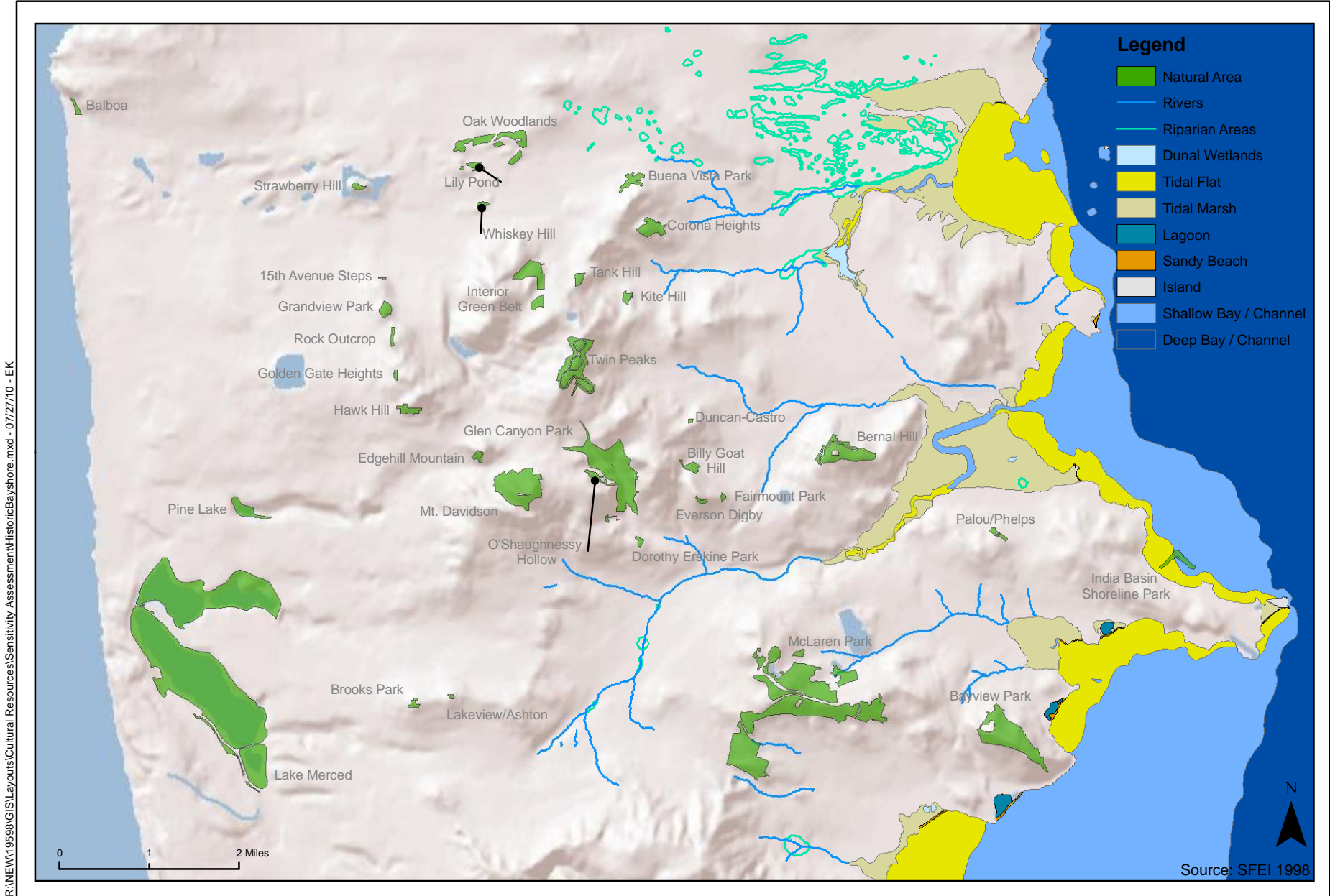
2.4 FLORA AND FAUNA

The C-APE encompasses some of the last vestiges of undeveloped land on the Peninsula, particularly within San Francisco. However, most of the habitats that are present within the Natural Areas today were altered historically by planting forests or landscaping. Further, numerous nonnative and invasive species occur in the areas today. The Natural Areas are surrounded by a modern landscape of paved streets, golf courses, and residential neighborhoods. Approximately 95 percent of the natural lands, wetlands, and shorelines within the Franciscan landscape have been altered in some way or have been destroyed altogether. Much of these areas were used historically for cattle grazing that led to nonnative and invasive vegetation or were planted with nonindigenous conifer and eucalyptus forests during the historic period. These practices have resulted in a highly fragmented and minimal natural or native landscape (SFRPD 2006:3-4).

Originally, as part of the South Coast Range, the region was dominated by a Southern Oak Woodland environment (Baumhoff 1978: 19). Acorns and other plant resources would have been available to the south in an area dominated by oak woodland plant community. Additionally, tule and coastal dune scrub communities, still found in the area today, would have been available along watercourses and in the dune complex (NPS 2002; Shoup and Baker 1981:9). Such vegetation, including maritime chaparral, coastal scrub, manzanita, and perennial grasslands, would have stabilized the sand dune complex once the communities developed (SFRPD 2006:3-4).

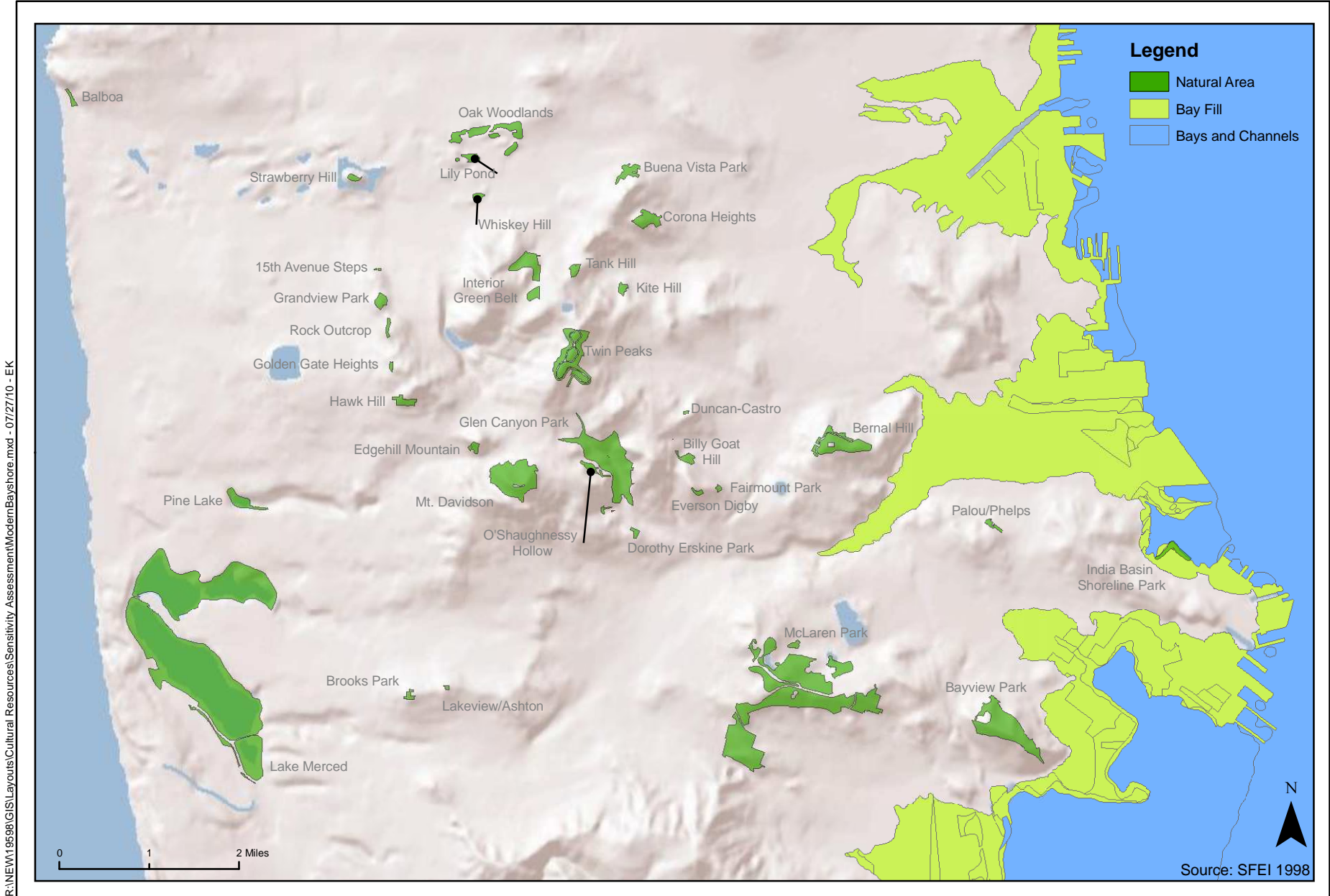
The presence of freshwater in some Natural Areas likely made them attractive to various terrestrial fauna and birds, including elk and migratory birds along the Pacific Flyway. Additionally, marine mammals and pinnipeds would have been available along the coast. Shorelines would have also offered opportunities for nearshore fishing and shellfish collecting historically and prehistorically (Moratto 1984: 221; Shoup and Baker 1981: 8-9).

SFRPD (2006:Appendix E) documents vegetation and animal species that were likely historically present within each Natural Area. In general, forests, grasslands, scrub, mixed herbaceous vegetation, and nonnative species are present at each today. Wetlands and marsh habitat exist in Natural Areas with significant hydrological features, such as Lake Merced, Sharp Park, Pine Lake, and Golden Gate Park Oak Woodlands (Strawberry Hill). The San Francisco Estuary Institute's (SFEI) (SFEI 2010) has reconstructed the historic bay shore vegetation of the San Francisco Bay, including the eastern half of the city (Figure 2-1; no data available for western extent of Peninsula). The Natural Areas in the central area of San Francisco are near the heads of several creeks that empty into the bay, while the most north-central Natural Areas, such as Buena Vista Park and Golden Gate Park Oak Woodlands, are close to an extensive riparian environment. Bernal Hill, Palou-Phelps, and Bayview Park are next to historic tidal marshes and flats. Bayview Park is also next to several lagoons and sandy beaches. India Basin Shoreline Park is the only Natural Area that is not on the historic shoreline. It is instead in a tidal flat and a shallow bay environment. The SFEI has also mapped the modern bay shore vegetation (Figure 2-2) to illustrate the vast changes that have occurred since the historic period.



Note: SFEI data are for the San Francisco Bayshore only. Therefore, no data exists for the western half of the Peninsula.

Historic Bayshore Environments



Note: SFEI data are for the San Francisco Bayshore only. Therefore, no data exists for the western half of the Peninsula.

Modern Bayshore Environments

3. ARCHAEOLOGICAL RECORD

Tetra Tech completed records searches through the NWIC of the California Historical Resources Information System at Sonoma State University for each of the Natural Areas and a quarter-mile buffer around each (NWIC file numbers 07-1792, 08-0414, and 09-0630). The records search is done to determine whether a subject parcel or its immediate environs have been previously surveyed for cultural resources and whether any sites have been identified and recorded. In addition historic maps were consulted, and the Office of Historic Preservation’s Historic Properties Directory and the California Inventory of Historical Resources were reviewed. All of the Natural Areas were covered by a study of pre-Spanish ecology of the Bay Area (Mayfield 1978). Cultural resources overviews (general discussions of resources that did not include formal surveys) and pedestrian surveys have been conducted within nine of the Natural Areas.

Tetra Tech staff also reviewed the records search results and conducted additional research at San Francisco MEA’s archaeology library. This included a review of MEA’s GIS database, historic maps, site records, reports, and general history library.

The following discussions describe information specific to each Natural Area obtained through the records search, research at MEA, and other research at local libraries.

3.1 SURVEYS AND OVERVIEWS WITHIN OR NEAR THE NATURAL AREAS

Cultural resource overviews (general discussions of resources that did not include formal surveys) and pedestrian surveys have been conducted within nine of the Natural Areas. All of the Natural Areas were covered by a study of pre-Spanish ecology of the Bay Area (Mayfield 1978). Table 3-1 summarizes the studies completed within specific Natural Areas. No archaeological surveys have been conducted at 23 of the Natural Areas: 15th Avenue Steps, Bernal Hill, Billy Goat Hill, Brooks Park, Buena Vista Park, Corona Heights, Dorothy Erskine Park, Duncan-Castro, Edgehill Mountain, Fairmont Park, Glen Canyon Park, Golden Gate Heights, Golden Gate Park Oak Woodlands (including Lily Pond, Strawberry Hill, and Whiskey Hill), Grandview Park, Interior Green Belt, Kite Hill, Lakeview/Ashton Mini Park, McLaren Park, Mount Davidson, O’Shaughnessy Hollow, Rock Outcrop, Tank Hill, and Twin Peaks.

**Table 3-1
Previous Surveys Conducted in the Natural Areas**

| Study No. | Date | Author | Title | Notes/Results* |
|---------------------|------|-----------------------------------|---|--|
| Balboa | | | | |
| S-5382 | 1979 | Roger Olmstead, Nancy Olmstead | <i>Ocean Beach Study: A Survey of Historic Maps and Photographs</i> | Records/literature search. No archaeological resources identified within Natural Area. |
| S-18341 | 1995 | Martin T. Mayer | <i>Archaeological Clearance Survey Form: Parkwide Traffic Counter Installation, Golden Gate National Recreation Area, Marin and SF Counties</i> | Linear survey. No archaeological resources identified within Natural Area. |
| S-18364 | 1979 | David Chavez, Eleanor Ramsey | <i>Preliminary Cultural Resources Evaluations of the Richmond Transport Sewer Alternatives</i> | Linear survey. One site, P-38-21, documented within 400 meters of the Natural Area. |
| Bayview Park | | | | |
| S-25045 | 2001 | Jan Hupman, David Chavez | <i>Archaeological Resources Investigations for the Bayview-Hunters Point Redevelopment Plan,</i> | Regional overview that covered entire Natural Area, in addition to |

**Table 3-1
Previous Surveys Conducted in the Natural Areas**

| Study No. | Date | Author | Title | Notes/Results* |
|-----------------------------------|-------------|---|--|---|
| | | | <i>San Francisco, California</i> | larger Bayview-Hunters Point APE. No archaeological resources identified within Natural Area. |
| S-28766 | 2004 | Jan Hupman, David Chavez | <i>Archaeological Resources Investigations for the Bayview-Hunters Point Redevelopment Plan</i> | Linear survey. No archaeological resources identified within Natural Area. |
| Everson/Digby | | | | |
| S-6160 | 1982 | Mark Ogden Rudo | <i>The Prehistory of San Francisco</i> | Regional overview that covered entire Natural Area, in addition to larger MA thesis study area. No archaeological resources identified within Natural Area. |
| S-9580 | 1983 | Randall T. Milliken | <i>The Spatial Organization of Human Populations on Central California's San Francisco Peninsula at the Spanish Arrival</i> | Regional overview that covered entire Natural Area, in addition to larger MA thesis study area. No archaeological resources identified within Natural Area. |
| S-15529 | 1993 | Robert L. Gearhart, II, Clell L. Bond, Steven D. Hoyt, James H. Cleland, James Anderson, Pandora Snethcamp, Gary Wesson, Jack Neville, Kim Marcus, Andrew York, and Jerry Wilson | <i>California, Oregon, and Washington: Archaeological Resource Study</i> | Regional overview that covered entire Natural Area, in addition to larger APE. No archaeological resources identified within Natural Area. |
| Hawk Hill | | | | |
| S-9585 | 1987 | City & County of San Francisco | <i>Subdivision and Rezoning of Vacant Lot on 2200 Block of Funston Avenue, Draft EIR</i> | Archaeological survey of entire Hawk Hill Natural Area. No archaeological resources identified within Natural Area. |
| India Basin Shoreline Park | | | | |
| S-15602 | 1987 | Kathryn Gualtieri and Lou Wall | Correspondence Concerning Proposed Homeporting of a Battleship Battlegroup and a Cruiser Destroyer Group in the San Francisco Bay Area (Letter Report) | Regional overview that covered entire Natural Area, in addition to larger APE. No archaeological resources identified within Natural Area. |
| S-16555 | 1994 | Adrian Praetzellis, Greg White, R. B.G. Naidu, and Nancy Olmstead | San Francisco Energy Company, Application for Certification, Cultural and Paleontological Resources | Archaeological survey that partially covered the Natural Area. No archaeological resources recorded within Natural Area, but noted that historic resources are within the |

**Table 3-1
Previous Surveys Conducted in the Natural Areas**

| Study No. | Date | Author | Title | Notes/Results* |
|---------------------|--|------------------------------------|--|---|
| | | | | survey's project area. |
| S-16882 | 1995 | Jan Hupman and David Chavez | <i>Archaeological Resources Investigations for the Waterfront Plan ER, San Francisco, California: Southern Waterfront</i> | Linear survey through western end of Natural Area. No archaeological resources identified within Natural Area, but noted that unrecorded historic wharfs, shipyards, mills, iron works buildings, and buried ships are in the survey's project area. |
| Lake Merced | | | | |
| S-3240 | 1957 | Cristy W. Willer and Alan D. Albee | <i>Archaeological Survey of Proposed Southwest Outfall and Southwest Water Pollution Control Plant</i> | Archaeological survey covering northwest corner of Natural Area. No archaeological resources identified within Natural Area. |
| S-3242 | 1964 | James Heid | <i>San Francisco Waste Water Management Archaeological Report</i> | Linear survey through northwest corner of Natural Area. No archaeological resources identified within Natural Area. |
| S-3247 | 1981 | Laurence Shoup and Suzanne Baker | <i>Cultural Resource Overview: Lake Merced Transport, San Francisco Clean Water Management Program</i> | Regional overview that covered western shoreline of Lake Merced along John Muir Drive and Skyline Blvd., in addition to larger APE. Identified three historic archaeological sites, CA-SFR-101H (P-38-92), CA-SFR-102H (P-38-93), and CA-SFR-103H (P-38-94), in and next to Natural Area. |
| S-4899 | Unknown. Not included in NWIC survey bibliography. Appears to have focused on CA-SFR-102H (P-38-93). | | | |
| S-10168 | 1988 | David Chavez | <i>Subsurface Archaeological Investigations at Ingalls Street and Fitzgerald Avenue—Yosemite and Fitch Outfalls Consolidation Project, San Francisco</i> | Archaeological testing in northwest corner of Natural Area. No archaeological resources identified. |
| S-19127 | 1993 | David Chavez & Associates | <i>Cultural Resources Investigation for the Bayside Phase III Discharge Alternatives EIR, San Francisco, California</i> | Linear survey along western edge of Natural Area that cuts through southern end of park and covers a small portion of the eastern edge of the park. Identified three historic archaeological sites, CA-SFR-101H (P-38-92), CA-SFR-102H (P-38-93), and CA-SFR-103H (P-38-94), in and next to Natural Area. |
| Palou-Phelps | | | | |
| S-11396 | 1989 | BioSystems Analysis, Inc. | <i>Technical Report of Cultural Resources Studies for the Proposed WTG-WEST, Inc. Los Angeles to San Francisco and</i> | Linear survey that bisects Natural Area. No archaeological resources identified within Natural Area. |

**Table 3-1
Previous Surveys Conducted in the Natural Areas**

| Study No. | Date | Author | Title | Notes/Results* |
|-------------------|-------------|--|--|---|
| | | | <i>Sacramento, California, Fiber Optic Cable Project</i> | |
| S-22657 | 2000 | Izaak Sawyer, Laurie Pfeiffer, Karen Rasmussen, and Judy Berryman | <i>Archaeological Survey Along Onshore Portions of the Global West Fiber Optic Cable Project</i> | Linear survey that bisects Natural Area. No archaeological resources identified within Natural Area. |
| S-29657 | 2002 | Wendy J. Nelson, Tammara Norton, Larry Chiea, and Reinhard Pribish | <i>Archaeological Inventory for the Caltrain Electrification Program Alternative in San Francisco, San Mateo, and Santa Clara Counties, California</i> | Linear survey that bisects Natural Area. No archaeological resources identified within Natural Area. |
| Pine Lake | | | | |
| S-32271 | 2006 | EDAW, Inc. and Ward & Associates | <i>Archaeological Survey Report, Pine Lake Trail</i> | Small survey in western portion of Natural Area. No archaeological resources identified. |
| S-32280 | 2004 | Denise Bradley and Michael Corbett | <i>Final Draft Cultural Landscape Report and National Register and California Register Evaluation for the Stern Grove and Pine Lake Park Historic District</i> | Landscape survey of entire Natural Area. No archaeological resources identified. |
| Sharp Park | | | | |
| S-3039 | 1977 | Mara Melandry | <i>Cultural Resources Survey, 04-SMa-1, Shoulder Improvements for Bicycle Use, Bikepath and Pedestrian Walkway on Route 1 in Pacifica, San Mateo County</i> | Linear survey along western perimeter of the eastern portion of the Natural Area. One unrecorded site noted, but it is unknown if the site was in the Natural Area. |
| S-4877 | 1974 | Michael J. Moratto | <i>Archaeological Reconnaissance of Proposed Route 380, between Hwy. 280 on the East and Hwy. 1 on the West</i> | Linear survey that cut through the southeast corner of the Natural Area. No archaeological resources identified in Natural Area. |
| S-6717 | 1984 | Robert Cartier | <i>Cultural Resources Evaluation of the Sharp Park Road Expansion Project in the City of Pacifica</i> | Linear survey along Sharp Park Road in the eastern portion of the Natural Area. No archaeological resources identified. |
| S-8917 | 1986 | Miley Paul Holman | <i>Archaeological Reconnaissance of the Mori Point Project, San Mateo County, California</i> | Field survey covering a small portion of the southwest corner of the western portion of the Natural Area. No archaeological resources identified. |
| S-15828 | 1994 | Robert L. Orlins and Rae Schwaderer | <i>The Archaeological Survey and Extended Survey for the City of Pacifica Wastewater Treatment Plant, San Mateo County</i> | Field survey in the northwest corner of the eastern portion of the Natural Area south of Sharp Park Road. No archaeological resources identified within Natural Area. |

**Table 3-1
Previous Surveys Conducted in the Natural Areas**

| Study No. | Date | Author | Title | Notes/Results* |
|-----------|------|------------------|--|--|
| S-31602 | 2006 | Matthew R. Clark | <i>Historic Properties Inventory Research for National Historic Preservation Act Section 106 Compliance for North Coast County Water District</i> | Linear survey through the southern half of the eastern portion of the Natural Area. No archaeological resources identified within Natural Area; however, Pastron (2008:11) notes that survey S-31602 found possible evidence of a prehistoric cultural deposits over one meter below the surface along Archery Range Road, not included in the Natural Area’s management area. |
| S-34499 | 2007 | Matthew R. Clark | <i>Historic Properties Inventory Research for National Historic Preservation Act Compliance North Coast County Water District, Pacifica Recycled Water Project</i> | Field survey in the central area of the eastern portion of the Natural Area, near the Sharp Park Rifle Range. No archaeological resources identified in Natural Area. |

*Tetra Tech did not obtain reports for each survey identified by the records searches, but the NWIC bibliographies contain resources identified in each survey.

3.2 ARCHAEOLOGICAL SITES WITHIN OR NEAR THE NATURAL AREAS

Fifteen Natural Areas contain or are near documented and undocumented archaeological resources (Table 3-2). Those indicated as “unrecorded” are potential resources identified in SFRPD (2006), the MEA GIS database, or survey reports, but not identified in the NWIC site records database. No archaeological resources were found to be in or near any of the remaining 17 Natural Areas: Billy Goat Hill, Dorothy Erskine Park, Duncan-Castro, Edgell Mountain, Everson/Digby, Fairmount Park, Glen Canyon Park, Golden Gate Heights, Grandview Park, Hawk Hill, Interior Greenbelt, Kite Hill, Lakeview/Ashton Mini Park, McLaren Park, Mount Davidson, O’Shaughnessy Hollow, and Rock Outcrop.

**Table 3-2
Archaeological Sites Within or Near the Natural Areas**

| Trinomial (Primary No.) | Recorder, Year Recorded | Description |
|--------------------------|--|--|
| 15th Avenue Steps | | |
| “Chert Quarry” | Unrecorded (based on SFRPD 2006:6.16-1; see discussion in Section 2.2 of this report). | The Natural Areas Management Plan indicates the presence of a former chert quarry in the southern Natural Area. The age of the quarry or its history is unknown. |
| Balboa | | |
| CA-SFR-5 (P-38-5) | N. C. Nelson, 1910; MEA GIS Database | Shellmound site, “Nelson 397.” To the north of Balboa Natural Area, along the coast. |
| CA-SFR-20 (P-38-20) | N. C. Nelson, 1910; MEA GIS Database | Shellmound site, “Nelson 396.” To the north of Balboa Natural Area, along the coast. |

**Table 3-2
Archaeological Sites Within or Near the Natural Areas**

| Trinomial (Primary No.) | Recorder, Year Recorded | Description |
|---|--|---|
| CA-SFR-21H (P-38-21) | Michael Meyer and Bryan Mischke, 2008 | Remains of Sutro Baths, constructed in the 1890s. There is also a prehistoric site at this location that was impacted and removed when the baths were constructed. This site was a large, loosely packed shell heap. |
| CA-SFR-164H (P-38-4466) | Michael Meyer, 2006 | Architectural remains and refuse deposits associated with buildings of Ocean Terrace, a residential and commercial complex of buildings that existed between 1890 and 1910. A portion of a headstone and brick piers also found at the site. May be potential for redeposited human bone at this site. |
| Possible redeposited materials from Midwinter International Exposition | Unrecorded (based on SFRPD 2006:6.22-1; see discussion in Section 2.2 of this report). | Sand from beneath the current De Young Museum in Golden Gate Park was redeposited in this Natural Area (SFRPD 2006:6.22-1). Based on the site record for CA-SFR-167H (P-38-4625), there is a potential that archaeological deposits associated with the Midwinter International Exposition are throughout undisturbed portions of Golden Gate Park (see discussion under Golden Gate Park Oak Woodlands below). It is therefore considered possible that the redeposited material now in Balboa Natural Area, originally from Golden Gate Park, included archaeological materials associated with the Midwinter International Exposition. |
| Bayview Park | | |
| CA-SFR-7 (P-38-7) | N. C. Nelson, 1910 | Shellmound site, "Nelson 387." Also known as Bayshore Mound, Crocker Mound, and Johnson's Landing Mound. Buried, intact prehistoric shellmound, 2.1 to 2.7 meters deep; human burials, one hearth, several concentrations of ash, fish scales, and rocks. Attributed to Middle to Late Period. Located south of Natural Area, along shoreline. Disturbed by construction of docks. |
| CA-SFR-8 (P-38-8) | P. Nichols, 1979, from N. C. Nelson, 1910 | Shellmound site, "Nelson 388." Located east of southern end of Natural Area along shoreline, based on Nelson (1910). Possibly destroyed or buried. |

Table 3-2
Archaeological Sites Within or Near the Natural Areas

| Trinomial (Primary No.) | Recorder, Year Recorded | Description |
|-----------------------------------|---|---|
| CA-SFR-9 (P-38-9) | P. Nichols, 1979, from N. C. Nelson, 1910 | Shellmound site, “Nelson 389.” Located east of southern end of Natural Area along shoreline, based on Nelson (1910). Possibly destroyed or buried. |
| CA-SFR-10 (P-38-10) | P. Nichols, 1979, from N. C. Nelson, 1910 | Shellmound site, “Nelson 387A.” Located northeast of the northern point of the Natural Area, based on Nelson (1910). Possibly destroyed or buried. MEA’s GIS database includes another CA-SFR-10, also to the northeast, along Ingalls Street, recorded at 75 to 90 centimeters below ground surface during monitoring activities and interpreted as a secondary deposit. |
| CA-SFR-111H (P-38-109) | John Foster and James Delgado, 1986; MEA GIS Database | Historic burnt hull of a wooden sailing vessel in mudflat south of Candlestick Point; associated large wooden post found on beach. The hull may have been a nineteenth century lumber schooner. Possibly one of two shipwrecks, <i>Carmel</i> and <i>Gray’s Harbor</i> , identified in MEA’s GIS database in this area. |
| “Rock Quarry” | Unrecorded (based on SFRPD 2006:6.17-1–6.17-2; see discussion in Section 2.2 of this report). | The Natural Areas Management Plan indicates a former rock quarry in the northern section of the Natural Area. The age of the quarry and its history are unknown, but stockpiles of soils and sediments on the quarry floor are presumably associated with it. |
| “Chinese Shrimp Camps” | Unrecorded (based on Hamusek- McGann 1998). | The archaeological inventory of the Hunters Point Shipyard to the east of the Natural Area indicates that several Chinese shrimp fisheries/camps existed in the Hunters Point area. Such activities may have extended west along the shoreline, in the vicinity of the Natural Area. |
| Bernal Hill | | |
| “Anderson Shellmound” | MEA GIS Database; Miley Holman, 2007 | Shellmound site, approximately 290 meters to the south of the Bernal Hill Natural Area. Originally noted by Miley Holman in 1990 and reported to MEA in 2007. The site was exposed during removal of a fence in the backyards of the residences at 225 and 233 Anderson Street. Shell was dense, and large deposits of fish remains were observed. Depth of this primary deposit was on average 61 centimeters. |
| “Bernal’s Stone Wall” | MEA GIS Database | Depicted on historic maps, including the County Recorder map for Precita Valley Lands (1856), the County Recorder map for the Pioneer Race Course Tract (1864), and the 1886 Sanborn map. The wall was located along the base of the northern slope of Bernal Hill. |
| “Jose C. Bernal Adobe/Reserve” | MEA GIS Database | Depicted on historic maps, including the US Coast Survey (1857) and County Recorder map for RJ Tiffany and BD Dean (1864), as well as in Hendry |

**Table 3-2
Archaeological Sites Within or Near the Natural Areas**

| Trinomial (Primary No.) | Recorder, Year Recorded | Description |
|---|---|--|
| | | and Bowman (1940). Today, the location is the site of St. Luke's Hospital, bounded by Cesar Chavez Street, Guerrero Street/San Jose Avenue, and Mission Street. |
| "Rock Quarry" | Unrecorded (based on SFRPD 2006:6.21-1; see discussion in Section 2.2 of this report). | The Natural Areas Management Plan indicates the presence of a former rock quarry in the southern portion of the Natural Area. The age of the quarry and its history are unknown. |
| Brooks Park | | |
| "Sandstone Quarry" | Unrecorded (based on SFRPD 2006:6.6-1–6.6-2; see discussion in Section 2.2 of this report). | The Natural Areas Management Plan indicates the exposed sandstone bedrock in the northwest and southeast corners of the Natural Area have been quarried. The age of the quarrying and its history are unknown. |
| Buena Vista Park | | |
| "Potrero Stone Wall" | MEA GIS Database | Depicted on historic maps in Hendry and Bowman (1940). The wall was east of the base of the eastern slope of the Buena Vista Park Natural Area. |
| "Mission Acequia" | MEA GIS Database | Depicted on historic maps and in Hendry and Bowman (1940). The site is east of the base of the eastern slope of the Buena Vista Park Natural Area. |
| "Guerrero Adobe" | MEA GIS Database | Depicted on historic maps and in Hendry and Bowman (1940). The site is east of the base of the eastern slope of the Buena Vista Park Natural Area. |
| "Bernal's Unfinished Adobe" | MEA GIS Database | Depicted on historic maps and in Hendry and Bowman (1940). The site is east of the base of the eastern slope of Buena Vista Park Natural Area. |
| "DeHaro Adobe" and associated buildings and structures | MEA GIS Database | Depicted in Hendry and Bowman (1940). The site is east of the base of the eastern slope of the Buena Vista Park Natural Area. |
| Mission Dolores and associated buildings and structures, including cemetery and garden area | MEA GIS Database | Depicted on historic maps and in Hendry and Bowman (1940). The site is east of the base of the eastern slope of the Buena Vista Park Natural Area. |
| Corona Heights | | |
| "Potrero Stone Wall" | MEA GIS Database | Depicted on historic maps in Hendry and Bowman (1940). The wall was east of the base of the eastern slope of the Corona Heights Natural Area. |
| "Mission Acequia" | MEA GIS Database | Depicted on historic maps and in Hendry and Bowman (1940). The site is east of the base of the eastern slope of the Corona Heights Natural Area. |
| "Guerrero | MEA GIS Database | Depicted on historic maps and in Hendry and |

**Table 3-2
Archaeological Sites Within or Near the Natural Areas**

| Trinomial (Primary No.) | Recorder, Year Recorded | Description |
|---|--|---|
| Adobe” | | Bowman (1940). The site is east of the base of the eastern slope of the Corona Heights Natural Area. |
| “Bernal’s Unfinished Adobe” | MEA GIS Database | Depicted on historic maps and in Hendry and Bowman (1940). The site is east of the base of the eastern slope of the Corona Heights Natural Area. |
| “DeHaro Adobe” and associated buildings and structures | MEA GIS Database | Depicted in Hendry and Bowman (1940). The site is east of the base of the eastern slope of the Corona Heights Natural Area. |
| Mission Dolores and associated buildings and structures, including cemetery and garden area | MEA GIS Database | Depicted on historic maps and in Hendry and Bowman (1940). The site is east of the base of the eastern slope of the Corona Heights Natural Area. |
| “Rock Quarry” | Unrecorded (based on SFRPD 2006:6.11-1; see discussion in Section 2.2 of this report). | The Natural Areas Management Plan indicates a quarry once existed where an amphitheater sits today in the middle of the park. The age of the quarry and its history are unknown. |
| Golden Gate Park Oak Woodlands (Lily Pond, Oak Woodlands, Strawberry Hill, and Whiskey Hill) | | |
| CA-SFR-167H (P-38-4625) | Aimee Arrigoni, 2007 | Three features attributed to the 1894 Midwinter International Exposition. Historic trash deposits that correspond to the location of the Oriental Village, as well as a brick and mortar footing associated with Thompson’s Scenic Railway. Located approximately 400 meters west of the Lily Pond area near the California Academy of Sciences building. (Slightly over 400 meters southwest of Oak Woodlands, approximately 800 meters east of Strawberry Hill, and just over 400 meters northwest of Whiskey Hill.) Construction of the Academy destroyed deposits in this location, but it is possible that intact deposits related to the Fair exist in other undisturbed portions of Golden Gate Park, such as the Oak Woodlands, Strawberry Hill, and Whiskey Hill management areas. |
| India Basin Shoreline Park | | |
| CA-SFR-11 (P-38-11) | N. C. Nelson, 1909; MEA GIS Database | Shellmound site, “Nelson 390.” Likely destroyed. Location based on Nelson (1909). Multiple site locations are documented, though, including near the intersection of Crisp Road and Griffith Street and at the intersection of Palou Avenue and Fitch Street. |
| CA-SFR-12 (P-38-12) | N. C. Nelson, 1909; MEA GIS Database | Shellmound site, “Nelson 391.” Likely destroyed. Located on southern shoreline of Hunters Point, based on Nelson (1909). |

**Table 3-2
Archaeological Sites Within or Near the Natural Areas**

| Trinomial (Primary No.) | Recorder, Year Recorded | Description |
|------------------------------------|--------------------------------------|--|
| CA-SFR-14 (P-38-14) | N. C. Nelson, 1909; MEA GIS Database | Shellmound site, “Nelson 392A.” Likely destroyed. Located at northern point of Hunters Point, based on Nelson (1909). |
| CA-SFR-15 (P-38-15) | N. C. Nelson, 1909; MEA GIS Database | Shellmound site, “Nelson 389A.” Likely destroyed. Location based on Nelson (1909). Multiple site locations are documented, though, including intersection of Jerrold Avenue and Phelps Street (more north and inland) and along Ingalls Street, between Oakdale Avenue and Palou Avenue (on Hunters Point). |
| TEMP-HPS-IR07 | Karisa Miller, 2010 | An area of historic refuse and debris was recently recorded along a sandy beach within Hunters Point Shipyard, southeast of the Natural Area. The site is likely redeposited imported fill and has become deflated after being covered by riprap. Materials include glass and ceramic shards, building debris (including carved sandstone and marble), children’s toys, a marble tombstone fragment, metal fragments, bottles, dishes, and personal items. |
| Various shipwrecks | MEA GIS Database | Four shipwrecks, including the ships <i>Janette</i> , <i>Viola</i> , <i>TH Allen</i> , and <i>Major Tomkins</i> , have been recorded offshore from the Natural Area. Further, Hamusek-McGann (1998) identified the shoreline of Hunters Point Shipyard as sensitive for buried “maritime resources” such as these. |
| Lake Merced | | |
| CA-SFR-101H (P-38-92) | L. Shoup, 1980 | Likely a concrete and rock well. The well is 84 cm deep, 67 centimeters aboveground on the south side, and is filled with glass. The feature may have been associated with a 1890s lifeguard station, an 1898 Spanish-American War cantonment, or a World War I-era Fort Funston battery bluff, all of which were in this area, within 400 meters of the northwest Lake Merced Natural Area. |
| CA-SFR-102H (P-38-93) | S. Baker and L. Shoup, 1980 | A brick-lined diversion canal constructed by the Spring Valley Water Company for wastewater. The canal is 1,158 meters long, 1.7 meters deep, and 2.6 meters wide. The canal was built in 1897 as part of the Spring Valley Water Company’s water system to carry runoff to the Lake Merced Pump Station. Located along the southwestern boundary of the Natural Area. |
| CA-SFR-103H (P-38-94) | S. Baker and L. Shoup, 1980 | Concrete coal bin foundations that measure 15.5 meters by 15.5 meters. Concrete chunks are present as well as metal strips that are 15 centimeters wide by 5 centimeters thick. It is believed these strips were used for reinforcing the concrete foundations. The site was |

**Table 3-2
Archaeological Sites Within or Near the Natural Areas**

| Trinomial (Primary No.) | Recorder, Year Recorded | Description |
|----------------------------|---|--|
| | | likely associated with a 1940s coal bin at nearby Fort Funston. The adjacent barracks near the now-destroyed Battery Howe was one of the oldest barracks at Fort Funston. Approximately 400 meters west of the northwest corner of the Natural Area. |
| CA-SFR-25 (P-38-25) | Dietz and Jackson, 1970; MEA GIS Database | Possible sand midden on ground surface, with some shell and no charcoal. Hardly any shells found, except for one large oyster. One stone pestle found. Slight surface erosion. East of the Natural Area, in the vicinity of the San Francisco State University football field. |
| CA-SFR-106 (P-38-97) | Bjelajac, 1982; MEA GIS Database | Surface archaeological site of unknown date, discovered accidentally, on Fort Funston directly west of the south end of the Natural Area. |
| “Lake Merced Site” | Fentress, 2007; MEA GIS Database | Prehistoric midden deposit at high point of drainage into Lake Merced at the northeast corner of Natural Area. |
| Various shipwrecks | MEA GIS Database | One shipwreck, the <i>King Phillip</i> , has been recorded offshore of the Natural Area. A second, the <i>Cornelius W. Lawrence</i> , is documented as on the beach to the west of the Natural Area. |
| Palou-Phelps | | |
| CA-SFR-15 (P-38-15a) | N. C. Nelson, 1909; MEA GIS Database | See description under India Basin Shoreline Park. This is the alternate location at Jerrold Avenue and Phelps Street. |
| CA-SFR-124 (P-38-123) | Holman and Associates, 1991; MEA GIS Database | Surface archaeological site of unknown date discovered accidentally. Extends up to 90 centimeters deep and contains both primary and secondary deposits with historic materials that were possibly relocated from Hunters Point. Located just over 400 meters southeast of the Natural Area. |
| CA-SFR-171 | Philip Kaijankoski, 2009 | Buried prehistoric archaeological site to the north of Natural Area. The site consists of a 60 cm-thick deposit of prehistoric archaeological materials identified in a 2-inch diameter geoarchaeological core. The deposit is situated atop a terrestrial deposit adjacent to the former extent of the Islas Creek Marsh. It is overlain by artificial fill and is buried between 2.4 and 3.0 meters (8 to 10 feet) below surface. It is interpreted as a relatively intact prehistoric archaeological deposit. |
| Pine Lake | | |
| CA-SFR-25 (P-38-25) | Dietz and Jackson, 1970; MEA GIS Database | See description under Lake Merced. Located just over 1,600 meters southeast of Natural Area. |
| “Lake Merced Site” | Fentress, 2007; MEA GIS Database | See description under Lake Merced. Located just over 400 meters southeast of Natural Area. |

Table 3-2
Archaeological Sites Within or Near the Natural Areas

| Trinomial (Primary No.) | Recorder, Year Recorded | Description |
|----------------------------|---|---|
| Sharp Park | | |
| CA-SMA-114 (P-41-116) | S. Humphreys, 1969 | Shell midden with bone, chert chippage, and fire-fractured rock, along with broken historic glass bottles. Located next to southwest corner of Natural Area. Site has been destroyed by erosion and construction. Subsequent surveys have not been able to locate archaeological materials in the mapped site location (Pastron 2008:11). |
| CA-SMA-162/C-116 | C. S. Desgrandchamp, 1978 (based on Pastron 2008:9-10). | Secondary prehistoric midden deposit originally from the Sharp Park area, redeposited to the south along Reina Del Mar Road. Original location in Sharp Park was along Highway 1. Subsequent surveys by Caltrans along Highway 1 did not relocate remnants of CA-SMA-162. C-116 is thought to be the original location from which midden was taken and redeposited at CA-SMA-162. It is north of the Natural Area, near the intersection of Paloma Avenue and Highway 1. |
| CA-SMA-268 (P-41-264) | Caltrans, 1986 (based on Pastron 2008:9-10). | Midden exposed in the bank of Calera Creek. Includes human remains, obsidian projectile point, and a possible groundstone pestle. Extends to approximately 70 centimeters. Located south of the Natural Area, near Calera Creek. Subsurface testing as part of survey S-15828 documented chert debitage, fire-affected rock, mammal bone, and shell extending to 110 centimeters. Up to 70 centimeters of overburden may cover the site. |
| “State Relief Camp” | Unrecorded (based on Pastron 2008:9-10). | As part of a survey of the Sharp Park Rifle Range (an area excluded from the Natural Area) Pastron (2008 and 2009) found that Sharp Park housed a series of Quonset huts in the 1930s associated with a public assistance facility for San Franciscans struggling through the Great Depression. Camp residents were paid to plant trees within the park and other planted gardens in the area. Pastron (2008:13) describes a historical society member who has noted isolated concrete stairs that may be related to the camp or the detention station (described below). |

**Table 3-2
Archaeological Sites Within or Near the Natural Areas**

| Trinomial (Primary No.) | Recorder, Year Recorded | Description |
|--|--|--|
| “Sharp Park Temporary Detention Station” | Unrecorded (based on Pastron 2008:9-10). | As part of a survey of the Sharp Park Rifle Range (an area outside the Natural Area), Pastron (2008 and 2009) found that the range was the site of a World War II-era detention facility for suspected “enemy aliens.” Sharp Park was one of two California detention stations that held the largest number of Japanese individuals (in addition to smaller populations of other nationalities). The station was closed in early 1946, and it is not clear when the buildings were cleared or to what extent. Pastron (2008:13) describes a historical society member who has noted isolated concrete stairs that may be related to the camp or the detention station. |
| “Sharp Park Rifle Range” | Pastron, 2008 | Three large earthen embankments, possible target mounds, along with shotgun shells were documented by Pastron (2008:12) in the area of the former Sharp Park Rifle Range, established in 1952 and closed in 1988. |
| Undocumented Resources | Matthew R. Clark, 2006 (based on Pastron 2008:9-10). | According to Pastron (2008:11) survey S-31602 by Clark, documented reports from archers using the archery range in Sharp Park of prehistoric artifacts observed and sometimes collected from the surface of the park. |
| Tank Hill | | |
| “Spring Valley Water Company Water Tank Foundation” | Unrecorded (based on SFRPD 2006:6.14-1; see discussion in Section 2.2 of this report). | The SNRAMP indicates a concrete foundation pad in the southern portion of the Natural Area. The foundation was for a former Spring Valley Water Company water tank. |
| Twin Peaks | | |
| “Rancho San Miguel House” | MEA GIS Database | Depicted in Hendry and Bowman (1940) and historic maps, including the US Coast Survey (1857), Goddard (1869), and Sanborn (1899). The site is east of the base of the eastern slope of Twin Peaks, along Douglas Street, between 22nd and 23rd Streets. |

3.3 ARCHAEOLOGICAL LANDSCAPE OF THE STUDY AREA AND C-APE

Relatively little archaeological research has been conducted within the study area compared to the rest of the San Francisco Bay Area. Most archaeological work in San Francisco has been within the city’s historic core, the South of Market area, and along the northern and eastern shorelines. It has become clear from this work that the Peninsula in general witnessed significant occupations by prehistoric and historic Native American populations.

With the establishment of extensive tidal marshlands approximately 5,000 to 7,000 years ago (Bickel 1978), the San Francisco Bay shore became an attractive location for prehistoric Costanoan communities, with the

varied resources available there (Hylkema 2002). Attesting to this are the numerous large shellmounds documented around the margins of the bay. In the early 1900s, N. C. Nelson recorded 49 of these sites along the San Mateo County and southern San Francisco County bay shorelines (Nelson 1909); however, most if not all of these sites have since been leveled or built over by modern construction (Heath 1996).

According to an overview of archaeology in San Mateo County (Moratto 1971), an entirely different situation is seen along the Pacific Ocean coastline of the Peninsula, where research was delayed until later in the century. Following enactment of the National Historic Preservation Act (1966), contract archaeology projects have tested or salvaged archaeological sites for many projects, but few large-scale investigations or analyses have occurred. It would seem that most work of this nature has occurred along the entire bay and coastline of the Peninsula, based on the distribution of recorded archaeological sites. However, archaeological salvage programs do commonly occur more inland as part of development projects.

Early Period archaeological sites are rare in the San Francisco region, most likely due to a combination of lower population, sedimentary deposition, and the natural effects of erosion, landform evolution, and sea level rise (Atwater et al. 1977; Bickel 1978; Erlandson 1994; Meyer and Rosenthal 2007; Porcasi et al. 1999; Stanley and Warne 1994; Stright 1990). Evidence for this period predominantly comes from burials found in the lower levels of shellmounds along the eastern bay shore (Suggs 1965). The best evidence is from the northern San Joaquin Valley, well away from the current project area, where burials are typically on low knolls in swampy delta regions. However, there is also evidence of an early presence in San Mateo County from the University Village site (CA-SMA-77) at the southwestern edge of San Francisco Bay, along San Francisquito Creek (Moratto 1984). Relatively little subsistence refuse was found at the site. It was not viewed as a site entirely of the Early or Middle Period; instead it has been interpreted as representative of an early Bay Area culture more similar to prehistoric cultures to the south than to those in the Sacramento and San Joaquin Rivers Delta and the Bay Area. If this is the case, Costanoans may not have settled the western Bay Area until after ca. 1000 BC and older archaeological sites may be more closely related to cultures to the south.

Several other sites on the Peninsula would seem to support this notion (Hylkema 2002:243; Moratto 1984). Middle and Late Period sites include more dietary refuse than these earlier sites, and artifacts are much less formal. Most of these are shell midden sites representing habitation and shellfish processing (Moratto 1984). Of sites discussed in the general archaeology literature found in public and university libraries, CA-SMA-100 is one of the more important deposits most often mentioned. It is a small shell midden with associated features dating to ca. AD 800 and is along San Bruno Creek (Van Dyke 1971). It was discovered during salvage excavation of a neighboring site, CA-SMA-101.

3.3.1 Prehistoric Archaeological Sites

The most common prehistoric archaeological property type in the project study area is shell middens, varying in size, depth, density, and associated artifacts and features. Sites attributed to nonhabitation activities, due to their ephemeral nature or lack of residential artifacts, are also common prehistoric site types and include temporary camps or activity loci. Nelson's (1909) early work in the region and Rudo's (1982) overview of San Francisco's prehistory also document the dominance of shell middens in and around the project study area. Given that Hylkema (2002) describes Early Period sites of the region as predominantly burials and Middle and Late Period sites as more habitation oriented, the dominance of large middens in the area should be expected. Early sites would have been more ephemeral and subjected to more deterioration or burial over time. Most recorded sites in the sample reviewed for King (2008) are most often attributed to the Middle and

Late Periods. However, as Meyer and Rosenthal (2007) note, the lack of early sites can be a bias that has resulted from landscape evolution.

Recorded sites discussed in the literature are mostly in the northern half of the project study area, but this may be due to a bias in archaeological work. However, the pattern of sites predominantly located on the eastern and northern shoreline of San Francisco is supported by Milliken's conclusion of a higher population along the bayshore of the Peninsula, as opposed to the windward western side (Milliken 1983).

While some of the prehistoric sites recorded in the study area are visible from the ground surface or eroding from creek banks within a modern urbanized setting, most were buried by natural deposition, historic activities, or modern development. Depths to these resources typically ranged from 1 to 23 meters. These subsurface sites are usually found and recorded as a result of testing or monitoring of construction projects in modern heavily developed areas.

Many of the records reviewed for subsurface sites specifically state that the deposits are intact, at least in lower depths (King 2008:3-12). Most sites are situated along the edges of historic lagoons and estuaries or are slightly inland, along creeks. Based on the work of Mayfield (1978), Shoup and Baker (1981), and SFEI (2010) and the reviewed historic maps, most of these environmental features have been filled or covered or have dried up. Sites along the northern shoreline of the project study area appear to be most commonly atop bluffs.

3.3.2 Historic Archaeological Sites

The dominant historic archaeological type in the study area is structural remains, primarily from construction, water development, recreation, and military activities. Other common historic archaeological resources are secondary deposits and refuse deposits. Subsurface historic-era archaeological resources have also been documented in urban areas, particularly in areas of early historic development. Unique to areas along the bay shoreline is the potential for buried ships (see Hamusek-McGann et al. 1998). Obviously these resources would be possible only in bayshore areas that have been filled historically to create new land surface.

Numerous historic activities, including early exploration, ranching, agriculture, water development, recreation, tourism, transportation, and military activities, may have left archaeological markers. Activities such as these involved localized areas of use, as well as construction of temporary camps and various permanent structures. Dispersed historic-era buildings are visible on historic topographic maps (USAMS 1947; USCOE 1939; USGS 1896, 1899, 1915) and General Land Office maps (GLO 1857, 1861, 1863, 1864, 1868, 1882a, 1882b, 1884). Early historic Sanborn maps (Sanborn 1915, 1926) indicate the western half of San Francisco was developed later than the eastern half of the city and other portions of the Peninsula. This is not to rule out the possibility of historic archaeological deposits in this portion of the study area. Over time, the few structures in early western San Francisco may have collapsed or deteriorated due to abandonment, or they may have been demolished but not completely removed, such as the coal bins of CA-SFr-103H. Many historic archaeological deposits simply may not be discovered yet due to modern development and a lack of archaeological investigations being carried out with the intent to identify these resources.

Localities of historic activities discussed in the literature are mostly in the northern and eastern portions of the project study area. This distribution makes sense, given the earlier development of San Francisco-proper in the northeast part of the project study area. On the other hand, ranchers would have been drawn to the western areas, given the availability of freshwater at Lake Merced and the availability of open space on this

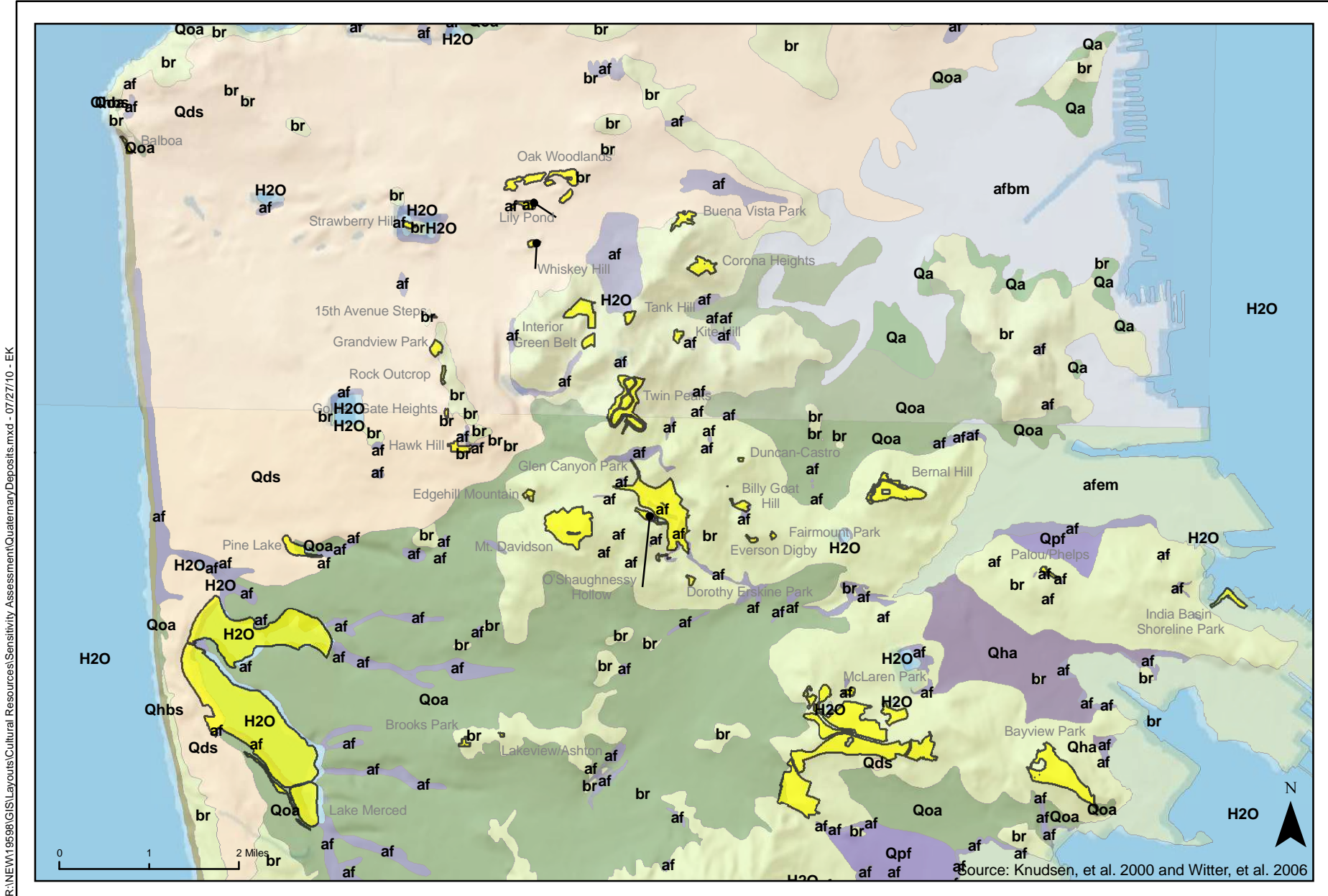
part of the Peninsula. Additionally, Lake Merced and the ocean would have drawn locals and tourists alike for recreation. Similarly, military activities would be expected to occur along the coastline for observation and defense.

3.3.3 Holocene Landforms of the C-APE and Subsurface Deposit Potential

As outlined in the methods above, landforms that date to the Holocene or later are more likely than earlier landforms to include archaeological resources. Meyer and Rosenthal (2007) used quaternary geology and liquefaction susceptibility studies of nine Bay Area counties completed by the USGS (Knudsen et al. 2000; Witter et al. 2006) to identify areas of increased potential for subsurface deposits associated with buried Holocene landforms. Meyer and Rosenthal (2007) identified at least three periods of landform stability in the San Francisco Bay Area: late Pleistocene (15,000 to 11,000 cal BP), early Holocene (10,500 to 7000 cal BP), and middle Holocene (6500 to 4000 cal BP). These periods are marked by buried soils separated by widespread depositional episodes that occurred around 11,500 and 7,000 years ago. More localized depositional periods are evident during the late Holocene, around 4,000, 2,800, and 650 years ago.

Typically, relatively intact archaeological resources are associated with buried soils that indicate these periods of landform stability (Meyer and Rosenthal 2007:8). Buried sites are also most common in lowland valleys of the Bay Area (Meyer and Rosenthal 2007:14). These areas contain the fans, floodplains, and dunes that formed during the Holocene and are the most likely environment to preserve archaeological remains (Meyer and Rosenthal 2007:19). Further, fans and floodplains are associated with freshwater sources that are likely to have drawn human populations to the area.

The same USGS studies and digital data used by Meyer and Rosenthal were reviewed for the current study. While Witter et al. (2006) is a more refined and detailed study of the Quaternary deposits, it does not cover the entire study area. As a result, Knudsen et al.'s (2000) more generalized data is used for the northern half of San Francisco. Due to the more localized application of this data, it is possible to focus this analysis on the specific locations of the Natural Areas. Of the eleven Quaternary deposits identified within the Natural Areas, nine developed during the Holocene (Figures 3-1 and 3-2). Table 3-3 summarizes the Quaternary deposits within each Natural Area and the ages of those deposits. Note that some deposits are either completely or partially buried beneath fill material.



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Legend

Natural Area

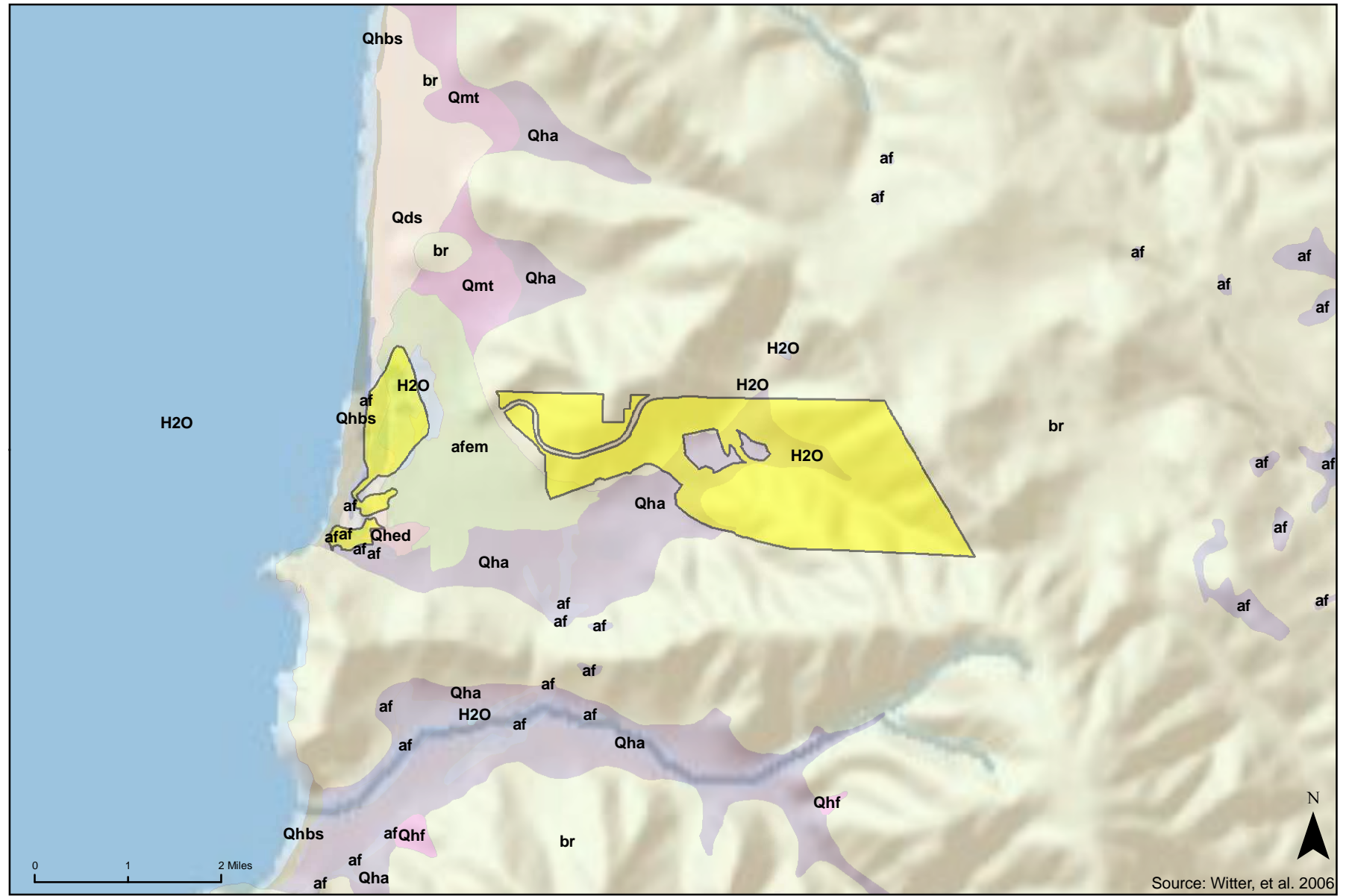


Tetra Tech, Inc

Quaternary Deposits - San Francisco Natural Areas

Figure 3-1

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Legend

 Natural Area

Quaternary Deposits - Sharp Park Natural Area

**Table 3-3
Quaternary Deposits of the Natural Areas**

| Quaternary Deposits | Age |
|---------------------------------------|--|
| 15th Avenue Steps | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Qds | Latest Pleistocene – Historical (30,000 yrs – present) |
| Balboa | |
| Qds | Latest Pleistocene – Historical (30,000 yrs – present) |
| Qhds | Latest Pleistocene – Historical (30,000 yrs – present) |
| Bayview Park | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Qoa | Early to Late Pleistocene (30,000 yrs – 1.8 Million yrs) |
| Bernal Hill | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Billy Goat Hill | |
| af | Historical (<150 yrs) |
| br (also beneath af) | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Brooks Park | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Buena Vista Park | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Qds | Latest Pleistocene – Historical (30,000 yrs – present) |
| Corona Heights | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Dorothy Erskine Park | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Duncan-Castro | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Edgehill Mountain | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Everson/Digby | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Fairmount Park | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Glen Canyon Park | |
| af | Historical (<150 yrs) |
| br (also beneath af) | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Golden Gate Heights Park | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 Million yrs]) |
| Qds | Latest Pleistocene – Historical (30,000 yrs – present) |
| Golden Gate Park Oak Woodlands | |
| <i>Lily Pond</i> | |
| af | Historical (<150 yrs) |
| Qds | Latest Pleistocene – Historical (30,000 yrs – present) |
| <i>Oak Woodlands</i> | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Qds | Latest Pleistocene – Historical (30,000 yrs – present) |
| Strawberry Hill | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |

**Table 3-3
Quaternary Deposits of the Natural Areas**

| Quaternary Deposits | Age |
|-----------------------------------|--|
| Whiskey Hill | |
| Qds | Latest Pleistocene – Historical (30,000 yrs – present) |
| Grandview Park | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Hawk Hill | |
| af | Historical (<150 yrs) |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Qds (also beneath af) | Latest Pleistocene – Historical (30,000 yrs – present) |
| India Basin Shoreline Park | |
| afem | Historical (<150 yrs) |
| Qhbm (underlies afem) | Holocene – Historical (11,800 yrs – present) |
| Interior Greenbelt | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Kite Hill | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Lake Merced | |
| af | Historical (<150 yrs) |
| Qds | Latest Pleistocene – Historical (30,000 yrs – present) |
| Qha (beneath af) | Latest Pleistocene – Historical (30,000 yrs – present) |
| Qhay (beneath af) | Latest Holocene – Historical (1,000 yrs – present) |
| Qoa (also beneath af) | Early to Late Pleistocene (30,000 yrs – 1.8 million yrs) |
| Lakeview/Ashton Mini Park | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| McLaren Park | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Qoa | Early to Late Pleistocene (30,000 yrs – 1.8 Million yrs) |
| Mount Davidson | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| O'Shaghnessy Hollow | |
| af | Historical (<150 yrs) |
| br (also beneath af) | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Palou-Phelps | |
| af | Historical (<150 yrs) |
| br (also beneath af) | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Pine Lake | |
| af | Historical (<150 yrs) |
| Qds | Latest Pleistocene – Historical (30,000 yrs – present) |
| Qoa (also beneath af) | Early to late Pleistocene (30,000 yrs – 1.8 Million yrs) |
| Rock Outcrop | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Sharp Park | |
| af | Historical (<150 yrs) |
| afem | Historical (<150 yrs) |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Qds (also beneath af) | Latest Pleistocene – Historical (30,000 yrs – present) |
| Qds-Qhbs (beneath af) | Latest Pleistocene – Historical (30,000 yrs – present) |
| Qha (also beneath af) | Latest Pleistocene – Historical (30,000 yrs – present) |

Table 3-3
Quaternary Deposits of the Natural Areas

| Quaternary Deposits | Age |
|--------------------------|--|
| Qhbm (beneath af) | Holocene – Historical (11,800 yrs – present) |
| Qhbs | Latest Holocene – Historical (1,000 yrs – present) |
| Qhed (also beneath afem) | Holocene – Historical (11,800 yrs – present) |
| Tank Hill | |
| af | Historical (<150 yrs) |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Twin Peaks | |
| br | Pre-Quaternary (early Quaternary and older [>1.4 million yrs]) |
| Qoa | Early to late Pleistocene (30,000 yrs – 1.8 million yrs) |

af: artificial fill

afem: artificial fill over estuarine mud

br: Early Quaternary and older (>1.4 million yrs) deposits and bedrock

Qds: Late Pleistocene to Holocene dune sand

Qha: Holocene alluvium, undifferentiated

Qhay: Latest Holocene alluvial deposits, undifferentiated

Qhbs: Latest Holocene beach sand

Qhbm: Holocene San Francisco Bay mud

Qhds: Holocene dune sand

Qhed: Holocene estuarine delta deposits

Qoa: Early to middle Pleistocene undifferentiated alluvial deposits (includes Colma Formation)

4. ARCHAEOLOGICAL SENSITIVITY OF THE NATURAL AREAS

This section outlines the overall archaeological sensitivity of each Natural Area. An intuitive approach was used in the assessment, based primarily on the qualities of archaeologically sensitive areas discussed in Section 1.2.3. In general, an area is considered to be sensitive based on the following factors:

- Presence of Holocene landforms of suitable depositional environments to preserve archaeological resources;
- Limited natural and human disturbances (although it is possible that historic human disturbances would constitute archaeological resources in and of themselves);
- Productive prehistoric and historic natural environment, including elements that would draw fauna, and proximity to freshwater, riparian corridors, and shoreline;
- Extent of previous survey coverage of the area; and
- Relatively high density of archaeological resources within or near the Natural Area.

The discussion below summarizes the factors affecting each Natural Area's archaeological sensitivity. Although the assessments are primarily intuitive, based on the summarized factors, an area is considered to have low archaeological sensitivity if it meets only one or none of the factors outlined above; a moderate level of sensitivity is designated for areas that meet two to three of the factors; areas of high sensitivity are those that meet four to five of the factors. Sensitivity levels for each Natural Area are provided in Table 4-1, which follows the summary discussions. Note that this evaluation is meant only as a preliminary assessment of surface and subsurface sensitivity for planning purposes and use in the associated project EIR (Tetra Tech 2010). Ground-truthing or additional, more detailed site-specific research may prove otherwise.

15th Avenue Steps: The 15th Avenue Steps Natural Area is within the historic-era sand dune complex that once covered the western half of San Francisco. The management areas are underlain primarily by dune sands that are 30,000 years old or less, as well as a pre-Quaternary bedrock landform in its western end. Landslides have been noted to occur in the northeast portion. No significant freshwater sources are documented nearby. No archaeological surveys have occurred at this Natural Area, and no archaeological sites have been documented within the area boundaries or nearby; however, a chert quarry once existed in the southern portion of the Natural Area. Other Natural Areas, including Grandview Park, Rock Outcrop, and Golden Gate Heights, along the same ridgeline as the 15th Avenue Steps also do not have archaeological sites recorded but have also not been previously surveyed. Hawk Hill Natural Area at the opposite southern end of the ridgeline has been completely surveyed, and no archaeological resources were identified.

Balboa: The Balboa Natural Area is within the historic-era sand dune complex that once covered the western half of San Francisco. The management areas are underlain by dune sands that are 30,000 years old or less. The surfaces today are still loose dune sand that was borrowed from beneath the De Young Museum in Golden Gate Park, where there was potential for Midwinter International Exposition-associated archaeological materials. The Natural Area's location, next to the Pacific Ocean, would have been a desirable location for prehistoric or historic fishing, hunting, or gathering of subsistence resources. Three surveys have partially covered the Natural Area, and no archaeological resources have been identified in the Natural Area. Four archaeological sites, including prehistoric and historic-era resources, have been documented nearby.

Bayview Park: The Bayview Park Natural Area overlies pre-Holocene landforms with chert and sandstone outcrops and other areas of exposed bedrock. Extensive human disturbance of the park is apparent, including terracing, soil slumps, stockpiling of sediments, and a former rock quarry. Natural disturbances are also apparent, including erosional areas and landslides. The hilltop Natural Area overlooks and is next to several productive historic environments, including two creeks, tidal marshes, tidal flats, sandy beaches, lagoons, and the shallow bay shore. Only one linear field survey has been conducted within the boundaries of the Natural Area, but no archaeological sites have been recorded within those boundaries. It is possible that the former rock quarry is historic. There is a high density of prehistoric shellmound sites recorded by N. C. Nelson (1910) at lower elevations along the shoreline here, as well as historic Chinese shrimp fishing camps. Historic shipwrecks have been documented offshore.

Bernal Hill: The Bernal Hill Natural Area overlies a pre-Quaternary bedrock landform with chert outcrops and an ancient terrace. Sediments are primarily thin deposits of sand, slope debris, and decomposed bedrock. Human disturbance of the Natural Area is evidenced by a former rock quarry, while natural disturbances include erosion and a soil slip. The hilltop Natural Area overlooks several productive historic environments, including two creeks, tidal marshes, a tidal flat, a channel through the marshes, and the shallow bay shore. The Natural Area has not been surveyed for archaeological resources, but three unrecorded archaeological resources are near the park: one prehistoric shellmound remnant at lower elevations to the south and two historic locations associated with Jose C. Bernal at the northern base of the hill. It is possible that the former rock quarry in the Natural Area is also historic.

Billy Goat Hill: The Billy Goat Hill Natural Area overlies a pre-Quaternary bedrock landform with historic artificial fill cover in areas. Overall, however, sediments in the Natural Area consist of thin slope debris. Outcrops of greenstone and chert occur, as do soil slips and other incidents of extensive erosion. The hilltop Natural Area is between three tributaries of creeks. The Natural Area has not been surveyed for archaeological resources, and no resources have been identified within or near the Natural Area. The nearest Natural Areas to Billy Goat Hill, Duncan-Castro, Everson/Digby, and Fairmount Park, also do not include archaeological resources but have not been included in any field surveys (Everson/Digby has been covered by three regional overviews).

Brooks Park: The Brooks Park Natural Area overlies a pre-Quaternary bedrock landform with thin sandy soils at the top and thicker at the base of slopes. Slope debris is present along the slopes and at their bases. The sandstone bedrock is exposed throughout the park, and several locations have been quarried in the past. An area of thin fill material is in the southwest portion of the park where a soil slip is present. The park overlooks Lake Merced a few miles to the west. The Natural Area has not been surveyed for archaeological resources. No archaeological resources have been recorded in the area, but the quarried areas of the park may be historic.

Buena Vista Park: The Buena Vista Park Natural Area is next to the historic sand dune complex that once covered the western half of San Francisco. The management areas primarily overlie a pre-Quaternary bedrock landform, but a sand dune formation 30,000 years old or less underlies the most northern portion of the Natural Area. In fact, soils are composed predominantly of historic dune sand that is moderately eroded by natural and modern cultural processes. The park is just south of a historic creek tributary and riparian areas. The area has not been surveyed for archaeological resources, but an area of concentrated historic activity, including several adobes, Mission Dolores, and features associated with these historic buildings, are immediately east of the park.

Corona Heights: The Corona Heights Natural Area is underlain by a pre-Quaternary bedrock landform. Sediments consist of thin slope debris over most of the area. Soil slips are apparent in areas of steep slopes where bedrock is exposed. An amphitheater has been constructed in the middle of the Natural Area, a location that had been a quarry. The park is next to the headwaters of three historic creek tributaries and riparian areas. The area has not been surveyed for archaeological resources, but an area of concentrated historic activity, including several adobes, Mission Dolores, and features associated with these historic buildings, are immediately northeast and east of the Natural Area. Additionally, the former quarry area may be historic.

Dorothy Erskine Park: The Dorothy Erskine Natural Area is underlain by a pre-Quaternary bedrock landform. Sediments consist of thin slope debris over most of the area. Soil slips are apparent in some areas, and bedrock outcrops occur along two perimeters of the Natural Area. The park is between the headwaters of two creek tributaries as well as the creek itself. The Natural Area has not been surveyed for archaeological resources, and none have been recorded in the vicinity.

Duncan-Castro: The Duncan-Castro Natural Area is underlain by a pre-Quaternary bedrock landform. Sediments are thin to nonexistent throughout the area. Shallow soil slips are common as are bedrock exposures and escarpments. The park is on a hill between the headwaters of two creek tributaries. The Natural Area has not been surveyed for archaeological resources, and none have been recorded in the vicinity.

Edgehill Mountain: The Edgehill Mountain Natural Area is underlain by a pre-Quaternary bedrock landform. Sediments are thin throughout the area. The hill slope is steep, creating soil slips and rock falls throughout the area, which exposes the bedrock. Several roads have been graded and cut into the slopes. Historical environmental data for the Edgehill Mountain area is unavailable, but it is slightly east of the historic sand dune area. The Natural Area has not been surveyed for archaeological resources, and none have been recorded in the vicinity.

Everson/Digby: The Everson/Digby Natural Area is a steep hill slope underlain by a pre-Quaternary bedrock landform. Sediments are thin throughout the area. The Natural Area is between the headwaters of two historic creek tributaries. No archaeological field surveys have occurred within the Natural Area, and no archaeological resources have been recorded in the vicinity.

Fairmount Park: The Fairmount Park Natural Area is underlain by a pre-Quaternary bedrock landform. Sediments vary in depth across the park and include loamy soils, slope debris, and sandy soils. Slopes have evidence of erosion in some areas and roadcuts have been graded into other areas. The Natural Area is between the headwaters of two historic creek tributaries. No archaeological field surveys have occurred within the Natural Area, and no archaeological resources have been recorded in the vicinity.

Glen Canyon Park: The Glen Canyon Park Natural Area is underlain by a pre-Quaternary bedrock landform with areas of historic-era artificial fill. Large areas of bedrock outcrops occur at the rim of the canyon and elsewhere in the vicinity. Soils are thin, with the exception of lower elevations where eroded and fill materials can be deep. The steep canyon is bisected by historic Islais Creek, which originates here. Seeps within the hillsides contribute to erosion and sedimentation, and the sedimentation contributes to episodic flooding and alluvial deposition. The Natural Area has not been previously surveyed for archaeological resources and none have been recorded in the vicinity.

Golden Gate Heights Park: The Golden Gate Heights Natural Area is within the historic-era sand dune complex that once covered the western half of San Francisco. The management areas are underlain primarily by dune sands that are 30,000 years old or less, which overlie a pre-Quaternary bedrock landform. Bedrock outcrops occur in several areas and soils are primarily sandy and prone to erosion. No significant freshwater sources are documented nearby. No archaeological surveys have occurred in this Natural Area, and no archaeological sites have been documented in the vicinity. Hawk Hill Natural Area immediately south of Golden Gate Heights Park on the same ridgeline has been completely surveyed, and no archaeological resources were identified.

Golden Gate Park Oak Woodlands:

Lily Pond Area: The Lily Pond area is within the historic-era sand dune complex that once covered the western half of San Francisco. The management areas are underlain by a Holocene dune sand landform and historic-era artificial fill. The dune sand is easily eroded. Although stabilized dune formations are found throughout Golden Gate Park, much of the area's topography was likely altered historically by park landscaping and continuing management. Lily Pond is a relatively flat dune. Lily Pond itself is a quarried lake, date unknown. No prehistoric freshwater sources are documented nearby. The area has not been surveyed for archaeological resources, but one historic-era archaeological resource associated with the 1894 Midwinter International Exposition has been recorded nearby. Additional archaeological resources associated with this historic event are considered to be possible throughout Golden Gate Park.

Oak Woodlands Area: The Oak Woodlands area is within the historic-era sand dune complex that once covered the western half of San Francisco. The management areas are underlain by a Holocene dune sand landform and historic-era artificial fill. The dune sand is easily eroded. Although stabilized dune formations are found throughout Golden Gate Park, much of the area's topography was likely altered historically by park landscaping, including planting of the oaks for which this Natural Area is named, and continuing management. No prehistoric freshwater sources are documented nearby. The area has not been surveyed for archaeological resources, but one historic-era archaeological resource associated with the 1894 Midwinter International Exposition has been recorded nearby. Additional archaeological resources associated with this historic event are considered to be possible throughout Golden Gate Park.

Strawberry Hill Area: The Strawberry Hill area is within the historic-era sand dune complex that once covered the western half of San Francisco. The management area is underlain by a pre-Quaternary bedrock landform overlain by dune sand. The area consists of a hill surrounded by Stow Lake. The dune sand ranges from thin at the hilltop to thick at its base, but it is easily eroded. Bedrock outcrops are also present. Although stabilized dune formations are found throughout Golden Gate Park, much of the area's topography was likely altered historically by park landscaping and continuing management. No prehistoric freshwater sources are documented as nearby. The area has not been surveyed for archaeological resources, but one historic-era archaeological resource associated with the 1894 Midwinter International Exposition has been recorded nearby. Additional archaeological resources associated with this historic event are considered to be possible throughout Golden Gate Park.

Whiskey Hill Area: The Whiskey Hill area is within the historic-era sand dune complex that once covered the western half of San Francisco. The management areas are underlain by a Holocene dune

sand landform with compacted to loose silty sand soils. The loose sand is easily eroded. Borings suggest that the sand is at least 46 meters deep. Stabilized dune formations are found throughout Golden Gate Park, and Whiskey Hill is a prime example. However, much of the area's topography was likely altered historically by park landscaping and continuing management. No prehistoric freshwater sources are documented nearby. The area has not been surveyed for archaeological resources; however, one historic-era archaeological resource associated with the 1894 Midwinter International Exposition has been recorded nearby. Additional archaeological resources associated with this historic event are considered to be possible throughout Golden Gate Park.

Grandview Park: The Grandview Park Natural Area is within the historic-era sand dune complex that once covered the western half of San Francisco. The management areas are underlain by a pre-Quaternary bedrock landform overlain by sandy soils that erode easily. Bedrock exposures occur in several areas. No significant freshwater sources are documented nearby. No archaeological surveys have occurred at this Natural Area, and no archaeological sites have been documented in the vicinity. Hawk Hill Natural Area at the opposite southern end of the same ridgeline has been completely surveyed, and no archaeological resources were identified.

Hawk Hill: The Hawk Hill Natural Area is within the historic-era sand dune complex that once covered the western half of San Francisco. The management areas are underlain by a pre-Quaternary bedrock landform overlain by Holocene dune sand and historic-era artificial fill in certain areas. The dune sand is easily eroded, and retaining walls have been constructed to limit the natural process. No significant freshwater sources are documented nearby. The entirety of the Natural Area was surveyed for archaeological resources in 1987, but no archaeological sites were documented.

India Basin Shoreline Park: The India Basin Shoreline Park Natural Area is underlain by Holocene San Francisco Bay mud and historic-era artificial fill over estuarine mud. A salt marsh has been constructed in the park. Mudflats in the area are exposed at low tide, and tidal action affects the eastern boundaries of the Natural Area. Before being filled, the park was an area of tidal flat and shallow bay. Two archaeological surveys have partially covered the Natural Area. Surveys noted that unrecorded historic-era archaeological resources were in the area, but no recorded archaeological sites are in the Natural Area. Several prehistoric and historic archaeological sites have been documented in the vicinity with the same setting: a historic refuse scatter along the sandy shoreline immediately south of the Natural Area, four prehistoric shellmound sites along the bayshore, and several shipwrecks offshore. The shoreline of Hunters Point has been identified as an area with potential for subsurface maritime resources, including shipwrecks.

Interior Greenbelt: The Interior Greenbelt Natural Area is underlain by a pre-Quaternary bedrock landform covered by sandy soils in most areas. Loamy soils near the middle of the Natural Area vary in depths. Bedrock outcrops and small scarps are present in portions of the area. A prominent valley bisects a portion of the area, formed by a tectonic shear zone that causes shallow soil slips along the valley walls. A seasonal creek has also formed within this valley. No archaeological surveys have occurred at this Natural Area, and no archaeological sites have been documented in the vicinity.

Kite Hill: The Kite Hill Natural Area is underlain by a pre-Quaternary bedrock landform covered by thin soils in most areas. Shallow slips and landslide scarps occur on most hillsides of the Natural Area, with debris deposits at the base of terraces and slopes. Bedrock outcrops occur in portions of the Natural Area. The

Natural Area overlooks the headwaters of two tributaries of a historic creek. No archaeological surveys have occurred at this Natural Area and no archaeological sites have been documented in the vicinity.

Lake Merced: The Lake Merced Natural Area, historically an open bay, is underlain by a pre-Holocene alluvium landform, Holocene dune sand, Holocene alluvium, and areas of historic-era artificial fill. Sandy soils are comparatively deep in portions of the Natural Area. The area has historically experienced periods of sedimentation that would close the bay, only to be reopened by floods. The lake was fed historically by several creeks and is the largest wetland and freshwater lake in San Francisco. The area has experienced cultural disturbances associated with modifications of the shorelines, rechanneling, and lake filling. The Natural Area has been partially surveyed by five archaeological surveys, primarily focused in the northwest quarter. The area is dominated by historic-era archaeological resources along the lakeshore, in the sand dune beach to the west, and in the developed urban area to the east. Two shipwrecks, one offshore and one on the beach directly west of the Natural Area, have been documented.

Lakeview/Ashton Mini Park: The Lakeview/Ashton Mini Park Natural Area overlies a pre-Quaternary landform with thin sandy soils around the edges. Slope debris with weathered bedrock thinly covers the slopes of the park's peak. At the top of the peak are bedrock outcrops. The park overlooks Lake Merced a few miles to the west. The Natural Area has not been surveyed for archaeological resources, and none have been recorded in the area.

McLaren Park: The McLaren Park Natural Area is underlain by pre-Quaternary bedrock and pre-Holocene alluvium landforms. The hilly park includes loamy and rocky soils, as well as sandy and silty sediments that vary in depth. Bedrock exposures have been noted throughout the park. Soil creep has also been noted along the ridgetop and slopes and in the fire-prone eastern portions. A bedrock quarry of unknown age is within the northwest quarter, and documented historic quarries are in other, terraced areas. A golf course has been constructed in the southern half of the Natural Area, which is at the head of several creeks, including Yosemite and Sunnydale Creeks. Four springs and a marsh associated with Yosemite Creek are still present within the area, as well as several ponds. Seeps are throughout the park. The Natural Area overlooks extensive tidal flats and marshes along the bayshore, as well as sandy beaches and lagoons. The Natural Area has not been surveyed for archaeological resources, and none have been recorded in the area.

Mount Davidson: The Mount Davidson Natural Area is underlain by a pre-Quaternary bedrock landform. The park is the highest point in San Francisco, and bedrock outcrops occur throughout. Soils consist of sandy and gravelly loams of unknown depths. The headwaters of one creek tributary is south of the Natural Area, which has not been surveyed for archaeological resources, and none have been recorded in the area.

O'Shaughnessy Hollow: The O'Shaughnessy Hollow Natural Area is underlain by a pre-Quaternary bedrock landform with areas of historic-era artificial fill. Large areas of bedrock outcrops occur, and soils are thin, with the exception of lower elevations, where eroded and fill materials can be deep. The hydrologic features of adjacent Glen Canyon Park Natural Area would have been easily accessible from O'Shaughnessy Hollow. The Natural Area has not been previously surveyed for archaeological resources, and none have been recorded in the vicinity.

Palou-Phelps: The Palou-Phelps Natural Area overlies a pre-Quaternary bedrock landform, with areas of historic-era artificial fill. Soils here are typically thin and rocky, and erosion is common. The hilltop Natural Area overlooks several productive historic environments, including four creek tributaries, tidal marshes, tidal

flats, a channel through the marshes, and the shallow bayshore. The Natural Area has been partially surveyed by three linear archaeological surveys, all of which focused on the rail line that runs through the hill on which the Natural Area is situated. Two prehistoric and one historic archaeological site have been documented in the vicinity, at elevations lower than the Natural Area.

Pine Lake: The Pine Lake Natural Area is underlain by a pre-Holocene alluvium landform, Holocene dune sand, and areas of historic-era artificial fill. The sandy soils of the area are easily eroded. The Natural Area includes an elongated valley with wooded walls and an escarpment. Natural Pine Lake is on the valley floor, historically fed by a stream to the east. Lake Merced and its habitats are also to the south. Cultural disturbances include a modern dog play area next to the Natural Area. One archaeological survey has occurred within the Natural Area, as well as a landscape survey of the entire park, focused on historic features, that resulted in the Stern Grove and Pine Lake Park Historic District. One historic-era and one prehistoric archaeological site have been documented in the vicinity of the Natural Area.

Rock Outcrop: The Rock Outcrop Natural Area is within the historic-era sand dune complex that once covered the western half of San Francisco. The management areas are underlain by a pre-Quaternary bedrock landform. The park is composed primarily of outcrops of this bedrock, which has contributed to the minimal amount of erosion in the Natural Area. No significant freshwater sources are documented nearby. No archaeological surveys have occurred at this Natural Area, and no archaeological sites have been documented in the vicinity. Hawk Hill Natural Area at the southern end of the same ridgeline has been completely surveyed, and no archaeological resources were identified.

Sharp Park: The Sharp Park Natural Area includes a pre-Quaternary bedrock landform, along with Holocene dune sand, beach sand, alluvium, mud flats, and estuarine delta deposits. Deposits of historic-era artificial fill and fill over estuarine mud are also present. Gravelly, sandy loam soils approximately 30 centimeters deep are in the extensive canyon of the eastern portion of the Natural Area. Soils in the canyon become thinner in the farthest reaches of the canyon. Erosion is active and extensive in this area and includes landslides and soil creep. In the western portion of the Natural Area is a public historic golf course; creeks, a lagoon, and wetlands border a levee and beach. Creek banks have been reinforced, and soils in these lower elevations of the park are loamy sands but exhibit a greater degree of disturbance. Where not reinforced, the creeks easily erode the creek banks. Seeps occur throughout the park. Historically the lagoon would periodically connect to the ocean when water levels were high enough to top the adjacent sand dunes. The lagoon today has been highly modified by construction of the golf course. Seven surveys have partially covered the Natural Area, primarily along the western, northern, and southern boundaries of the eastern portion of the Natural Area. At least three prehistoric archaeological resources and three historic-era resources have been documented in the area: shell middens, collected surface artifacts, a State Relief Camp, the Sharp Park Temporary Detention Center, and the Sharp Park Rifle Range. Features of the three historic resources (the camp, detention center, and rifle range) are still present in the Natural Area.

Tank Hill: The Tank Hill Natural Area is underlain by a pre-Quaternary bedrock landform with areas of historic-era artificial fill. The area is covered by thin soils and slope debris. Landslide scarps occur on the steep hillsides of the park, with debris deposits from common shallow soil slips and slope raveling at the base of the hill. Bedrock outcrops and weathered exposures occur in portions of the Natural Area. The Natural Area overlooks the headwaters of two tributaries of a historic creek. No archaeological surveys have occurred at this Natural Area, and no archaeological sites have been recorded in the vicinity; however, a

concrete foundation pad described in the SNRAMP is associated with the historic Spring Valley Water Company.

Twin Peaks: The Twin Peaks Natural Area overlies pre-Quaternary bedrock and pre-Holocene alluvium landforms. The park is the second highest point in San Francisco. Thin sandy loam soils cover the peaks. Roadcuts have been created throughout the Natural Area and the excavated materials placed on the downslope sides of the roads. Erosion is limited to areas of high use. No archaeological surveys have been conducted within the Natural Area. One area of historic activity, the Rancho San Miguel House, has been documented as being just east of the base of the eastern hillside.

**Table 4-1
Archaeological Sensitivity of Natural Areas**

| Natural Area | Considerations | Archaeological Sensitivity |
|-------------------|--|----------------------------|
| 15th Avenue Steps | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possible historic rock quarry; possibility for prehistoric use as well. • No survey coverage. • Limited natural resources. • Holocene landform. • Moderate natural and human disturbances. | Moderate |
| Balboa | <ul style="list-style-type: none"> • High comparative site density in surrounding area. • Redeposition of Golden Gate Park fill may include subsurface archaeological resources associated with the Midwinter International Exposition. • Evidence of high rate of historic activity. • Partial survey coverage. • Active Holocene landform. • Extensive natural and human disturbances. | High |
| Bayview Park | <ul style="list-style-type: none"> • High comparative site density in surrounding area. • Possible historic rock quarry; possibility for prehistoric quarrying of outcrops as well. • Evidence of high rate of historic activity. • Minimal survey coverage. • Minimal soil/sediment depth over pre-Holocene landform. • Extensive natural and human disturbances. • Productive surrounding natural environment, including freshwater source and associated productive riparian habitats. | Moderate |
| Bernal Hill | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possible historic rock quarry; possibility for prehistoric quarrying of outcrops as well. • Evidence of high rate of historic activity. • No survey coverage. • Minimal soil/sediment depth over pre-Holocene landform. • Moderate natural and human disturbances. • Productive surrounding natural environment, including freshwater source and associated riparian habitats. | Moderate |

**Table 4-1
Archaeological Sensitivity of Natural Areas**

| Natural Area | Considerations | Archaeological Sensitivity |
|----------------------|--|----------------------------|
| Billy Goat Hill | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possibility for prehistoric quarrying of outcrops. • No survey coverage. • Minimal soil/sediment depth over pre-Holocene landform. • Minimal natural and human disturbances. • Between three historic freshwater sources and associated productive riparian habitats. | Low |
| Brooks Park | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possible historic rock quarry; possibility for prehistoric quarrying of outcrops as well. • No survey coverage. • Minimal soil/sediment depth over pre-Holocene landform. • Minimal natural and human disturbances. • Near freshwater source and associated productive riparian habitats. | Low |
| Buena Vista Park | <ul style="list-style-type: none"> • Comparatively moderate site density in surrounding area. • No survey coverage. • Minimal soil/sediment depth over Holocene landform. • Moderate natural and human disturbances. • Next to freshwater source, associated productive riparian habitats, and other productive environments. | Moderate |
| Corona Heights | <ul style="list-style-type: none"> • Comparatively moderate site density in surrounding area. • Possible historic rock quarry; possibility for prehistoric quarrying of outcrops as well. • No survey coverage. • Minimal soil/sediment depth over pre-Holocene landform. • Moderate natural and human disturbances. • Next to freshwater sources, associated productive riparian habitats, and other productive environments. | Moderate |
| Dorothy Erskine Park | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possibility for prehistoric quarrying of outcrops. • No survey coverage. • Minimal soil/sediment depth over pre-Holocene landform. • Minimal natural and human disturbances. • Near freshwater sources and associated productive riparian habitats. | Low |
| Duncan-Castro | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possibility for prehistoric quarrying of outcrops and exposures. • No survey coverage. • Minimal soil/sediment depth over pre-Holocene landform. | Low |

**Table 4-1
Archaeological Sensitivity of Natural Areas**

| Natural Area | Considerations | Archaeological Sensitivity |
|--------------------------------|---|----------------------------|
| | <ul style="list-style-type: none"> • Minimal natural and human disturbances. • Near freshwater sources and associated productive riparian habitats. | |
| Edgehill Mountain | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possibility for prehistoric quarrying of outcrops and exposures. • No survey coverage. • Minimal soil/sediment depth over pre-Holocene landform. • Moderate natural and human disturbances. | Low |
| Everson/Digby | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • No survey coverage. • Minimal soil/sediment depth over pre-Holocene landform. • Minimal natural and human disturbances. • Near freshwater sources and associated productive riparian habitats. | Moderate |
| Fairmount Park | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • No survey coverage. • Varied soil/sediment depth over pre-Holocene landform. • Moderate natural and human disturbances. • Near freshwater sources and associated productive riparian habitats. | Low |
| Glen Canyon Park | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possibility for prehistoric quarrying of outcrops. • No survey coverage. • Thin to deep sediments and soils over pre-Holocene landform; alluvial deposition. • Minimal natural and human disturbances. • Includes and is next to freshwater sources and associated productive riparian habitats. | High |
| Golden Gate Heights Park | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possibility for prehistoric quarrying of outcrops. • No survey coverage. • Limited natural resources. • Holocene landform. • Moderate natural and human disturbances. | Low |
| Golden Gate Park Oak Woodlands | | |
| Lily Pond Area | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Quarried lake may be historic in nature and Midwinter International Exposition-related deposits are possible. • No survey coverage. • Minimal soil/sediment depth over Holocene landform. • High degree of natural and human disturbances. • Limited natural resource availability. | Low |
| Oak Woodlands Area | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. | Low |

**Table 4-1
Archaeological Sensitivity of Natural Areas**

| Natural Area | Considerations | Archaeological Sensitivity |
|----------------------------|---|----------------------------|
| | <ul style="list-style-type: none"> • Midwinter International Exposition-related deposits are possible. • No survey coverage. • Minimal soil/sediment depth over Holocene landform. • High degree of natural and human disturbances. • Limited natural resource availability. | |
| Strawberry Hill Area | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Midwinter International Exposition-related deposits are possible. • No survey coverage. • Minimal soil/sediment depth over pre-Holocene landform. • High degree of natural and human disturbances. • Limited natural resource availability. | Low |
| Whiskey Hill Area | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Midwinter International Exposition-related deposits are possible. • No survey coverage. • Extremely deep soil/sediment depth over Holocene landform. • High degree of natural and human disturbances. • Limited natural resource availability. | Moderate |
| Grandview Park | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possibility for prehistoric quarrying of exposures. • No survey coverage. • Limited natural resources. • Pre-Holocene landform. • Moderate natural and human disturbances. | Low |
| Hawk Hill | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Complete survey coverage. • Limited natural resources. • Holocene landform and historic artificial fill. • Moderate natural and human disturbances. | Low |
| India Basin Shoreline Park | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Partial survey coverage. • Historic fill material over Holocene bay and estuarine mud. • Minimal natural and human disturbances of historic fill. | Moderate |
| Interior Greenbelt | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possibility for prehistoric quarrying of exposures. • No survey coverage. • Pre-Holocene landform with soils varying in depth. • Minimal natural and human disturbances of historic fill. • Includes seasonal freshwater source and associated productive riparian habitats. | High |

**Table 4-1
Archaeological Sensitivity of Natural Areas**

| Natural Area | Considerations | Archaeological Sensitivity |
|---------------------------|--|----------------------------|
| Kite Hill | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possibility for prehistoric quarrying of outcrops. • No survey coverage. • Thin soils over pre-Holocene landform. • Minimal natural and human disturbances. • Near freshwater sources and associated productive riparian habitats. | Low |
| Lake Merced | <ul style="list-style-type: none"> • High comparative site density in Natural Area and surrounding area. • Partial survey coverage. • Holocene landforms with historic-era fill materials. • Moderate natural and human disturbances. • Includes major freshwater source and associated productive riparian/wetland habitats. | High |
| Lakeview/Ashton Mini Park | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possibility for prehistoric quarrying of outcrops. • No survey coverage. • Minimal soil/sediment depth over pre-Holocene landform. • Minimal natural and human disturbances. • Near freshwater source and associated productive riparian habitats. | Low |
| McLaren Park | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Historic quarries are within the Natural Area; possibility for prehistoric quarrying of outcrops. • No survey coverage. • Varied soil/sediment depth over pre-Holocene landforms. • Moderate overall degree of natural and human disturbances. • Comparatively numerous freshwater sources and associated riparian habitats within park. Productive resource areas available. | High |
| Mount Davidson | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possibility for prehistoric quarrying of outcrops. • Highest peak in area likely to draw human activity. • No survey coverage. • Unknown soil/sediment depth over pre-Holocene landform. • Minimal degree of natural and human disturbances. • Near freshwater source and associated productive riparian habitats. | Moderate |

**Table 4-1
Archaeological Sensitivity of Natural Areas**

| Natural Area | Considerations | Archaeological Sensitivity |
|----------------------|--|----------------------------|
| O'Shaughnessy Hollow | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possibility for prehistoric quarrying of outcrops. • No survey coverage. • Thin to deep sediments and soils over pre-Holocene landform. • Minimal natural and human disturbances. • Next to freshwater sources and associated productive riparian habitats. | High |
| Palou-Phelps | <ul style="list-style-type: none"> • Moderate to high comparative site density in surrounding area. • Minimal survey coverage. • Minimal soil/sediment depth over pre-Holocene landform and historic fill materials. • Moderate natural and human disturbances. • Productive surrounding natural environment, including freshwater source and associated riparian habitats. | High |
| Pine Lake | <ul style="list-style-type: none"> • Moderate comparative site density in surrounding area. • Partial survey coverage. • Holocene landforms with historic-era fill materials. • Minimal natural and human disturbances. • Includes freshwater source and associated productive riparian/wetland habitats. Next to major natural resources. | High |
| Rock Outcrop | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Possibility for prehistoric quarrying of exposures. • No survey coverage. • Limited natural resources. • Pre-Holocene landform with almost no soils. • Minimal natural and human disturbances. | Low |
| Sharp Park | <ul style="list-style-type: none"> • High comparative site density in and around Natural Area. • Partial survey coverage. • High degree of available natural resources. • Holocene landforms with soils no deeper than 30 centimeters. • High degree of human disturbances; moderate natural disturbances. | High |
| Tank Hill | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. • Unrecorded Spring Valley Water Company water tank foundation pad is within the Natural Area. • No survey coverage. • Thin soils over pre-Holocene landform and historic-era fill materials. • Moderate natural and human disturbances. • Near freshwater sources and associated productive riparian habitats. | Moderate |
| Twin Peaks | <ul style="list-style-type: none"> • Low comparative site density in surrounding area. | Low |

**Table 4-1
Archaeological Sensitivity of Natural Areas**

| Natural Area | Considerations | Archaeological Sensitivity |
|--------------|---|----------------------------|
| | <ul style="list-style-type: none"> • No survey coverage. • Thin soils over pre-Holocene landforms. • Extensive natural and human disturbances. • Limited natural resource availability. | |

5. RECOMMENDATIONS

As presented in Table 5-1 below, the research outlined in the preceding sections suggest that nine Natural Areas have a high level of sensitivity for archaeological sites, nine have a moderate level as well as the Whiskey Hill portion of the Golden Gate Park Oak Woodlands Natural Area, and 14 have a low level (including the Lily Pond, Oak Woodlands, and Strawberry Hill portions of Golden Gate Park Oak Woodlands Natural Area).

**Table 5-1
Distribution of the Natural Areas Across Archaeological Sensitivity Levels**

| Archaeological Sensitivity | Natural Areas | |
|----------------------------|---|---|
| Low | <ol style="list-style-type: none"> 1. Billy Goat Hill 2. Brooks Park 3. Dorothy Erskine Park 4. Duncan-Castro 5. Edgehill Mountain 6. Fairmount Park 7. Golden Gate Heights Park 8. Golden Gate Park Oak Woodlands (Lily Pond, Oak Woodlands, and Strawberry Hill areas only) | <ol style="list-style-type: none"> 9. Grandview Park 10. Hawk Hill 11. Kite Hill 12. Lakeview/Ashton Mini Park 13. Rock Outcrop 14. Twin Peak |
| Moderate | <ol style="list-style-type: none"> 1. 15th Avenue Steps 2. Bayview Park 3. Bernal Hill 4. Buena Vista Park 5. Corona Heights | <ol style="list-style-type: none"> 6. Everson/Digby 7. Golden Gate Park Oak Woodlands (Whiskey Hill area only) 8. India Basin Shoreline Park 9. Mount Davidson 10. Tank Hill |
| High | <ol style="list-style-type: none"> 1. Balboa Park 2. Glen Canyon Park 3. Interior Greenbelt 4. Lake Merced | <ol style="list-style-type: none"> 5. McLaren Park 6. O'Shaughnessy Hollow 7. Palou-Phelps 8. Pine Lake 9. Sharp Park |

Several of the general and site-specific management activities proposed in the SNRAMP (SFRPD 2006) could adversely affect archaeological resources. These management activities primarily include ground-disturbing activities, such as vegetation removal, livestock grazing, and activities associated with trail development and maintenance and erosion control.

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July 17, 2008

Ms. Ramona Garibay
Representative
The Trina Marine Ruano Family
16010 Halmar Lane
Lathrop CA 95330

Subject: San Francisco Significant Natural Resource Areas Management Plan, San Francisco County, California

Dear Ms. Garibay:

The purpose of this letter is to inform The Trina Marine Ruano Family about a natural resource management plan developed to preserve, restore, and enhance 31 remnant Natural Areas within the City and County of San Francisco and managed by the San Francisco Recreation and Park Department (SFRPD), and to promote environmental stewardship of these areas. Natural Areas are remnants of San Francisco's historic landscape and contain the City's natural heritage. These areas support an array of native habitats and species, some found nowhere else in the world, such as the San Francisco garter snake and mission blue butterfly. The opportunity exists in these areas to protect and restore sensitive species and natural habitats for future generations. Pursuant to Government Code §65352.3(a)(2), the SFRPD is inviting your participation in government-to-government consultation as part of the CEQA process to identify possible cultural resources impacts associated with implementation of the management plan. Your participation in this process is important.

As envisioned, the *Significant Natural Resource Areas Management Plan* (SNRAMP) will provide the framework for long-term management of the identified Natural Areas. The 31 Natural Areas are scattered mostly throughout the central and southern portions of San Francisco and constitute approximately 4 percent of the total city area; one Natural Area is located in Pacifica. A map of the Natural Areas has been provided with this letter. They range in size from less than one acre to almost 400 acres and include such popular locations as Twin Peaks and portions of Glen Canyon Park. Many of these areas support sensitive plant and animal species and habitats. Others include striking geologic formations. Most are used as recreational open spaces by residents and visitors. While mostly owned by the SFRPD, some remnant natural areas are managed by other public and private entities. Some of these properties may eventually be transferred to SFRPD. The objectives of the SNRAMP are:

- to inventory the biological resources in Natural Areas to provide background information for planning, restoration, and management activities;
- to develop a Geographic Information System (GIS) database containing baseline information for each of the Natural Areas;
- to identify issues and impacts adversely affecting habitats, enhance biological diversity, and maintain populations of sensitive species;
- to identify and prioritize restoration, management, and monitoring actions;
- to provide guidelines and amenities for passive recreational uses compatible with natural resources; and



Golden Gate Park Conservatory (CA-SFR-37H [P-38-0037]) is adjacent to the Golden Gate Park Natural Areas. Historic canal features associated with the Spring Valley Water Company's water system (CA-SFR-102H [P-38-0093]) are within the Lake Merced Natural Area. The Pine Lake Natural Area is a part of the historic district of Stern Grove and Pine Lake Park (P-38-4472). An archaeological site containing "shell midden with some bone, chert chipage, and fire fractured rock" as well as some noted historic-era glass bottles and recorded in 1969 by S. Humphreys is adjacent to the Sharp Park Natural Area. At the time of its recording, it was remarked that the site was almost entirely destroyed by erosion and construction. Additionally, though not indicated in the records search, Golden Gate Park, including Oak Woodland, Lily Pond, Whiskey Hill, and Strawberry Hill Natural Areas, has been listed on the NRHP since 2004 as a historic district and would therefore be included on the CRHR as well. This would bring the total number of natural areas with documented cultural resources to ten. It should be noted that Geographic Information System (GIS) data received from SFRPD indicates there are additional cultural resources within and adjacent to the Natural Areas that have not been previously documented or evaluated. For instance, the Mount Davidson Cross in the Mount Davidson Natural Area was not indicated in the NWIC records search as a documented resource, but it is indicated as a historic-aged architectural resource in the SFRPD GIS.

No cultural resources survey has been conducted for this project. However, several cultural resources overviews and pedestrian surveys have been conducted within most of the 31 Natural Areas. All of the Natural Areas were covered by a study of pre-Spanish ecology of the Bay Area (S-9583). The Balboa Natural Area has been partially addressed in two overviews (S-5382 and S-18364) and one linear field surveys (S-18341). The Bayview Park Natural Area has been completely covered by a regional overview (S-25045) and partially covered by a linear field survey (S-28766). The Hawk Hill Natural Area has been fully covered by an archaeological field survey (S-9585). The India Basin Shoreline Park Natural Area has been addressed by one cultural resource overview (S-15602), one archaeological field survey (S-16555), and one linear archaeological field survey (S-16882). The Lake Merced Natural Area has been partially addressed in one regional cultural resource overview (S-3247), three field surveys (S-3240, S-3242, and S-19127), and one subsurface testing project (S-10168). The Palou-Phelps Natural Area has been partially covered by three linear archaeological field surveys (S-11396, S-22657, and S-29657). The Pine Lake Natural Area has been entirely covered by a cultural landscape report with register evaluations that included both archaeological and architectural field surveys (S-32280) and partially covered by a separate archaeological field survey (S-32271). The Sharp Park Natural Area has had nine overviews and surveys within and adjacent to it. The Natural Area itself has been partially covered by three archaeological field surveys (S-3039, S-6717, and S-15828), two linear archaeological field surveys (S-4877 and S-31602), and one archaeological field survey with a historic study and register evaluation (S-34499). The Bernal Hill, Billy Goat Hill, Brooks Park, Buena Vista Park, Corona Heights, Dorothy Erskine Park, Duncan-Castro, Edgehill Mountain, Fairmont Park, 15th Avenue Steps, Glen Canyon Park, Golden Gate Heights, Grandview Park, Kit Hill, Interior Green Belt, Lakeview/Ashton, Lily Pond, McLaren Park, Mount Davidson, O'Shaughnessy Hollow, Oak Woodlands, Rock Outcrop, Strawberry Hill, Tank Hill, Twin Peaks, and Whiskey Hill Natural Areas have not been covered by any field survey or a cultural resource overview specific to those areas.



July 17, 2008

Mr. Andrew Galvan
The Ohlone Indian Tribe
P.O. Box 3152
Mission San Jose, CA 94539

Subject: San Francisco Significant Natural Resource Areas Management Plan, San Francisco County, California

Dear Mr. Galvan:

The purpose of this letter is to inform the Ohlone Indian Tribe about a natural resource management plan developed to preserve, restore, and enhance 31 remnant Natural Areas within the City and County of San Francisco and managed by the San Francisco Recreation and Park Department (SFRPD), and to promote environmental stewardship of these areas. Natural Areas are remnants of San Francisco's historic landscape and contain the City's natural heritage. These areas support an array of native habitats and species, some found nowhere else in the world, such as the San Francisco garter snake and mission blue butterfly. The opportunity exists in these areas to protect and restore sensitive species and natural habitats for future generations. Pursuant to Government Code §65352.3(a)(2), the SFRPD is inviting your participation in government-to-government consultation as part of the CEQA process to identify possible cultural resources impacts associated with implementation of the management plan. Your participation in this process is important.

As envisioned, the *Significant Natural Resource Areas Management Plan* (SNRAMP) will provide the framework for long-term management of the identified Natural Areas. The 31 Natural Areas are scattered mostly throughout the central and southern portions of San Francisco and constitute approximately 4 percent of the total city area; one Natural Area is located in Pacifica. A map of the Natural Areas has been provided with this letter. They range in size from less than one acre to almost 400 acres and include such popular locations as Twin Peaks and portions of Glen Canyon Park. Many of these areas support sensitive plant and animal species and habitats. Others include striking geologic formations. Most are used as recreational open spaces by residents and visitors. While mostly owned by the SFRPD, some remnant natural areas are managed by other public and private entities. Some of these properties may eventually be transferred to SFRPD. The objectives of the SNRAMP are:

- to inventory the biological resources in Natural Areas to provide background information for planning, restoration, and management activities;
- to develop a Geographic Information System (GIS) database containing baseline information for each of the Natural Areas;
- to identify issues and impacts adversely affecting habitats, enhance biological diversity, and maintain populations of sensitive species;
- to identify and prioritize restoration, management, and monitoring actions;
- to provide guidelines and amenities for passive recreational uses compatible with natural resources; and
- to provide guidelines for educational, research, and stewardship programs.



0093]) are within the Lake Merced Natural Area. The Pine Lake Natural Area is a part of the historic district of Stern Grove and Pine Lake Park (P-38-4472). An archaeological site containing "shell midden with some bone, chert chipage, and fire fractured rock" as well as some noted historic-era glass bottles and recorded in 1969 by S. Humphreys is adjacent to the Sharp Park Natural Area. At the time of its recording, it was remarked that the site was almost entirely destroyed by erosion and construction. Additionally, though not indicated in the records search, Golden Gate Park, including Oak Woodland, Lily Pond, Whiskey Hill, and Strawberry Hill Natural Areas, has been listed on the NRHP since 2004 as a historic district and would therefore be included on the CRHR as well. This would bring the total number of natural areas with documented cultural resources to ten. It should be noted that Geographic Information System (GIS) data received from SFRPD indicates there are additional cultural resources within and adjacent to the Natural Areas that have not been previously documented or evaluated. For instance, the Mount Davidson Cross in the Mount Davidson Natural Area was not indicated in the NWIC records search as a documented resource, but it is indicated as a historic-aged architectural resource in the SFRPD GIS.

No cultural resources survey has been conducted for this project. However, several cultural resources overviews and pedestrian surveys have been conducted within most of the 31 Natural Areas. All of the Natural Areas were covered by a study of pre-Spanish ecology of the Bay Area (S-9583). The Balboa Natural Area has been partially addressed in two overviews (S-5382 and S-18364) and one linear field surveys (S-18341). The Bayview Park Natural Area has been completely covered by a regional overview (S-25045) and partially covered by a linear field survey (S-28766). The Hawk Hill Natural Area has been fully covered by an archaeological field survey (S-9585). The India Basin Shoreline Park Natural Area has been addressed by one cultural resource overview (S-15602), one archaeological field survey (S-16555), and one linear archaeological field survey (S-16882). The Lake Merced Natural Area has been partially addressed in one regional cultural resource overview (S-3247), three field surveys (S-3240, S-3242, and S-19127), and one subsurface testing project (S-10168). The Palou-Phelps Natural Area has been partially covered by three linear archaeological field surveys (S-11396, S-22657, and S-29657). The Pine Lake Natural Area has been entirely covered by a cultural landscape report with register evaluations that included both archaeological and architectural field surveys (S-32280) and partially covered by a separate archaeological field survey (S-32271). The Sharp Park Natural Area has had nine overviews and surveys within and adjacent to it. The Natural Area itself has been partially covered by three archaeological field surveys (S-3039, S-6717, and S-15828), two linear archaeological field surveys (S-4877 and S-31602), and one archaeological field survey with a historic study and register evaluation (S-34499). The Bernal Hill, Billy Goat Hill, Brooks Park, Buena Vista Park, Corona Heights, Dorothy Erskine Park, Duncan-Castro, Edgehill Mountain, Fairmont Park, 15th Avenue Steps, Glen Canyon Park, Golden Gate Heights, Grandview Park, Kit Hill, Interior Green Belt, Lakeview/Ashton, Lily Pond, McLaren Park, Mount Davidson, O'Shaughnessy Hollow, Oak Woodlands, Rock Outcrop, Strawberry Hill, Tank Hill, Twin Peaks, and Whiskey Hill Natural Areas have not been covered by any field survey or a cultural resource overview specific to those areas.



July 17, 2008

Ms. Jakki Kehl
Cultural Resource Coordinator
The Ohlone/Costanoan Tribal Band
720 North 2nd Street
Patterson, CA 95363

Subject: San Francisco Significant Natural Resource Areas Management Plan, San Francisco County, California

Dear Ms. Kehl:

The purpose of this letter is to inform The Ohlone/Costanoan Tribal Band about a natural resource management plan developed to preserve, restore, and enhance 31 remnant Natural Areas within the City and County of San Francisco and managed by the San Francisco Recreation and Park Department (SFRPD), and to promote environmental stewardship of these areas. Natural Areas are remnants of San Francisco's historic landscape and contain the City's natural heritage. These areas support an array of native habitats and species, some found nowhere else in the world, such as the San Francisco garter snake and mission blue butterfly. The opportunity exists in these areas to protect and restore sensitive species and natural habitats for future generations. Pursuant to Government Code §65352.3(a)(2), the SFRPD is inviting your participation in government-to-government consultation as part of the CEQA process to identify possible cultural resources impacts associated with implementation of the management plan. Your participation in this process is important.

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July 17, 2008

Ms. Ann Marie Sayers
Chairperson
The Indian Canyon Mutsun Band of Costanoan
P.O. Box 28
Hollister CA 95024

Subject: San Francisco Significant Natural Resource Areas Management Plan, San Francisco County, California

Dear Ms. Sayers:

The purpose of this letter is to inform the Indian Canyon Mutsun Band of Costanoan about a natural resource management plan developed to preserve, restore, and enhance 31 remnant Natural Areas within the City and County of San Francisco and managed by the San Francisco Recreation and Park Department (SFRPD), and to promote environmental stewardship of these areas. Natural Areas are remnants of San Francisco's historic landscape and contain the City's natural heritage. These areas support an array of native habitats and species, some found nowhere else in the world, such as the San Francisco garter snake and mission blue butterfly. The opportunity exists in these areas to protect and restore sensitive species and natural habitats for future generations. Pursuant to Government Code §65352.3(a)(2), the SFRPD is inviting your participation in government-to-government consultation as part of the CEQA process to identify possible cultural resources impacts associated with implementation of the management plan. Your participation in this process is important.

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July 17, 2008

Ms. Irene Zwierlein
Chairperson
The Amah/Mutsun Tribal Band
789 Canada Road
Woodside CA 94062

Subject: San Francisco Significant Natural Resource Areas Management Plan, San Francisco County, California

Dear Ms. Zwierlein:

The purpose of this letter is to inform the Amah/Mutsun Tribal Band the about a natural resource management plan developed to preserve, restore, and enhance 31 remnant Natural Areas within the City and County of San Francisco and managed by the San Francisco Recreation and Park Department (SFRPD), and to promote environmental stewardship of these areas. Natural Areas are remnants of San Francisco's historic landscape and contain the City's natural heritage. These areas support an array of native habitats and species, some found nowhere else in the world, such as the San Francisco garter snake and mission blue butterfly. The opportunity exists in these areas to protect and restore sensitive species and natural habitats for future generations. Pursuant to Government Code §65352.3(a)(2), the SFRPD is inviting your participation in government-to-government consultation as part of the CEQA process to identify possible cultural resources impacts associated with implementation of the management plan. Your participation in this process is important.

As envisioned, the *Significant Natural Resource Areas Management Plan* (SNRAMP) will provide the framework for long-term management of the identified Natural Areas. The 31 Natural Areas are scattered mostly throughout the central and southern portions of San Francisco and constitute approximately 4 percent of the total city area; one Natural Area is located in Pacifica. A map of the Natural Areas has been provided with this letter. They range in size from less than one acre to almost 400 acres and include such popular locations as Twin Peaks and portions of Glen Canyon Park. Many of these areas support sensitive plant and animal species and habitats. Others include striking geologic formations. Most are used as recreational open spaces by residents and visitors. While mostly owned by the SFRPD, some remnant natural areas are managed by other public and private entities. Some of these properties may eventually be transferred to SFRPD. The objectives of the SNRAMP are:

- to inventory the biological resources in Natural Areas to provide background information for planning, restoration, and management activities;
- to develop a Geographic Information System (GIS) database containing baseline information for each of the Natural Areas;
- to identify issues and impacts adversely affecting habitats, enhance biological diversity, and maintain populations of sensitive species;
- to identify and prioritize restoration, management, and monitoring actions;
- to provide guidelines and amenities for passive recreational uses compatible with natural resources; and



Golden Gate Park Conservatory (CA-SFR-37H [P-38-0037]) is adjacent to the Golden Gate Park Natural Areas. Historic canal features associated with the Spring Valley Water Company's water system (CA-SFR-102H [P-38-0093]) are within the Lake Merced Natural Area. The Pine Lake Natural Area is a part of the historic district of Stern Grove and Pine Lake Park (P-38-4472). An archaeological site containing "shell midden with some bone, chert chipage, and fire fractured rock" as well as some noted historic-era glass bottles and recorded in 1969 by S. Humphreys is adjacent to the Sharp Park Natural Area. At the time of its recording, it was remarked that the site was almost entirely destroyed by erosion and construction. Additionally, though not indicated in the records search, Golden Gate Park, including Oak Woodland, Lily Pond, Whiskey Hill, and Strawberry Hill Natural Areas, has been listed on the NRHP since 2004 as a historic district and would therefore be included on the CRHR as well. This would bring the total number of natural areas with documented cultural resources to ten. It should be noted that Geographic Information System (GIS) data received from SFRPD indicates there are additional cultural resources within and adjacent to the Natural Areas that have not been previously documented or evaluated. For instance, the Mount Davidson Cross in the Mount Davidson Natural Area was not indicated in the NWIC records search as a documented resource, but it is indicated as a historic-aged architectural resource in the SFRPD GIS.

No cultural resources survey has been conducted for this project. However, several cultural resources overviews and pedestrian surveys have been conducted within most of the 31 Natural Areas. All of the Natural Areas were covered by a study of pre-Spanish ecology of the Bay Area (S-9583). The Balboa Natural Area has been partially addressed in two overviews (S-5382 and S-18364) and one linear field surveys (S-18341). The Bayview Park Natural Area has been completely covered by a regional overview (S-25045) and partially covered by a linear field survey (S-28766). The Hawk Hill Natural Area has been fully covered by an archaeological field survey (S-9585). The India Basin Shoreline Park Natural Area has been addressed by one cultural resource overview (S-15602), one archaeological field survey (S-16555), and one linear archaeological field survey (S-16882). The Lake Merced Natural Area has been partially addressed in one regional cultural resource overview (S-3247), three field surveys (S-3240, S-3242, and S-19127), and one subsurface testing project (S-10168). The Palou-Phelps Natural Area has been partially covered by three linear archaeological field surveys (S-11396, S-22657, and S-29657). The Pine Lake Natural Area has been entirely covered by a cultural landscape report with register evaluations that included both archaeological and architectural field surveys (S-32280) and partially covered by a separate archaeological field survey (S-32271). The Sharp Park Natural Area has had nine overviews and surveys within and adjacent to it. The Natural Area itself has been partially covered by three archaeological field surveys (S-3039, S-6717, and S-15828), two linear archaeological field surveys (S-4877 and S-31602), and one archaeological field survey with a historic study and register evaluation (S-34499). The Bernal Hill, Billy Goat Hill, Brooks Park, Buena Vista Park, Corona Heights, Dorothy Erskine Park, Duncan-Castro, Edgemoor Mountain, Fairmont Park, 15th Avenue Steps, Glen Canyon Park, Golden Gate Heights, Grandview Park, Kit Hill, Interior Green Belt, Lakeview/Ashton, Lily Pond, McLaren Park, Mount Davidson, O'Shaughnessy Hollow, Oak Woodlands, Rock Outcrop, Strawberry Hill, Tank Hill, Twin Peaks, and Whiskey Hill Natural Areas have not been covered by any field survey or a cultural resource overview specific to those areas.

STATE OF CALIFORNIAArnold Schwarzenegger, Governor**NATIVE AMERICAN HERITAGE COMMISSION**

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June 19, 2008

Erin King, MA, RPA
Archaeologist
180 Howard Street, Suite 250
San Francisco, CA 94105

Sent by Fax: 415-974-5914
Number of Pages: 2

Re: Proposed Significant Natural Resources Areas Management Plan project, San Francisco County.

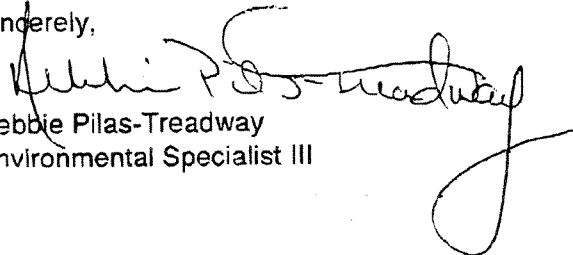
Dear Ms. King:

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4038.

Sincerely,


Debbie Pilas-Treadway
Environmental Specialist III

Native American Contacts
San Francisco County
June 18, 2008

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Ohlone/Costanoan

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Ohlone/Costanoan
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Ohlone/Costanoan

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Ohlone/Costanoan
 Bay Miwok
 Plains Miwok
 Patwin

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Significant Natural Resource Areas Management Plan project, San Francisco County.

APPENDIX **D**

Biological Resources

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

| Species | Common Name | Status Federal, State, CNPS, Local | Local Significance |
|--|---------------------------|------------------------------------|--|
| Birds | | | |
| <i>Aechmophorus clarkii</i> | Clark's Grebe | SLC | Few breeding records from Lake Merced. Also occurs at Sharp Park and India Basin on occasion. |
| <i>Podilymbus podiceps</i> | Pied-billed Grebe | SLC | Breeds at Lake Merced and Pine Lake. Also present at Sharp Park |
| <i>Phalacrocorax auritus</i> | Double-crested Cormorant | CSC (rookeries) | Presently nests at Lake Merced |
| <i>Phalacrocorax penicillatus</i> | Brandt's Cormorant | SLC | Found only at India Basin. |
| <i>Phalacrocorax pelagicus</i> | Pelagic Cormorant | SLC | Found only at India Basin. |
| <i>Nycticorax nycticorax</i> | Black-crowned Night Heron | - | Locally uncommon, may breed at Lake Merced. Observed at Sharp Park, India Basin, and McLaren Park. |
| <i>Butorides striatus</i> | Green Heron | SLC | Presently occurs at Golden Gate Park and Pine Lake. Presently nests at Lake Merced. |
| <i>Ardea herodias</i> | Great Blue Heron | Sens | Presently nests at Lake Merced |
| <i>Anas strepera</i> | Gadwall | SLC | Historically bred within San Francisco. Now a winter resident at Lake Merced, Pine Lake, Sharp Park, India Basin, and McLaren Park. |
| <i>Rallus limicola</i> | Virginia Rail | SLC | Presently occurs at Lake Merced |
| <i>Porzana carolina</i> | Sora | SLC | Presently occurs at Lake Merced |
| <i>Laterallus jamaicensis coturniculus</i> | Black Rail | SLC | Historically reported, not recently observed in the City |
| <i>Haematopus bachmani</i> | Black Oystercatcher | SLC | Occurs in India Basin only |
| <i>Charadrius alexandrinus</i> | Snowy Plover | FT, CSC | Presently occurs at Ocean Beach |
| <i>Cephus columba</i> | Pigeon Guillemont | SLC | Occurs in India Basin only |
| <i>Buteo lineatus</i> | Red-shouldered Hawk | SLC | Lake Merced, Pine Lake, Palau Phelps, Golden Gate Heights, Billy Goat Hill, and Dorothy Erskine Park. Breeds at Sharp Park, Bayview Hill, McLaren Park, Buena Vista Park, and Glen Canyon. |
| <i>Buteo jamaicensis</i> | Red-tailed Hawk | SLC | Found in most Natural Areas. Breeds at Sharp Park, Bayview Hill, McLaren Park, Buena Vista Park, Dorothy Erskine Park, Glen Canyon Park, Mt. Davidson, Tank Hill, and Twin Peaks. |
| <i>Pandion haliaetus</i> | Osprey | SLC | Observed at Lake Merced, India Basin, and McLaren Park. |
| <i>Falco sparverius</i> | American Kestrel | SLC | Lake Merced, Sharp Park, Bayview Hill, India Basin, and Mt. Davidson. Breeds at McLaren Park. |
| <i>Falco peregrinus</i> | Peregrine Falcon | SLC | Likely forages in most Natural Areas. No breeding habitat in any of the Natural Areas. |
| <i>Callipepla californica</i> | California Quail | SLC | Presently occurs at the Presidio and the Arboretum in Golden Gate Park |
| <i>Columba fasciata</i> | Band-tailed Pigeon | SLC | Sharp Park, Buena Vista. Breeds in Glen Canyon, Mt. Davidson, and Twin Peaks |
| <i>Bubo virginianus</i> | Great Horned Owl | SLC | Found in Sharp Park. Breeds at Lake Merced, Pine Lake, McLaren Park, and Glen Canyon. |
| <i>Tyto alba</i> | Barn Owl | SLC | Presently occurs at Lake Merced. Historically reported from Golden Gate Park. |
| <i>Otus kennicottii</i> | Western Screech Owl | SLC | Presently occurs at Oak Woodlands (Golden Gate Park) |

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

| Species | Common Name | Status Federal, State, CNPS, Local | Local Significance |
|-------------------------------|--------------------------|------------------------------------|---|
| <i>Aeronautes saxatalis</i> | White-throated Swift | SLC | Found at Edgehill Mtn, Fairmount Park, Glen Canyon, Interior Greenbelt, Kite Hill, and Mt. Davidson. |
| <i>Picoides villosus</i> | Hairy Woodpecker | SLC | Found in Sharp Park. |
| <i>Contopus borealis</i> | Olive-sided Flycatcher | SLC | Currently nests at Lake Merced, Golden Gate Park, Buena Vista, and the Presidio |
| <i>Sayornis saya</i> | Say's Phoebe | SLC | Winter resident at Sharp Park, Bayview Hill, Bernal Heights, India Basin, McLaren Park, and Mt. Davidson. |
| <i>Empidonax difficilis</i> | Pacific-slope Flycatcher | SLC | Found in Sharp Park, Bayview Hill, McLaren Park, Billy Goat Hill, Corona Heights, Duncan-Castro, Glen Canyon Park, Mt. Davidson, Oak Woodlands, Tank Hill, and Twin Peaks. |
| <i>Eremophila alpestris</i> | Horned Lark | SLC | Occurs during migration only. Historic breeding records. |
| <i>Tachycineta bicolor</i> | Tree Swallow | SLC | Found in Sharp Park, Bayview Hill, and Golden Gate Heights. Breeds in Glen Canyon Park and McLaren Park. |
| <i>Tachycineta thalassina</i> | Violet-green Swallow | SLC | Found in Sharp Park, Bayview Hill, Golden Gate Heights, Glen Canyon Park, Kite Hill, Mt. Davidson, and Twin Peaks. |
| <i>Riparia riparia</i> | Bank Swallow | ST | Currently nest at Fort Funston and forage over Lake Merced |
| <i>Hirundo pyrrhonota</i> | Cliff Swallow | SLC | Currently nests at Lake Merced and Golden Gate Park |
| <i>Hirundo rustica</i> | Barn Swallow | SLC | Found in most Natural Areas. Breeds at Lake Merced, Pine Lake, McLaren Park, Buena Vista Park, Billy Goat Hill, Corona Heights, Glen Canyon Park, and Mt. Davidson. |
| <i>Cyanocitta stelleri</i> | Steller's Jay | SLC | Found at Sharp Park, Buena Vista, Glen Canyon Park. Breeds at Mt. Davidson and Oak Woodlands. |
| <i>Chamaea fasciata</i> | Wrentit | SLC | Presently occurs at McLaren Park, and Bayview Hill. |
| <i>Sitta canadensis</i> | Red-breasted Nuthatch | SLC | Winter resident at Lake Merced, Pine Lake, Bayview Hill, McLaren Park, Golden Gate Heights, Corona Heights, Dorothy Erskine Park, Glen Canyon Park, Mt. Davidson, and Oak Woodlands. |
| <i>Sitta pygmaea</i> | Pygmy Nuthatch | SLC | Breeds at Brooks Park, Lake Merced, Pine Lake, Bayview Hill, McLaren Park, Buena Vista, Golden Gate Heights, Corona Heights, Dorothy Erskine Park, Edgehill Mtn, Fairmount Park, Glen Canyon, Interior Greenbelt, Mt. Davidson, Oak Woodland, Tank Hill, and Twin Peaks. Also found at Kite Hill. |
| <i>Thryomanes bewickii</i> | Bewick's Wren | SLC | Presently nests at Lake Merced and Fort Funston |
| <i>Catharus ustulatus</i> | Swainson's Thrush | SLC | Breeds at Sharp Park. Also found at Buena Vista, Golden Gate Heights, Glen Canyon, McLaren Park, Oak Woodlands, and Twin Peaks. |
| <i>Lanius ludovicianus</i> | Loggerhead Shrike | SLC | Occurs during migration only. Historic breeding records. |
| <i>Vireo huttoni</i> | Hutton's Vireo | SLC | Found at Sharp Park, Bayview Hill, McLaren Park, Pine Lake, and Buena Vista. Likely breeds in San Francisco. |

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

| Species | Common Name | Status Federal, State, CNPS, Local | Local Significance |
|-------------------------------|------------------------|------------------------------------|---|
| <i>Vermivora celata</i> | Orange-crowned Warbler | SLC | Found at Lake Merced, Pine Lake, Bayview Hill, McLaren Park, Buena Vista, Billy Goat Hill, Edgehill Mt., Glen Canyon Park, Mt. Davidson, Oak Woodlands, and Twin Peaks. Likely breeds in San Francisco at Mt. Davidson. |
| <i>Dendroica petechia</i> | Yellow Warbler | CSC (nesting) | Observed at Lake Merced in spring 2000, breeding undocumented |
| <i>Wilsonia pusilla</i> | Wilson's Warbler | SLC | Found at Bernal Heights, Bayview Hill, McLaren Park, Buena Vista, Golden Gate Heights, Corona Heights, Dorothy Erskine, Glen Canyon Park, Oak Woodlands, and Twin Peaks. Breeds at lake Merced, Pine Lake, and Mt. Davidson. |
| <i>Geothlypis trichas</i> | Common Yellowthroat | CSC | Presently occurs at Lake Merced and Sharp Park |
| <i>Pipilo maculatus</i> | Spotted Towhee | SLC | Presently occurs at Mount Davidson, Presideo, Oak Woodlands (Golden Gate Park), McLaren Park, Glen Canyon Park, and Twin Peaks. |
| <i>Junco hyemalis</i> | Dark-eyed Junco | - | Breeding population limited, wintering birds widespread in parks and yards of San Francisco |
| <i>Zonotrichia leucophrys</i> | White-crowned Sparrow | - | Breeding population limited, wintering birds widespread in parks and yards of San Francisco |
| <i>Icterus cucullatus</i> | Hooded Oriole | SLC | Breeds at Lake Merced and Glen Canyon Park. Also found at McLaren Park, Buena Vista, and Mt. Davidson. |
| <i>Carduelis tristis</i> | American Goldfinch | SLC | Breeds at Lake Merced, Sharp Park, Bayview Hill, and McLaren Park. Also found at Glen Canyon, Mt. Davidson, and Twin Peaks. |
| <i>Carduelis psaltria</i> | Lesser Goldfinch | SLC | Breeds at Bayview Hill, McLaren Park, Gilly Goat Hill, Corona Heights, Glen Canyon Park, Mt. Davidson, and Twin Peaks. Also found at Brooks Park, Dorothy Erskine Park, and Farimount Park. |
| <i>Loxia curvirostra</i> | Red Crossbill | SLC | Winter resident found at Lake Merced, McLaren Park, Buena Vista, Golden Gate Heights, Oak Woodlands, and Twin Peaks. |
| <i>Carpodacus purpureus</i> | Purple Finch | SLC | Breeds at Lake Merced, Glen Canyon, Mt. Davidson, Oak Woodlands, and Twin Peaks. Also found at Pine Lake, Sharp Park, Bayview Hill, McLaren Park, Buena Vista, Golden Gate Heights, Corona Heights, and Dorothy Erskine Park. |

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

| Species | Common Name | Status Federal, State, CNPS, Local | Local Significance |
|---|------------------------------------|------------------------------------|---|
| Fish | | | |
| <i>Eucyclogobius newberryi</i> | Tidewater Goby | FPD (FE), CSC | Historically collected (1895), not recently observed in the City |
| Reptiles and Amphibians | | | |
| <i>Clemmys marmorata</i> | Western Pond Turtle | CSC | Presently occurs at Lake Merced. Presumed extant at Pine Lake but not recently observed. |
| <i>Rana aurora draytonii</i> | California Red-legged Frog | FT | Historically observed at Lake Merced. Recently observed at Sharp Park. |
| <i>Thamnophis sirtalis elegans</i> | San Francisco Garter Snake | FE, SE, SFP | Historically reported from Sharp Park |
| Invertebrates | | | |
| <i>Caecuditea tomalensis</i> | Tomales Isopod | FSC | Collected in 1984 from Lake Merced (CNDDDB 2000) |
| <i>Euphydryas editha bayensis</i> | Bay Checkerspot Butterfly | FT | Reported from Mt. Davidson and Twin Peaks in 1980. Not currently present at either Natural Area. |
| <i>Icaricia icarioides missionensis</i> | Mission Blue Butterfly | FE | Reported at Sharp Park and McLaren Park in 1988 and from Bayview Park in 2001. Currently breeds on Twin Peaks |
| <i>Incisalia mossii bavensis</i> | San Bruno Elfin Butterfly | FE | |
| <i>Ischnura gemina</i> | San Francisco Forktail Damselfly | - | Not observed since 1989, presumed present in Glen Canyon. Presently occurs in McLaren Park. |
| <i>Lichnanthe ursina</i> | Bumblebee Scarab Beetle | FSC | 1980 report from dunes near Laguna Salada, presumed present |
| <i>Speyeria callippe callippe</i> | San Francisco Silverspot Butterfly | FE | |
| Plants | | | |
| <i>Amsinckia menziesii</i> var. <i>intermedia</i> | Common Fiddleneck | LS | Presently occurs at Bayview Park, and Twin Peaks |
| <i>Aquilegia formosa</i> | Red Columbine | LS | Presently occurs at Glen Canyon, O'Shaughnessy Hollow, and Mount Davidson |
| <i>Arabis blepharophylla</i> | Coast Rock Cress | CNPS List 4 | Presently occurs at Mt. Davidson, O'Shaughnessy Hollow, and Twin Peaks |
| <i>Arctostaphylos hookeri</i> ssp. <i>franciscana</i> | Franciscan manzanita | CNPS List 1A | Historically occurred at Mt. Davidson |
| <i>Arctostaphylos hookeri</i> ssp. <i>ravenii</i> | Raven's manzanita | FE, SE, CNPS List 1B | Historically occurred at Mt. Davidson |
| <i>Aristolochia californica</i> | California Pipevine | - | Presently occurs at occur at Lake Merced |
| <i>Aster radulinus</i> | Broadleaf Aster | LS | Presently occurs at Bayview Park |
| <i>Astragalus nutalli</i> var. <i>virgatus</i> | Nuttall's Milk Vetch | LS | Historically occurred at Lake Merced |
| <i>Blennosperma nanum</i> | Common Stickyseed | LS | Presently occurs at Bayview Park |
| <i>Calamagrostis nutkaensis</i> | Pacific Reed Grass | LS | Southern range limit, presently occurs at Mt. Davidson, Twin Peaks, and Edgehill Mtn. |
| <i>Castilleja exserta</i> | Purple Owl's Clover | LS | Presently occurs at Mount Davidson and Glen Canyon |
| <i>Castilleja wightii</i> | Paintbrush | LS | Presently occurs at Hawk Hill, Lake Merced, and Balboa Natural Area. |

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

| Species | Common Name | Status Federal, State, CNPS, Local | Local Significance |
|--|---------------------------|------------------------------------|--|
| <i>Cerastium arvense</i> | Meadow White | LS | Presently occurs at Twin Peaks and Rock Outcrop |
| <i>Chenopodium californicum</i> | California Goosefoot | LS | Historically occurred at Lake Merced |
| <i>Chorizanthe cuspidata</i> var. <i>cuspidata</i> | San Francisco Spineflower | FSC, CNPS List 1B | Presently occurs at Ft. Funston, Golden Gate Heights, and Lake Merced |
| <i>Clarkia rubicunda</i> | Farewell-to-Spring | - | Presently occurs at Tank Hill, Bayview Hill, and Lakeview/Ashton Mini Park |
| <i>Collinsia multicolor</i> | San Francisco Collinsia | CNPS List 1B | Presently occurs at Bayview Hill |
| <i>Croton californica</i> | California Croton | LS | Northern distributional limit, presently occurs at Hawk Hill |
| <i>Delphinium californicum</i> | Larkspur | LS | Presently occurst at Bayview Park |
| <i>Delphinium decorum</i> | Coast Larkspur | LS | Presently occurs at Bayview Park |
| <i>Deschampsia danthonioides</i> | Annual Hairgrass | LS | Presently occurs at Corona and Rock Outcrop |
| <i>Disporum hookeri</i> | Fairy Bells | LS | Presently occurs at Interior Green Belt |
| <i>Dodecatheon cleveandjii</i> | Shooting Star | LS | Presently occurs at Bernal Hill. |
| <i>Elymus multisetus</i> | Big Squirrel Tail | LS | Presently occurs at Bayview Park, Bernal Hill and McLaren Park |
| <i>Erigeron foliosus</i> | Leafy Daisy | LS | Presently occurs in O'Shaughnessey Hollow |
| <i>Erysimum franciscanum</i> | San Francisco Wallflower | FSC, CNPS List 4 | Presently occurs at Grandview Park, Golden Gate Heights, Hawk Hill, and Rock Outcrop |
| <i>Euthamia occidentalis</i> | Western Goldenrod | LS | Historically reported not recently observed in the City. |
| <i>Festuca californica</i> | California Fescue | LS | Presently occurs at Bayview Park, Edgehill Mtn. and Mt. Davidson |
| <i>Frankenia salina</i> | Alkali-Heath | LS | Presently occurs at India Basin Shoreline Park. |
| <i>Fritillaria liliacea</i> | Fragrant Fritillary | CNPS 1B | Presently occurs at Bernal Heights |
| <i>Gallium porrigens</i> | Climbing Bedstraw | LS | Presently occurs in Bayview Park , O'Shaughnessy Hollow, and Twin Peaks |
| <i>Garrya elliptica</i> | Silk Tassel Bush | LS | Presently found in Glen Canyon Park |
| <i>Gilia capitata</i> ssp. <i>chamissonis</i> | Dune Gilia | CNPS List 1B | Presently occurs at Hawk Hill and Lake Merced |
| <i>Gilia clivorum</i> | Grassland Gilia | LS | Historically reported not recently observed in the City. |
| <i>Grindelia hirsutula</i> var. <i>maritima</i> | San Francisco Gumplant | FSC, CNPS List 1B | Presently occurs at Mount Davidson, Twin Peaks, Corona Heights, and Balboa Natural Area. |
| <i>Grindelia stricta</i> var. <i>augustifolia</i> | Marsh Gumplant | - | Presently occurs at India Basin Shoreline Park. |
| <i>Heuchera micrantha</i> | Alumroot | LS | Presently occurs at O'Shaughnessy, and Glen Canyon |
| <i>Juncus xiphiodes</i> | Iris Leaf Rush | LS | Historically reported not recently observed in the City. |
| <i>Layia carnosa</i> | Beach Layia | FE, SE, CNPS List 1B | Historically reported from San Francisco, location not well mapped, presumed extirpated |
| <i>Lessingia germanorum</i> | San Francisco Lessingia | FE, SE, CNPS List 1B | Only current population found on the Presidio. |
| <i>Leymus x vancouverensis</i> | Vancouver's Ryegrass | LS | Presently occurs at Lake Merced |
| <i>Lilaea scilloides</i> | Flowering Quillwort | LS | Presently occurs at McLaren Park (is likely extirpated) |

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

| Species | Common Name | Status Federal, State, CNPS, Local | Local Significance |
|---|--------------------------------------|------------------------------------|--|
| <i>Linaria canadensis</i> | Canadian or Blue Toad-Flax | LS | Presently occurs at Hawk Hill |
| <i>Lithophragma heterophylla</i> | Prarie Star, Woodland Star | LS | Presently occurs in Bayview Park |
| <i>Marah oreganus</i> | Wild Cucumber, Man-root | LS | Presently occurs at McLaren Park and Lake Merced |
| <i>Monardella undulata</i> | Curly-leaved Monardella | CNPS List 4 | Not known to occur in the City |
| <i>Muilla maritima</i> | Common Muilla | LS | Presently occurs at Corona Heights, Tank Hill, Bernal Hill and Mount Davidson |
| <i>Navarretia squarrosa</i> | Skunkweed | LS | Presently occurs at Hawk Hill and McLaren Park |
| <i>Osmorhiza chilensis</i> | Sweet Cicely | LS | Presently occurs at Interior Greenbelt. |
| <i>Pellaea andromedifolia</i> | Coffee Fern | LS | Historically reported not recently observed in the City. |
| <i>Prunus emarginata</i> | Bitter Cherry | LS | Presently occurs at Bayview and Glen Canyon |
| <i>Prunus ilicifolia</i> | Holly-leaved Cherry Islais Cherry | LS | Presently occurs at Bayview Park, Glen Canyon |
| <i>Prunus virginiana var. demissa</i> | Western Choke Cherry | LS | Presently occurs at Tank Hill and Bayview Park |
| <i>Quercus chrysolepis</i> | Canyon Live Oak | LS | Presently occurs at Lake Merced |
| <i>Rhamnus crocea</i> | Spiny Redberry | LS | Presently occurs at Glen Canyon |
| <i>Ribes divaricatum</i> | Coastal Black Gooseberry | LS | Presently occurs at Lake Merced |
| <i>Ribes menziessi</i> | Canyon Gooseberry | LS | Presently occurs at Bayview Park |
| <i>Rosa gymnocarpa</i> | Wood Rose | LS | Presently occurs at Bayview Park, O'Shaughnessy and Mount Davidson |
| <i>Rubus parviflorus</i> | Thimbleberry | LS | Presently occurs at Lake Merced and Interior Green Belt |
| <i>Salvia spathacea</i> | Hummingbird Sage | LS | Presently occurs at Bernal Hill. |
| <i>Saxifraga californica</i> | California saxifrage | LS | Presently occurs at Billy Goat Hill |
| <i>Sedum spathulifolium</i> | Broadleaf Stonecrop | - | Larval food plant for San Bruno elfin butterfly, presently occurs at Glen Canyon, Mt. Davidson, O'Shaughnessy Hollow, Tank Hill, and Twin Peaks |
| <i>Senecio aronicoides</i> | Groundsel | LS | Presently occurs at Bayview Park and Mount Davidson |
| <i>Silene scouleri</i> ssp. <i>grandis</i> | Scouler's Large Campion | LS | Presently occurs at Bayview Hill |
| <i>Silene verecunda</i> ssp. <i>verecunda</i> | San Francisco Campion | FSC, CNPS List 1B | Presently occurs at Mt. Davidson and Rock Outcrop |
| <i>Sisyrinchium californicum</i> | Yellow-eyed Grass | LS | Only San Francisco population in Glen Canyon |
| <i>Tanacetum camphoratum</i> | Dune Tansy | - | Southern distributional limit. Presently occurs at Grandview Park, Golden Gate Heights, Hawk Hill, Rock Outcrop, Lake Merced, and Balboa Natural Area. |
| <i>Triphysaria eriantha</i> var. <i>rosea</i> | Johnny-tuck | LS | Presently occurs at McLaren Park |

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

| Species | Common Name | Status Federal, State, CNPS, Local | Local Significance |
|-----------------------------|-------------------------------------|------------------------------------|--|
| <i>Vaccinium ovatum</i> | California or Evergreen Huckleberry | LS | Presently occurs at Mount Davidson |
| <i>Viola adunca</i> | Blue Violet | LS | Presently occurs at Glen Canyon, Twin Peaks and O'Shaugnessy |
| <i>Viola pedunculata</i> | Johnny-Jump-Up | - | Larval food plant for San Francisco silverspot butterfly, presently occurs at Bayview Hill, McLaren Park, Tank Hill, Duncan-Castro, and Corona Heights |
| <i>Woodwardia fimbriata</i> | Giant Chain Fern | LS | Presently occurs at Glen Canyon |
| <i>Zigadenus fremontii</i> | Star Lily | LS | Presently occurs at Bernal Hill |

Status Key:

- Federal Status**
- FE** Endangered. Species in danger of extinction throughout all or significant portion of its range.
 - FT** Threatened. Species likely to become endangered within foreseeable future throughout all or a significant portion of its range.
 - FPE** Proposed for listing as endangered.
 - FC** Candidate for listing as endangered. Candidate information now available indicates that listing may be appropriate with supporting data currently on file.
 - FSC** Species of Concern. Former Category 2 Candidate for listing as endangered.
 - FPD** Proposed de-listing.

California State Status

- SE** Endangered. Species whose continued existence in California is jeopardized.
- ST** Threatened. Species, although not presently threatened with extinction, that is likely to become endangered in the foreseeable future.
- SSC** Species of Concern.
- SFP** State Fully Protected under Sections 3511 and 4700 of the Fish and Game Code.
- Sens** Considered a sensitive species by the California Department of Forestry.

California Native Plant Society

- 1A** Plants presumed extinct in California
- 1B** Plants that are rare or endangered in California and elsewhere.
- 2** Plants that are endangered in California, but more common elsewhere.
- 3** Plants about which more information is needed.
- 4** Plants of limited distribution (a watch list).
- LS** Locally Significant.

Golden Gate Audubon Society

- SLC** Species of Local Concern

Appendix Table C-1. Bird species found within the San Francisco Significant Natural Areas (Based on Cotter [1998] as annotated by Josiah Clark, 2002).

| | | | | | Natural Area | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|-----------------------------|-----------------------------------|-----------|----------------------|--------------|------|----|----|-----------|----|----|----|----|--------------|----|----|----|----|---------|----|----|----|----|----|----|----|----|-------|----|----|----|----|----|----|
| | | | | | Southwest | | | | Southeast | | | | | Central West | | | | | Central | | | | | | | | | North | | | | | | |
| | | | | | BP | LM | PL | SP | VP | BH | IB | MP | PP | BV | GV | GH | HH | RO | FI | BG | CH | DP | DC | EM | FP | GC | IG | KH | MD | OW | OH | TK | TP | BN |
| Common Name | Species Name | N/I | Sensitive | Resident/ Migrant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Red-throated Loon | <i>Gavia stellata</i> | | w | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Pacific Loon | <i>Gavia pacifica</i> | | w | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Common Loon | <i>Gavia immer</i> | | w | | x | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Yellow-billed Loon | <i>Gavia adamsii</i> | | v | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Pied-billed Grebe | <i>Podilymbus podiceps</i> | | r/m | | *X | X* | X | | | x | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Horned Grebe | <i>Podiceps auritus</i> | | w | | X | | | | | x | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Red-necked Grebe | <i>Podiceps grisegena</i> | | w | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Eared Grebe | <i>Podiceps nigricollis</i> | | w | | X | | | | | X | x | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Western Grebe | <i>Aechmophorus occidentalis</i> | | w | | X(*) | | X | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Clark's Grebe | <i>Aechmophorus clarkii</i> | | w | | X(*) | | X | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | American White Pelican | <i>Pelecanus erythrorhynchos</i> | | m | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Brown Pelican | <i>Pelecanus occidentalis</i> | | pb | | x | | | | | X | | | | | | | | | | | | | | | | | | | | | | | x |
| 13 | Double-crested Cormorant | <i>Phalacrocorax auritus</i> | | r/m | | X | x | X | | | X | x | | | | | | | | | | | | | | | | | | | | | | x |
| 14 | Brandt's Cormorant | <i>Phalacrocorax penicillatus</i> | | r/m | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | Pelagic Cormorant | <i>Phalacrocorax pelagicus</i> | | r/m | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | American Bittern | <i>Botaurus lentiginosus</i> | | m | | x | | x | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | Least Bittern | <i>Ixobrychus exilis</i> | | v | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | Great Blue Heron | <i>Ardea herodias</i> | | r/m | | X* | X | X | | | X | X | | | | | | | | | | | | | | | | | | | | | | x |
| 19 | Great Egret | <i>Ardea alba</i> | | r/m | | X* | X | X | | | X | X | | | | | | | | | | | | | | | | | | | | | | x |
| 20 | Snowy Egret | <i>Egretta thula</i> | | r/m | | X | x | X | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | Cattle Egret | <i>Bubulcus ibis</i> | | v | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | Green Heron | <i>Butorides virescens</i> | | s | | X | x* | x | | | | x | | | | | | | | | | | | | | | | | | | | | | |
| 23 | Black-crowned Night-Heron | <i>Nycticorax nycticorax</i> | | r/m | | X | x | x | | | X | X | | | | | | | | | | | | | | | | | | | | | | x |
| 24 | White-faced Ibis | <i>Pegadis chihii</i> | | v | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | Turkey Vulture | <i>Cathartes aura</i> | | m/w | | x | x | X | x | x | x | x | | x | x | x | x | x | | | x | | | | x | x | | | x | x | x | x | x | |
| 26 | Tundra Swan | <i>Cygnus columbianus</i> | | w | | ? | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | Greater White-fronted Goose | <i>Anser albifrons</i> | | w | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | x |
| 28 | Snow Goose | <i>Chen caerulescens</i> | | w | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | x |
| 29 | Ross's Goose | <i>Chen rossii</i> | | w | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | Brant | <i>Branta bernicla</i> | | w | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | Canada Goose | <i>Branta canadensis</i> | | w | | x | | | | | X | | | | | | | | | | | | | | | | | | | | | | | x |
| 32 | Wood Duck | <i>Aix sponsa</i> | | w | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | Green-winged Teal | <i>Anas crecca</i> | | w | | x | | | | | x | | | | | | | | | | | | | | | | | | | | | | | |
| 34 | Mallard | <i>Anas platyrhynchos</i> | | r/m | | X | X | X | | | X | X | | x | | | | | | | | | | | | | | | | | | | | x |
| 35 | Northern Pintail | <i>Anas acuta</i> | | w | | x | | | | | x | x | | | | | | | | | | | | | | | | | | | | | | |
| 36 | Blue-winged Teal | <i>Anas discors</i> | | w | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 37 | Cinnamon Teal | <i>Anas cyanoptera</i> | | w | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 38 | Northern Shoveler | <i>Anas clypeata</i> | | w | | x | x | X | | | x | | | | | | | | | | | | | | | | | | | | | | | |
| 39 | Gadwall | <i>Anas strepera</i> | | w | | X | x | X | | | x | x | | | | | | | | | | | | | | | | | | | | | | |
| 40 | Eurasian Wigeon | <i>Anas penelope</i> | | w | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | |
| 41 | American Wigeon | <i>Anas americana</i> | | w | | X | x | X | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 42 | Canvasback | <i>Aythya valisineria</i> | | w | | x | x | | | | x | x | | | | | | | | | | | | | | | | | | | | | | |
| 43 | Redhead | <i>Aythya americana</i> | | w | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 44 | Ring-necked Duck | <i>Aythya collaris</i> | | w | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45 | Tufted Duck | <i>Aythya fuligula</i> | | v | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 46 | Greater Scaup | <i>Aythya marila</i> | | w | | X | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 47 | Lesser Scaup | <i>Aythya affinis</i> | | w | | X | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | Harlequin Duck | <i>Histrionicus histrionicus</i> | | w | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 49 | Oldsquaw | <i>Clangula hyemalis</i> | | w | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | Black Scoter | <i>Melanitta nigra</i> | | w | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | |
| 51 | Surf Scoter | <i>Melanitta perspicillata</i> | | w | | x | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 52 | White-winged Scoter | <i>Melanitta fusca</i> | | w | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | |
| 53 | Common Goldeneye | <i>Bucephala clangula</i> | | w | | x | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 54 | Barrow's Goldeneye | <i>Bucephala islandica</i> | | w | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | |
| 55 | Bufflehead | <i>Bucephala albeola</i> | | w | | X | | | | | X | x | | | | | | | | | | | | | | | | | | | | | | |
| 56 | Hooded Merganser | <i>Lophodytes cucullatus</i> | | w | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 57 | Common Merganser | <i>Mergus merganser</i> | | w | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 58 | Red-breasted Merganser | <i>Mergus serrator</i> | | w | | x | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 59 | Ruddy Duck | <i>Oxyura jamaicensis</i> | | w(*) | | X* | x | X | | | X | X | | | | | | | | | | | | | x | | | | | | | | x | |
| 60 | Osprey | <i>Pandion haliaetus</i> | | r/m | | x | | | | | x | x | | | | | | | | | | | | | | | | | | | | | | x |
| 61 | White-tailed Kite | <i>Elanus leucurus</i> | | r/m | | x | | | | | x | | | | | | | | | | | | | | | | | | | | | | | x |
| 62 | Bald Eagle | <i>Haliaeetus leucocephalus</i> | | m | | x | | | x | | | | | | | | | | | | | | | | | | | | | | | | | |
| 63 | Northern Harrier | <i>Circus cyaneus</i> | | m | | x | | | | | x | | | x | x | | | | | | | | | | | | | | | | | | | x |
| 64 | Sharp-shinned Hawk | <i>Accipiter striatus</i> | | w | | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | |

Appendix Table C-1. Bird species found within the San Francisco Significant Natural Areas (Based on Cotter [1998] as annotated by Josiah Clark, 2002).

| Common Name | Species Name | N/I | Sensitive | Resident/ Migrant | Natural Area | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|-------------------------|--------------------------------------|-----------|----------------------|--------------|----|----|----|-----------|----|----|----|--------------|----|----|----|---------|----|----|----|----|----|----|----|-------|----|----|----|----|----|----|----|----|----|
| | | | | | Southwest | | | | Southeast | | | | Central West | | | | Central | | | | | | | | North | | | | | | | | | |
| | | | | | BP | LM | PL | SP | VP | BH | IB | MP | PP | BV | GV | GH | HH | RO | FI | BG | CH | DP | DC | EM | FP | GC | IG | KH | MD | OW | OH | TK | TP | BN |
| 321 | Red-winged Blackbird | <i>Agelaius phoeniceus</i> | | | r/m | x | X* | X* | X* | x | x | X | x | | X | | | | | x | x | x | x | | x | X | X | X | X | x | x | x | X | |
| 322 | Tricolored Blackbird | <i>Agelaius tricolor</i> | | | m | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 323 | Western Meadowlark | <i>Sturnella neglecta</i> | | | w | x | x | x | X | X | X | X | x | x | X | x | X | | | | | | | x | X | | x | X | x | | x | x | | |
| 324 | Yellow-headed Blackbird | <i>Xanthocephalus xanthocephalus</i> | | | v | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 325 | Brewer's Blackbird | <i>Euphagus cyanocephalus</i> | | | r/m | X* | X* | X* | X | X* | X* | X* | X* | X* | X* | X | X* | X | X | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X | |
| 326 | Great-tailed Grackle | <i>Quiscalus mexicanus</i> | | | v | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 327 | Brown-headed Cowbird | <i>Molothrus ater</i> | | | r/m | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X | |
| 328 | Orchard Oriole | <i>Icterus spurius</i> | | | v | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 329 | Hooded Oriole | <i>Icterus cucullatus</i> | | | s | | X* | x | | x | | | X | | | x | | | | | | | | | X* | | | X | x | | | x | | |
| 330 | Baltimore Oriole | <i>Icterus galbula</i> | | | v | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 331 | Bullock's Oriole | <i>Icterus bullockii</i> | | | m(*) | | x | x | | X | | | X | | x | x | x | | | | | | | | X | | | X | x | | x | x | | |
| 332 | Scott's Oriole | <i>Icterus parisorum</i> | | | v | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 333 | Purple Finch | <i>Carpodacus purpureus</i> | | | r/m | x | X* | X | X | X | x | | X | | X | x | X | x | | x | | | x | x | X* | x | | X* | X* | | x | X* | | |
| 334 | Cassin's Finch | <i>Carpodacus cassinii</i> | | | v | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 335 | House Finch | <i>Carpodacus mexicanus</i> | | | r/m | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X |
| 336 | Red Crossbill | <i>Loxia curvirostra</i> | | 4 | w/m(*) | | x | | | | | | x | | x | | | | | | | | | | | | | | | | | | | |
| 337 | Pine Siskin | <i>Carduelis pinus</i> | | | r/m | x | X* | X* | X | X | | | X* | | X | X | X | x | x | X | x | | | | | | | X* | X* | | X* | X | | |
| 338 | Lesser Goldfinch | <i>Carduelis psaltria</i> | | | r/m | X | x* | x* | X | X* | x | x | X* | x | x* | x* | x | x | x | x | X* | X* | X | x | x | X | X* | x | x | X* | x | | X* | |
| 339 | Lawrence's Goldfinch | <i>Carduelis lawrencei</i> | | | v | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 340 | American Goldfinch | <i>Carduelis tristis</i> | | | r/m | x | X* | x | X* | X* | x | x | X* | | x | x | x | x | | x | | | | x | X | x | x | X | x | | X | X | | |
| 341 | Evening Grosbeak | <i>Coccothraustes vespertinus</i> | | | v | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 342 | House Sparrow | <i>Passer domesticus</i> | | | r/m | X* | X* | X* | X | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X* | X |

Notes

- 1 Once common, now very rare
- 2 Recently common but notably declining
- 3 Appears to be declining in recent years
- 4 Potentially at risk or declining
- + Rare breeder in San Francisco
- X Means expected at appropriate time of year and in appropriate habitat. This includes migrants.
- x Means recorded but not to be expected every visit or very rare- like recorded just once.
- * Indicates that the species breeds in the area.
- r Species that is resident with at least part of the population non-migratory and breeding in area
- w Species that regularly spends the winter in the area but migrates elsewhere to breed
- m Species seen during migration but neither breeds nor spends the winter
- s Species that migrate to the area to breed in the spring and summer months
- v Species that is very rare or a vagrant in the area and is far out of range or expected habitat
- pb Species regularly present post breeding as individuals disperse north to avoid competition for food around breeding colonies
- (*) Indicates that a few breeding records exist for this species in the area
- r/m Species that is primarily a resident but migrants of the species regularly pass through
- m/w Species that is primarily a migrant but winters with some regularity
- m/s Species that is primarily a migrant but some individuals do attempt to breed in the area

Note that birds that are indicated as W or S are also migrants during spring and fall.
Migrants, vagrants and spring breeding birds may occasionally overwinter.

This list was created using the official bird list for the City of San Francisco (Cotter, 1998) as annotated by Josiah Clark, SFRPD 2002.

Southwest

- BP = Brooks Park, Lakeview/Ashton Mini Park
- LM = Lake Merced
- PL = Pine Lake

SP = Sharp Park

Southeast

- VP = Bayview Park
- BH = Bernal Hill
- IB = India Basin Shoreline Park
- MP = McLaren Park
- PP = Palou/Phelps

Central West

- BV = Buena Vista
- GV = Grandview Park
- GH = Golden Gate Heights
- HH = Hawk Hill
- RO = Rock Outcrop

Central

- FI = 15th Avenue Steps
- BG = Billy Goat Hill
- CH = Corona Heights
- DP = Dorothy Erskine Park
- DC = Duncan-Castro
- EM = Edgehill Mountain
- FP = Fairmount Park
- GC = Glen Canyon Park
- IG = Interior Green Belt
- KH = Kite Hill
- MD = Mount Davidson
- OW = Golden Gate Park (Oak Woodland and Strawberry Hill)
- OH = O'Shaughnessy Hollow
- TK = Tank Hill
- TP = Twin Peaks

North

- BA = Balboa Natural Area

Appendix Table C-3. Plant species found within the San Francisco Significant Natural Areas.

| Number of Species | | | Natural Area | | | | | | | | | | | | | | | | | | | | | | | | | | | North |
|-------------------|--|-----------------------------------|--------------|-----|-----|----|-----|-----------|----|----|----|----|--------------|----|----|-----|----|---------|----|----|-----|----|----|-----|----|-----|----|-----|----|-------|
| | | | Southwest | | | | | Southeast | | | | | Central West | | | | | Central | | | | | | | | | | | | |
| | | | BP | LM | PL | SP | VP | BH | IB | MP | PP | BV | GV | GH | HH | RO | FI | BG | CH | DP | DC | EM | FP | GC | IG | KH | MD | OW | OH | |
| 60 | 106 | 74 | 209 | 226 | 167 | 10 | 221 | 76 | 50 | 77 | 51 | 67 | 77 | 31 | 59 | 132 | 53 | 31 | 28 | 11 | 334 | 28 | 59 | 161 | 64 | 160 | 75 | 191 | | |
| Species Name | Common Name | SF Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | <i>Abronia latifolia</i> | Yellow Sand Verbena | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | <i>Acacia longifolia</i> | Golden Wattle, Sydney Golden | No | | | | X | | | | | | | | | | | | | | X | X | X | | | | X | | X | |
| 3 | <i>Acacia mearnsii</i> | Black Wattle | No | | | | | | | | | X | | | | | | | | | | | | | | | | | | |
| 4 | <i>Acacia melanoxydon</i> | Blackwood Acacia | No | | | X | | | | | | | | | | | | | | | | | | | | X | | | | |
| 5 | <i>Acacia verticillata</i> | Star Acacia, Prickly Moses | No | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | <i>Acaena pinnatifida var. californica</i> | Acaena | Yes | X | | | X | X | | | | | | | | | | | | | X | | | | | X | | X | | X |
| 7 | <i>Acanthomintha lanceolata</i> | Santa Clara Thormint | No | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | <i>Acer macrophyllum</i> | Big-leaf Maple | Yes | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 9 | <i>Acer negundo var. californica</i> | California Box Elder | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | <i>Acer sp.</i> | | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | <i>Achillea millefolium</i> | Yarrow | Yes | | | X | | X | X | | | | | | | | | | | | | | | | | | | | | |
| 12 | <i>Achyraea mollis</i> | Blow-wives | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | <i>Actaea rubra</i> | Baneberry | Yes | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | <i>Adiantum jordanii</i> | California Maiden-hair Fern | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | <i>Aesculus californica</i> | California Buckeye | Yes | | | | X | X | | | | | | | | | | | | | X | X | | | | | X | | X | |
| 16 | <i>Agapanthes africanus</i> | Agapanthes | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | <i>Agapanthes orientalis</i> | Agapanthes | No | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 18 | <i>Agapanthes sp.</i> | Agapanthes | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | <i>Agoseris apargioides var. apargioides</i> | Coast Dandelion | Yes | X | | | | X | X | | | | | | | | | | | | | | | | | | | | | |
| 20 | <i>Agoseris grandiflora</i> | California Dandelion | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 21 | <i>Agoseris sp.</i> | | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | <i>Agrostis exarata</i> | Bent Grass | Yes | | | | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 23 | <i>Agrostis hallii</i> | Hall's Bent Grass | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| 24 | <i>Agrostis pallens</i> | Leafy bent Grass | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 25 | <i>Agrostis sp.</i> | | No | | | | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 26 | <i>Aira caryophyllea</i> | European hairgrass, Shiver Grass | No | X | X | | | X | X | | | | | | | | | | | | | | | | | | | | | |
| 27 | <i>Albizia lophantha</i> | Plume Acacia, Stink Bean | No | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | <i>Alchemilla occidentalis</i> | Alchemilla | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | <i>Allium dichlamydeum</i> | Coast Red Onion | Yes | X | | | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 30 | <i>Allium triquetrum</i> | Wild onion, White-flowered Onion | No | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 31 | <i>Alnus rhombifolia</i> | White Alder | No | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | <i>Alnus rubra</i> | Red Alder | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | <i>Alopecurus geniculatus</i> | Water Foxtail | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 34 | <i>Alopecurus saccatus</i> | | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35 | <i>Amaryllis belladonna</i> | Naked Lady | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | <i>Ambrosia chamissonis</i> | Beach Bur, Silver Beachweed | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 37 | <i>Amelanchier pallida</i> | Service Berry | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 38 | <i>Amelanchier utahensis</i> | Utah Service Berry | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39 | <i>Amsinckia intermedia</i> | Fiddleneck, Rancher's Fireweed | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 40 | <i>Anagallis arvensis</i> | Scarlet Pimpernel | No | | | | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 41 | <i>Anaphalis margaritacea</i> | Pearly Everlasting | Yes | X | | | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 42 | <i>Angelica hendersonii</i> | Coast Angelica | Yes | X | | | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 43 | <i>Anthriscus caucalis</i> | Bur-Chervil | No | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 44 | <i>Aphanes mollis</i> | | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45 | <i>Aphanes occidentalis</i> | Western Lady's Mantle | Yes | | | | | X | X | | | | | | | | | | | | | | | | | | | | | |
| 46 | <i>Aptenia cordifolia</i> | Baby Sun Rose, Dew Plant | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 47 | <i>Aquilegia formosa</i> | Columbine | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | <i>Arabis blepharophylla</i> | Coast Rock Cress | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 49 | <i>Arabis glabra</i> | Tower mustard | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | <i>Arbutus menziesii</i> | Pacific Madrone | Yes | | | | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 51 | <i>Arctotheca calendula</i> | Capeweed | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 52 | <i>Aristolochia californica</i> | Calif. Pipe Vine, Dutchman's Pipe | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 53 | <i>Armeria maritima ssp. californica</i> | Thrift, Sea-pink | Yes | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 54 | <i>Artemisia californica</i> | California Sagebrush | Yes | | | | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 55 | <i>Artemisia douglasiana</i> | Mugwort, California Mugwort | Yes | | | | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 56 | <i>Artemisia pycnocephala</i> | Beach or coastal Sagewort | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 57 | <i>Artemisia sp.</i> | | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 58 | <i>Aster chilensis</i> | California Aster | Yes | X | | | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 59 | <i>Aster radulinus</i> | Aster, Rough-leaved Aster | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 60 | <i>Athyrium filix-femina var. cyclosum</i> | Lady Fern | Yes | | | | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 61 | <i>Atriplex triangularis</i> | Spearscale | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 62 | <i>Avena barbata</i> | Slender Wild Oat | No | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 63 | <i>Avena fatua</i> | Wild Oat | No | | | | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 64 | <i>Avena sp.</i> | Wild Oat | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 65 | <i>Azolla filiculoides</i> | American Water Fern | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | |

Appendix Table C-3. Plant species found within the San Francisco Significant Natural Areas.

| Species Name | Common Name | SF Native | Natural Area | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------|--|--|--------------|-----|-----|----|-----------|----|----|----|----|--------------|----|----|----|-----|----|---------|----|----|-----|----|----|-----|----|-----|----|-----|----|----|-------|----|---|---|--|
| | | | Southwest | | | | Southeast | | | | | Central West | | | | | | Central | | | | | | | | | | | | | North | | | | |
| | | | BP | LM | PL | SP | VP | BH | IB | MP | PP | BV | GV | GH | HH | RO | FI | BG | CH | DP | DC | EM | FP | GC | IG | KH | MD | OW | OH | TK | TP | BA | | | |
| 60 | 106 | 74 | 209 | 226 | 167 | 10 | 221 | 76 | 50 | 77 | 51 | 67 | 77 | 31 | 59 | 132 | 53 | 31 | 28 | 11 | 334 | 28 | 59 | 161 | 64 | 160 | 75 | 191 | | | | | | | |
| 66 | <i>Baccharis douglasii</i> | Marsh Baccharis | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 67 | <i>Baccharis pilularis</i> | Coyote Brush | Yes | X | X | X | X | X | X | | X | X | X | X | X | X | X | X | X | | X | | X | | X | X | X | X | X | X | | | | | |
| 68 | <i>Baccharis pilularis ssp. consanguinea</i> | Coyote Brush | Yes | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 69 | <i>Barbarea orthoceras</i> | American Winter Cress | Yes | | | | | X | | | | | | | | | | | | | | X | | | | | | | | | | | | | |
| 70 | <i>Bellis perennis</i> | English Daisy | No | | | | | | | | X | | | | | | | | | | | X | | | | | | | | | X | | | | |
| 71 | <i>Berberis pinnata</i> | Coast barberry, Shiny-leaf Mahonia | Yes | | | | X | X | | | | | | | | | | | | | | X | | | X | X | X | X | X | | | | | | |
| 72 | <i>Brachypodium distachyon</i> | Purple False Brome | No | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 73 | <i>Brassica nigra</i> | Black Mustard | No | | | | | X | X | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 74 | <i>Brassica rapa</i> | Field Mustard, Turnip | No | | | | X | X | | X | | | | | | | | | | | | X | | | | | | | | | | X | | | |
| 75 | <i>Briza maxima</i> | Rattlesnake Grass, Big Quaking Grass | No | | X | | X | X | | X | | | X | X | | | | X | | | | X | | X | X | | X | X | X | | | | | | |
| 76 | <i>Briza minor</i> | Little Rattlesnake (Quaking) Grass | No | | X | | X | X | | X | | | | | | | | | | | | X | | | | | | | | | | | | | |
| 77 | <i>Brodiaea elegans</i> | Harvest Brodiaea | Yes | | | | | | | | X | | | | | | | | | | | X | | | | | | | | | | | | | |
| 78 | <i>Brodiaea sp.</i> | Brodiaea sp. | No | X | | | | | | X | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 79 | <i>Brodiaea terrestris</i> | Dwarf Brodiaea, Earth Brodiaea | Yes | | | | X | X | | X | | | | | | | | | | | | X | | | X | | X | X | X | | | | | | |
| 80 | <i>Bromus carinatus ssp. carinatus</i> | California Brome, Mountain Brome | Yes | | X | X | | X | X | | X | X | | | | | X | X | X | | X | | X | X | X | X | X | X | X | | | | | | |
| 81 | <i>Bromus carinatus ssp. maritimus</i> | California Brome, Seaside Brome | Yes | X | | | | | | | | | | | | X | X | X | X | X | | | | | | | | | | | | | | | |
| 82 | <i>Bromus catharticus</i> | Rescue Grass | No | | | | | | | | | | | | | | X | X | X | X | X | | | | | | | | | | | X | | | |
| 83 | <i>Bromus diandrus</i> | Rippgut Brome | No | X | X | X | X | X | | X | X | | | | | X | X | X | X | X | | X | | X | X | X | X | X | X | | | X | | | |
| 84 | <i>Bromus hordeaceus</i> | Soft Chess | No | | X | | | X | X | | X | X | | | | | X | X | | | | X | | X | X | | X | X | | | | X | | | |
| 85 | <i>Bromus madritensis ssp. rubens</i> | Foxtail Chess | No | | X | | | X | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| 86 | <i>Buddleja davidii</i> | | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | |
| 87 | <i>Cakile maritima</i> | Sea Rocket | No | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 88 | <i>Calamagrostis nutkaensis</i> | Pacific Reed Grass | Yes | | | | X | | | | X | | | | | | | | | | | | | | X | | X | | | | X | | | | |
| 89 | <i>Calandrinia ciliata</i> | Red Maids | Yes | | | | | | | | | | | | | X | | | | | | | | | | X | | X | | | | X | | | |
| 90 | <i>Calocedrus decurrens</i> | Incense Cedar | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | |
| 91 | <i>Calochortus albus</i> | White Globe Lily, Fairy Lantern | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 92 | <i>Calycanthus occidentalis</i> | Spice Bush | No | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| 93 | <i>Calystegia occidentalis</i> | Western or Bush Morning-glory | Yes | | | | | X | X | | X | | | | | | | | | | | X | | | | | | | | | | X | | | |
| 94 | <i>Calystegia purpurata ssp. purpurata</i> | Morning-glory | Yes | | | | X | X | X | | | | | | | | | | | | X | X | | X | | X | X | | X | | X | | | | |
| 95 | <i>Calystegia subacaulis</i> | Hill Morning-glory | Yes | | | | X | X | | X | | | | | | | | | | | | X | | X | | X | | X | | X | | X | | | |
| 96 | <i>Camissonia cheiranthifolia</i> | Beach Evening Primrose | Yes | | X | | X | | | | | | | | | X | | X | | | | | | | | | | | | | | | | | |
| 97 | <i>Camissonia ovata</i> | Sun Cup | Yes | | | | X | X | | X | | | | | | | | | | | X | | | | X | | X | | | | | | | | |
| 98 | <i>Capsella bursa-pastoris</i> | Shepherd's Purse | No | | | | | X | | | | | | | | | | | | | | X | | | | | | | | | | | X | | |
| 99 | <i>Cardamine californica var. integrifolia</i> | Milk maids, California Toothwort | Yes | | | | | X | | | | | | | | | | | | | X | X | | | X | | X | | | | | | | | |
| 100 | <i>Cardamine oligosperma</i> | Bitter-cress | Yes | | | | | X | X | | | | | | | | | | | | | X | | | | X | | X | | | | X | | | |
| 101 | <i>Cardamine sp.</i> | | No | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 102 | <i>Cardionema ramosissimum</i> | Sandmat | Yes | | X | | | X | | | X | | | | | | | | | | | X | | | X | | X | | | | | X | | | |
| 103 | <i>Carduus pycnocephalus</i> | Italian Thistle | No | | | | X | X | X | | X | | | | | | | | | | X | | | | X | | X | | X | X | | X | | | |
| 104 | <i>Carex barbarae</i> | Santa Barbara Sedge | Yes | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | |
| 105 | <i>Carex brevicaulis</i> | Short-stemmed Sedge | Yes | | | | | X | X | | | | | | | | X | X | | | | X | | | | | | | | | | | | | |
| 106 | <i>Carex sp.</i> | Sedge | No | | | | X | | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 107 | <i>Carpobrotus edulis</i> | Iceplant, Hottentot Fig | No | | X | X | X | X | X | | | | | | | X | X | X | X | | | | | | | | | | | | | | X | | |
| 108 | <i>Castilleja densiflora</i> | Owl's Clover | Yes | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| 109 | <i>Castilleja exserta ssp. exserta</i> | Purple Owl's Clover | Yes | | | | | | | | | | | | | | | | | | | | X | | | X | | X | | | | | | | |
| 110 | <i>Castilleja latifolia</i> | Seaside Paintbrush | Yes | | | | | | | | | | | X | | | | | | | | X | | | | | | | | | | | | | |
| 111 | <i>Castilleja sp.</i> | Indian Paintbrush | No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| 112 | <i>Castilleja wightii</i> | Beach Paintbrush | Yes | | | | X | | | | | | | | | X | | | | | | | | | | | | | | | | | | | |
| 113 | <i>Ceanothus "species nova"</i> | | No | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | |
| 114 | <i>Ceanothus thyrsiflorus</i> | Coast Blue Blossom, California Lilac | Yes | | | | | | | | X | | | | | | | | | | | X | X | | | | X | | | | | X | | | |
| 115 | <i>Centaurea solstitialis</i> | Yellow Star-thistle, Barnaby's Thistle | No | | | | X | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 116 | <i>Centaurium muehlenbergii</i> | Monterey Centaury | Yes | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| 117 | <i>Centranthus ruber</i> | Red Valerian | No | | | | | X | X | | X | X | | | | | | | | | | X | X | | | | | X | | | | X | | | |
| 118 | <i>Cerastium arvense</i> | Field or Meadow Chickweed | Yes | | | | | | | | X | | | | | | X | | | | | | | | X | X | | | | | | | X | | |
| 119 | <i>Cerastium glomeratum</i> | Mouse-Ear Chickweed | No | | X | | | X | X | | X | | | | | | | | | | | | X | | | | | | | | | | X | | |
| 120 | <i>Chamaesyce maculata</i> | spotted Spurge | No | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| 121 | <i>Chamomilla suaveolens</i> | Pineapple Weed | No | | | | | X | X | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| 122 | <i>Chasmanthe floribunda</i> | Chasmanthe | No | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 123 | <i>Chenopodium album</i> | Pigweed, Lamb's Quarters | No | | | | X | | | | | | | | | | | | | | | X | | | | | | | | | | | | | |
| 124 | <i>Chenopodium berlandieri</i> | Berlandier's or Pitseed Goosefoot | Yes | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 125 | <i>Chenopodium multifidum</i> | Cutleaf Goosefoot | No | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 126 | <i>Chenopodium murale</i> | Nettle-leaf Goosefoot | No | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| 127 | <i>Chenopodium sp.</i> | | No | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 128 | <i>Chlorogalum pomeridianum</i> | Soap Plant, Amole | Yes | X | X | X | X | X | X | | | | | | | X | | | | | | X | X | | X | X | | X | X | X | | X | | | |
| 129 | <i>Chlorogalum pomeridianum var. divaricatum</i> | Soap Plant | Yes | | | | | X | | | X | X | | | | | | | | | | | | | | | | | | | | | | X | |
| 130 | <i>Chorizanthe cuspidata ssp. cuspidata</i> | San Francisco Spineflower | Yes | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 131 | <i>Chrysanthemum leucanthemum</i> | Ox-Eye Daisy, Common Daisy | No | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Appendix Table C-3. Plant species found within the San Francisco Significant Natural Areas.

| Species Name | Common Name | Number of Species | SF Native | Natural Area | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------|--|---------------------------------|-----------|--------------|----|----|----|----|-----------|----|----|----|----|--------------|----|----|----|----|----|---------|----|----|----|----|----|----|----|----|----|-------|
| | | | | Southwest | | | | | Southeast | | | | | Central West | | | | | | Central | | | | | | | | | | North |
| | | | | BP | LM | PL | SP | VP | BH | IB | MP | PP | BV | GV | GH | HH | RO | FI | BG | CH | DP | DC | EM | FP | GC | IG | KH | MD | OW | OH |
| 132 | <i>Chrysanthemum segetum</i> | | No | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 133 | <i>Cirsium arvense</i> | Canada Thistle | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 134 | <i>Cirsium brevistylum</i> | Indian Thistle | Yes | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 135 | <i>Cirsium occidentale</i> var. <i>californicum</i> | California Thistle | Yes | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| 136 | <i>Cirsium quercetorum</i> | Brownie Thistle | Yes | | | | | X | X | | | | | | | | | | | | | | | | | | | | | |
| 137 | <i>Cirsium vulgare</i> | Bull thistle | No | | | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| 138 | <i>Clarkia rubicunda</i> | Farewell-to-Spring | Yes | | | | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 139 | <i>Claytonia perfoliata</i> | Miner's Lettuce | Yes | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 140 | <i>Clematis</i> sp. | | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 141 | <i>Collinsia multicolor</i> | Chinese Houses | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 142 | <i>Conicosia pugioniformis</i> | Narrow-Leaf Ice Plant | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 143 | <i>Conioselinum chinense</i> | | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 144 | <i>Conium maculatum</i> | Poison Hemlock | No | | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| 145 | <i>Convolvulus arvensis</i> | Morning-Glory, Field Bindweed | No | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 146 | <i>Conyza bilboana</i> | | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 147 | <i>Conyza bonariensis</i> | Horseweed | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 148 | <i>Conyza canadensis</i> | Horseweed | Yes | | | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| 149 | <i>Conyza</i> sp. | Horseweed | No | | | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | <i>Coprosma repens</i> | Mirror Plant | No | | | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| 151 | <i>Cornus sericea</i> ssp. <i>sericea</i> | Creek or American Dogwood | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 152 | <i>Coronopus didymus</i> | Wart, Swine Cress | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 153 | <i>Cortaderia jubata</i> | Andean Pampas Grass | No | X | | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 154 | <i>Cortaderia selloana</i> | Pampas Grass | No | | X | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 155 | <i>Corylus cornuta</i> var. <i>californica</i> | California Hazelnut | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 156 | <i>Cotoneaster pannosa</i> | Cotoneaster | No | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 157 | <i>Cotoneaster</i> sp. | Cotoneaster | No | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 158 | <i>Cotula australis</i> | New Zealand Brass Buttons | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 159 | <i>Cotula coronopifolia</i> | Brass Buttons | No | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 160 | <i>Crassula argentea</i> | Jade Plant | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 161 | <i>Crassula connata</i> | Sand Pygmy-weed | Yes | | | | | X | X | | | | | | | | | | | | | | | | | | | | | |
| 162 | <i>Crassula</i> sp. | (succulents) | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 163 | <i>Crococsmia masoniorum</i> | Crococsmia | No | | | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| 164 | <i>Croton californicus</i> | California Croton | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 165 | <i>Cupressus macrocarpa</i> | Monterey Cypress | No | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 166 | <i>Cuscuta salina</i> var. <i>major</i> | Salt marsh Dodder | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 167 | <i>Cymbalaria muralis</i> | Kenilworth Ivy | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 168 | <i>Cynodon dactylon</i> | Bermuda Grass | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 169 | <i>Cynosurus echinatus</i> | Hedgehog Dogtail, Dogtail Grass | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 170 | <i>Cyperus eragrostis</i> | Tall Cyperus | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 171 | <i>Cyperus esculentus</i> | Nutsedge, Galingale | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 172 | <i>Cytisus scoparius</i> | Scotch Broom | No | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 173 | <i>Dactylis glomerata</i> | Orchard Grass | No | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 174 | <i>Danthonia californica</i> var. <i>americana</i> | California Oatgrass | Yes | X | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 175 | <i>Daucus carota</i> | Carrot | No | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 176 | <i>Daucus pusillus</i> | Rattlesnake Weed | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 177 | <i>Delairea odorata</i> | Cape-ivy, German-ivy | No | X | | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 178 | <i>Delphinium californicum</i> | California Larkspur | Yes | | | | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 179 | <i>Delphinium decorum</i> | Coast Larkspur | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 180 | <i>Deschampsia cespitosa</i> | Tufted Hairgrass | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 181 | <i>Deschampsia cespitosa</i> ssp. <i>holciformis</i> | Tufted Hairgrass | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 182 | <i>Deschampsia danthonioides</i> | annual Hairgrass | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 183 | <i>Dichelostemma capitatum</i> | Blue Dicks, Wild Hyacinth | Yes | X | | | | X | X | | | | | | | | | | | | | | | | | | | | | |
| 184 | <i>Dichondra donelliana</i> | Dichondra | Yes | | | | | X | X | | | | | | | | | | | | | | | | | | | | | |
| 185 | <i>Disporum hookeri</i> | Fairy Bells | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 186 | <i>Distichlis spicata</i> | Saltgrass | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 187 | <i>Dodecatheon clevelandii</i> ssp. <i>patulum</i> | Shooting Star | Yes | | | | | X | X | | | | | | | | | | | | | | | | | | | | | |
| 188 | <i>Dodecatheon hendersonii</i> | Mosquito Bills, Sailor Caps | Yes | | | | | X | X | | | | | | | | | | | | | | | | | | | | | |
| 189 | <i>Dryopteris arguta</i> | Spreading Coastal Wood Fern | Yes | | | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 190 | <i>Duchesnea indica</i> | Mock-strawberry | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 191 | <i>Dudleya farinosa</i> | Live-forever | Yes | | | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 192 | <i>Echinocloa crus-galli</i> | | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 193 | <i>Echium candicans</i> | Echium | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 194 | <i>Echium</i> sp. | Echium | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 195 | <i>Ehrharta erecta</i> | Ehrharta Grass | No | | | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 196 | <i>Elymus californicus</i> | California Bottle-brush Grass | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 197 | <i>Elymus glaucus</i> ssp. <i>glaucus</i> | Blue Wild Rye, Western Wild Rye | Yes | X | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |

Appendix Table C-3. Plant species found within the San Francisco Significant Natural Areas.

| | | | Natural Area | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------|---|---|--------------|-----|-----|----|-----------|----|----|----|----|--------------|----|----|----|-----|----|---------|----|----|-----|----|----|-----|----|-----|----|-----|----|----|-------|
| | | | Southwest | | | | Southeast | | | | | Central West | | | | | | Central | | | | | | | | | | | | | North |
| | | | BP | LM | PL | SP | VP | BH | IB | MP | PP | BV | GV | GH | HH | RO | FI | BG | CH | DP | DC | EM | FP | GC | IG | KH | MD | OW | OH | TK | TP |
| 60 | 106 | 74 | 209 | 226 | 167 | 10 | 221 | 76 | 50 | 77 | 51 | 67 | 77 | 31 | 59 | 132 | 53 | 31 | 28 | 11 | 334 | 28 | 59 | 161 | 64 | 160 | 75 | 191 | | | |
| Species Name | Common Name | SF Native | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 198 | <i>Elymus multisetus</i> | Big Squirrel Tail | Yes | | | | | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 199 | <i>Epilobium brachycarpum</i> | Willow-herb | Yes | | | | | X | | X | X | | | | | | | X | | | | X | | | X | | X | | X | | |
| 200 | <i>Epilobium ciliatum</i> | Willow-herb | Yes | | | | | | | | X | | | | | | | | | | | | | | | | | | | | |
| 201 | <i>Epilobium ciliatum ssp. ciliatum</i> | Northern Willow-herb | Yes | | | | | X | X | | | | | | | | | | | | | | | | | X | | | | | |
| 202 | <i>Epilobium ciliatum ssp. watsonii</i> | Willow-herb | Yes | | | | | X | | | | | | | | | | | | | | X | | | X | | X | | X | | |
| 203 | <i>Epipactis helleborine</i> | | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 204 | <i>Equisetum arvense</i> | Common Horsetail, Field Horsetail | Yes | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 205 | <i>Equisetum sp.</i> | Horsetail | No | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 206 | <i>Equisetum telmateia</i> | Giant Horsetail | Yes | | | | | X | | | X | | | | | | | | | | | X | | | | | | | | | |
| 207 | <i>Equisetum telmateia ssp. Braunii</i> | Giant horsetail, Horsetail fern | Yes | | | | | | | | X | | | | | | | | | | | | | | | | | | | | |
| 208 | <i>Erechtites arguta</i> | | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 209 | <i>Erechtites glomerata</i> | New Zealand Fireweed | No | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 210 | <i>Erechtites minima</i> | Australian Fireweed | No | | | | | X | | | | | | | | | | | | | | X | | | X | | | | | | |
| 211 | <i>Erechtites prenanthoides</i> | | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 212 | <i>Erechtites sp.</i> | | No | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 213 | <i>Ericameria ericoides</i> | Mock Heather, Goldenbush | Yes | | X | | | | | | | X | X | X | X | X | | | | | | | | | | | | | X | | |
| 214 | <i>Erigeron blochmaniae</i> | Blochmans Leafy Daisy | No | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 215 | <i>Erigeron foliosus</i> | Leafy Daisy | Yes | | | | | X | | | | | | | | | | X | | | | X | | | | | X | | | | |
| 216 | <i>Erigeron glaucus</i> | Seaside Daisy | Yes | X | | | | X | | | | | | | | X | | | | | | X | | | X | | X | X | X | | |
| 217 | <i>Erigeron sp.</i> | Fleebane Daisy | No | | | | | | | | X | | | | | | | | | | | X | | | | | | | | | |
| 218 | <i>Eriogonum latifolium</i> | Coast Buckwheat | Yes | X | X | | | X | X | | X | X | X | X | | X | X | X | X | | X | X | | X | X | | X | X | X | | |
| 219 | <i>Eriogonum nudum</i> | Nude Buckwheat | Yes | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 220 | <i>Eriophyllum confertiflorum</i> | Golden or Yellow Yarrow | Yes | | | | | X | | | X | | | | | X | | | | | | | | X | | | | | X | | |
| 221 | <i>Eriophyllum confertiflorum var. confertiflorum</i> | Lizardtail | Yes | | | | | | | | | | | | | | | | | | | X | | | | | | X | | X | |
| 222 | <i>Eriophyllum staechadifolium</i> | Lizard-tail, Seaside Woolly Sunflower | Yes | X | X | | | X | | | X | | | | | | | | | | | X | | | X | X | X | X | X | | |
| 223 | <i>Erodium botrys</i> | Broad-leaf Filaree, Long-beaked Filaree | No | | X | | | X | X | | X | X | | | | | | | | | | X | | X | X | | | | | X | |
| 224 | <i>Erodium cicutarium</i> | Red-stemmed Filaree, Storksbill | No | | | | | X | X | | X | X | | | | | | | X | | | X | | X | | | | | X | X | |
| 225 | <i>Erodium moschatum</i> | White-stemmed Filaree | No | | | | | X | X | | X | | | | | | | | | | | X | | | | | | | | X | |
| 226 | <i>Erodium sp.</i> | Filaree | No | | | | | | | | X | | | | | | | | | | | | | | | | | | | | |
| 227 | <i>Erysimum franciscanum</i> | San Francisco Wallflower | Yes | | X | | | | | | | X | X | X | X | X | | | | | | | | | | | | | | | |
| 228 | <i>Escallonia sp.</i> | Escallonia | No | | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| 229 | <i>Eschscholzia californica</i> | California Poppy | Yes | X | X | | | X | X | | X | X | X | X | X | X | X | X | X | | X | X | | X | X | X | X | X | X | X | |
| 230 | <i>Eucalyptus globulus</i> | Blue Gum Eucalyptus | No | | X | X | | X | X | | X | X | | | | | | | | | X | X | X | | X | X | | X | | | |
| 231 | <i>Eucalyptus nicholii</i> | Eucalyptus | No | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 232 | <i>Eucalyptus sp.</i> | Blue Gum | No | | | | | X | | | X | | | | | | | | | | | | | | | | | | | | |
| 233 | <i>Eucalyptus viminalis</i> | manna Gum | No | | | | | X | | | X | | | | | | | | | | | | | | | | | | | | |
| 234 | <i>Euphorbia peplus</i> | Petty Spurge | No | | | | | X | X | | X | | | | | | | | | | | X | | | | | | | | | |
| 235 | <i>Euphorbia spathulata</i> | Spurge | Yes | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 236 | <i>Festuca arundinacea</i> | Tall Fescue, Alta Fescue, Reed Fescue | No | | | | | | | | X | | | | | | | | | | | | | | | | | | | | |
| 237 | <i>Festuca californica</i> | California Fescue | Yes | | | | | X | X | | X | | | | | | | | | | | X | | | X | | | | | | |
| 238 | <i>Festuca idahoensis</i> | Idaho Fescue | Yes | | | | | X | | | | | | | | X | | | | | X | | | | X | | | X | | X | |
| 239 | <i>Festuca rubra</i> | Red Fescue | Yes | X | | | | X | X | | X | X | X | X | X | X | X | X | | X | X | | | X | X | | | X | X | | |
| 240 | <i>Festuca sp.</i> | | No | | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| 241 | <i>Filago gallica</i> | Herba Impia | No | | | | | X | X | | X | | | | | | | | | | | X | | | | | | | | | |
| 242 | <i>Filago sp.</i> | | No | | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| 243 | <i>Foeniculum vulgare</i> | Sweet Fennel | No | | X | | | X | X | | X | X | | | | | | X | X | X | | X | | X | | | X | | X | X | |
| 244 | <i>Fragaria chiloensis</i> | Beach or Dune Strawberry | Yes | X | | | | X | | | | | | | | | X | X | X | | | X | | | | | | | | X | |
| 245 | <i>Fragaria sp.</i> | Strawberry | No | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 246 | <i>Fragaria vesca</i> | Wild or Woodland Strawberry | Yes | | | | | X | X | | | | | | | | | | | | X | | | X | | X | | X | | X | |
| 247 | <i>Frankenia salina</i> | Alkali heath, Yerba Reuma | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 248 | <i>Fritillaria affinis</i> | Checker lily, Mission Bells | Yes | | | | | X | X | | | | | | | | | | | | X | X | | | X | | X | | X | | |
| 249 | <i>Fumaria officinalis</i> | Fumitory | No | | | | | | | | X | | | | | | | | | | | X | | | | X | | | | | |
| 250 | <i>Fumaria parviflora</i> | Fumitory | No | | | | | X | | | X | | | | | | | | | | | | | | | | | | | | |
| 251 | <i>Fumaria sp.</i> | | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 252 | <i>Fushia sp.</i> | Fushia | No | | | | | | | | | | | | | | | | | | | | | X | | X | | | | | |
| 253 | <i>Galium aparine</i> | Bedstraw, Cleavers, Goosegrass | Yes | | | | | X | X | | X | | | | | | | | | | X | X | | X | X | X | X | X | X | | |
| 254 | <i>Galium nuttallii</i> | Nuttall's Bedstraw, Climbing Bedstraw | No | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 255 | <i>Galium porrigens var. porrigens</i> | Climbing Bedstraw | Yes | | | | | X | X | | | | | | | | | | | | | X | | | | X | | X | | X | |
| 256 | <i>Galium sp.</i> | Bedstraw | No | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 257 | <i>Garrya elliptica</i> | Silk tassel Bush | Yes | | | | | X | | | | | | | | | | | | | | X | | | | | | | | | |
| 258 | <i>Gaultheria shallon</i> | Gaultheria | Yes | | | | | | | | | | | | | | | | | | | X | | | X | | X | | | | |
| 259 | <i>Gazania sp.</i> | Gazania | No | | | | | | | | X | | | | | | | | | | | | | | | X | | X | | | |
| 260 | <i>Genista monspessulana</i> | French Broom | No | | | | | X | X | | X | | | | X | | X | | | | | X | | | X | | X | X | X | | |
| 261 | <i>Geranium dissectum</i> | Cut-Leaf Geranium | No | | | | | X | X | | X | X | | | X | | | | | | | X | | | X | X | X | X | X | | |
| 262 | <i>Geranium molle</i> | Crane's Bill Geranium | No | | | | | X | X | | X | | | | | | | | | | | X | | | | X | X | X | X | | |
| 263 | <i>Geranium sp.</i> | Geranium | No | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |

Appendix Table C-3. Plant species found within the San Francisco Significant Natural Areas.

| Species Name | Common Name | SF Native | Natural Area | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------|---|-----------------------------|--------------|-----|----|-----|-----------|-----|----|-----|----|--------------|----|----|----|----|----|---------|-----|----|----|----|----|-----|----|----|-----|----|-----|----|-------|----|---|---|---|
| | | | Southwest | | | | Southeast | | | | | Central West | | | | | | Central | | | | | | | | | | | | | North | | | | |
| | | | BP | LM | PL | SP | VP | BH | IB | MP | PP | BV | GV | GH | HH | RO | FI | BG | CH | DP | DC | EM | FP | GC | IG | KH | MD | OW | OH | TK | TP | BA | | | |
| | | | 60 | 106 | 74 | 209 | 226 | 167 | 10 | 221 | 76 | 50 | 77 | 51 | 67 | 77 | 31 | 59 | 132 | 53 | 31 | 28 | 11 | 334 | 28 | 59 | 161 | 64 | 160 | 75 | 191 | | | | |
| 264 | <i>Gilia capitata</i> ssp. <i>chamissonis</i> | Dune Gilia | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 265 | <i>Gilia clivorum</i> | Gilia | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 266 | <i>Glyceria leptostachya</i> | Manna Grass | Yes | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| 267 | <i>Glyceria occidentalis</i> | Manna Grass | Yes | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| 268 | <i>Gnaphalium californicum</i> | Cudweed, Green everlasting | Yes | | | | X | X | | | | | | | | | | | | | | | X | | | | | X | | | X | | | | |
| 269 | <i>Gnaphalium canescens</i> ssp. <i>beneolens</i> | Everlasting Cudweed | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| 270 | <i>Gnaphalium luteo-album</i> | Everlasting Cudweed | No | | | | | X | | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| 271 | <i>Gnaphalium purpureum</i> | Purple Cudweed | Yes | | | | | X | | | | | | | X | | | | | | | | | | | | | | | | | | | | |
| 272 | <i>Gnaphalium ramosissimum</i> | Pink Everlasting, Cudweed | Yes | | | | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 273 | <i>Gnaphalium</i> sp. | Cudweed | No | X | | | X | | | X | | | | | | | | | | | | | | | | | | X | | X | | | X | | |
| 274 | <i>Gnaphalium stramineum</i> | Cudweed | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 275 | <i>Grindelia camporum</i> | Gumplant | Yes | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| 276 | <i>Grindelia hirsutula</i> | Hairy Gumplant | Yes | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | X | |
| 277 | <i>Grindelia hirsutula</i> var. <i>maritima</i> | San Francisco Gumplant | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| 278 | <i>Grindelia maritima</i> | San Francisco Gumplant | Yes | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| 279 | <i>Grindelia stricta</i> | Gumplant | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 280 | <i>Grindelia stricta</i> var. <i>angustifolia</i> | Gumplant | Yes | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| 281 | <i>Griselinia</i> sp. | Griselinia | No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 282 | <i>Hedera helix</i> | English Ivy | No | X | X | | | X | | X | X | X | | X | | | | | X | | | | X | X | | X | X | | | | | | X | | |
| 283 | <i>Hedypnois cretica</i> | Hedypnois | No | | | | | | | | | | | | X | | | | | | | | X | | | | | | | | | | | | |
| 284 | <i>Helenium puberulum</i> | Sneezeweed | Yes | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| 285 | <i>Heliotropium curvassavicum</i> | Heliotrope | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 286 | <i>Heracleum lanatum</i> | Cow Parsnip | Yes | | | | X | | | | | | | | | | | | | | | | X | | | | | | | | | X | X | | |
| 287 | <i>Heteromeles arbutifolia</i> | Toyon, Christmas Berry | Yes | X | X | X | X | X | | X | X | X | | | X | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | |
| 288 | <i>Heterotheca sessiliflora</i> ssp. <i>bolanderi</i> | Goldenaster | Yes | | | | X | | | | | | | | | | | | | | | | X | | | | X | | | | | | | | |
| 289 | <i>Heuchera micrantha</i> | Alumroot | Yes | | | | | | | | | | | | | | | | | | | | X | | | X | | X | | | | | X | | |
| 290 | <i>Hirschfeldia incana</i> | Summer Mustard | No | | | | X | X | X | X | X | | | | | | | | X | | X | | X | | | X | | | | | | | | | |
| 291 | <i>Holcus lanatus</i> | Purple Velvet Grass | No | | | X | X | X | | X | | | | | | | | | | | | | X | | | | | | | | | | | | |
| 292 | <i>Holodiscus discolor</i> | Oceanspray, Creambush | Yes | X | | | X | X | | X | | | | | | | | | | | | | X | | | X | | X | | | | | | X | |
| 293 | <i>Hordeum brachyantherum</i> | Meadow Barley | Yes | | | | X | X | X | X | | | | | | | | | | | | | X | | | | | | | | | | | | |
| 294 | <i>Hordeum marinum</i> ssp. <i>gussoneanum</i> | Mediterranean Barley | No | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| 295 | <i>Hordeum murinum</i> ssp. <i>Leporum</i> | Farmer's Foxtail | No | | | X | | X | X | X | X | X | X | X | X | | | X | X | | | X | X | | X | X | X | X | X | X | X | X | X | X | |
| 296 | <i>Hordeum</i> sp. | | No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 297 | <i>Horkelia californica</i> | California Horkelia | Yes | X | | | X | X | X | | | | | | | | | X | X | X | | | X | | X | | X | | | | | | | X | |
| 298 | <i>Hypochaeris glabra</i> | Smooth Cat's-Ear | No | | | | X | X | | X | X | X | X | X | X | | | X | X | X | | | X | | | X | | X | | | | | | X | |
| 299 | <i>Hypochaeris radicata</i> | Hairy or Rough Cat's-Ear | No | X | | | X | X | | X | X | X | X | X | X | | | X | X | | | | X | | X | | X | | X | X | X | X | X | X | |
| 300 | <i>Ilex aquifolium</i> | English Holly | No | | | | | | | X | | | | | | | | | | | | | X | | | | | | | | | | | | |
| 301 | <i>Ilex</i> sp. | Holly | No | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 302 | <i>Iris douglasiana</i> | Douglas Iris | Yes | | | X | X | X | | | | X | X | | | | | | | | | | X | X | | X | | X | | | | | X | | |
| 303 | <i>Iris longipetala</i> | Coast Iris | Yes | | | | X | X | | X | | | | | | | | X | X | X | | | X | | X | | X | | | | | | | X | |
| 304 | <i>Iris pseudacorus</i> | Yellow Flag | No | | | X | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 305 | <i>Jaumea carnosa</i> | Jaumea | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 306 | <i>Juncus balticus</i> | Rush | Yes | | | X | X | | | X | | X | | | | | | | | | | | X | | | | | | | | | | | | |
| 307 | <i>Juncus bufonius</i> | Toad Rush | Yes | | | | X | X | | X | | | | X | | | | | | | | | X | | | | X | | X | | | | | | |
| 308 | <i>Juncus effusus</i> var. <i>brunneus</i> | Bog Rush | Yes | | | X | X | | | X | | | | | | | | | | | | | X | | | X | X | X | | | | | | | |
| 309 | <i>Juncus lesueurii</i> | Rush | Yes | | | X | X | | | X | | X | | | | | | | | | | | X | | | | | | | | | | | | |
| 310 | <i>Juncus occidentalis</i> | Rush | Yes | | | | X | | | X | | | | | | | | | | | | | X | | | | | | | | | | | | |
| 311 | <i>Juncus patens</i> | Spreading Rush, Common Rush | Yes | | | | X | X | | | | | | | | | | | | | | | X | | | X | | X | | | | | | X | |
| 312 | <i>Juncus phaeocephalus</i> | Rush | Yes | | | | | | | X | | X | | | | | | | | | | | X | | | | | | | | | | | | |
| 313 | <i>Juncus</i> sp. | Rush | No | X | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| 314 | <i>Juncus xiphioides</i> | Iris Leaf Rush | No | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 315 | <i>Kniphofia uvaria</i> | Red-Hot Poker, Poker Plant | No | | | | | | | | | | | | | | | | | | | | X | | | X | | | | | | | | | |
| 316 | <i>Koeleria macrantha</i> | June Grass | Yes | | | | X | X | X | X | X | | | | X | | | | | | | | X | | | X | | X | X | X | X | X | X | X | X |
| 317 | <i>Lactuca serriola</i> | prickly Lettuce | No | | | | X | | | X | | | | | | | | | | | | | | | | | | | | | | | | | X |
| 318 | <i>Lactuca</i> sp. | Prickly Lettuce | No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| 319 | <i>Lasthenia californica</i> | Goldfields | Yes | | | | X | X | | X | | | | | | | | | | | | | X | | | X | | | | | | | | | |

Appendix Table C-3. Plant species found within the San Francisco Significant Natural Areas.

| Species Name | Common Name | SF Native | Natural Area | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------|--|-------------------------------------|--------------|----|----|----|----|-----------|----|----|----|----|--------------|----|----|----|----|----|---------|----|----|----|----|----|----|----|----|----|----|----|-------|
| | | | Southwest | | | | | Southeast | | | | | Central West | | | | | | Central | | | | | | | | | | | | North |
| | | | BP | LM | PL | SP | VP | BH | IB | MP | PP | BV | GV | GH | HH | RO | FI | BG | CH | DP | DC | EM | FP | GC | IG | KH | MD | OW | OH | TK | TP |
| 396 | <i>Mimulus aurantiacus</i> | Sticky or Bush Monkey Flower | Yes | X | X | | X | X | | | | | | | | | X | | | | X | | | X | X | X | X | X | | | |
| 397 | <i>Mimulus guttatus</i> | Common Monkey Flower | Yes | | | X | | | | | X | | | | | | | | | | X | | | | | | | | | | |
| 398 | <i>Minuartia douglasii</i> | Sandwort | No | | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| 399 | <i>Monardella villosa</i> | Coyote-Mint | Yes | | | X | X | X | | | | | | | | | | | | | X | | | X | | | | | | X | |
| 400 | <i>Monardella villosa var. franciscana</i> | Western Pennyroyal | Yes | | | | | | | | | | | | | | | | | | X | | | | | | X | | | | |
| 401 | <i>Muilla maritima</i> | Muilla | No | | | | | | | | | | | | | | | | | | X | | | X | | | | X | | X | |
| 402 | <i>Myoporum laetum</i> | Lollypop Tree | No | | X | | X | | | | | | | | | | | | | | | | | X | X | | X | | | | |
| 403 | <i>Myoporum sp.</i> | | No | | | | | | | | | | | | | | | | | | | | | X | | | | | | | |
| 404 | <i>Myosotis latifolia</i> | Forget-me-not | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 405 | <i>Myosotis sp.</i> | Forget-me-not | No | | | | | | | | | | | | | | | | | | | | | X | | | | | | | |
| 406 | <i>Myrica californica</i> | California Wax Myrtle | Yes | | X | X | X | | | | | | | | | | | | | | | X | | | X | | X | | | | |
| 407 | <i>Narcissus sp.</i> | Daffodil | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 408 | <i>Nassella lepida</i> | Foothill Needlegrass | Yes | | | X | X | X | | | X | | | | | | | | | | | | | | | | | | | | |
| 409 | <i>Nassella pulchra</i> | Purple Needlegrass | Yes | X | | | X | X | X | | | | | | | | X | X | X | | X | X | X | | X | X | | X | X | X | |
| 410 | <i>Navarretia squarrosa</i> | Skunkweed | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 411 | <i>Nemophila maculata</i> | | No | | | | | | | | X | | | | | | | | | | | | | | | | | | | | |
| 412 | <i>Nemophila menziesii</i> | Baby Blue-eyes | Yes | | | | | | X | | | | | | | | | | | | | X | | | | | | | X | | |
| 413 | <i>Nymphaea odorata</i> | White Water Lily, Water Nymph | No | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| 414 | <i>Oemleria cerasiformis</i> | Oso Berry | Yes | | | X | X | | | X | | | | | | | | X | X | | | X | X | | X | | X | X | X | | |
| 415 | <i>Oenanthe sarmentosa</i> | Water Parsley | Yes | | X | X | X | | | X | | | | | | | | | | | | X | | | X | | | | | | |
| 416 | <i>Oenothera elata ssp. hookeri</i> | Beach Evening Primrose | Yes | | X | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 417 | <i>Olea sp.</i> | Olive | No | | | | | | | | | X | | | | | | | | | | | | | | | | | | | |
| 418 | <i>Osmorhiza chilensis</i> | Sweet Cicely | Yes | | | | | | | | | | | | | | | | | | | | X | | | | | | | | |
| 419 | <i>Oxalis albicans ssp. pilosa</i> | Wood-sorrel | Yes | X | | | | | | X | | | | | | | | | | | | | | | | | | | | | |
| 420 | <i>Oxalis incarnata</i> | | No | | | | | | | | | | | | | | | | | | | X | | | | | | X | | | |
| 421 | <i>Oxalis latifolia</i> | | No | | | | | | | | | | | | | | X | | | | | | | | | | | | | | |
| 422 | <i>Oxalis pes-caprae</i> | Bermuda Buttercup | No | | X | | | X | X | | X | | | X | X | X | X | X | | | | X | X | | X | X | X | X | X | X | |
| 423 | <i>Oxalis rubra</i> | | No | | | | | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 424 | <i>Oxalis sp.</i> | | No | | | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| 425 | <i>parietaria judaica</i> | | No | | | | X | | | X | | | | | | | | | | | | | | | | | | | | | |
| 426 | <i>Paronychia franciscana</i> | Nailwort | No | X | | | | | X | | X | | | | | | X | X | X | | | X | | | X | | X | X | X | | |
| 427 | <i>Pellaea andromedifolia</i> | Coffee Fern | Yes | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| 428 | <i>Pellaea sp.</i> | | No | | | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| 429 | <i>Pennisetum clandestinum</i> | Kikuyu Grass | No | X | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 430 | <i>Pentagramma triangularis</i> | Goldback Fern | Yes | | | X | X | X | | X | | | | | | | | | | | | X | | | | | X | | X | | |
| 431 | <i>Perideridia kelloggii</i> | Yampah | Yes | | | | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| 432 | <i>Phacelia californica</i> | California Coast Phacelia | Yes | | X | | X | X | | | | | X | X | X | X | | | | | X | | | | | | | | | X | |
| 433 | <i>Phacelia distans</i> | Wild-Heliotrope | Yes | | | X | | | | | | | X | X | X | X | | | | | | | | | | | | | | X | |
| 434 | <i>Phacelia malvifolia</i> | Stinging Phacelia | Yes | | | X | | | | | | | X | | | | | | | | | | | | | X | X | | | | |
| 435 | <i>Phalaris aquatica</i> | Harding Grass | No | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 436 | <i>Phalaris sp.</i> | | No | | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| 437 | <i>Picris echioides</i> | Bristly Ox-tongue | No | | | X | X | X | | X | | | | | | | | | | | X | | | | | | | | | | |
| 438 | <i>Pinus pinea</i> | Italian Stone Pine | No | | | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| 439 | <i>Pinus radiata</i> | Monterey Pine | No | X | X | | X | X | | X | | | X | X | X | X | | | | | | X | | | X | X | | | | X | |
| 440 | <i>Pinus sp.</i> | Pine | No | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | |
| 441 | <i>Piperia elegans</i> | Green Rein-orchid, Coast Piperia | Yes | | | | | X | X | | | | | | | | | | | | | X | | | X | | X | | | X | |
| 442 | <i>Piptochaetium setosum</i> | Ricegrass | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 443 | <i>Pittosporum crassifolium</i> | Thick-leaved Pittosporum | No | | | | | | | | | | | | | X | | | | | | | | | | | | | | | |
| 444 | <i>Pittosporum sp.</i> | | No | | | X | X | | X | | | | | | | | | | | | | | | | | | | | | | |
| 445 | <i>Pittosporum undulatum</i> | Victorian Box, Mock Orange | No | | | | | | | | | | | | | X | | | | | | | | | | | | | | | |
| 446 | <i>Plantago coronopus</i> | Split-Leaf Plantain | No | | | | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| 447 | <i>Plantago erecta</i> | Dwarf Plantain | Yes | X | | | | X | X | | X | | | | | | | | X | | X | | | X | | X | | X | X | X | |
| 448 | <i>Plantago lanceolata</i> | English Plantain | No | X | X | | X | X | X | | X | | | X | X | | | X | X | X | | X | X | | X | X | | X | X | X | |
| 449 | <i>Plantago major</i> | Common Plantain | No | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | |
| 450 | <i>Plantago sp.</i> | Plantain | No | | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 451 | <i>Plantago subnuda</i> | Mexican Plantain | Yes | | | X | X | | | | | | | | | | | | | | | X | | | | | | | | | |
| 452 | <i>Platanus racemosa</i> | Western Sycamore | Yes | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 453 | <i>Poa annua</i> | Annual Bluegrass | No | | X | X | | X | X | | | | X | | | | | | | | | X | | X | X | | | | | X | |
| 454 | <i>Poa douglasii</i> | Douglas or Sand-dune Bluegrass | Yes | | X | | | | | | | | X | | X | X | | | | | | | | | | | | | | | |
| 455 | <i>Poa secunda ssp. secunda</i> | One-sided Bluegrass, Pine Bluegrass | Yes | | | | | | | | | | | | | | | | | | | X | | X | | | | | | | |
| 456 | <i>Poa sp.</i> | | No | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 457 | <i>Poa unilateralis</i> | Ocean-bluff bluegrass | Yes | X | | | | X | X | | X | | | | X | | | | | | | X | | X | | X | | X | X | X | |
| 458 | <i>Polycarpon tetraphyllum</i> | Four-leaved allseed | No | | | | | | | | | | | | | | | | | | | | X | | | | | | | | |
| 459 | <i>Polygala californica</i> | Milkwort | Yes | | | | | | | | | | | | X | | | | | X | | | | | | | | | | | |
| 460 | <i>Polygonum amphibium var. emersum</i> | Swamp Knotweed, Kelp | Yes | | X | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| 461 | <i>Polygonum arenastrum</i> | Common or Dooryard Knotweed | No | | | | | | X | | | | | | | | | | | | | | X | | X | | | | | | |

Appendix Table C-3. Plant species found within the San Francisco Significant Natural Areas.

| Species Name | Common Name | SF Native | Natural Area | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------|--|--------------------------------------|--------------|----|----|----|-----------|----|----|----|----|--------------|----|----|----|----|----|---------|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| | | | Southwest | | | | Southeast | | | | | Central West | | | | | | Central | | | | | | | | | | | | | North |
| | | | BP | LM | PL | SP | VP | BH | IB | MP | PP | BV | GV | GH | HH | RO | FI | BG | CH | DP | DC | EM | FP | GC | IG | KH | MD | OW | OH | TK | TP |
| 594 | <i>Tragopogon porrifolius</i> | Salsify, Oyster Plant | No | | | | X | | X | | | | | | | | | | | | | | X | | | | | | | | |
| 595 | <i>Trifolium depauperatum</i> var. <i>amplectans</i> | Sack Clover, Pale Sack Clover | Yes | | | | X | X | | X | | | | | | | X | | | | | | | | | | | | | | |
| 596 | <i>Trifolium depauperatum</i> var. <i>truncatum</i> | Sack Clover | Yes | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 597 | <i>Trifolium dubium</i> | Shamrock, Little Hop Clover | No | | | | | | | X | | | | | | | | | | | | X | | | | | | | | X | |
| 598 | <i>Trifolium gracilentum</i> | Clover | Yes | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 599 | <i>Trifolium hirtum</i> | Rose Clover | No | | | | | X | | | | | | | | | | | | | | X | | | | | | | | | |
| 600 | <i>Trifolium incarnatum</i> | Crimson Clover | No | | | | | X | | | | | | | | | | | | | | X | | | | | | | | | |
| 601 | <i>Trifolium microcephalum</i> | Clover | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 602 | <i>Trifolium microdon</i> | Clover | Yes | | | | | | | X | | | | | | | | | | | | | | | | | | | | | |
| 603 | <i>Trifolium repens</i> | White Clover | No | | X | X | | | | X | | | | | | | | | | | | X | | | | | | | | | |
| 604 | <i>Trifolium sp.</i> | Clover | No | | | | | | | X | | | | | | | | | | | | | | X | | | | | | | |
| 605 | <i>Trifolium subterraneum</i> | Subterranean Clover | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 606 | <i>Trifolium tridentatum</i> | Tomcat Clover | Yes | | | | | | | | | | | | | | | | | | | X | | | | X | | | | | |
| 607 | <i>Trifolium willdenovii</i> | Tomcat Clover | Yes | | | | X | X | | X | X | | | X | | | | X | | | | X | | | | | | X | X | | |
| 608 | <i>Trifolium wormskioldii</i> | Cow Clover, Coast Clover | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 609 | <i>Triphysaria eriantha</i> | Butter-and-eggs, Johnny-tuck | Yes | | | | X | | | X | | | | | | | | | | | | X | | | | | | | | | |
| 610 | <i>Triphysaria pusilla</i> | Owl's Clover, Dwarf Owl's Clover | Yes | | | | X | X | | X | | | | | | | | | | | | X | | | X | | | X | X | | |
| 611 | <i>Triteleia laxa</i> | Ithurie's Spear, Long-rayed Brodiaea | Yes | X | | | X | X | | X | X | | | | | | | X | X | X | | X | | | X | | X | X | X | | |
| 612 | <i>Triticum aestivum</i> | Wheat | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 613 | <i>Tropaeolum majus</i> | Garden Nasturtium | No | | X | X | | | | | X | | | | X | | | | X | | | X | X | | X | | X | | | | |
| 614 | <i>Typha angustifolia</i> | Nail Rod, Narrow-leaved Cattail | Yes | | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 615 | <i>typha latifolia</i> | Cat-tail | Yes | | X | | X | | | X | | | | | | | | | | | | X | | | | | | | | | |
| 616 | <i>Typha sp.</i> | | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 617 | <i>Umbellularia californica</i> | California Bay, California Laurel | Yes | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 618 | <i>Urtica dioica</i> ssp. <i>gracilis</i> | California Nettle | Yes | | | X | X | | | | | | | | | | | | | | | | | | | | | | | | |
| 619 | <i>Urtica dioica</i> ssp. <i>holosericea</i> | Coast Nettle | Yes | | X | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 620 | <i>Urtica sp.</i> | | No | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 621 | <i>Urtica urens</i> | Dwarf Nettle | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 622 | <i>Vaccinium ovatum</i> | California or Evergreen Huckleberry | Yes | | | | | | | | | | | X | | | | | | | | | | | X | | X | | | | |
| 623 | <i>Valeriana sp.</i> | Valerian, Garden Heliotrope | No | | | | | X | | | X | | | | | | | | | | | | | | | | | | | | |
| 624 | <i>Veronica americana</i> | American Brooklime | Yes | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | |
| 625 | <i>Veronica persica</i> | Persian Speedwell | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 626 | <i>Vicia americana</i> var. <i>americana</i> | American Vetch | Yes | | | | | X | | | X | | | | | | | X | | | | X | | | | | | | | X | |
| 627 | <i>Vicia benghalensis</i> | Purple Vetch | No | | | | | | | | X | | | | | | | | | | | X | | | | | | | | | |
| 628 | <i>Vicia gigantea</i> | Giant Vetch | Yes | | | X | X | | | | | | | | | | | | | | | X | | | X | | | | | | |
| 629 | <i>Vicia hirsuta</i> | | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 630 | <i>Vicia sativa</i> ssp. <i>nigra</i> | Narrow-leaved Vetch, Common Vetch | No | | | | | X | | X | X | | | | | | X | X | | | | X | | X | X | | X | | X | | |
| 631 | <i>Vicia sativa</i> ssp. <i>sativa</i> | Common Vetch, Spring Vetch | No | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| 632 | <i>Vicia sp.</i> | Vetch | No | | X | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| 633 | <i>Vicia villosa</i> | Woolly Vetch | No | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| 634 | <i>Vinca major</i> | Greater Periwinkle | No | | X | X | | | | | X | | | | | | | | | | | X | | | | X | | | | | |
| 635 | <i>Viola adunca</i> | Blue or Western Dog Violet | Yes | | | | | | | | | | | | | | | | | | | X | | | | | X | | | | |
| 636 | <i>Viola pedunculata</i> | Johnny-jump-up, Cal. Golden Violet | Yes | | | | X | X | | X | | | | | | | | | | | | X | | | X | | | X | X | | |
| 637 | <i>Vulpia bromoides</i> | Six-weeks Fescue | No | X | | | X | X | | X | | | | X | X | X | X | | | | | X | X | | X | X | | X | X | | |
| 638 | <i>Vulpia microstachys</i> var. <i>pauciflora</i> | | Yes | | | | | | | X | | | | | | | | | | | | | | | | | | | | | |
| 639 | <i>Vulpia myuros</i> var. <i>hirsuta</i> | Rat-tail Fescue | No | | | | X | | | X | | | | | | | | | | | | | | | | | | X | X | | |
| 640 | <i>Vulpia octoflora</i> | Slender Fescue | Yes | | | | | | | X | | | | | | | | | | | | | | | | | | | | | |
| 641 | <i>Vulpia sp.</i> | | No | | | | | | | | | | | | | | | | | | | X | | | X | | X | | | | |
| 642 | <i>Woodwardia fimbriata</i> | Giant chain Fern | Yes | | | | | | | | | | | | | | | | | | | X | | | | X | | | | | |
| 643 | <i>Wyethia angustifolia</i> | Narrow-leaf Mule's Ears | Yes | | | | X | X | | X | | | | | | | | X | X | | | X | | X | X | | X | | X | | |
| 644 | <i>Zantedeschia aethiopica</i> | Calla Lily, Common Calla | No | | | | | | | | | | | | X | | | | | | | X | | | | | | | | | |
| 645 | <i>Zigadenus fremontii</i> | Star Lily | Yes | | | | | X | | X | | | | | | | | | | | | X | | | | | | | | | |

Southwest
 BP = Brooks Park, LakeView/Ashton Mini Park
 LM = Lake Merced
 PL = Pine Lake
 RN = Rolph Nicol
 SP = Sharp Park

Southeast
 VP = Bayview Park
 BH = Bernal Hill
 IB = India Basin Shoreline Park
 MP = McLaren Park
 PP = Palou/Phelps

Central West
 BV = Buena Vista
 GV = Grandview Park
 GH = Golden Gate Heights
 HH = Hawk Hill
 RO = Rock Outcrop

Central
 FI = 15th Avenue Steps
 BG = Billy Goat Hill
 CH = Corona Heights
 DP = Dorothy Erskine Park
 DC = Duncan-Castro
 EM = Edgehill Mountain
 FP = Fairmount Park
 GC = Glen Canyon Park

IG = Interior Green Belt
 KH = Kite Hill
 MD = Mount Davidson
 OW = Golden Gate Park (Oak Woodland and Strawberry Hill)
 OH = O'Shaughnessy Hollow
 TK = Tank Hill
 TP = Twin Peaks

North
 ML = Mountain Lake

APPENDIX **E**

**1995 Significant Natural Resource Areas
Management Plan**



RECREATION AND PARK DEPARTMENT

STAFF REPORT ON THE

SIGNIFICANT NATURAL RESOURCE AREAS
MANAGEMENT PLAN

Adopted by the San Francisco
Recreation and Park Commission

January 19, 1995

Resolution No. 9501-008

PAJ9210
1990

Introduction

Significant natural areas in San Francisco are generally remnants of an original landscape region that stretched from San Bruno Mountain to the Golden Gate Headlands. This original landscape, sometimes known as the Franciscan biological region, was marked by the greatest inland penetration of ocean sand anywhere on the Pacific Coast and supported a rich sand dune ecosystem.

Rising above this belt of wind-blown sand, a ridge of Franciscan radiolarian chert extended in a southeast-northwest direction. Predominantly treeless except for small groves of coast live oak and toyon in more sheltered areas with sufficient soil, these grassy hilltops flourished with wildflowers in the spring.

Freshwater and saltwater wetlands teeming with wildlife lined the shoreline of the Bay. Small seasonal pools dotted the shifting sand dunes near the ocean and extensive stream systems fed vast marshes. A rising ocean deposited sand that effectively blocked the free-flow of a creek system resulting in the creation of Lake Merced.

The unique characteristics of this biological region made it different from any other ecosystem. Today, only very small examples of this rare environment remain as footnotes to the ecological history of San Francisco.

Many of these natural vestiges face degradation and destabilization from increasing urbanization. In order to effectively preserve and protect these valuable natural resources, the Recreation and Park Department proposes to develop a Significant Natural Resource Areas Management Plan.

Program Background


As public awareness of the value of San Francisco's biological diversity has grown, so has the appreciation of notable natural resources within the City's park system.

To further the protection and enhancement of significant natural resources on property under the jurisdiction of the Recreation and Park Department, a total of \$400,000 has been earmarked to fund a Significant Natural Resource Areas Management Plan (SNRAMP) through the San Francisco Park and Open Space Program. The purpose of this management plan is to establish a maintenance and preservation program related to the protection and enhancement of natural resource values.

It is envisioned that a significant portion of the funds would be used to address immediate threats to natural resources on park property, such as invasive weeds and erosion (see Attachment D). The remainder of the funds would be reserved for the development of the specific management programs of the natural resources management plan.

The Recreation and Park Department staff has drafted plan objectives, policies and guidelines for identifying significant natural areas and developing a standardized procedure for inventorying these areas and establishing management programs for their protection. The attached report provides the background and initial process contemplated by staff for the Significant Natural Resource Areas Management Plan.

An environmental consultant would be selected in the second part of the plan's development to further refine the plan, inventory natural resources within selected park properties, and make the site specific management program recommendations.

 A stated objective of the proposed program is to "[i]ncrease City-wide level of awareness of the location and value of significant natural resource areas...." and to "[e]ncourage local participation in the protection or improvement of natural resources." Therefore, interested members of the public have been invited to participate in a series of community workshops to review and comment on the draft SNRAMP. Members of the public, community organizations, and agencies with natural resources expertise will be invited to participate with Recreation and Park Department staff on a task force to implement SNRAMP. The task force would also monitor the progress of the consultant and review and comment on further refinements of the plan by the consultant.

Following this process, the general public will be invited to attend a workshop to review and comment on the consultant-prepared plan. Upon completion of the environmental review for compliance with the California Environmental Quality Act (CEQA), the consultant-prepared SNRAMP would be reviewed and considered for approval by the Recreation and Park Commission at a public hearing.

Program Overview

The protection and enhancement of natural areas has become a priority goal for public agencies at both the state and federal levels. The Environmental Protection Agency, and Department of the Interior in particular, have initiated numerous programs to inventory natural resources on public lands, and have developed guidelines and standards for the preservation and enhancement of

resources such as threatened and endangered plants and animals, and habitat areas such as wetlands, vernal pools, desert communities and coastal zones.

Similarly, the State of California has a long history of priority policies and actions directed to the protection of statewide natural resources. In particular, the California Department of Fish and Game, Lands and Natural Areas Project has initiated a computerized inventory of natural areas, and a program designed to raise the awareness among developers, planners, conservationists and the general public about the presence of natural areas in local communities.

Many environmental organizations, such as The Nature Conservancy, also provide assistance in the preservation of unique natural resources. Groups with special expertise, such as the California Native Plant Society, the Sierra Club, the Audubon Society and others have played an active role in forwarding these programs.

Locally, there are a number of individual efforts under the auspices of the Golden Gate National Recreation Area and within the Recreation and Park Department (particularly through the Park and Open Space Program) that focus on the preservation and enhancement of natural areas and resources within the City and County of San Francisco.

The Recreation and Park Department would like to further these efforts by: 1) Developing guidelines and policies to protect or enhance valuable natural resources; 2) Setting standards for identifying these resources on property under the jurisdiction of the Recreation and Park Department; and 3) Following an approach and site-specific methodology for managing these areas. The result will be a Significant Natural Resource Areas Management Plan.

The following report produced by the staff of the Recreation and Park Department provides the background and initial process envisioned by staff for the Significant Natural Resource Areas Management Plan. This report is a summary of a program to identify significant natural resource areas, develop a standardized procedure for inventorying these areas, and establish management policies and actions for their protection.

Relationship to Other Plans

Other City departments and governmental agencies would comment on the consultant-prepared SNRAMP for consistency with other applicable plans and policies, including the following:

- *City Master Plan: Recreation and Open Space Element - Policy 13:* "Natural area management plans should be developed for publicly owned land throughout the City which would identify potentially significant natural areas,

inventory them, and identify the presence of natural resources. The plan should establish a consistent set of management policies and practices to protect and enhance the resources."

- Adopted master plans for individual parks
- Adopted forestry management plans for individual parks
- GGNRA: *General Management Plan and Resources Management Plan*
- Local Coastal Plan.

Action Items for Adoption by the Recreation and Park Commission

I. PROGRAM OBJECTIVES

- Increase City-wide level of awareness of the location and value of significant natural resource areas under the jurisdiction of the Recreation and Park Department.
- Encourage community participation in the protection or improvement of natural resources.
- Provide educational and recreational opportunities related to natural resources where appropriate; where feasible, restrict recreational uses and activity in sensitive habitat areas.
- Determine management needs and priorities for natural resources, particularly those identified by other agencies as rare, threatened or endangered species or habitat, or a species or habitat of special concern.
- Consult and coordinate with other city departments, agencies and groups with special expertise for inventory information and implementation.
- Implement measures designed to address immediate problems, such as invasive weed control.

II. IDENTIFICATION OF SIGNIFICANT NATURAL RESOURCE AREAS

In order to identify the significant natural resource areas under the jurisdiction of the Recreation and Park Department, staff established a general set of criteria. These criteria are:

- A. Park property contains naturally occurring biotic and/or geomorphic remnants of the indigenous landscape.
- B. Conforms to State of California, Department of Fish and Game criteria:
 1. Presence of rare type of species or habitat;
 2. Presence of ensemble type of species or habitat (3 or more elements occurring together);
 3. Presence of the best example of a type of species or habitat; and
 4. Presence of high diversity type of species or habitat.
- C. Special values: geology, riparian zones, wildlife habitat.
- D. Corridor or connector between natural areas.
- E. Natural resource area is vulnerable to degradation from an imminent ecological crisis, such as inundation by exotic plant species.

Many properties under the jurisdiction of the Recreation and Park Department are remnants (or include remnants) of the original natural landscape found in San Francisco prior to urbanization and therefore have significant natural values or features. Some examples of significant natural resource areas include:

- Native grasslands that thrive on the shallow soils of the windswept, foggy western slopes of San Francisco hilltops such as Bernal Hill, Twin Peaks, Bayview Park and the eastern side of Mt. Davidson. These grasslands are noteworthy for their ability to provide conditions of shade and water retention between bunches of grass that are ideal for native wildflowers. Many of these native wildflowers support a biologically diverse insect community, including rare species of butterflies.
- The most important avian habitat in San Francisco at Lake Merced. The Lake's proximity to the ocean, coastal cliffs and remnant dunes make it critical to the breeding ecology of as many as 50 bird species. It is a valuable habitat for thousands of migrating birds during spring and fall. Winter birds range from 60 to 100 species and number in the thousands of

individual birds. Lake Merced also provides habitat for remnant mammal, reptile and insect populations.

- Rare and diverse habitat areas in Glen Canyon Park, including a riparian habitat and a hillside native plant community.
- Rare and unusual geological formations found at Twin Peaks, the Rock Outcrop and Corona Heights.
- Important connectors between natural areas such as the many hilltop parks in San Francisco that serve as important links for certain species of birds and butterflies that require a range of suitable habitat.
- Rare, threatened or endangered species of animals and plants, such as the Mission Blue Butterfly found on Twin Peaks.

It is not the function of the SNRAMP to identify, inventory and maintain elements of park property which are not remnants of the original natural landscape, such as playgrounds, golf courses and ballfields. It is recognized, however, that certain parks that are characterized by a nonindigenous landscape are naturalistic, and as such, contribute to the biodiversity of the region by providing wildlife habitat. An example of such a park includes the vegetation of Stern Grove which supports many species of birds. These "naturalistic" parks are generally prioritized in Rank C in recognition of the fact that the park does not meet all of the criteria listed above (particularly criterion A).

Staff developed an evaluation matrix using the above criteria and suggested the following initial priority ranking of properties for "significant natural resource area" designation.

Following supplemental field inventories, this ranking may be revised based on site specific programs. Field work may also show that a particular park should be a higher priority because it is threatened by an immediate ecological crisis, pursuant to criterion E.

All or PART of the following parks would be considered candidates for significant natural areas.

| Rank A | Rank B | Rank C |
|---|--|---|
| Bayview Park Glen Canyon Park Lake Merced Mt. Davidson Twin Peaks | Bernal Hill Billy Goat Hill Buena Vista Park Corona Heights Golden Gate Heights -- (western edge) Golden Gate Park— Oak Woodland Strawberry Hill Grandview Park — Kite Hill McLaren Park— southern grasslands McNab Lake/Marsh Rock Outcrop Sharp Park Tank Hill | Brooks Property Dorothy Erskine Park Edgehill Mtn. Open Space Fairmont Park Golden Gate Park— Selected Lakes Park Presidio Interior Greenbelt Lincoln Park Mountain Lake Park Rolph Nicol (southern edge) Stern Grove/Pine Lake Zoo |

COMMENTS:

The program would focus on San Francisco park property and Sharp Park, however, Camp Mather may receive some review. Although the Zoo and Palace of Fine Arts (Lagoon) are included (Rank C), these sites may be questionable as natural areas.

III. GENERAL POLICIES AND MANAGEMENT ACTIONS

A. Vegetation

- Maintain/promote indigenous plant species; propagate native plants using seed collected from the specific site to avoid alteration of unique genetic strains of native plant species. This propagation policy should apply to the policies and management actions listed below to the extent possible.
- Control/remove invasive species.
- Provide fire breaks where appropriate and maximize indigenous vegetation with low flammability or low fuel volume in areas of high fire hazard.

- Utilize indigenous vegetation as ground cover to control erosion on steep slopes.
- Protect species listed as rare, threatened, endangered or of special concern.
- Remove exotic plants which adversely affect indigenous plant growth.
- Enhance riparian areas.
- Reforest and/or replant areas where appropriate to maintain diversity of indigenous plant communities.
- Preserve habitat which supports wildlife.

B. Wildlife

- Monitor wildlife population which is an indicator of a diverse ecosystem.
- Consult with agencies such as the State of California, Department of Fish and Game and The Nature Conservancy on habitat enhancement.
- Cooperate with other agencies (SPCA, Mayor's Office of Animal Care and Control) using established and humane procedures to remove or control free-roaming domestic dogs, feral cats and feral ducks or geese when their presence conflicts with natural wildlife.
- Develop educational programs with other agencies for wildlife protection.

C. Water Resources

- Maintain/improve water quality of streams and ponds.
- Protect riparian zones from erosion and sedimentation.
- Maintain drainage and erosion prevention devices along roads and service trails.

- Control drainage/runoff from roads.
- Establish and maintain tule encroachment zone around lakes.
- Use proper controls when applying aquatic herbicide.

D. Geotechnical/Soils

- Minimize erosion along roads and trails.
- Seed/plant bare soils with indigenous vegetation.
- Stabilize embankments when not in conflict with habitat.
- Minimize public access to and use of landslide areas and unstable slopes.
- Seek agreements with adjacent property owners to avoid development which contributes to erosion/runoff, or is subject to landslides.
- Clear landslide debris on park property.
- Install retaining devices where necessary to stabilize slopes.

E. Education

- Promote professional development of Recreation and Park Department staff in natural resources management.
- Develop nature programs to promote educational and recreational value of resources (for example, through the Randall Museum).
- Develop education programs aimed at private property owners adjacent to significant natural resource areas regarding the degradation of the resource resulting from such practices as dumping garden clippings or planting exotic species on park property.
- Develop education programs through the San Francisco Unified School District regarding significant natural resource areas. For example, work with staff at McAtteer High School to develop an ecology program using Glen Canyon Park as an outdoor

classroom. Various aspects of the canyon ecology and history could be incorporated into the school curriculum in the form of class projects.

F. Public Use

- Develop guidelines for pathways and interpretative trails/signs.
- Control dirt bikes and off-road vehicle use.
- Encourage community participation in a public stewardship program.

SIGNIFICANT NATURAL RESOURCES AREA MANAGEMENT PLAN

ATTACHMENT A SIGNIFICANT NATURAL AREA INVENTORY

(Name of Park) _____

(Area Surveyed) _____

(Date of Survey) _____

| Natural Resources | Applicable? | |
|--|-------------|---|
| | Yes | No |
| Notes | | |
| <p>A. VEGETATION Ground cover Shrubs/vines Perennials Annuals Grasses Trees</p> | | <p>Describe proportion of natural, exotics; any species on threatened or endangered plant list; sensitive plant endangered list; balance of flowering vs. non-flowering; habitat for animals; proportion of evergreen vs. deciduous self-seeding characteristics; pest and disease resistance; drought tolerant; irrigation; potential fire hazard.¹</p> |
| <p>B. WILDLIFE</p> | | <p>Describe all types; any species on T & E list; diversity; need for protection/enhancement.¹</p> |
| <p>C. WATER</p> | | <p>Natural water (ponds, creeks, streams, lakes); drainages; water quality; encroachment (tules, sedimentation).¹</p> |
| <p>D. GEOLOGY/SOILS</p> | | <p>Any rock outcropping; exposed soils/erosion; landslide areas; wetlands.¹</p> |
| <p>E. PUBLIC USE</p> | | <p>Active play area; viewing area; developed pathways; seating area; handicapped access; signage; lighting.¹</p> |

Show on map.

SIGNIFICANT NATURAL RESOURCES AREA MANAGEMENT PLAN

ATTACHMENT B MOBILE CREW WORK PLAN

A component of the proposed Significant Natural Resource Areas Management Plan is to address immediate problems in selected parks that contain significant natural resources. An initial program to hire 3 to 4 gardeners from a temporary Civil Service list and/or retain the services of the San Francisco Conservation Corps on an as-needed basis is being considered.

The types of projects that would be assigned to the mobile crew would include:

- Invasive Weed Control
- Erosion Control/Shoreline Restoration (small scale)
- Ivy Removal/Control
- Revegetation Projects related to Invasive Weed and Erosion Control
- Fire Hazard Control
- Weedy Tree Control

| <u>RANK A PARKS</u> | <u>DURATION¹</u> |
|-------------------------------------|-----------------------------|
| Bayview Park | 1 month |
| Glen Canyon Park | 2 months |
| Mt. Davidson (west side) | 1 month |
| Twin Peaks | 2 months |
| Lake Merced | 1 month |
| | |
| <u>RANK B PARKS</u> | <u>DURATION¹</u> |
| Bernal Hill | 2 weeks |
| Corona Heights | 1 month |
| Golden Gate Park: Oak Woodland | 2 weeks |
| Golden Gate Park: Strawberry Hill | 1 week |
| McLaren Park (South) | 2 weeks |
| Billy Goat Hill | 2 weeks |
| Grandview Park | 1 |
| month | |
| Tank Hill | 2 weeks |
| Golden Gate Heights (west side) | 1 week |
| Rock Outcrop | 1 week |
| Buena Vista Park | 2 weeks |
| Sharp Park (Selected Natural Areas) | 1 month |
| Kite Hill | 2 weeks |
| | |
| <u>RANK C PARKS</u> | <u>DURATION¹</u> |
| Stern Grove/Pine Lake | 1 month |
| Brooks Property | 1 week |
| Golden Gate Park (Selected Lakes) | 2 weeks |
| Mountain Lake Park | 2 weeks |
| Interior Greenbelt | 2 weeks |

¹Weed Control: Duration noted is for first pass only. Repeated weed control will be needed.