

6.15 GOLDEN GATE PARK, OAK WOODLANDS (INCLUDING WHISKEY HILL, LILY POND, AND STRAWBERRY HILL)

GENERAL DESCRIPTION AND LOCATION

In the northeast corner of the 1,021-acre Golden Gate Park, the 26.2-acre Oak Woodlands Natural Area is between Fulton Street and Lincoln Way (Figure 1-1). Included in the Oak Woodlands Natural Area are Whiskey Hill, Strawberry Hill, and Lily Pond, all of which contain oak woodlands but are at different location than the main oak woodland at Fulton and Stanyan Streets. (Figure 6.15-1). Strawberry Hill is located in the center of Stow Lake. Whiskey Hill is due west of Kezar Stadium. Lily Pond is located across Middle Drive from the National AIDS Memorial Grove. Even though they were probably originally planted in the 1870s, the oak woodland habitats of Golden Gate Park have been recognized as an important resource and were recommended for designation as an oak woodland preserve in the *Golden Gate Park Master Plan* (SFRPD 1998). Golden Gate Park has been used by the public since 1872, when landscaping work was completed on the eastern end of the park. Most of the native vegetation of Golden Gate Park has been removed. These Natural Areas are one of the few places where a large stand of native trees persist within the Significant Natural Areas System. There are two Dog Play Areas (DPAs) within or adjacent to the Natural Areas in Golden Gate Park. One is near where North Willard Street intersects with Fulton Street and the other is adjacent to Whiskey Hill.

As a highly used park, Golden Gate Park has high recreational and natural resources values for the citizens of San Francisco that include: the most extensive native coast live oak woodland in the City; high levels of recreational trail use and tourist visitation; and suitable habitat for a wide variety of resident and migratory bird species.

GEOLOGY, HYDROLOGY, AND TRAILS

Existing Conditions

The Oak Woodlands Natural Areas exist within a highly landscaped matrix that includes structures, pathways, and roadways. Elevations within these areas range from approximately 250 to 325 feet above sea level, and the slopes often reflect grading and management of the park. The elevation difference of the Golden Gate Park Natural Areas is less than that in many of the Natural Areas in other parks, but erosion problems are still found there, especially on the slopes (Figure 6.15-2). Most soils throughout Golden Gate Park are in the Sirdrak sand series, and are highly susceptible to water and wind erosion (USDA 1991). There are also scattered chert outcrops throughout the park. The oak woodlands are used extensively by the homeless. Social trails to homeless encampments are abundant throughout the oak woodlands. In some cases, homeless campers have leveled slopes (including cut and fill) and damaged oak trees by piling dirt at tree bases.

Oak Woodlands

The erosion control plan for Golden Gate Park lists nine focus areas in the Oak Woodlands as having severity ratings ranging from “minor” to “severe” (SFRPD and DPW 1994). Almost without exception, erosion problems in these areas are all the result of off-trail human use by visitors and homeless; approximately 12,381 linear feet of social trails have been developed. This use pattern has removed ground cover and exposed the sandy substrates to erosive forces. Four of the nine areas seem to have had erosion control measures installed since the report was written in 1994. The most common treatment has been to install log barriers and signs to close social trails. Oak seedlings are becoming established in an erosion control area east of the horseshoe pits, indicating that the closure of trails and erosion control measures can help increase the oak populations. There is a small DPA near where North Willard Street intersects with Fulton Street. This DPA is not the source of problems for the Natural Areas at Golden Gate Park.

Whiskey Hill

Whiskey Hill has the classic elongated, slightly arced shape of a sand dune. It rises approximately 40 feet above the surrounding area to an elevation of approximately 295 feet above mean sea level. It is one of the numerous sand dunes found throughout Golden Gate Park that have been stabilized by vegetation. The ground surface is moderately compacted silty fine sand, except at the base of the north side of the hill, facing Martin Luther King, Jr. Drive, where loose fine sand has been exposed by erosion along a social trail. Unlike in most of the other Natural Areas, there is no bedrock exposed at Whiskey Hill. Nearby test borings by the U.S. Geological Survey indicate at least 150 feet of sand and other loose sediment above the Franciscan bedrock. Pebbles and cobbles of Franciscan chert can be seen embedded in the main trail across the top of the hill, but these do not appear to be in place.

The main trail extends the length of the ridge formed by Whiskey Hill. It is at least 15 feet wide at the northeast end of the hill, narrowing to approximately 8 feet wide at the top. The trail surface is well compacted, the edges are fully vegetated, and there is little evidence of on-going erosion. At the top of the hill, the trail passes through a grove of large eucalyptus trees, the roots of which help to stabilize the dune, but which have been exposed in the trail by foot traffic. An expanse of damp ground in the eucalyptus grove indicates the presence of a seep. On the west slope, the trail has been stabilized with water bars made from 6-inch-thick eucalyptus trunks. A branch trail leads down the north side of the dune near the east end. It is 2 feet wide at the top and 6 feet wide at the base. It has eroded to depths between 4 and 12 inches, exposing the roots of oaks, pines, and eucalyptus trees. Several social trails up to 1 foot wide branch off the main trail, and numerous smaller social trails branch off those. The secondary trails exhibit erosion from foot traffic and are beginning to erode from wind and rain. The smaller trails have not yet begun to erode. The DPA adjacent to Whiskey Hill is bounded by 5th and 7th avenues, Lincoln Way, and King Drive. As it is laid out, use of this DPA does not affect the Natural Area at Whiskey Hill.

Lily Pond

The Lily Pond Natural Area is a relatively flat-topped sand dune over Franciscan chert with gentle to moderate slopes on all sides located adjacent to the quarried lake, known as Lily Pond. There is one main asphalt path on the eastern side of Lily Pond that connects the tennis courts to the Conservatory of Flowers. Numerous social paths cross through this section of oak woodland, and homeless encampments are commonly found there. Most of the slopes are well vegetated and not prone to erosion. Trails that cut up slopes can funnel water and small erosion gullies have formed in these areas.

Strawberry Hill

Strawberry Hill is an island in Stow Lake. It rises approximately 135 feet above the surface of the lake to an elevation of approximately 410 feet above mean sea level. Most of the island is a hill of Franciscan chert covered by Sirdrak sand. Exposures of chert, sandstone, and mélangé are visible adjacent to the trails, particularly along the lower trail on the south side of the hill. The sand ranges in depth from a few inches on the hill top and upper slopes to several feet on the middle and lower slopes.

A well-defined system of earthen trails and service roads encircle Strawberry Hill. Most of the trails are 12 to 15 feet wide, made of crushed rock, bounded by grass growing right against the trail edge (no bare ground), and are in good condition. In the steepest areas, particularly on the north side on the hill, steps have been constructed in the trails. The edges of most of the steps are formed with 8- to 10-inch wooden beams, staked into the ground in a U-shape and filled with rock and sand to create a stable, nearly level surface on which to stand. One set of steps on the west side of the hill top is cast concrete. Only a few social trails have been created, apparently by people sliding down the steep slopes. All these trails are eroding because of continued use, wind, and water.

VEGETATION

Based on aerial photo interpretation and ground-truthing, the vegetation of these Natural Areas was classified into 14 series (Table 6.15-1; Figure 6.15-3). These series are within four sub-formations: approximately 91 percent is forest; 4 percent is classified as “other” (developed and ornamental vegetation); 3 percent is classified as scrub; and less than 2 percent is grassland. Three of these series (coast live oak forest, California wax myrtle forest, and yellow bush lupine scrub) are dominated by native species.

Forest

Seven forest series were mapped within the Oak Woodlands Natural Areas. The most abundant forest series was the coast live oak forest (approximately 13 acres). This represented approximately 76 percent of the entire oak woodland habitat. Relatively large stands of mixed

exotic forests (10.07 acres) within the Natural Area reflect the managed nature of Golden Gate Park. Five other series (California wax myrtle forest, eucalyptus forest, acacia forest, cypress forest, and pine forest) generally accounted for a quarter of an acre or less each. Collection of point sample data within the Oak Woodland understory indicated that invasive species outnumbered the native species almost 2 to 1 (33 invasive to 17 native). Invasive species in the understory covered 66 percent of the area.

Grassland and Scrub

Native-dominated yellow bush lupine scrub (0.72 acres) and the mattress vine scrub (0.02 acres) were the only scrub series within the Golden Gate Park Natural Areas. Three grassland series were mapped and cover approximately 0.46 acres. The majority of the acreage was wild oat grassland (0.21 acres). Small areas of ripgut brome grasslands and annual grasslands were mapped within Golden Gate Park Natural Areas, covering 0.15 acres and 0.10 acres, respectively.

Other

Two series were mapped as “other” habitats at these Natural Areas: developed and ornamental vegetation. Developed areas account for just over an acre, and include all of the roads, buildings, and other human structures. Ornamental vegetation (0.05 acres) includes landscaped areas.

Sensitive Plant Species

The California Natural Diversity Data Base (CNDDDB) reports the occurrence of San Francisco spineflower (*Chorizanthe cuspidata* var *cuspidata*), San Francisco lessingia (*Lessingia germanorum*), and beach layia (*Layia carnosa*) within Oak Woodlands (CNDDDB 2005) (Table 6.15-2). These reports are all the result of non-specific locations taken from historic literature. The beach layia, for example, was reported as being found on “San Francisco sand dunes” in 1904 and was mapped with a 5-mile radius circle that encompasses most of San Francisco (CNDDDB 2005). The dune scrub habitat required by these species does not occur within Oak Woodlands. As part of countrywide conservation efforts, dune tansy (*Tanacetum camphoratum*) was reintroduced into openings within the Oak Woodlands in two locations. None of the other plant species designated as sensitive for this management plan have been observed at Oak Woodlands.

Invasive Plant Species

Nine vegetation series, accounting for almost 10 acres of the land, are dominated by invasive vegetation. Mixed exotic forest and blue gum eucalyptus account for most of the invasive plant species.

WILDLIFE

Birds

Nearby year-round water is available and can be an important resource. The multi-storied complex habitat of this Natural Area provides suitable foraging, nesting, and roosting habitat for a variety of species. The nearby forests of Oak Woodlands provide potential nesting habitat for raptors which would forage in adjacent landscaped areas. Habitat for smaller birds (passerines) is available in the scrub and mosaic habitats throughout the park. Those species that are typical of oak woodland habitat include oak titmouse (*Baeolophus inornatus*), white-breasted nuthatch (*Sitta carolinensis*), dark-eyed junco (*Junco hyemalis*), and Cassin's vireo (*Vireo cassinii*) (Appendix Table C-4).

Sensitive Bird Species and Important Bird Habitat

Nineteen species of locally sensitive birds are known to use the Oak Woodlands (Table 6.15-2). Of these, five species are known to breed within the Oak Woodlands or Golden Gate Park. These include purple finch (*Carpodacus purpureus*), pygmy nuthatch (*Sitta pygmaea*), and Steller's jay (*Cyanocitta stelleri*). Cliff swallow (*Petrochelidon pyrrhonota*) and olive-sided flycatcher (*Contopus cooperi*) are known to nest in Golden Gate Park. Oak woodland habitat, with a good-quality understory, can provide foraging and breeding areas for California quail (*Callipepla californica*), spotted towhee (*Pipilo maculatus*), and white-crowned sparrow (*Zonotrichia leucophrys*), all of which are species nearing extirpation within the City of San Francisco (Murphy 2000) (Table 6.15-2). Additionally, the oak woodlands provides nesting and foraging habitat for western screech owl (*Otus kennicottii*), a species with very limited distribution in San Francisco (Murphy 2000). The forest habitat of Oak Woodlands may provide nesting habitat for several species of raptors, all of which would qualify as sensitive species. The CNDDDB does not report the occurrence of any special-status species of birds from Oak Woodlands (CNDDDB 2005). Six areas of important bird habitat have been designated at Oak Woodlands and Whiskey Hill. Because oak woodlands are excellent habitat for birds, the areas of important bird habitat include the entire Natural Area (Figure 6.15-4). These areas are used by the sensitive species discussed previously, but also by acorn woodpeckers (*Melanerpes formicivorus*), varied thrushes (*Ixoreus naevius*) in the winter, and American robins (*Turdus migratorius*). Strawberry Hill was not designated as important bird habitat.

Mammals

To date, no small mammal surveys have been conducted in Oak Woodlands. Small mammals that may exist here are likely those that are relatively common in semi-urban settings including gophers and moles, house mouse (*Mus musculus*), and black rat (*Rattus rattus*). Larger mammals found in the Oak Woodlands area such as squirrels, raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), and Virginia opossum (*Didelphis virginiana*) are typical of urbanized parks

in general. The CNDDDB does not report the occurrence of any sensitive mammal species within the area (CNDDDB 2005).

Reptiles/Amphibians

A single three-hour survey for reptiles and amphibians was conducted at Oak Woodlands in March 2000 (Paquin and Reading 2000). This survey, conducted by walking transects, resulted in the observation of a single California slender salamander (*Batrachoseps attenuatus*). A survey of the area by EIP biologists on April 26, 1999, located three California slender salamanders within Oak Woodlands. Other relatively common reptiles that may be present include western fence lizard (*Sceloporus occidentalis*) and San Francisco alligator lizard (*Elgaria coerulea coerulea*). The CNDDDB reports the occurrence of California red-legged frogs (*Rana aurora draytonii*) from the northwestern edge of Oak Woodlands. These observations are undated from pre-1966 observations at either Stow Lake, the de Young Museum, or Lloyd Lake (CNDDDB 2005). This species is known to occur in the Arboretum in Golden Gate Park. The water bodies at Lily Pond and around Strawberry Hill contain many invasive reptiles and amphibians, including the African clawed frog (Lily Pond) (Giorni 2005) and bullfrogs. The presence of these known predators likely precludes the use of these oak woodlands by red-legged frogs. Because of this, California red-legged frogs are not a species of management concern within Oak Woodlands.

MANAGEMENT AREAS

Most of the Golden Gate Park Natural Area has been delineated as a Management Area-2 (MA-2). These oak woodlands have high natural resource values. MA-1 (MA-1a and MA-1b) areas have been delineated within the Oak Woodlands based on the presence of sensitive species such as the dune tansy and California pipevine. There are no MA-3 areas designated within this Natural Area.

ISSUES AND RECOMMENDATIONS

Several conservation and recreation-related issues have been identified for Golden Gate Park Natural Areas. Recommendations developed for each of these issues will guide restoration, enhancement, and maintenance work. In the following discussion, system-wide issues and recommendations (GR-1 for example; see Chapter 5) that apply to all Natural Areas at Golden Gate Park are presented first within each topical area, followed by site-specific issues and recommendations. Site-specific recommendations are keyed to the Management Area in which they should occur.

Site Improvements – Implementation of management recommendations in the Golden Gate Park Oak Woodlands would not change significantly the overall look of the park and would result in:

- enhanced native oak woodland by preventing establishment of invasive tree species;

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- more complex understory within the coast live oak woodland;
- reduction and control of soil erosion;
- enhanced habitat for resident and migratory birds and other wildlife;
- enhanced public safety by increasing and establishing view corridors;
- beautification of some park entry points with designed native plant gardens;
- improved public access on improved designated trail system; and
- improved education opportunities.

Overall, implementation of the following recommendations will improve the productivity of the oak woodlands in this Natural Area. Over the life of this plan, the oak woodlands may be compared to similar habitats at Junipero Serra Park in San Mateo County.

Vegetation

Issues relating to vegetation management at the Golden Gate Park Natural Areas focus on the protection of sensitive species and habitats, typically through the control of invasive plants (GR-1) and management of sensitive species and vegetation series of limited distribution (GR-2). Issues relating to the general safety of visitors and surrounding homes, fire hazards posed by vegetation and trees, and illicit activities must be considered during management of the Natural Areas (GR-13). In addition to these general recommendations, the following site-specific issues should be addressed.

Issue OW-1: The Golden Gate Park Natural Area supports the largest stand of oak woodlands within the Natural Areas System. These woodlands have the potential to be extremely diverse habitats that support sensitive plants and abundant wildlife (especially birds). However, the understory of the existing oak woodlands is highly degraded and contains substantial amounts of invasive vegetation that are crowding out sensitive species and reducing the overall biodiversity of this Natural Area. Unless this invasive vegetation is controlled, it could lead to a decline in the health of the oak woodlands and the localized extinction of sensitive species. Overall, the oak woodlands in the eastern end of Golden Gate Park are declining in number and acreage.

Recommendation OW-1a: Control of understory vegetation will not only help enhance existing habitat for wildlife, but will also allow for increases in diversity and protection of sensitive plant species. Therefore, contain and reduce invasive herbaceous and woody vegetation such as ehrharta grass (*Ehrharta erecta*), Cape ivy (*Delairea odorata*), poison hemlock (*Conium maculatum*), wild radish (*Raphanus sativus*), English ivy (*Hedera helix*), potato vine (*Muehlenbeckia* sp.), and Himalayan blackberry (*Rubus discolor*) within all Management Areas. In addition, invasive trees shall not be allowed to become established within MA-1a and 1b and all MA-2 areas.

Recommendation OW-1b: Most of the Management Areas within the Golden Gate Park Natural Areas contain oak woodlands with dune scrub or invasive species in the

understory and in forest gaps. Reduction of invasive vegetation within these oak forests creates the opportunity to increase and diversify the native understory of the oak woodlands. Therefore, maintain and diversify the existing oak woodland understory by reducing invasive species and installing native plants. When appropriate, forest gaps should be enhanced with dune scrub vegetation. These recommendations apply to all MA-2 areas at the Golden Gate Park Natural Area. A mosaic of coastal scrub and dune vegetation without an overstory is found in MA-1a; this habitat should be maintained in its current state. Installation of native plants will be based on diversity, cover, and density targets generated from reference sites within and around San Francisco. At some trail entrances and road frontages to the Natural Areas, planting palettes will be modified to favor showy native perennials in collaboration with Golden Gate Park gardening staff.

Recommendation OW-1c: Augmentation and reintroduction of sensitive plant species should be considered as appropriate to help establish and stabilize sensitive plant populations within Golden Gate Park, but also within the Natural Areas as a whole. Species to consider for augmentation or re-introduction include San Francisco wallflower (*Erysimum franciscanum*) (MA-1a and MA-1b), dune tansy (MA-1a and MA-1b), California pipevine (*Aristolochia californica*) (at MA-1a and MA-1b, MA-2c, MA-2d, MA-2j, MA-2k), wood rose (*Rosa gymnocarpa*) (MA-2d), and canyon gooseberry (*Ribes menziesii*) (MA-2d). Installation of young oak trees within vegetation Management Areas will increase the overall numbers of oak trees and promote a more multi-aged stand.

Recommendation OW-1d: Removal of approximately 92 invasive trees is recommended to help improve the oak woodlands and protect these native forests from continued habitat loss. No tree removal will occur in MA-1a, MA-1b, MA-2a, MA-2c-e, and MA-2i-k. Over 800 of the approximately 900 invasive trees in the Oak Woodlands will remain. Within MA-2d, the existing acacias shall remain; however, as they naturally age and die, they shall be gradually replaced with native oaks, planted to maintain the vegetative screen between the Natural Area and Fulton Street. Specific tree removals for other Management Areas are as follows:

- Remove 12 medium-sized eucalyptus from within MA-2b; the large eucalyptus will remain.
- Remove approximately 10 maytens trees (*Maytenus boaria*) from within MA-2f.
- Remove 4 tea trees (*Leptospermum* spp) from within MA-2g.
- Remove 6 acacia trees from within MA-2h.
- Remove approximately 50 acacia, lollipop tree (*Myoporum laetum*), thick-leaved pittosporum (*Pittosporum crassifolium*), and eucalyptus trees MA-2j.

Issue OW-2: Currently, SFRPD dumps unwanted organic material at a site east of Arguello Boulevard. This material is plant clippings and soil generated by gardeners in Golden Gate Park that is often pushed onto the base of the oaks, which occur at the edge of and slightly down slope

of the dump site. This is causing damage to neighboring oak community and spreading invasive weeds into the oak woodlands.

Recommendation OW-2a: SFRPD should redesign the organic dump and install traffic barricades at the edge of the slope to reduce damage to oak trees down slope.

Wildlife

Wildlife issues within this Natural Area focus on three main topics: habitat, food sources, and shelter. Vegetation management during the breeding season can impact nesting birds (GR-4); however, vegetation management also can provide materials to create artificial habitat for ground-dwelling birds, small mammals, and reptiles (GR-9). Artificial nesting structures may benefit some species, especially cavity nesters such as titmice, chickadees, and woodpeckers (GR-6). Finally, reduction in predation pressures will benefit all animals within the Natural Area (GR-7). In addition to these general recommendations, the following site-specific issues should be addressed.

Birds

Issue OW-3: Ground-dwelling birds rely on areas of relatively dense vegetation in which they can take shelter. Many of the species that provide shelter are also fruiting plants that provide an important food source. Currently, the understory of the Oak Woodlands Natural Area only provides a limited amount of cover and food. Removal of invasive vegetation as discussed above (Issue OW-1) creates the opportunity to improve the structural and vegetative diversity of the oak woodland understory. This action would benefit sensitive bird species such as California quail, spotted towhee, and dark-eye junco as well as western screech owls which may forage in the area.

Recommendation OW-3a: The management of vegetation within Oak Woodlands includes the removal of invasive understory vegetation such as ivy and Himalayan blackberries (Recommendation OW-1a). Replacement plants shall include those native species typical of an oak woodland understory such as toyon (*Heteromeles arbutifolia*), California coffeeberry (*Rhamnus californica*), oceanspray (*Holodiscus discolor*), snowberry (*Symphoricarpos albus* var *laevigatus*), and California honeysuckle (*Lonicera hispidula* var *vacillans*). Additionally, to help improve late-season forage, restoration activities shall include the installation of late-fruiting shrubs, coffeeberry and toyon. All plants should be installed in clusters to create thickets that afford protection to ground-dwelling birds.

Soils, Erosion, and Public Use

The erosion and soil use issues within this Natural Area relate to the trail system and public use. A network of roads and designated and social trails winds through the Management Areas at Oak

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Woodlands (Figure 6.15-2). This plan proposes to improve and maintain 5,252 feet of trail and retain an additional 7,211 feet of unimproved trails. The issue of erosion and habitat impacts related to social trails is addressed through the proposed closure of social trails (12,381 feet) and the implementation of GR-11 and GR-12. Of particular concern at the Oak Woodlands is the unauthorized use of trails by mountain bikes. The placement of signs and temporary barriers as discussed in GR-11 should address this concern. In addition, interpretive signs regarding the oak woodland ecosystem should also be considered (GR-14). No site-specific recommendations are made for this Natural Area.

Issue OW-4: There are two existing DPAs within and adjacent to the Oak Woodlands. Golden Gate Park Southeast is located in the understory of a cypress woodland across from the Big Rec Ball Fields. This area is adjacent to the oak grove, but dog-related recreation is not likely to impact wildlife in the oak woodlands. Golden Gate Park Northeast DPA is located within the oak woodlands. These oak woodlands provide nesting habitat for Hutton's vireo (*Vireo huttoni*) and Olive-sided flycatcher (*Contopus cooperi*), two species of concern in San Francisco. At present, most of the off-leash dog use in the area does not encroach into bird breeding habitat. Dogs typically run in the open un-vegetated area next to the oak stand. Nests of these species are located in trees. Therefore, at present, there is some separation between the breeding bird habitat and dog use in the area. It is possible, however, that increased use of this DPA could result in dogs running into, and directly disturbing, breeding bird habitat, which could negatively affect their reproduction.

Recommendation OW-4a: Use of the DPA at Golden Gate Park Northeast should be monitored. The boundaries of both DPAs in Golden Gate Park should be signed. If use levels increase in Golden Gate Park Northeast DPA such that impacts to breeding bird habitat are detected, SFRPD and the Dog Advisory Committee should consider relocating the DPA outside of oak woodlands.

Table 6.15-1. Vegetation series mapped at Golden Gate Park (Oak Woodlands, Strawberry Hill, and Whiskey Hill).

| | Vegetation Series | Total Acreage |
|--------------------|-------------------------------|----------------------|
| Forest | coast live oak forest* | 12.92 |
| | California wax myrtle forest* | 0.04 |
| | acacia forest | 0.16 |
| | blue gum forest | 0.23 |
| | eucalyptus forest | 0.25 |
| | mixed exotic forest | 10.07 |
| | pine forest | 0.25 |
| | Subtotal | 23.92 |
| Scrub | yellow bush lupine scrub* | 0.72 |
| | mattress vine scrub | 0.02 |
| | Subtotal | 0.74 |
| Grassland | annual grassland | 0.10 |
| | ripgut brome grassland | 0.15 |
| | wild oat grassland | 0.21 |
| | Subtotal | 0.46 |
| Other | developed | 1.04 |
| | ornamental | 0.05 |
| | Subtotal | 1.09 |
| Grand Total | | 26.22 |

* Indicates vegetation type is dominated by native species.

Table 6.15-2. Sensitive species known to presently or historically occur at Golden Gate Park (Oak Woodlands, Strawberry Hill, and Whiskey Hill).

| Species | Common Name | Status Federal, State, CNPS | Occurrence Status |
|--|---------------------------|-----------------------------|---|
| ANIMALS | | | |
| <i>Tyto alba</i> | Barn Owl | SLC | Historically reported. |
| <i>Callipepla californica</i> | California Quail | SLC | Historically reported. |
| <i>Hirundo pyrrhonota</i> | Cliff Swallow | SLC | Currently nests within Golden Gate Park |
| <i>Junco hyemalis</i> | Dark-eyed Junco | - | Presently occurs. |
| <i>Butorides striatus</i> | Green Heron | SLC | Presently occurs. |
| <i>Contopus borealis</i> | Olive-sided Flycatcher | SLC | Currently nests within Golden Gate Park. |
| <i>Vermivora celata</i> | Orange-crowned Warbler | SLC | Presently occurs. |
| <i>Empidonax difficilis</i> | Pacific-slope Flycatcher | SLC | Presently occurs. |
| <i>Carpodacus purpureus</i> | Purple Finch | SLC | Presently breeds. |
| <i>Sitta pygmaea</i> | Pygmy Nuthatch | SLC | Presently breeds. |
| <i>Loxia curvirostra</i> | Red Crossbill | SLC | Winter resident |
| <i>Sitta canadensis</i> | Red-breasted Nuthatch | SLC | Winter resident |
| <i>Pipilo maculatus</i> | Spotted Towhee | SLC | Presently occurs. |
| <i>Cyanocitta stelleri</i> | Steller's Jay | SLC | Presently breeds. |
| <i>Catharus ustulatus</i> | Swainson's Thrush | SLC | Presently occurs. |
| <i>Otus kennicottii</i> | Western Screech Owl | SLC | Presently occurs. |
| <i>Zonotrichia leucophrys</i> | White-crowned Sparrow | - | Presently occurs. |
| <i>Wilsonia pusilla</i> | Wilson's Warbler | SLC | Presently occurs. |
| PLANTS | | | |
| <i>Chorizanthe cuspidata</i> var. <i>cuspidata</i> | San Francisco Spineflower | FSC, CNPS List 1B | Presently occurs at Ft. Funston |
| <i>Layia carnosa</i> | beach layia | FE, SE, CNPS List 1B | Historically reported from San Francisco, location not well mapped, presumed extirpated |
| <i>Tanacetum camphoratum</i> | Dune Tansy | - | Presently occurs |
| <i>Lessingia germanorum</i> | San Francisco Lessingia | FE, SE, CNPS List 1B | Only extant population found on the Presidio. |

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.

Table 6.15-2. Sensitive species known to presently or historically occur at Golden Gate Park (Oak Woodlands, Strawberry Hill, and Whiskey Hill).

- 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



Source: Aerial photography San Francisco Department of Public Works, 2002, Orthophoto -San Francisco - 1-foot resolution, 2001; property boundary data derived by San Francisco Recreation and Park Department (RPD) 2005 from data provided by San Francisco Department of Telecommunications and Information Services, 2002; natural area boundary data created by San Francisco State University Institute for GISc from information provided by RPD's Natural Areas Program (NAP), 2005; contour lines provided by San Francisco Department of Conservation; all data are California State Plane Zone III, NAD 83.



Created by Debra Dwyer, San Francisco State University
Institute for GISc, May 6, 2002, revised June 7, 2005.

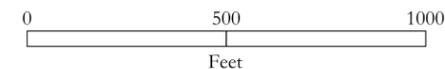
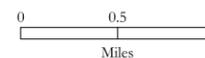


FIGURE 6.15 - 1
**AERIAL PHOTOGRAPH,
PROPERTY BOUNDARIES,
AND NATURAL AREAS**
**Oak Woodlands, Whiskey Hill, Lily Pond,
and Strawberry Hill in Golden Gate Park**
Significant Natural Resource Areas
Management Plan
San Francisco, California



Source: Soils and land features data collected by EIP Associates, 1999-2002; trail data collected by San Francisco Recreation and Park Department Natural Areas Program (NAP) 2005, digitized by San Francisco State Institute for GISc; vegetation data collected by NAP, San Francisco State University Biology Department and EIP Associates, 1999- 2000; data layers digitized by Geotopo, Inc., 2000; edited and corrected by SFSUIGIS, 2000 - 2002; natural area boundary created by SFSUIGIS based on a determination by NAP, 2005; streets data excerpted from ArcView StreetMap 2000, copyright 1998-2000, Environmental Systems Research Institute, Inc., (ESRI).

Created by D. Dwyer, San Francisco State University Institute for GISc, August 16, 2001, revised December 11, 2005.

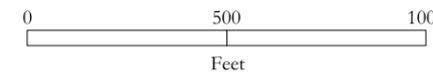
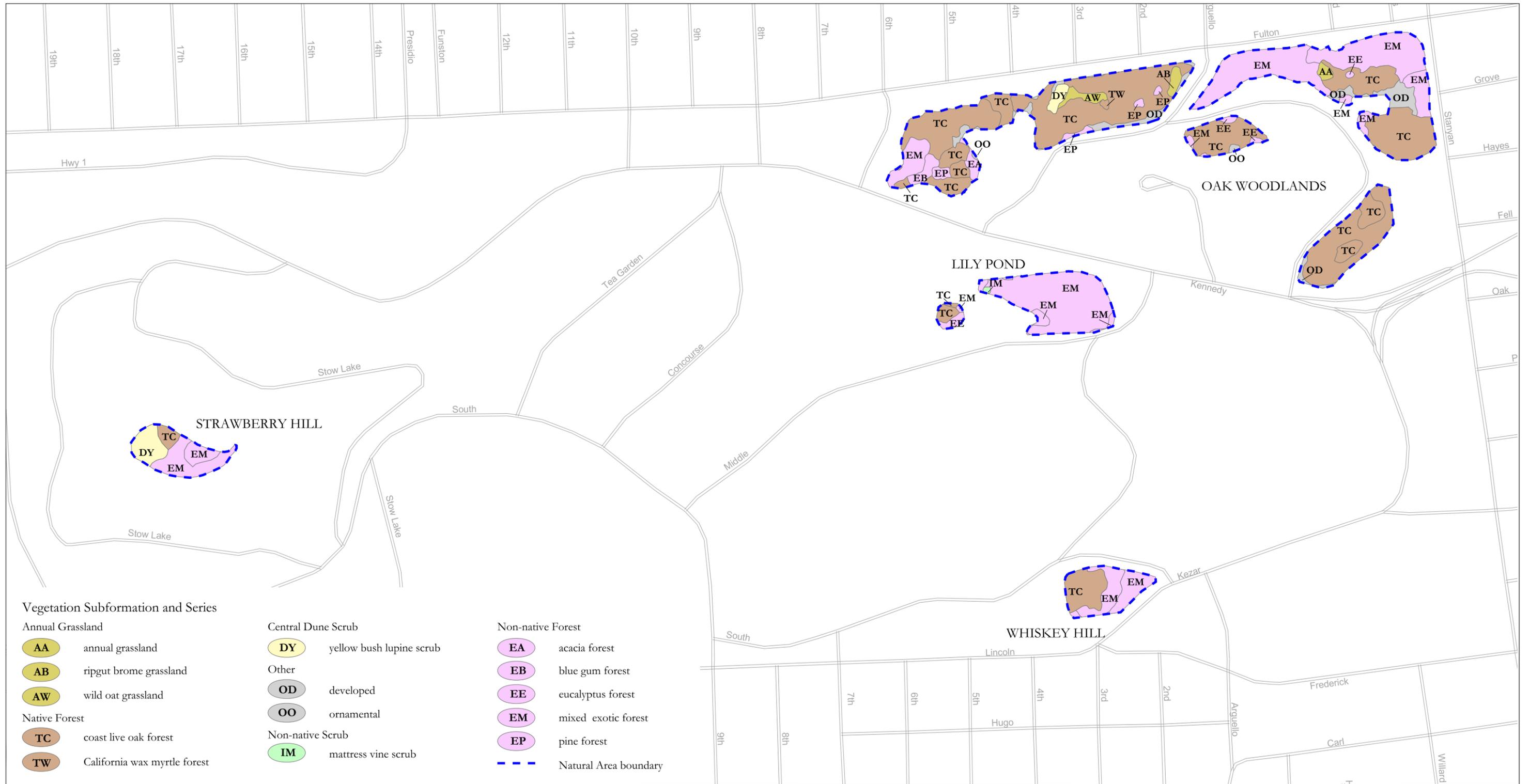


FIGURE 6.15 - 2
SOILS, LAND FEATURES, AND TRAILS
Oak Woodlands, Whiskey Hill, Lily Pond,
and Strawberry Hill in Golden Gate Park
 Significant Natural Resource Areas
 Management Plan
 San Francisco, California



Vegetation Subformation and Series

Annual Grassland

- AA** annual grassland
- AB** ripgut brome grassland
- AW** wild oat grassland

Native Forest

- TC** coast live oak forest
- TW** California wax myrtle forest

Central Dune Scrub

- DY** yellow bush lupine scrub

Other

- OD** developed
- OO** ornamental

Non-native Scrub

- IM** mattress vine scrub

Non-native Forest

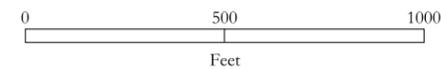
- EA** acacia forest
- EB** blue gum forest
- EE** eucalyptus forest
- EM** mixed exotic forest
- EP** pine forest

- - -** Natural Area boundary



Source: Vegetation data collected by San Francisco Department of Recreation and Parks Significant Natural Areas Program (NAP), San Francisco State University Biology Department and EIP Associates, 1999-2000; data layers digitized by Geotopo, Inc., 2000; edited and corrected by San Francisco State Institute for GISc (SFSUGIS), 2000 - 2002; natural area boundary created by SFSUGIS from data provided by NAP, 2005; streets data excerpted from ArcView StreetMap 2000 data from Environmental Systems Research Institute, Inc., copyright 1998-2001.

Created by D. Dwyer, San Francisco State University Institute for GISc September 15, 2001, revised August 21, 2005.

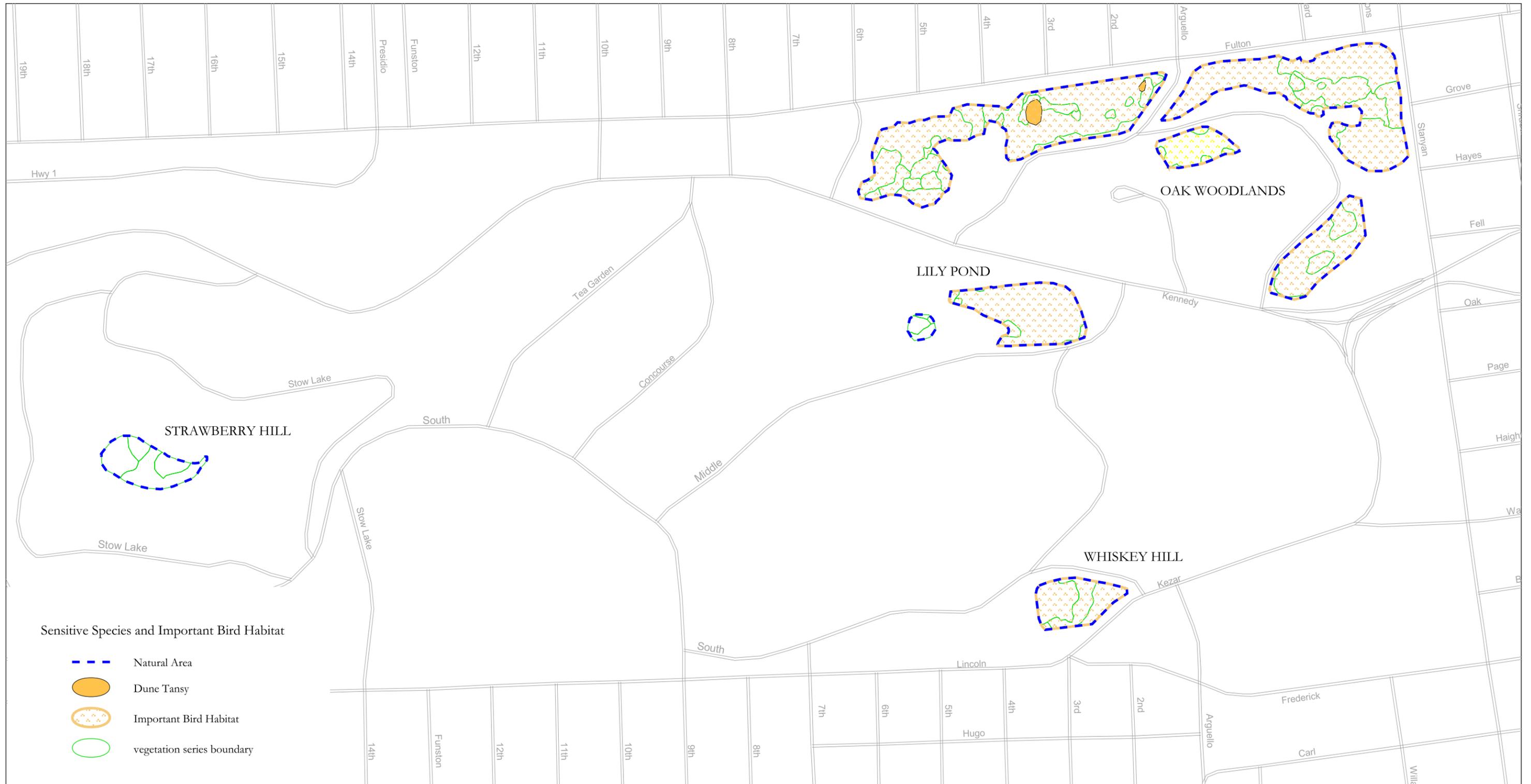


**FIGURE 6.15 - 3
VEGETATION**

**Oak Woodlands, Whiskey Hill, Lily Pond,
and Strawberry Hill in Golden Gate Park**

Significant Natural Resource Areas
Management Plan

San Francisco, California



Sensitive Species and Important Bird Habitat

-  Natural Area
-  Dune Tansy
-  Important Bird Habitat
-  vegetation series boundary



Source: Sensitive species data collected by San Francisco Department of Recreation and Parks Significant Natural Areas Program (NAP), 2002-2005; vegetation series data collected by NAP, San Francisco State University Biology Department and EIP Associates, 1999-2000; data layers digitized by Geotopo, Inc., 2000; edited and corrected by San Francisco State Institute for GISc (SFSUGIS), 2000 - 2005; critical and natural area boundaries created by SFSUGIS from data provided by NAP, 2002-2005.

Created by D. Dwyer, San Francisco State University Institute for GISc, October 24, 2001, revised June 7, 2005.

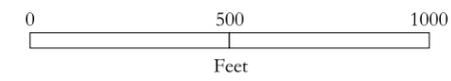
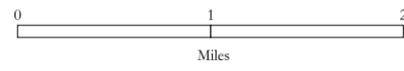
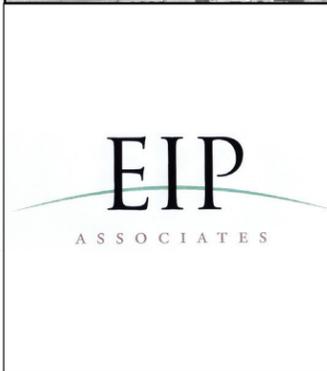


FIGURE 6.15 - 4
SENSITIVE SPECIES AND
IMPORTANT BIRD HABITAT
Oak Woodlands, Whiskey Hill, Lily Pond,
and Strawberry Hill in Golden Gate Park
 Significant Natural Resource Areas
 Management Plan
 San Francisco, California



| Mgmt Area | Action |
|-----------|---|
| MA-1a | <ul style="list-style-type: none"> Maintain coastal scrub with open sand gaps Augment sensitive plant populations |
| MA-1b | <ul style="list-style-type: none"> Maintain oak woodland with dune scrub gaps Augment sensitive plant populations |
| MA-2a | <ul style="list-style-type: none"> Maintain and enhance oak woodland with diverse native understory No change to existing DPA |
| MA-2b | <ul style="list-style-type: none"> Remove 12 medium sized invasive trees Maintain and enhance oak woodland with diverse native understory and dune scrub gaps |
| MA-2c | <ul style="list-style-type: none"> Maintain and enhance oak woodland with diverse native understory and dune scrub gaps |
| MA-2d | <ul style="list-style-type: none"> Maintain and enhance oak woodland with dune scrub gaps Augment sensitive plant populations Reintroduce sensitive plants Maintain visual screen to traffic along Fulton |
| MA-2e | <ul style="list-style-type: none"> Maintain and enhance native oak woodland with diverse native understory |
| MA-2f | <ul style="list-style-type: none"> Remove approximately 10 invasive trees Maintain and enhance oak woodland with diverse native understory and dune scrub gaps Install barricades at organic dump to protect oak trees |
| MA-2g | <ul style="list-style-type: none"> Remove 4 leptospermum trees Maintain and enhance oak woodland with diverse native understory and dune scrub in gaps Monitor existing Dog Play Areas and modify to on-leash or on-trail if necessary |
| MA-2h | <ul style="list-style-type: none"> Remove 6 invasive trees Maintain and enhance oak woodland with diverse native understory and dune scrub gaps |

| Mgmt Area | Action |
|--|---|
| MA-2i | <ul style="list-style-type: none"> Maintain and enhance oak woodland with dune scrub gaps |
| MA-2j | <ul style="list-style-type: none"> Remove approximately 50 invasive trees Maintain and enhance oak woodland with diverse native understory and dune scrub gaps Augment sensitive plant populations Limit mountain bike use with signs and, if necessary, temporary barrier fences |
| MA-2k | <ul style="list-style-type: none"> Maintain and enhance a native oak-toyon woodland with dune scrub gaps Augment sensitive plant populations |
| Natural Area Wide Management Actions | |
| <ul style="list-style-type: none"> Reduce and contain herbaceous and woody weeds No invasive tree removal unless specified above Prevent recruitment of invasive trees unless specified above Total trails to remain: 12,463 linear-feet Provide access on designated trails only Social trails subject to closure Total invasive trees to remove: 82; Total invasive trees to remain: 818 Implement erosion control as required (GR-12) Implement wildlife enhancements as appropriate | |



Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1 Foot Resolution - 2001; City of San Francisco Department of Public Works, San Francisco; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

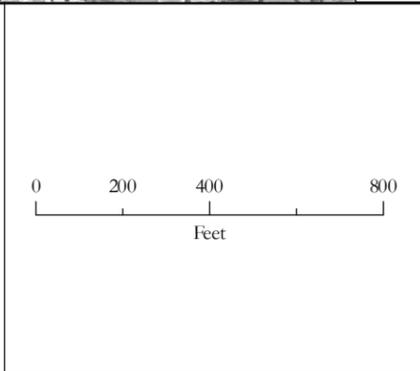
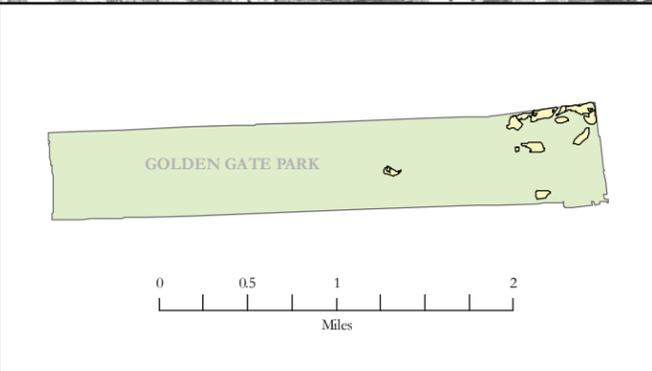


FIGURE 6.15 - 5
MANAGEMENT AREAS AND TRAIL PLAN
 Oak Woodlands, Whiskey Hill, Lily Pond, and Strawberry Hill in Golden Gate Park
 Significant Natural Resource Areas Management Plan
 San Francisco, California