

6.5 GRANDVIEW PARK, ROCK OUTCROP, GOLDEN GATE HEIGHTS PARK, AND HAWK HILL

GENERAL DESCRIPTION AND LOCATION

The Natural Areas at Grandview Park, Rock Outcrop, Golden Gate Heights Park, and Hawk Hill all belong to a remnant ridge-top sand dune system in the western portion of San Francisco, in the mid-Sunset or Sunset Heights area (Figure 1-1). The Natural Areas within each of these parks are relatively small, ranging from less than an acre at Golden Gate Heights Park to 4 acres at Grandview Park (Figures 6.5-1 to 6.5-4). Because these areas have similar site characteristics and management issues, they have been combined into this single report section. Grandview Park (4 acres) is the northernmost park, located at 15th Avenue and Moraga Street. Just south of Grandview Park is Rock Outcrop (1.6 acres), located between 14th Avenue and Funston Avenue. Continuing to the south, Golden Gate Heights Park, which contains the 0.8 acre Natural Area, is located between Funston, 12th, and 14th avenues. Of the four parks, Hawk Hill (4.5 acres), located at the intersection of Rivera Street and Funston Avenue, is the furthest south. Like many Natural Areas within the system, these parks are surrounded by dense urban development yet have high natural resource values that include: some of the last remaining sand dune communities in the City; picturesque rock outcrops; some recreational trail opportunities; interpretive signs (Grandview); important habitat for native plants and populations of sensitive plant and animal species; and outstanding City views.

GEOLOGY, HYDROLOGY, AND TRAILS

The historic San Francisco landscape was dominated by an extensive area of sand dunes in the western part of the City (Schlocker 1974; USDA 1991) (Section 3). The soils at these four Natural Areas still show evidence of these historic dunes. Grandview Park is composed of chert overlain by Sirdrak dune sand (Figure 6.5-5). Two stairways lead to the top of this Natural Area. South and west of the concrete steps on the eastern edge of Grandview Park is an excavated chert escarpment that mostly exists on neighboring private residences. At the top of the concrete steps is a broad area of bare ground, including a heavily eroded slope with exposed tree roots, some suspended over 1 foot above the soil surface. Localized chert exposures occur at the peak of the hill. The other main area of chert outcrop occurs at the northern corner of the park, the western edge of which is eroding onto the street below. The eastern edge of the outcrop is a vertical scarp and appears more stable, with a thicker top layer of soil and vegetation. The southern and eastern slopes of the park contain exposed sands that erode onto the street below during winter rain events, in some cases clogging the storm drain (Figure 6.5-5). Erosion control netting, erosion bars, wattles, and sediment fencing have been installed around the Natural Area to help control erosion. In addition, planting of natives at the north corner and at the top of the hill have contributed to erosion control.

Rock Outcrop is aptly named because the park is essentially one large Franciscan chert outcrop (Figure 6.5-6). There are inclusions of two other rock types within the park: sandstone near the northern and southern ends and conglomerate near the middle and southern end of the park. A large slope of colluvium (sandy material that has collected near the base of the slope) exists along the western edge, below a fill slope for a house above the park. Mass movement of the natural sand and fill material is occurring slowly in the southern ravine. Fill also occurs along the edge of the road downslope from the colluvium. Public access to Rock Outcrop is available from the northwest corner. However, access from other points is limited because the steep rock face and shallow setback from the road prevent most entry to the site. For this reason the park may be considered much more a visual than recreational resource. There are a few breaks in the rock that some visitors apparently use to climb the rock face. These infrequently used routes do not seem to cause critical damage to vegetation or rock features.

Golden Gate Heights Natural Area (on the western side of Golden Gate Heights Park) is comprised of mostly sandy soils with areas of exposed chert. The southwestern corner of the Natural Area is bordered by a chert outcrop, approximately 6 to 8 feet high. The initial site assessment noted an extensive network of social trails that were exposing the soils and allowing unchecked erosion. Recent activities by Natural Areas Program staff have included the removal of invasive vegetation, installation of timber stairs, definition of trail boundaries with local materials, revegetation and other soil conserving measures. The combination of trail delineation and installation of stairs has limited impacts to adjacent vegetation and reduced the erosion noted during the initial survey work for this project.

Soils at Hawk Hill are entirely dune sand (Figure 6.5-8), remnant of the dune fields that once covered large portions of the San Francisco Peninsula. Public access to this Natural Area is limited. Two difficult-to-find public access points are located at the end of neighborhood streets. At these points, retaining walls have been installed to limit the deposition of sand on the City streets. These walls also tend to limit access to trailheads. Social trails leading from private backyards and a schoolyard also provide access to Hawk Hill.

VEGETATION

The vegetation of these Natural Areas was classified into a combined total of 15 series (Table 6.5-1; Figures 6.5-9 to 6.5-12). These series represent six subformations: approximately 11 percent of the combined area is forest; 35 percent is scrub; 32 percent is a mosaic of different subformations; 1 percent is grassland; 10 percent is other herbaceous series; and 10 percent is classified as “other” (rock outcropping and sand).

Forest

The forest subformations in these Natural Areas are limited to invasive cypress and eucalyptus in small stands within the Natural Area (such as Grandview) or dense stands at the Natural Area margins (Hawk Hill, Golden Gate Heights, and Rock Outcrop). Overall, the forest

component of the vegetation comprises 1.19 acres. Depending on the age of the forest areas and the overall tree canopy density, the understory of these forest areas contains varying amounts of native species. Typically, individual trees or groves with dense canopies have highly degraded understory vegetation. The changed moisture regime caused by shading and fog drip encourages the growth of ehrharta grass (*Ehrharta erecta*) and is intolerable to native scrub species. The understories of cypress trees at Rock Outcrop and Grandview Park are almost entirely composed of ehrharta grass, a highly invasive perennial species.

Grassland, Scrub, and Mosaic

In all of these Natural Areas, grasses and shrubs are interspersed with open dune sands, a natural component of the plant community. Open sands are critical to early successional plant species such as wildflowers, forbs, and grasses. Scrub habitats dominate Hawk Hill. Hawk Hill contains two series, blue beach lupine scrub and willow scrub, which account for 3.69 and 0.04 acres, respectively. However, within these areas native plants provide only 51 percent of the cover at Hawk Hill. In both Rock Outcrop and Hawk Hill, willow scrub is found on the lower slopes, presumably where water is captured by runoff. Both blue beach lupine and willow scrub habitats contain a significant component of native species. At Grandview Park and Golden Gate Heights Park, scrub vegetation is mixed with grasses to form mosaics. The wild oat/poison oak and wild oat/coyote brush series account for 0.09 and 2.96 acres, respectively, at Grandview Park. The only mosaic series at Golden Gate Heights Natural Area is wild oat/coyote brush series, which accounts for 0.42 acres. Both of these habitats contain a significant component of native species. Point sampling data from Grandview indicates that natives comprise 36 of the 70 species and account for 52 percent of the cover. At Golden Gate Heights, natives account for 20 of the 34 species but only 28 percent of the cover. The only grassland series to be found in this group of Natural Areas is a small area (0.14 acres) of native red fescue prairie located in the northern portion of Rock Outcrop. Even though Rock Outcrop is relatively rich in native species (42 of the 71 species observed), the cover actually provided by native species is only 44 percent.

Sensitive Plant Species

Surveys conducted for this project located eleven species within these Natural Areas that are considered sensitive (Table 6.5-2). The most widespread of these are dune tansy (*Tanacetum camphoratum*) and San Francisco wallflower (*Erysimum franciscanum*), which occur at all four parks (Figures 6.5-13 to 6.5-16). San Francisco is the southern limit of dune tansy range. San Francisco wallflower is a federal species of concern and on the California Native Plant Society (CNPS) 1B list (a list of species that are rare or endangered in California and elsewhere). San Francisco spineflower (*Chorizanthe cuspidata* var. *cuspidata*) exists at Golden Gate Heights Natural Area in open dune sands. Dune gilia (*Gilia capitata* ssp. *chamissonis*) may be at the limit of its range and was observed at Hawk Hill and Golden Gate Heights. San Francisco campion (*Silene verecunda* ssp. *verecunda*), a federal species of concern and on the CNPS 1B

list, is reported from the northern edge of Rock Outcrop. Populations of annual hairgrass (*Deschampsia danthonioides*) and meadow chickweed (*Cerastium arvense*), both CNPS locally significant species, can also be found on Rock Outcrop (Figure 6.5-14). At its northern distributional limit, California croton (*Croton californicus*) is reported from the early successional dune vegetation in the center of Hawk Hill. Other species reported from Hawk Hill include striped skunkweed (*Navarretia squarrosa*) and a population of beach paintbrush (*Castilleja wightii*) (Figure 6.5-16). The California Natural Diversity Data Base (CNDDDB) does not report the occurrence of any sensitive species at any of these four Natural Areas (CNDDDB 2005).

Invasive Plant Species

Invasive vegetation cover accounts for approximately 2.5 acres of the land at these four Natural Areas. The single largest area of invasive vegetation within this group of Natural Areas is approximately 0.87 acres of iceplant (*Carpobrotus edulis*) at Rock Outcrop. Significant amounts of invasive forest, sheep sorrel (*Rumex acetosella*), and ehrharta grass occur throughout these parks. The development of invasive forest often provides the opportunity for other invasive species to develop as well. Typically individual trees or groves with dense canopies have highly degraded understory vegetation. The changed moisture regime caused by shading and fog drip encourages the growth of ehrharta grass and is intolerable to native scrub species. The understories of cypress trees at Rock Outcrop and Grandview Park are almost entirely composed of ehrharta grass, a highly invasive perennial species.

WILDLIFE

Birds

The habitat in these Natural Areas provides suitable foraging, nesting, and roosting areas for a variety of smaller songbirds. Red-tailed hawks (*Buteo jamaicensis*) were observed foraging at Hawk Hill and Rock Outcrop (EIP field visits, May 17, 1999, and March 20, 2001). An American kestrel (*Falco sparverius*) was observed chasing a red-tailed hawk and perching on the snags at Grandview Park (EIP field visit, March 20, 2001). The kestrel may have found a cavity suitable for nesting within one of the nearby parks. The complex ground vegetation at Hawk Hill probably provides nesting and foraging habitat for smaller birds such as sparrows, finches, and dark-eyed juncos (*Junco hyemalis*). The scrub and mosaic habitats at Grandview Park and Hawk Hill probably support a prey base for foraging raptors and suitable nesting habitat for smaller birds.

Sensitive Bird Species and Important Bird Habitat

Seven bird species, all considered to be species of local concern, have been reported as occurring at Golden Gate Heights (Table 6.5-2) although many of these were observed in the landscaped portion of the park. Red-shouldered hawks (*Buteo lineatus*) may forage in nearby

parcs and perch in Golden Gate Heights. Similarly, tree swallows (*Tachycineta bicolor*) and violet-green swallows (*Tachycineta thalassina*) forage over this Natural Area and nest elsewhere. Swainson's thrush (*Catharus ustulatus*) and Wilson's warbler (*Wilsonia pusilla*) likely use the scrub and forest habitat. The other two species that are reported from Golden Gate Heights are wintering red crossbill (*Loxia curvirostra*) and red-breasted nuthatch (*Sitta canadensis*). Species such as white-crowned sparrows (*Zonotrichia leucophrys*), song sparrows (*Melospiza melodia*), and spotted towhees (*Pipilo maculatus*) are relatively dependent on high-quality scrub habitat for breeding. A large portion of the Hawk Hill Natural Area may provide suitable habitat for these and other scrub-dependent species, but specific occurrences are not known. No other sensitive bird species are reported from these Natural Areas. Important bird habitat has not been designated at any of these Natural Areas.

Mammals

Of the four Natural Areas, only Hawk Hill was the focus of trapping efforts. Evidence of mammals at the other three sites was collected during reptile and amphibian surveys and site visits. The trapping surveys for small mammals at Hawk Hill consisted of operating 48 traps over four nights. These surveys did not result in the capture of any small mammals (Paquin and Reading 2000). Evidence of small rodents (small burrows and gopher mounds) was observed in the grassland and mosaic habitats of Grandview Park and Rock Outcrop and in the dune scrub areas of Hawk Hill (EIP field visit, March 20, 2001). It is expected that these Natural Areas support a small variety of small rodents, especially California meadow voles (*Microtus californicus*), house mice (*Mus musculus*), and black rats (*Rattus rattus*). A fox squirrel (*Sciurus niger*) [not in appendix lists] was observed in the landscaped section of Golden Gate Heights Park (EIP field visit, April 26, 1999). Larger mammals found in these parks such as raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*) and Virginia opossum (*Didelphis virginiana*) are typical of urbanized parks. The trapping effort was not focused on these species. Free-roaming cats have been observed on site and are relatively common. No special-status mammal species have been observed at any of these parks, nor are they reported by the CNDDDB (CNDDDB 2005).

Reptiles/Amphibians

Reconnaissance-level surveys of these parks were conducted by EIP biologists on April 26, 1999 (Grandview Park and Golden Gate Heights) and May 17, 1999 (Rock Outcrop and Hawk Hill). California slender salamanders (*Batrachoseps attenuatus*) were observed in all parks except Grandview Park. Additionally, two San Francisco alligator lizards (*Elgaria coerulea coerulea*) were observed at Rock Outcrop (EIP field visit, May 17, 1999). During a survey of Hawk Hill, a San Francisco alligator lizard was observed (Paquin and Reading 2000). California slender salamanders are the most common species of salamander in the City, typically found in moist soils under rocks, logs, and other debris. No sensitive reptiles or amphibian species were documented at any of these parks.

Invertebrates

Common invertebrates such as butterflies, beetles and spiders that are adapted to relatively dry habitats are expected to occur in these natural areas. However, no special-status species were reported by CNDDDB (CNDDDB 2005).

MANAGEMENT AREAS

Management Areas (MAs) at these Natural Areas have been mapped to include the sensitive species, rich dune habitats and grasslands within the MA-1 areas. Three areas on Grandview, two areas on Rock Outcrop, one area at Golden Gate Heights, and one area at Hawk Hill have been mapped as MA-1 (Figure 6.5-17 to 6.5-20). The MA-2 areas contain less sensitive, but important, habitat and usually surround the MA-1 areas, providing a buffer to the more sensitive habitats within MA-1 areas. The MA-3 areas designated at Grandview and Golden Gate Heights contain areas of invasive trees. The following text presents issues and recommended management actions by Management Area.

Site Improvements – Implementation of management recommendations at Grandview Park, Rock Outcrop, Golden Gate Heights Park, and Hawk Hill would not change significantly the overall look of the Natural Area and would result in:

- increased health and diversity of native dune community;
- reduction and control of soil erosion;
- increased and more sustainable populations of sensitive plants;
- improved wildlife habitat;
- beautification of some park entry points with designed native plant gardens (especially at Grandview and Golden Gate Heights); and
- improved public access on designated trails.

Implementation of the following management recommendations will improve rare plant and wildlife habitat. Eventually, Grandview Park and Rock Outcrop may resemble the native grasslands of other nearby areas such as those used in the reference site analysis on San Bruno Mountain. In addition, through management recommendations, the Natural Area of Golden Gate Heights Park may return to a native coastal scrub habitat similar to what is found on San Bruno Mountain. Proactive management of the Hawk Hill Natural Area will lead to improvements of the dune scrub habitat so that it may resemble other nearby reference sites such as North Shore Point Reyes.

ISSUES AND RECOMMENDATIONS

Several conservation and recreation-related issues have been identified for this group of 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 four Natural Areas are presented first within each topic area, followed by site-specific issues and recommendations. Site-specific recommendations are keyed to the Management Area in which they should occur. Because these four Natural Areas are included in the same section the following abbreviations are used to indicate Natural Area specific Management Areas: Grandview (GV), Rock Outcrop (RO), Golden Gate Heights (GH), and Hawk Hill (HH). Thus, a management action specifically for the MA-1a area in Rock Outcrop would read as RO MA-1a. Issues are identified with the first letter of each Natural Area name (GGRH).

Vegetation

Issues relating to vegetation management at these Natural Areas are focused 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). The general recommendation for management of grasslands (GR-3) also applies to these Natural Areas. In addition to these general recommendations, the following site-specific issues should be addressed.

Issue GGRH-1: Native grasslands, uncommon dune scrub habitat types, and populations of sensitive plant species are at risk of diminishing or going extinct within these Natural Areas because of habitat loss and invasive species. Invasive vegetation (ehrharta, Bermuda buttercup (*Oxalis pes-caprae*), French broom (*Genista monspessulana*), European grasslands, and sheep sorrel, etc.) occurs throughout the Natural Areas and threatens the long-term survival of these grassland and dune scrub habitats, as well as sensitive species that persist there.

Recommendation GGRH-1a: To help preserve existing habitats and sensitive plant species, contain and reduce herbaceous and woody weeds throughout such as iceplant, Bermuda buttercup, wild radish (*Raphanus sativus*), European grasses, ehrharta, sheep sorrel, and pampas grass (*Cortaderia selloana*) in all MA-1 and MA-2 areas at all four Natural Areas. Vegetation removal must be conducted without causing erosion on these unstable soils (see GGRH-1f). Within the MA-3 areas of Grandview (GV MA-3a) and Golden Gate Heights (GH MA-3a), some invasive plants such as eucalyptus and cypress may remain in place where they provide nectar, larval, or food plants for wildlife. However, they must be monitored to ensure that they are not encroaching on sensitive habitats, and managed accordingly.

Recommendation GGRH-1b: Consider augmenting existing sensitive plants within these Natural Areas. Species such as San Francisco wallflower, dune tansy, San Francisco champion, dune gilia, California croton, beach paintbrush, striped skunkweed, and meadow chickweed (GV MA-1a and MA-2a, RO MA-1a, GH MA-1a, HH MA-1a and MA-2a).

Recommendation GGRH-1c: Consider reintroduction of sensitive plants such as California lilac (*Ceanothus thyrsiflorus*), Canadian toad-flax (*Linaria Canadensis*), dune gilia, and San Francisco spineflower, Western goldenrod (*Euthamia occidentalis*), yellowtinge larkspur (*Delphinium decorum*), California saxifrage (*Saxifraga californica*), San Francisco wallflower, dune tansy, and meadow chickweed as appropriate (GV MA-1a, GV MA-2a and MA-2b, RO MA-1a and MA-2a, HH MA-1a and MA-2a).

Recommendation GGRH-1d: Protect the existing grassland and dune habitats by preventing invasive trees from becoming established in all MA-1 and MA-2 areas at these Natural Areas. No tree removal will occur in any of the Natural Areas except for Grandview where approximately five trees will be removed from the upper slope (GV MA-2a and MA-2b). The remaining 60 trees in these Natural Areas will remain.

Recommendation GGRH-1e: Reduction in invasive vegetation in these Natural Areas provides an opportunity to enhance these unique habitats. As vegetation is cleared in small plots (see GGRH-1f), native species shall be planted to approximate the diversity, cover, and density (generated from relative importance values) of adjacent habitat or reference plots in similar habitats at other parks (Appendix B). The following provides a list of target habitat types:

- At Grandview, maintain and enhance dune scrub with openings for native plant recruitment (GV MA-2a), a dune scrub mosaic (GV MA-2b), and cypress tree-scrub mosaic (GV MA-3a).
- At Rock Outcrop, maintain and enhance the dune scrub-rock outcrop plant communities with scattered open sand for annual plant recruitment (RO MA-1a and RO MA-2a).
- At Golden Gate Heights, maintain and enhance dune scrub with scattered sand for annual plant recruitment (GH MA-1a and GH MA-2a). Within the urban forest of GH MA-3a, maintain a diversified understory and plant forest gaps with wildlife friendly species (GR-14). At the Natural Areas entryway consider removing the asphalt pad and installing a showy perennial native plant demonstration garden.
- At Hawk Hill maintain and enhance the dune scrub communities with scattered open sand for annual plant recruitment (HH MA-1a and HH MA-2a).

Recommendation GGRH-1f: In areas where large-scale removal of invasive vegetation could lead to increased soil erosion (removal of iceplant at Hawk Hill, for example), the vegetation removal shall only occur in small, non-adjacent patches. Currently, herbicides are being applied in this manner to small patches of iceplant at Hawk Hill. Once the iceplant dies it shall be left in place to retain the sandy soils while native species recolonize the area. This method seems to work and can be used in other areas with highly erodible soils.

Wildlife

Wildlife resources at these four Natural Areas are generally very limited. Because of this, there are no site-specific wildlife issues or recommendations. The two general issues that apply to these areas concern vegetation management during the breeding season which can impact nesting birds (GR-4) and reduction in predation pressures that will benefit all animals within these areas (GR-7). Also, plant habitat improvements described above in GGRH-1, especially those that will enhance habitat and structured diversity (GGRH-1e), will benefit wildlife species.

Soils, Erosion, and Public Use

The erosion and soil issues at these four Natural Areas relate to the trail system and public use. A network of designated and social trails winds through most of the Management Areas at these Natural Areas (Figure 6.5-5 to 6.5-8) except the Rock Outcrop which lacks trails. The issue of erosion and habitat impacts related to social trails is addressed through implementation of GR-11 and GR-12. 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). Interpretive signs regarding the ecosystem of these Natural Areas should also be considered (GR-14).

Hawk Hill

Issue GGRH-2: A network of social trails (692 linear feet) provides access to the upper portions of Hawk Hill. Use of these trails leads to trampling of vegetation and excessive erosion as the underlying sand is exposed. In addition, the trails at Hawk Hill are poorly defined and tend to run directly up and down the slopes from street level. The underlying sand is exposed in these areas and tends to flow downhill into the street.

Recommendation GGRH-2a: Limit access to designated trails (917 linear feet) in order to protect sensitive habitat area (highly erodible dunes). If alternative measures such as signage are ineffective at keeping park users on trails, consider installing fencing (HH MA-1a and MA-2a).

Recommendation GGRH-2b: Most biotechnical control measures (brush boxes, fiber matting, etc.) would help control soil movement and allow for revegetation, but would not withstand foot traffic on these steep slopes. The dune step system at Baker Beach may provide a good model for approaching this problem. In this system, two parallel cables are anchored into the hill at the top and bottom. Timber steps are anchored to the cables at approximately 4-foot intervals (or whatever interval works for the slope in question). The entire step system is allowed to rest on the soil surface like a rope ladder laid on the surface of the dune. As it is used, the area behind the timbers gradually fills with sand, or the timbers sink into the sand. Periodic maintenance is necessary to keep

the system functional. This maintenance is relatively simple because the timbers can simply be lifted back to the surface. A step system of this nature would meet several needs at the access point at the end of Funston Avenue (HH MA-1a). It would help control the downhill flow of sand, create a formal trail that would focus foot traffic and thereby limit impacts to adjacent vegetation, and allow the other informal trails to be closed and revegetated.

Grandview

Issue GGRH-3: The upper area of Grandview is covered with an extensive network of social trails (409 linear feet) such that the entire hill top is void of vegetation. In addition, soil erosion is occurring at the transitions from stairs to earth trails. At the top landing of the wooden steps the soil has eroded 6 to 12 inches from under the concrete pad.

Recommendation GGRH-3a: Route users away from eroding areas and sensitive habitats to designated trails (1,313 linear feet). Also, designate a single route to and around the top of the hill and direct trail users to this trail from the bottom of the hill. If signage is not effective at obtaining compliance, install temporary or permanent fencing (GV MA-1a and MA-2a).

Recommendation GGRH-3b: Install soil retaining boxes on the downhill side of the landings to help minimize erosion. These could be brush boxes constructed of local materials or boards anchored on edge into the soil. The retention box consists of three parts. The longest leg is parallel to the landing and extends past the landing on both sides. Two shorter legs (one from each end of the longer leg) extend upslope toward the landing. The result is a U-shaped retention structure that helps to contain the soils and provide a more stable transition from the hard-surfaced steps to the softer dirt trails.

Golden Gate Heights

Issue GGRH-4: Although small in size, Golden Gate Heights has a relatively extensive trail network. Use of these trails is impacting sensitive plants and habitats found within this Natural Area.

Recommendation GGRH-4a: Develop a new trail (approximately 188 feet) at the edge of the forest to replace existing trail that is causing erosion (Figure 6.5-19) (GH MA-1a and MA-2a). When this trail is constructed, close the existing social trail (390 linear feet) through the dunes. Additionally, installation of a new formalized entranceway including a native landscape garden with informational signs will help focus use on the designated path and educate Natural Area users (GH MA-1a and MA-2a).

Table 6.5-1. Vegetation series mapped within Natural Areas at Grandview Park, Golden Gate Heights, Rock Outcrop, and Hawk Hill.

	Vegetation Series	Grand-view Park	Golden Gate Heights	Rock Outcrop	Hawk Hill	Total Acreage
Forest	blue gum forest	0.22	--	--	--	0.22
	cypress forest	0.37	--	0.01	--	0.38
	mixed exotic forest	--	0.38	--	0.11	0.49
	pine forest	--	--	0.02	0.08	0.10
	Subtotal	0.59	0.38	0.03	0.19	1.19
Scrub	blue beach lupine scrub*	--	--	--	3.69	3.69
	willow scrub*	--	--	0.07	0.04	0.11
	Subtotal	0.00	0.00	0.07	3.73	3.80
Mosaic	wild oat/poison oak mosaic*	0.09	--	--	--	0.09
	wild oat/coyote brush mosaic*	2.96	0.42	--	--	3.39
	Subtotal	3.05	0.42	0.00	0.00	3.48
Grassland	red fescue prairie*	--	--	0.14	--	0.14
Other Herbaceous	mixed exotic herbaceous	0.01	--	--	--	0.01
	iceplant herbaceous	--	--	0.87	0.15	1.02
	Subtotal	0.01	0.00	0.87	0.15	1.03
Other	ornamental	--	--	--	0.30	0.30
	rock outcrop	0.05	0.02	0.47	0.07	0.61
	sand	0.19	--	--	--	0.19
	developed	0.02	--	--	--	0.02
	Subtotal	0.27	0.02	0.47	0.37	1.12
Grand Total		3.92	0.82	1.59	4.43	10.76

* Indicates vegetation type with a significant native species component.

Table 6.5-2. Sensitive species presently or historically known to occur at Grandview Park, Golden Gate Heights, Rock Outcrop, and Hawk Hill.

Species	Common Name	Status Federal, State, CNPS	Occurrence Status
ANIMALS			
<i>Loxia curvirostra</i>	Red Crossbill	SLC	Winter resident at Golden Gate Heights.
<i>Sitta canadensis</i>	Red-breasted Nuthatch	SLC	Winter resident at Golden Gate Heights.
<i>Buteo lineatus</i>	Red-shouldered Hawk	SLC	Presently occurs at Golden Gate Heights.
<i>Catharus ustulatus</i>	Swainson's Thrush	SLC	Presently occurs at Golden Gate Heights.
<i>Tachycineta bicolor</i>	Tree Swallow	SLC	Presently occurs at Golden Gate Heights.
<i>Tachycineta thalassina</i>	Violet-green Swallow	SLC	Presently occurs at Golden Gate Heights.
<i>Wilsonia pusilla</i>	Wilson's Warbler	SLC	Presently occurs at Golden Gate Heights.
PLANTS			
<i>Castilleja wightii</i>	Beach Paintbrush	LS	Presently occurs at Hawk Hill (1 population planted by NAP)
<i>Cerastium arvense</i>	Field or Meadow Chickweed	LS	Presently occurs at Rock Outcrop
<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	San Francisco Spineflower	FSC, CNPS List 1B	Presently occurs at Golden Gate Heights.
<i>Croton californica</i>	California Croton	LS	Presently occurs at Hawk Hill
<i>Deschampsia danthonioides</i>	Annual Hairgrass	LS	Presently occurs at Rock Outcrop
<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>Gilia capitata</i> ssp. <i>chamissonis</i>	Dune Gilia	-	Presently occurs at Hawk Hill
<i>Linaria canadensis</i>	Canadian or Blue Toad-Flax	LS	Historically occurs at Hawk Hill
<i>Navaretia squarrosa</i>	Skunkweed	LS	Presently occurs at Hawk Hill
<i>Silene verecunda</i> ssp. <i>verecunda</i>	San Francisco Campion	FSC, CNPS List 1B	Presently occurs at Rock Outcrop
<i>Tanacetum camphoratum</i>	Dune Tansy	-	Presently occurs at Grandview Park, Golden Gate Heights, Hawk Hill, and The Rocks

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).

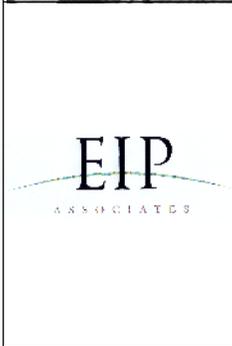
LS Locally Significant.

Golden Gate Audubon Society

SLC Species of Local Concern



-  Other City Jurisdiction (SF City Property)
-  Natural Area Boundary and SFRPD Jurisdiction (SF City Property)
-  Natural Area Boundary and Other City Department Jurisdiction (SF City Property)
-  Shared boundary SFRPD Jurisdiction and Other San Francisco Department Jurisdiction (SF City Property)
-  10-Foot contour line



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 5, 2002, revised June 10, 2005.

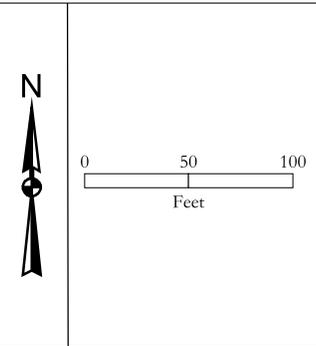
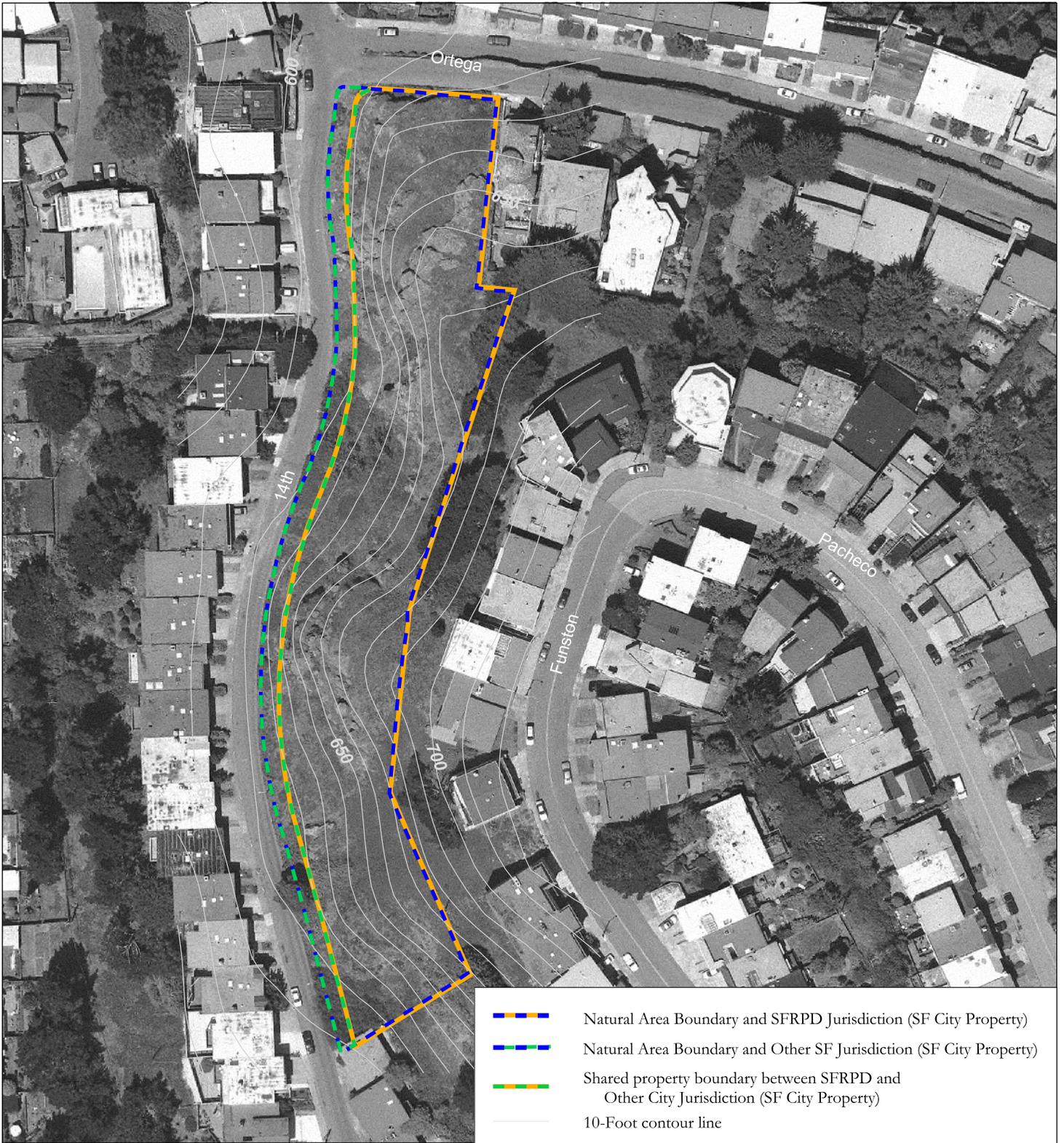


FIGURE 6.5 - 1
**AERIAL PHOTOGRAPH,
 PROPERTY BOUNDARIES,
 AND NATURAL AREAS**
Grandview Park
**Significant Natural Resource Areas
 Management Plan**
San Francisco, California



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 5, 2002, revised June 7, 2005.

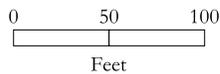
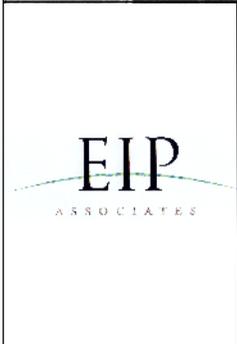
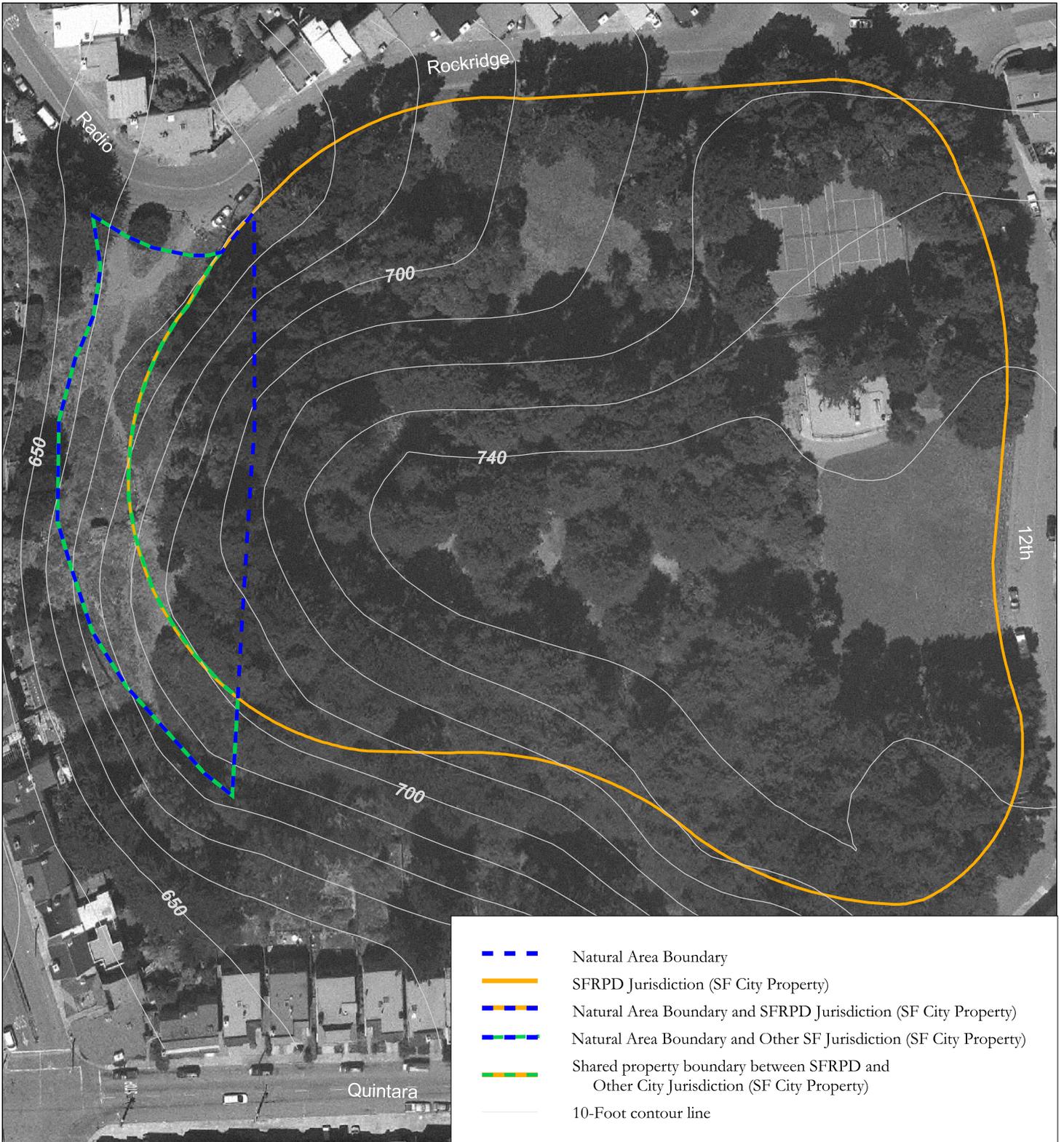


FIGURE 6.5 - 2
AERIAL PHOTOGRAPH,
PROPERTY BOUNDARIES,
AND NATURAL AREAS
Rock Outcrop
Significant Natural Resource Areas
Management Plan
San Francisco, California





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 5, 2002, revised June 10, 2005.

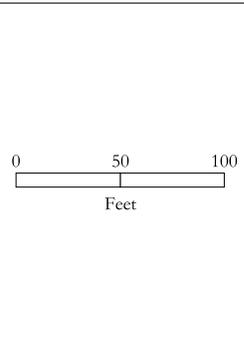
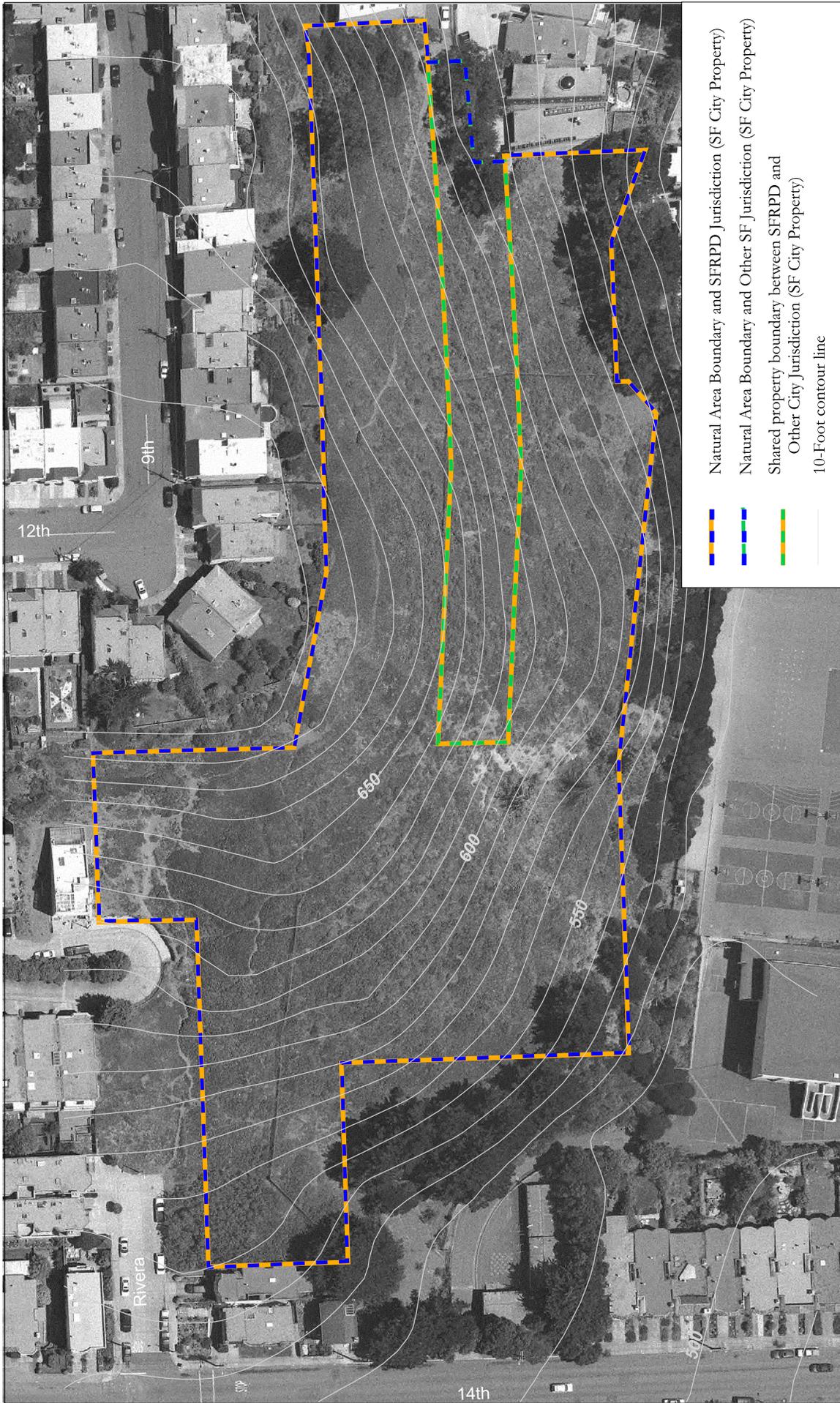
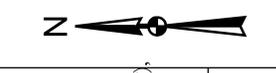
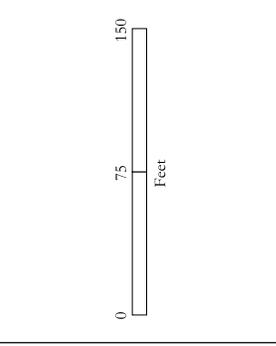


FIGURE 6.5 - 3
AERIAL PHOTOGRAPH, PROPERTY BOUNDARIES, AND NATURAL AREAS
Golden Gate Heights
Significant Natural Resource Areas Management Plan
San Francisco, California



-  Natural Area Boundary and SFRPD Jurisdiction (SF City Property)
-  Natural Area Boundary and Other SF Jurisdiction (SF City Property)
-  Shared property boundary between SFRPD and Other City Jurisdiction (SF City Property)
-  10-Foot contour line

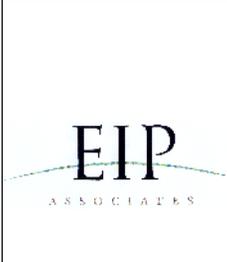
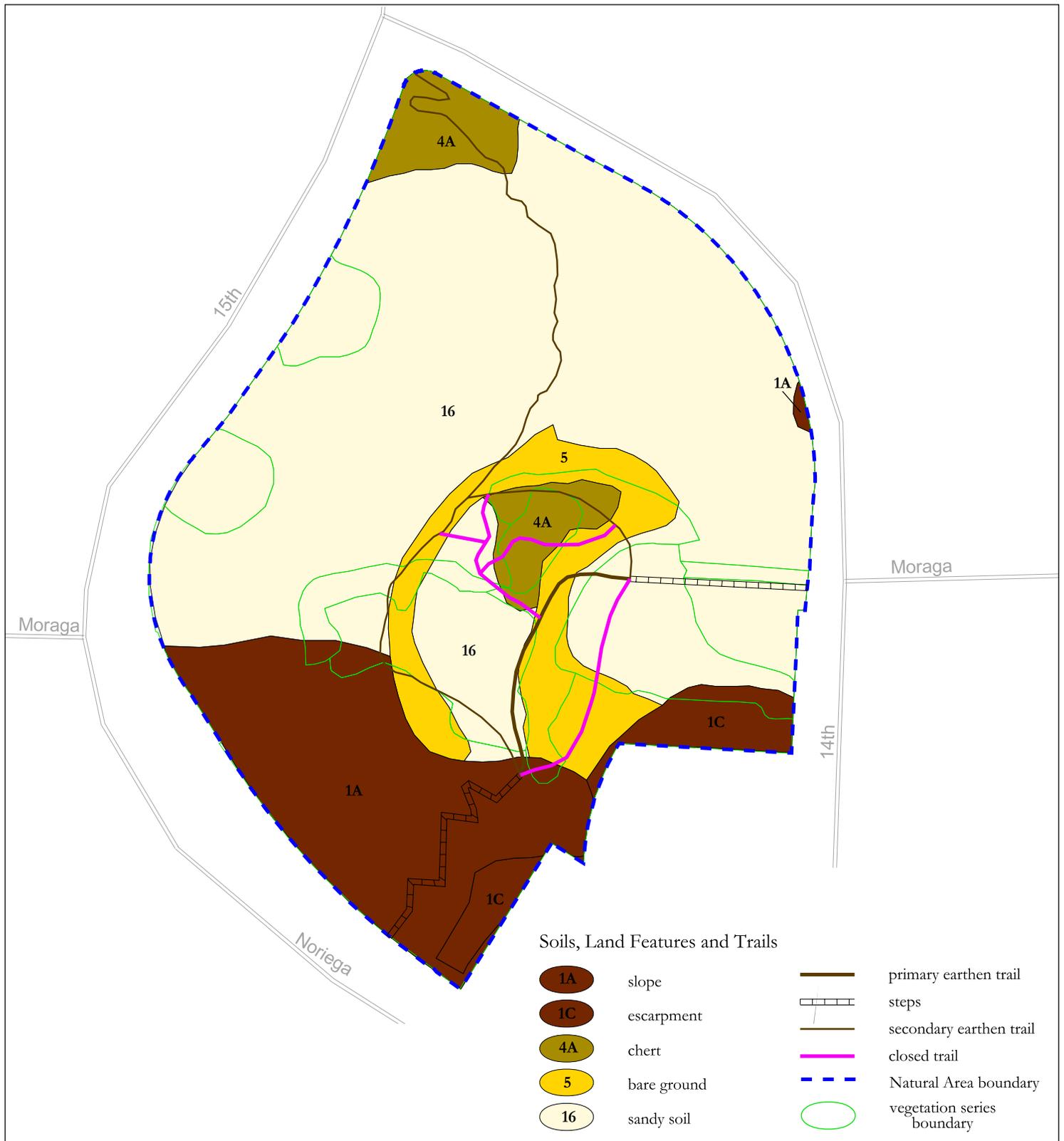
FIGURE 6.5 - 4
AERIAL PHOTOGRAPH,
PROPERTY BOUNDARIES,
AND NATURAL AREAS
Hawk Hill
 Significant Natural Resource Areas
 Management Plan
 San Francisco, California



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 5, 2002, revised June 10, 2005.





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; soil and land features data collected by EIP Associates, 1999 - 2002; trails data collected by NAP, 2005; data layers digitized by Geotopo, Inc., 1999 - 2000; edited and corrected by San Francisco State University Institute for GISc (SFSU IGIS), 2000, 2005; trails data digitized by SFSU IGIS, 2005; natural area boundary created by SFSU IGIS from data determined by NAP, 2005; streets data excerpted from ArcView StreetMap 2000 Data, copyright 1998-2000, Environmental Systems Research Institute, Inc. (ESRI).

Created by D. Dwyer of San Francisco State University Institute for GISc January 30, 2001, revised December 10, 2005.

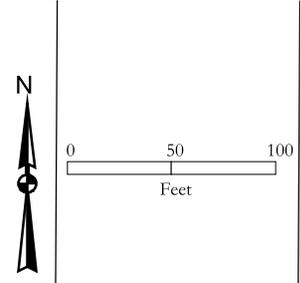


FIGURE 6.5 - 5
SOILS, LAND FEATURES,
AND TRAILS
Grandview Park
 Significant Natural Resource Areas
 Management Plan
 San Francisco, California



Soils and Land Features

- 2 erosion control area
- 4A chert
- 4B sandstone
- 4D melange (conglomerate)
- 11 fill slope
- 16 sandy soil
- Natural Area boundary
- vegetation series 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; soil and land features data collected by EIP Associates, 1999 - 2002; trails data collected by NAP, 2005; data layers digitized by Geotopo, Inc., 1999 - 2000; edited and corrected by San Francisco State University Institute for GISc (SFSUGIS), 2000, 2005; trails data digitized by SFSUGIS, 2005; natural area boundary created by SFSUGIS from data determined by NAP, 2005; streets data excerpted from ArcView Street-Map 2000 Data, copyright 1998-2000, Environmental Systems Research Institute, Inc. (ESRI).

Created by D. Dwyer of San Francisco State University Institute for GISc February 1, 2001, revised December 11, 2005.

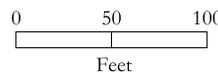


FIGURE 6.5 - 6
SOILS AND
LAND FEATURES

Rock Outcrop

Significant Natural Resource Areas
Management Plan

San Francisco, California





Soils, Land Features, and Trails

-  4B sandstone
-  16 sandy soil
-  primary earthen trail
-  proposed trail
-  closed trail
-  Natural Area boundary
-  vegetation series 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; soil and land features data collected by EIP Associates, 1999 - 2002; trails data collected by NAP, 2005; data layers digitized by Geotopo, Inc., 1999 - 2000; edited and corrected by San Francisco State University Institute for GISc (SFSUGIS), 2000, 2005; trails data digitized by SFSUGIS, 2005; natural area boundary created by SFSUGIS from data determined by NAP, 2005; streets data excerpted from ArcView Street-Map 2000 Data, copyright 1998-2000, Environmental Systems Research Institute, Inc. (ESRI).

Created by D. Dwyer of San Francisco State University Institute for GISc Lab February 5, 2001, revised December 10, 2005.

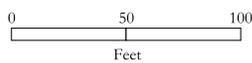


FIGURE 6.5 - 7
SOILS, LAND FEATURES, AND TRAILS

Golden Gate Heights
Significant Natural Resource Areas Management Plan
San Francisco, California

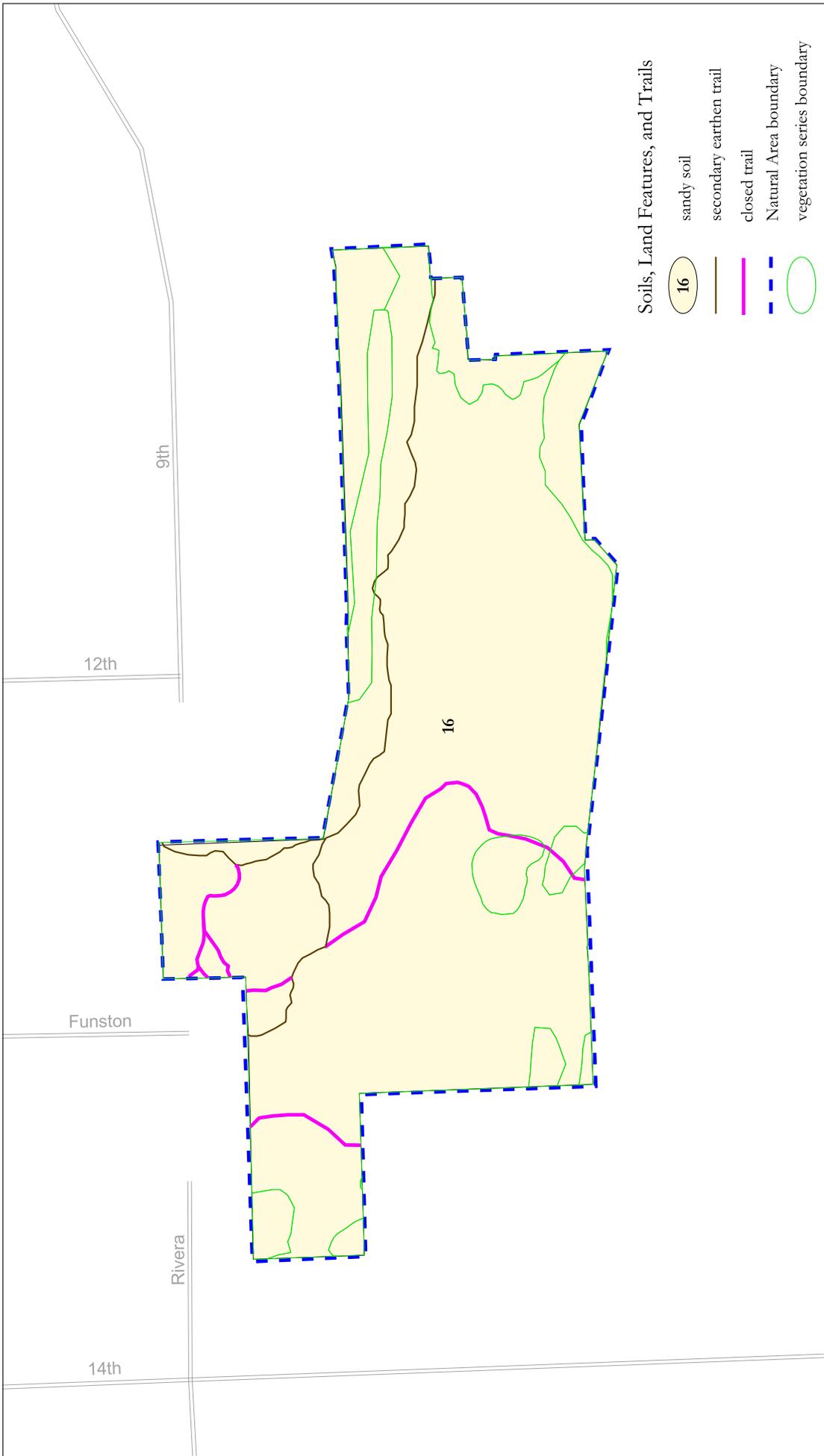


FIGURE 6.5 - 8
SOILS, LAND FEATURES,
AND TRAILS

Hawk Hill

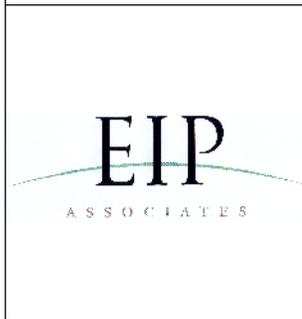
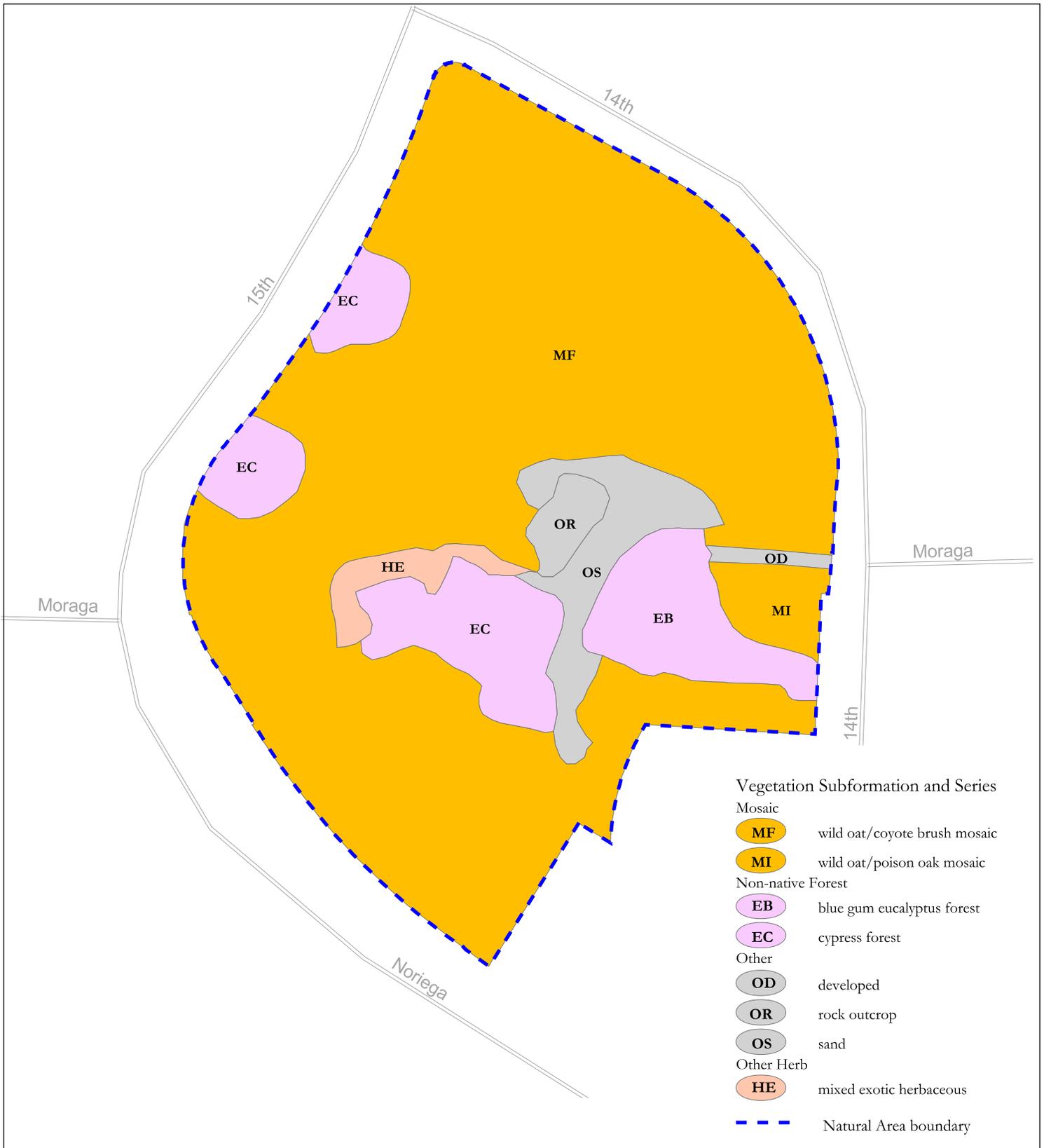
Significant Natural Resource Areas
 Management Plan

San Francisco, California

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; soil and land features data collected by EIP Associates, 1999 - 2002; trails data collected by NAP, 2005; data layers digitized by Geotopo, Inc., 1999 - 2000; edited and corrected by San Francisco State University Institute for GISc (SFSU IGIS), 2000, 2005; trails data digitized by SFSU IGIS, 2005; natural area boundary created by SFSU IGIS from data determined by NAP, 2005; streets data excerpted from ArcView StreetMap 2000 Data, copyright 1998-2000, Environmental Systems Research Institute, Inc. (ESRI).

Created by D. Dwyer of San Francisco State University Institute for GISc February 5, 2001, revised December 10, 2005.





Source: Vegetation data collected by San Francisco Recreation and Park Department 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 University Institute for GISc (SFSUGIS), 2000 - 2002; natural areas boundary created by SFSUGIS from data determined by NAP, 2005; streets data excerpted from ArcView StreetMap 2000 data, copyright 1998-2000, Environmental Systems Research Institute, Inc.

Created by D. Dwyer of San Francisco State University Institute for GISc January 30, 2001, revised June 5, 2005.

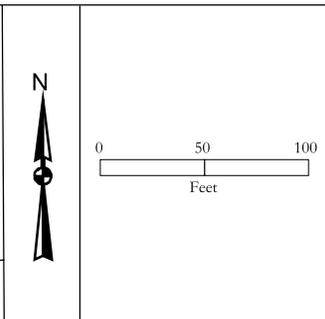
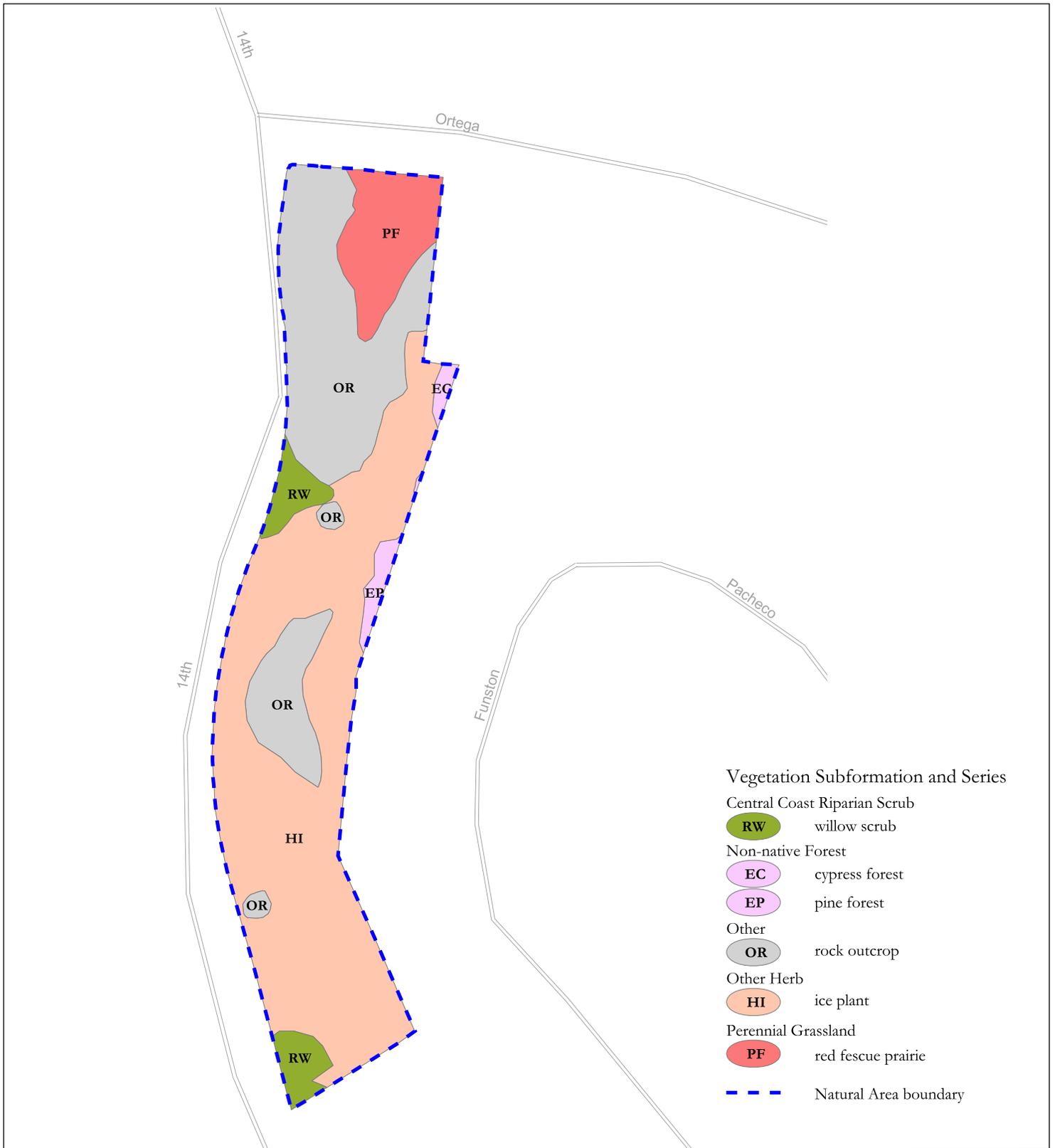
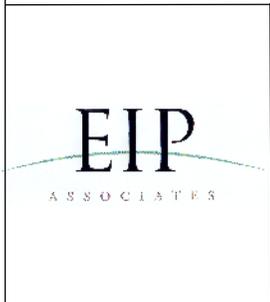


FIGURE 6.5 - 9
VEGETATION
Grandview Park
 Significant Natural Resource Areas Management Plan
 San Francisco, California



- Vegetation Subformation and Series**
- Central Coast Riparian Scrub
 - RW** willow scrub
 - Non-native Forest
 - EC** cypress forest
 - EP** pine forest
 - Other
 - OR** rock outcrop
 - Other Herb
 - HI** ice plant
 - Perennial Grassland
 - PF** red fescue prairie
 - - -** Natural Area boundary



Source: Vegetation data collected by San Francisco Recreation and Park Department 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 University Institute for GISc (SFSUGIS), 2000 - 2002; natural areas boundary created by SFSUGIS from data determined by NAP, 2005; streets data excerpted from ArcView StreetMap 2000 data, copyright 1998-2000, Environmental Systems Research Institute, Inc.

Created by D. Dwyer of San Francisco State University Institute for GISc April 9, 2001, revised June 5, 2005.

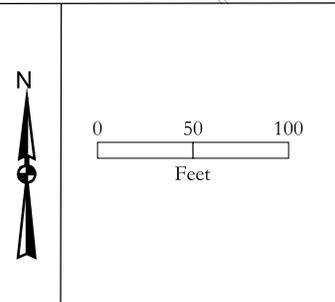


FIGURE 6.5 - 10
VEGETATION
Rock Outcrop
 Significant Natural Resource Areas Management Plan
 San Francisco, California



- Vegetation Subformation and Series
- Mosaic
 - MF** wild oat/coyote brush mosaic
 - Non-native Forest
 - EM** mixed exotic forest
 - Other
 - OR** rock outcrop
 - - -** Natural Area boundary

Source: Vegetation data collected by San Francisco Recreation and Park Department 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 University Institute for GISc (SFSUGIS), 2000 - 2002; natural areas boundary created by SFSUGIS from data determined by NAP, 2005; streets data excerpted from ArcView StreetMap 2000 data, copyright 1998-2000, Environmental Systems Research Institute, Inc.

Created by D. Dwyer of San Francisco State University Institute for GISc April 19, 2001, revised June 5, 2005.

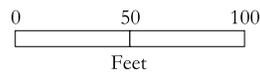


FIGURE 6.5 - 11 VEGETATION

Golden Gate Heights Significant Natural Resource Areas Management Plan

San Francisco, California

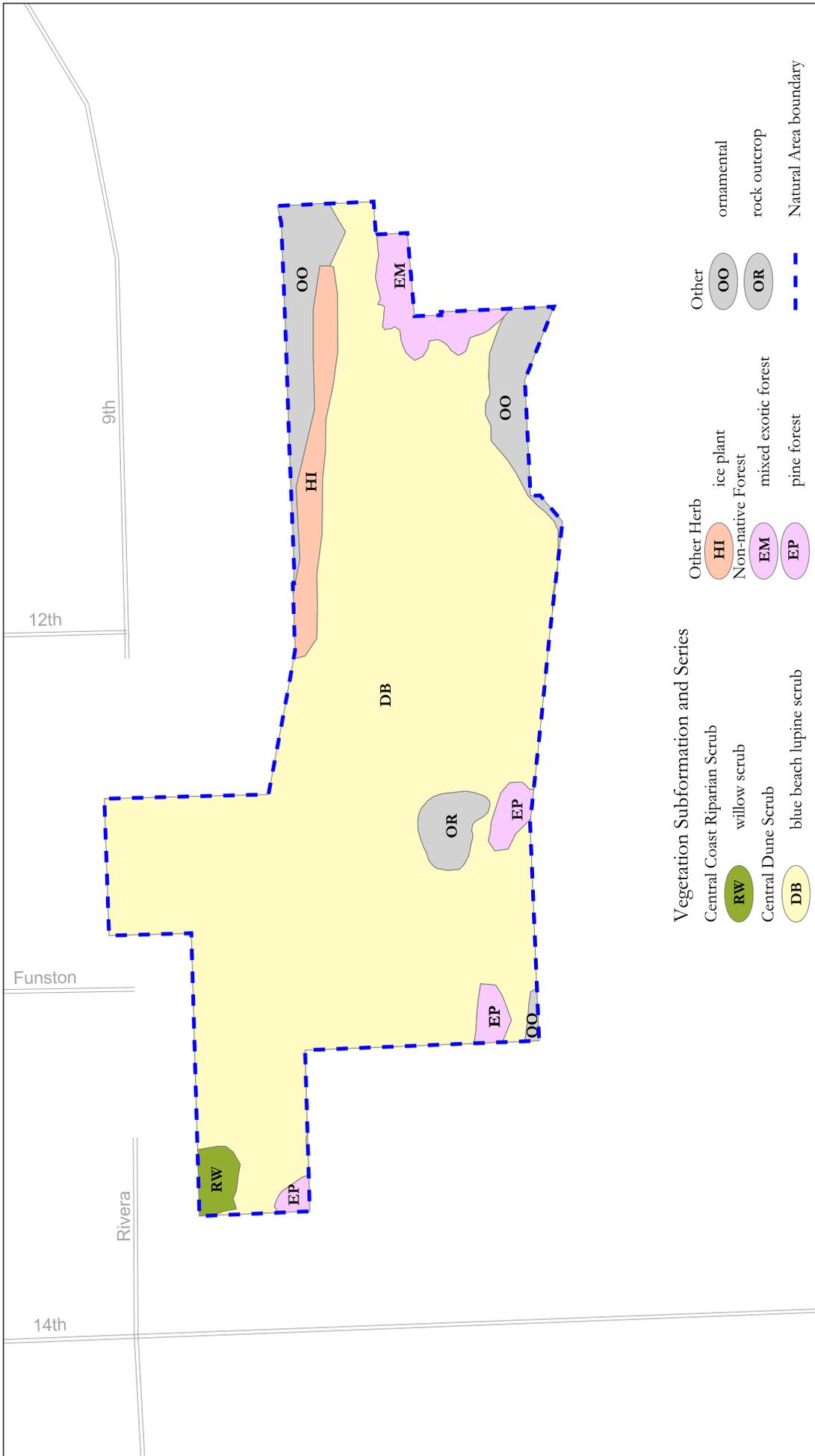
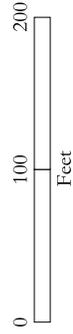


FIGURE 6.5 - 12
VEGETATION

Hawk Hill

Significant Natural Resource Areas
Management Plan

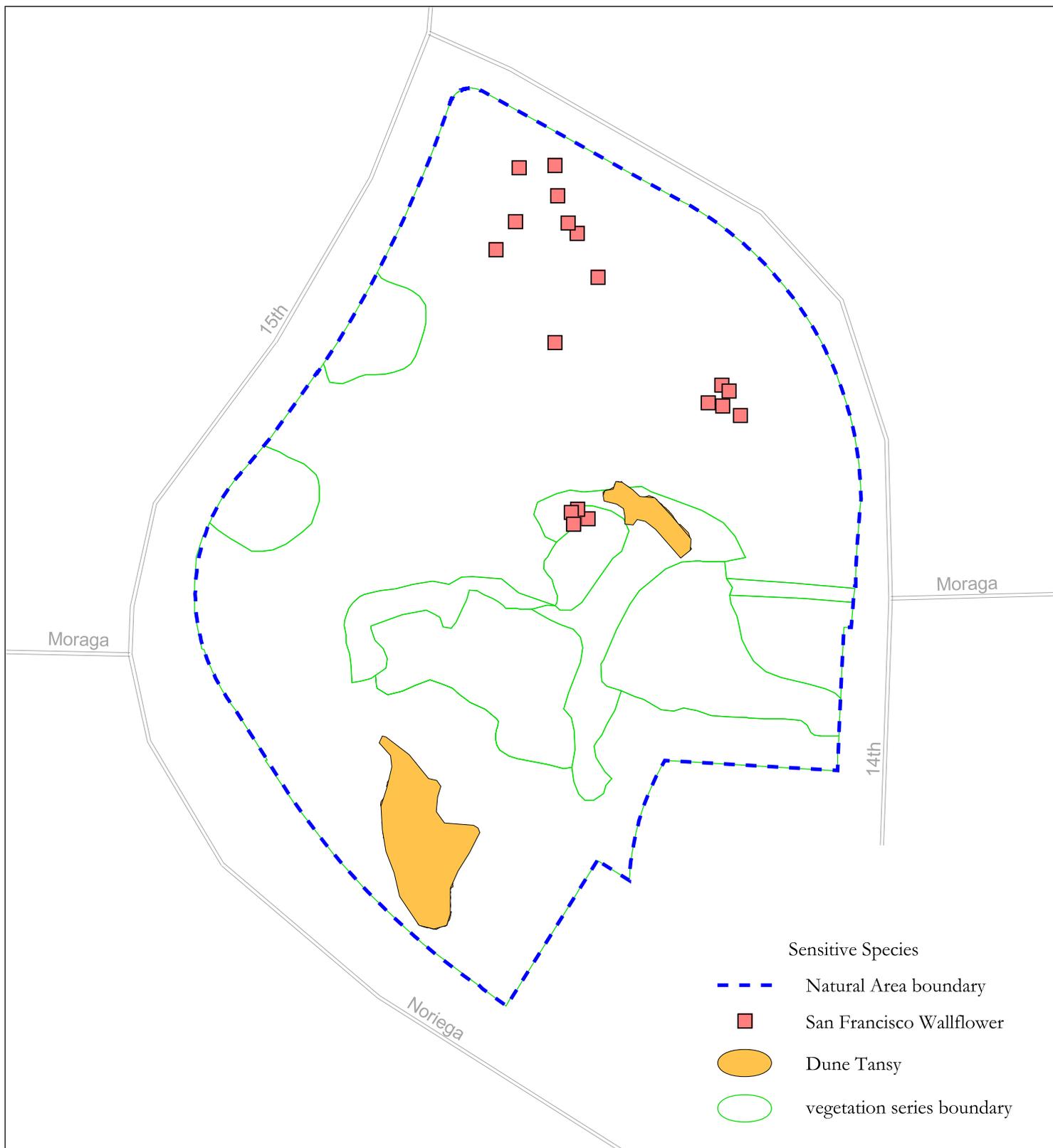
San Francisco, California



Source: Vegetation data collected by San Francisco Recreation and Park Department 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 University Institute for GISc (SFSUGIS), 2000 - 2002; natural areas boundary created by SFSUGIS from data determined by NAP, 2005; streets data excerpted from ArcView StreetMap 2000 data, copyright 1998-2000, Environmental Systems Research Institute, Inc.

Created by D. Dwyer of San Francisco State University Institute for GISc February 1, 2001, revised June 5, 2005.





Source: Vegetation data collected by San Francisco Recreation and Park Department 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 University Institute for GISc (SFSUGIS), 2000 - 2002; sensitive species data collected for NAP 1998, and 2002; natural areas boundary created by SFSUGIS from data determined by NAP, 2005; streets data excerpted from ArcView StreetMap 2000 data, copyright 1998-2000, Environmental Systems Research Institute, Inc. (ESRI).

Created by D. Dwyer, San Francisco State University Institute for GISc March 21, 2001, revised June 4, 2005.

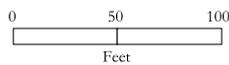


FIGURE 6.5 - 13
SENSITIVE SPECIES

Grandview Park

Significant Natural Resource Areas Management Plan

San Francisco, California



Source: Vegetation data collected by San Francisco Recreation and Park Department Natural Areas Program (NAP), San Francisco State University Biology Department, and EIP Associates, 1999 - 2000; sensitive species data collected by and for NAP 1999, 2002 and 2005; vegetation data layer digitized by Geotopo, Inc., 2000, edited and corrected by San Francisco State University Institute for GISc (SFSUGIS), 2000 - 2005; natural areas boundary created by SFSUGIS from data determined by NAP, 2005; streets data excerpted from ArcView StreetMap 2000 data, copyright 1998-2000, Environmental Systems Research Institute, Inc. (ESRI).

Created by D. Dwyer of San Francisco State University Institute for GISc March 26, 2001, revised June 4, 2005.

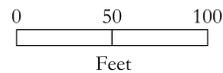
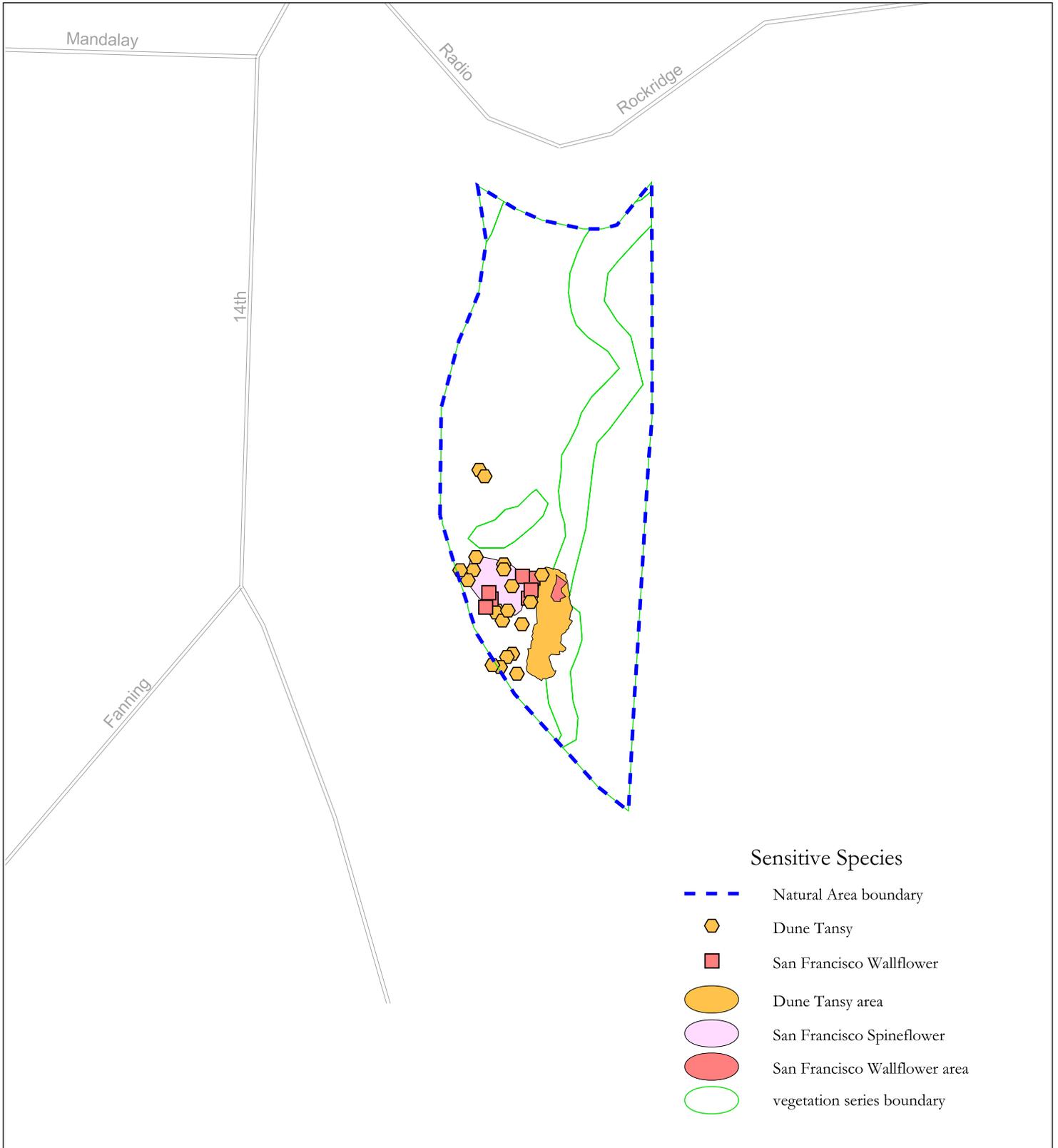


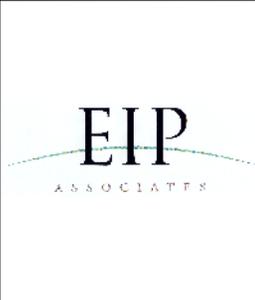
FIGURE 6.5 - 14
SENSITIVE SPECIES
Rock Outcrop
Significant Natural Resource Areas
Management Plan
 San Francisco, California





Sensitive Species

-  Natural Area boundary
-  Dune Tansy
-  San Francisco Wallflower
-  Dune Tansy area
-  San Francisco Spineflower
-  San Francisco Wallflower area
-  vegetation series boundary



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

Created by D. Dwyer of San Francisco State University Institute for GISc March 26, 2001, revised June 4, 2005.

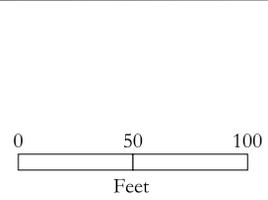


FIGURE 6.5 - 15
SENSITIVE SPECIES
Golden Gate Heights
Significant Natural Resource Areas
Management Plan
 San Francisco, California

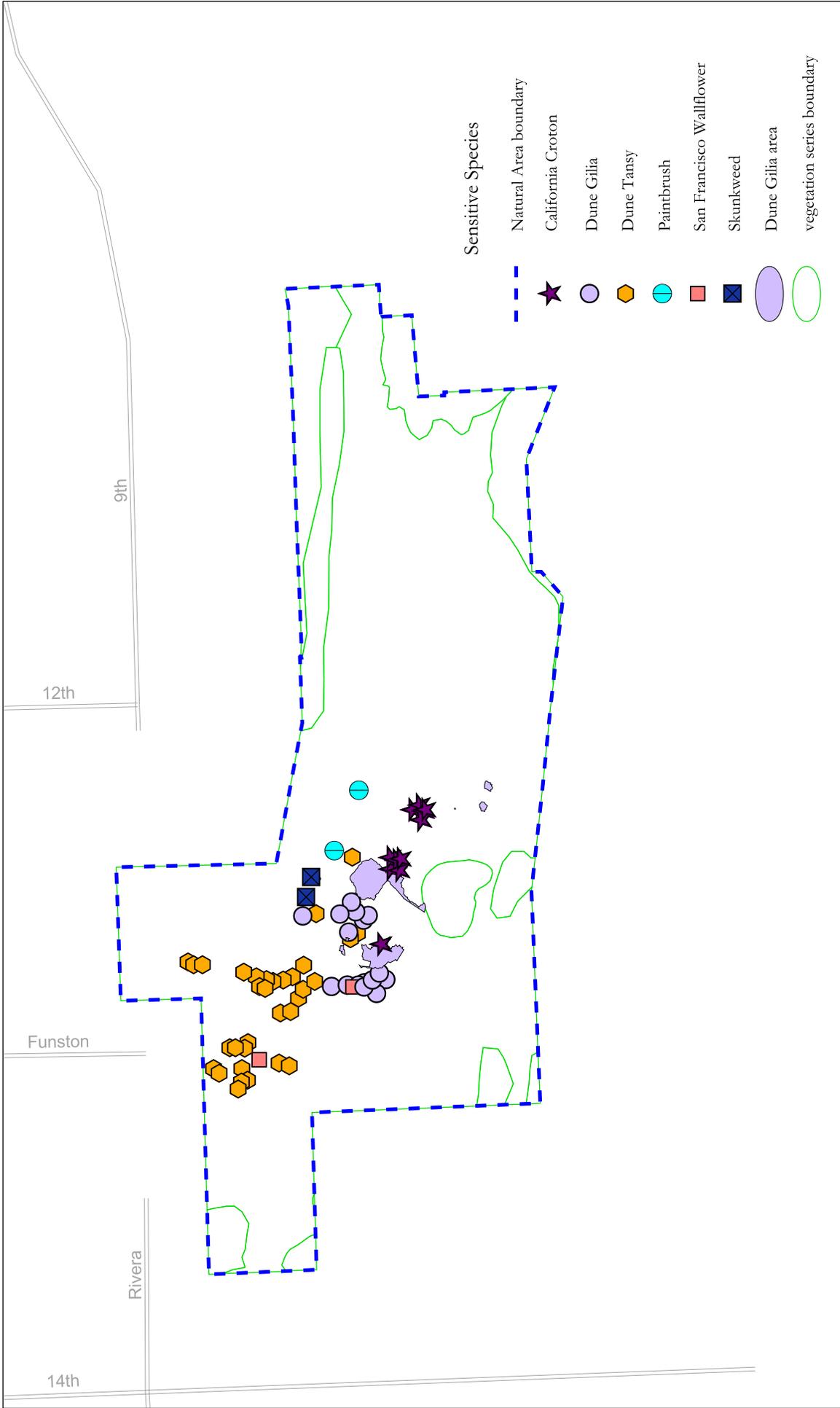
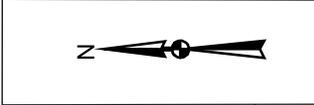
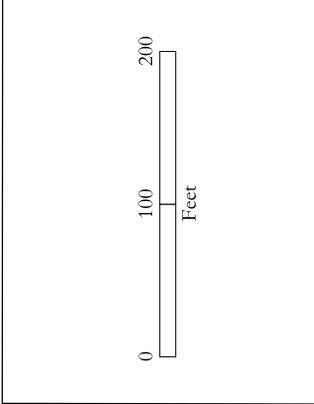
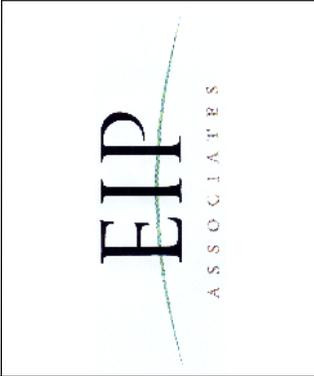


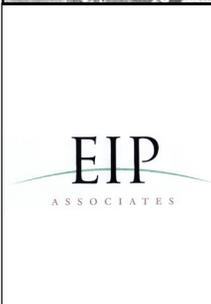
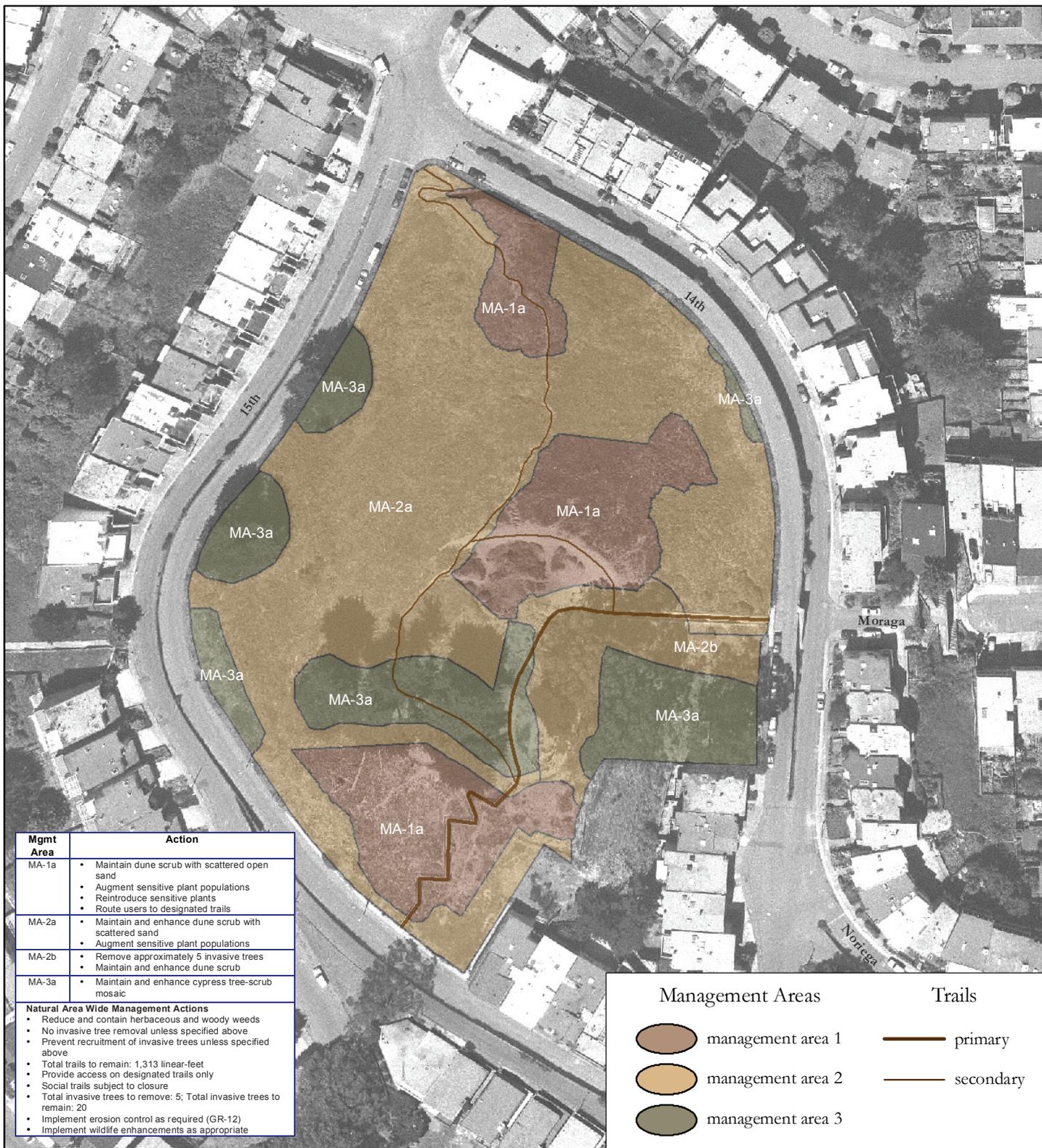
FIGURE 6.5 - 16
SENSITIVE SPECIES
Hawk Hill
 Significant Natural Resource Areas
 Management Plan
 San Francisco, California



Source: Vegetation polygons digitized by Geotopo, Inc. from data obtained by San Francisco Department of Recreation and Parks, Significant Natural Areas Program (NAP), EIP Associates, and San Francisco State University Department of Biology, 1999-2000; vegetation data edited and corrected by San Francisco State University Institute for GISc, 1999-2000 (SFSU GIS); natural areas layer created by SFSU GIS from data determined by NAP, 2002; streets data excerpted from ArcView StreetMap 2000 Data, copyright 1998-2000, Environmental Systems Research Institute, Inc. (ESRI).

Created by D. Dwyer of San Francisco State University Institute for GISc March 26, 2001, revised June 5, 2005.





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; 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.

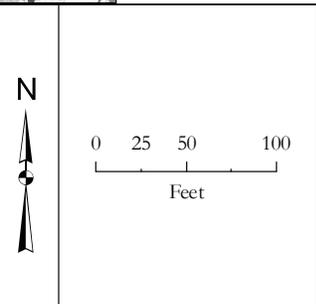
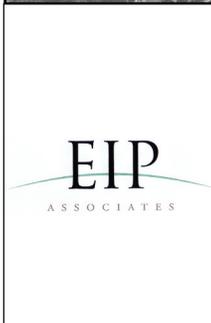
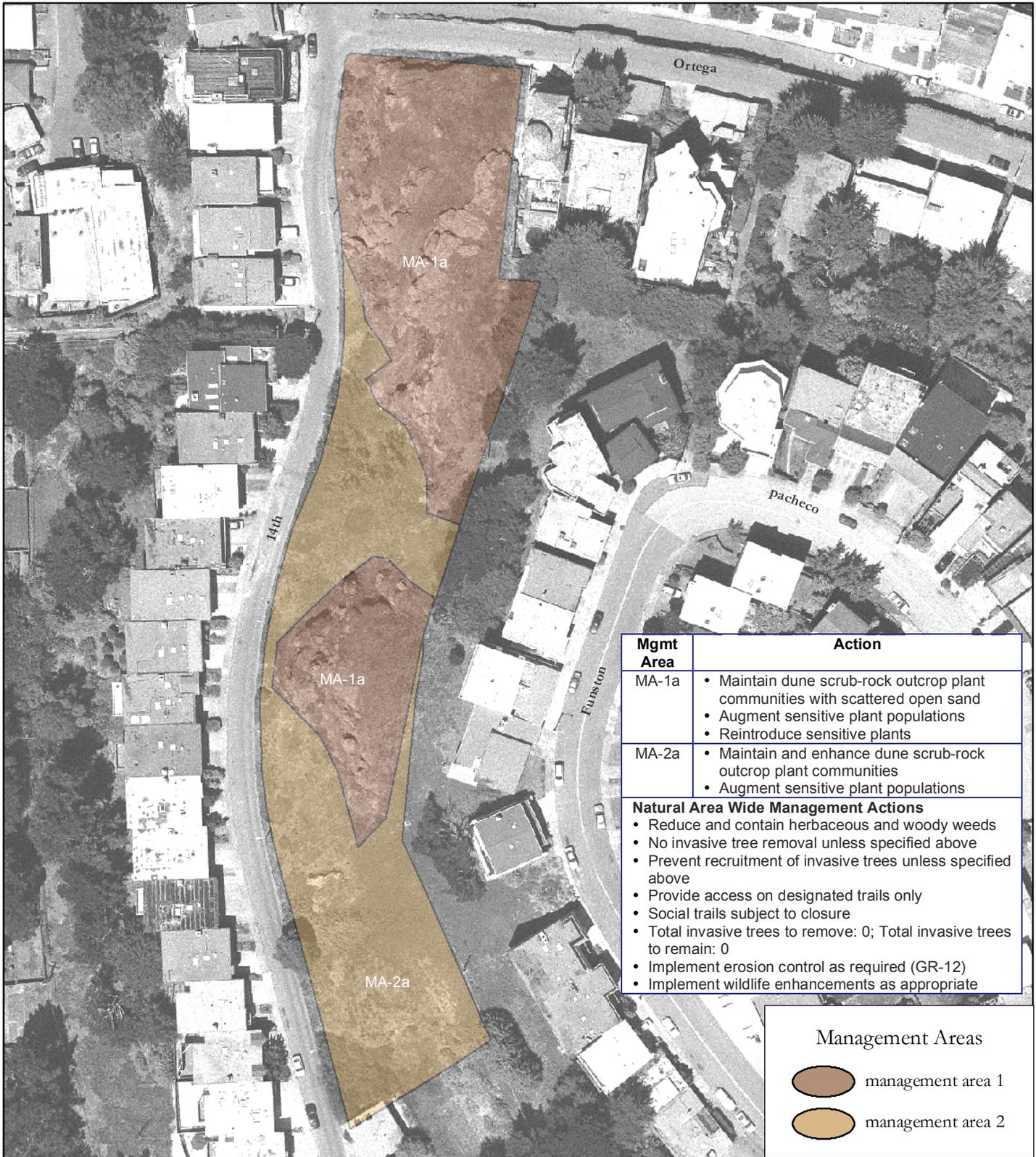


FIGURE 6.5 - 17
MANAGEMENT AREAS AND TRAIL PLAN
 Grandview
 Significant Natural Resource Areas
 Management Plan
 San Francisco, California



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 Street-Map 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; 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.

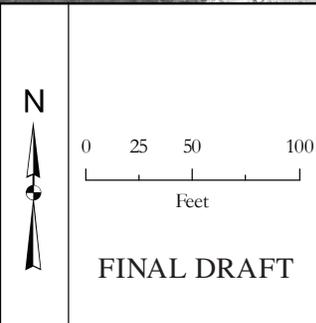
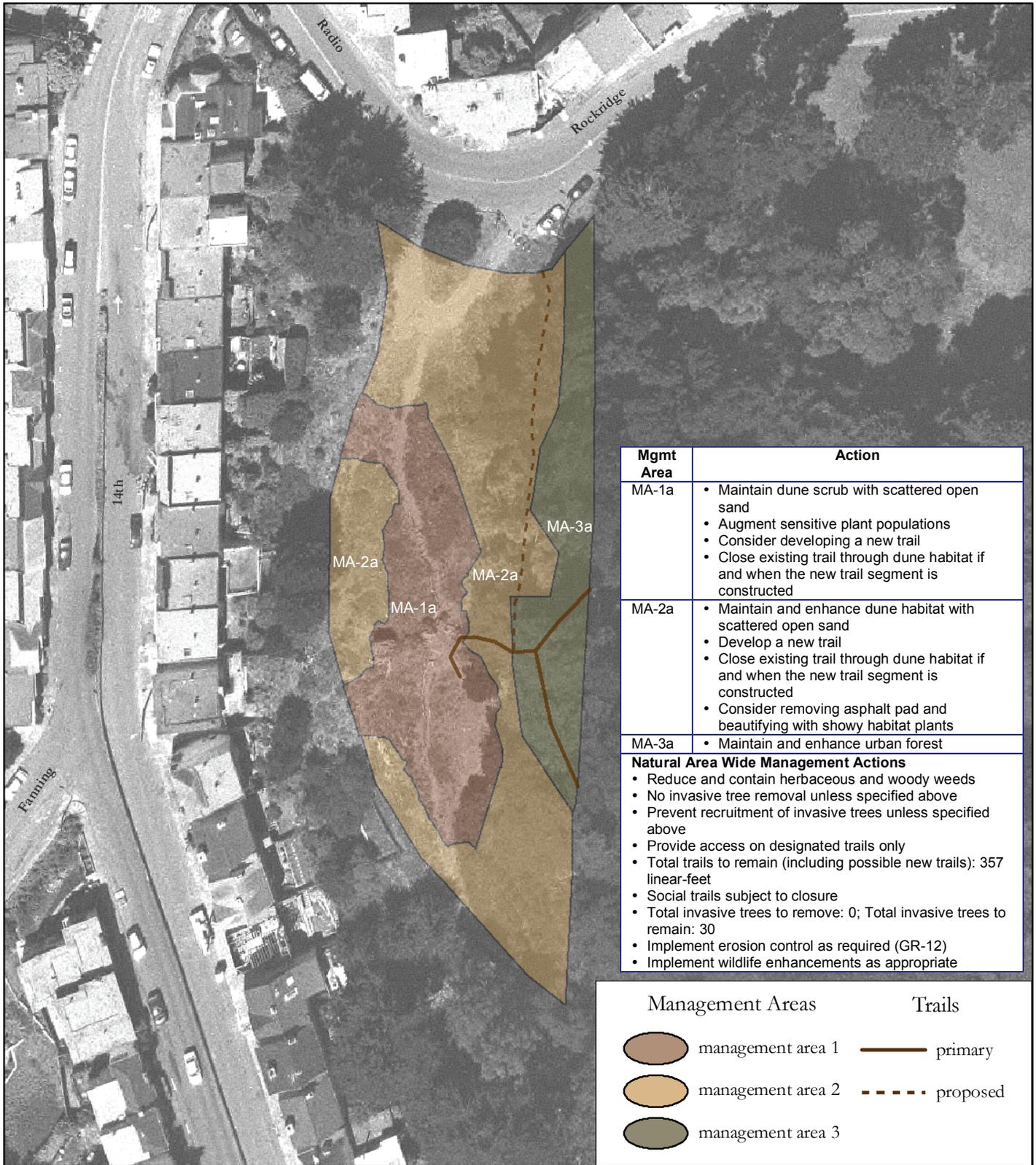


FIGURE 6.5 - 18
MANAGEMENT AREAS
AND TRAIL PLAN

Rock Outcrop
Significant Natural Resource Areas
Management Plan
San Francisco, California



Mgmt Area	Action
MA-1a	<ul style="list-style-type: none"> Maintain dune scrub with scattered open sand Augment sensitive plant populations Consider developing a new trail Close existing trail through dune habitat if and when the new trail segment is constructed
MA-2a	<ul style="list-style-type: none"> Maintain and enhance dune habitat with scattered open sand Develop a new trail Close existing trail through dune habitat if and when the new trail segment is constructed Consider removing asphalt pad and beautifying with showy habitat plants
MA-3a	<ul style="list-style-type: none"> Maintain and enhance urban forest

- Natural Area Wide Management Actions**
- Reduce and contain herbaceous and woody weeds
 - No invasive tree removal unless specified above
 - Prevent recruitment of invasive trees unless specified above
 - Provide access on designated trails only
 - Total trails to remain (including possible new trails): 357 linear-feet
 - Social trails subject to closure
 - Total invasive trees to remove: 0; Total invasive trees to remain: 30
 - Implement erosion control as required (GR-12)
 - Implement wildlife enhancements as appropriate

Management Areas	Trails
management area 1	primary
management area 2	proposed
management area 3	



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 (SFSUGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s Street-Map 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; 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.

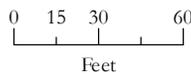
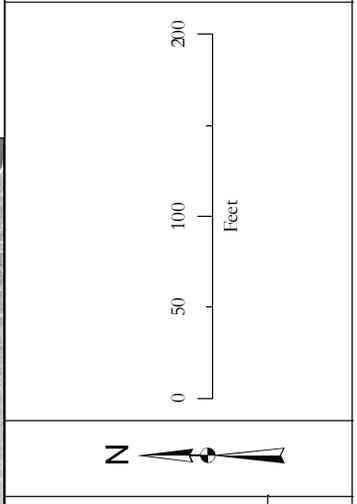


FIGURE 6.5 - 19
MANAGEMENT AREAS AND TRAIL PLAN
Golden Gate Heights
 Significant Natural Resource Areas Management Plan
 San Francisco, California



FIGURE 6.5 - 20
MANAGEMENT AREAS
AND TRAIL PLAN
Hawk Hill
 Significant Natural Resource Areas
 Management Plan
 San Francisco, California



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; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 28, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

Mgmt Area	Action
MA-1a	<ul style="list-style-type: none"> Maintain dune scrub with scattered open sand Augment sensitive plant populations Reintroduce sensitive plants Consider installing a sand ladder on secondary trails Limit access to designated trails, fence if necessary
MA-2a	<ul style="list-style-type: none"> Maintain and enhance dune scrub with scattered open sand Augment sensitive plant populations Limit access to designated trails, fence if necessary
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 Provide access on designated trails Total trails to remain: 917 linear-feet Social trails subject to closure Total invasive trees to remove: 0; Total invasive trees to remain: 10 Implement erosion control as required (GR-12) Implement wildlife enhancements as appropriate 	