

F. URBAN FORESTRY STATEMENTS

INTRODUCTION

Trees are an important resource to the people of San Francisco and the varied wildlife species that utilize the urban forests within the City. People are accustomed to views of most Natural Areas, and the parks of San Francisco in general, that include large majestic trees and substantial stands of urban forest. In an urban setting, visual relief from a very dense urban context is provided by stands of tree in Natural Areas and parks.

As important of a resource as the trees are, the species that have been planted throughout the Natural Areas are almost entirely non-native and most are also invasive. These include eucalyptus (*Eucalyptus globulus*, *Eucalyptus* sp.), Monterey cypress (*Cupressus macrocarpa*), Monterey pine (*Pinus radiata*), acacia (*Acacia longifolia*, *Acacia melanoxylon*), plume acacia (*Albizia lophantha*), and myoporum (*Myoporum laetum*). While some of these species are native to California, none of them are native to San Francisco. In many Natural Areas, trees capture moisture from the coastal fog. This moisture drips onto the ground creating artificially wetter than normal conditions which favor invasive weed species. Invasive tree species provide nesting habitats for several species of birds, including some of those considered sensitive for this management plan. However, eucalyptus in particular do not provide a substantial source of food and the oils in their leaves inhibit the germination of plants in the forest understory. This creates a relatively open forest floor that severely limits the habitat value of eucalyptus forests. Many native birds, mammals, and reptiles require relatively dense scrub cover for nesting and roosting. Most urban forests provide minimal habitat for these species.

The long-term goal of urban forest management in MA-1 and MA-2 areas is to slowly convert those areas to native scrub, and grassland habitats or oak woodlands.¹ Prior to colonization and the stabilization of dunes and introduction of invasive species, trees were not a dominant feature of the San Francisco peninsula. It is likely that scrubby coast live oaks grew on north-facing slopes in moist drainages and that buckeyes, bays, and oaks lined creek channels that flowed to the bay or ocean. However, much of the area probably resembled the coastal scrub habitats of San Bruno Mountain or the grassland-scrub mosaics of the Marin Headlands. Management of MA-1 and MA-2 areas is focused on the gradual conversion of these areas into native scrub and grassland habitats. This is the long-term goal. In the short-term, the removal of some trees will allow for re-vegetation with native understory vegetation; the first step in the gradual conversion of some areas from forest to scrub or grassland.

While trees exist in almost every Natural Area, tree removal is proposed for 15 of the 31 Natural Areas: Brooks Park, Lake Merced, Sharp Park, Bayview Park, McLaren Park, Palou-Phelps, Buena

¹ It is anticipated that in most cases this conversion will take significantly longer than the life of this plan (20 years).

Vista Park, Grandview Park, Corona Heights, Dorothy Erskine Park, Glen Canyon Park, Interior Greenbelt, Mount Davidson, Oak Woodlands, and Twin Peaks. Five Natural Areas (Palou-Phelps, Buena Vista Park, Grandview Park, Oak Woodlands, and Twin Peaks) have proposed tree removals but are not included in the following forestry statements. This is because the trees targeted for removal in these Natural Areas occur as isolated individuals, small groups, are scattered throughout the Natural Area, and are not considered forests. Tree removal will occur in small numbers and will be scattered throughout the Natural Area. As a result, issues typically associated with removal of trees from a forest, such as windthrow, would not be of concern in these five Natural Areas.

A substantial number of trees will be removed from Pine Lake in summer 2006 as part of the approved Capital Project. The approximately 132 trees to be removed at Pine Lake had hazard ratings of 8 or higher (Hortscience, Inc. 2004). Tree removal associated with this project was evaluated for impacts (San Francisco Planning Department 2004) and the Recreation and Park Commission adopted the plan (SFRPD 2004). Because no additional trees are proposed for removal at Pine Lake, it is not discussed further within this appendix.

Additionally, many of the urban forests have been designated as MA-3 areas. These areas will be managed through implementation of General Recommendation (GR)-15 (Section 5).

This appendix describes standard terminology, system-wide practices, and tree removal techniques that apply to all the removal and management actions in all Natural Areas regardless of designated management area. Following this discussion, the focus shifts to proposed tree removal within the MA-1 and MA-2 areas only. In the following Natural Areas tree removal is proposed in urban forest stands: Lake Merced, Glen Canyon Park, Bayview Park, McLaren Park, Mount Davidson, Interior Greenbelt, Dorothy Erskine Park, Corona Heights, and Sharp Park. The acreage of invasive forest within the MA-1 and MA-2 areas for each of these Natural Areas is used to estimate the number of trees in the existing forests. This is then compared to the number of trees to be removed and an evaluation of the impacts of tree removal in relation to the existing forest and the Natural Area as a whole is presented.

Terminology

Basal area: A measure, typically in square-feet per acre, of the area covered by trees within a given urban forest. Basal area is used as an index of tree production. For example, a basal area of 25 square feet per acre could equate to 11 trees with diameters of 20 inches, or 45 trees with diameters of 10 inches, in a single acre.

Seedling or Sapling: Young trees that are less than 15 feet tall. Seedlings and saplings are not included in the calculation of the number of trees within the Natural Areas, trees to be removed, or basal area because they are not considered trees.

Selection Silviculture: The removal of individual tree(s), or small groups of trees within the stands or along its edges.

Tree: A plant having one dominant vertical trunk that is over 15 feet tall.

Tree Stand or Stand: A unit of trees that is relatively homogeneous in age, structure, composition, and physical environment.

Urban Forest: Any significant stand of non-indigenous trees.

System-wide Forest Management Practices

The following forest management practices could apply to any tree removal in Natural Areas, including urban forests. The choice of forest management technique to be applied depends on the location and number of trees to be removed as well as the end goal of the management action. In general, any removal of trees over 6 inches in diameter at breast height (dbh) requires coordination with, and evaluation by SFRPD's Arborist. In addition, prior to any tree removal, individual trees measuring 6 inches dbh or greater must be posted for 30 days (Section 1).

GROUP SELECTION

Group selection results in the removal of a number of trees within a specified area. It is often used to create openings or plots within existing dense forests. For example, many of the urban forests are very dense with many trees per acre. Application of group selection to small areas between 0.25 and 0.5 acres in size, would create the desired openings, but with the surrounding forest remaining intact. Within MA-1 and MA-2, these sites would then be re-planted with native shrub and grassland species. Within MA-3, urban forest species would be planted or encouraged (see Section 5, GR-15).

THINNING

Thinning activities typically occur over large areas (several acres) and result in the removal of smaller trees and saplings, effectively opening up the understory. Some overstory trees may also be removed; however, the overstory trees to be removed will be individually selected. Application of thinning management results in an increase in the average diameter of the residual trees, promotes the growth of those trees, and improves forest health through the removal of suppressed trees. Within the MA-1 and MA-2 areas, thinning will allow promotion and establishment of a native understory, and will decrease the site dominance of invasive tree species. In MA-3 urban forests, thinning may be used to improve the health of the forest by relieving crowding.

SLASH AND DEBRIS REMOVAL

Unless it can be used to create wildlife habitat (see Section 5, GR-9) all large woody debris will be chipped on site, stockpiled in visually hidden places or removed manually off-site. Some of the chips may be used to deter understory invasive vegetation in the stand, or could be used as beneficial mulch on other revegetation projects in Natural Areas. Some large trunks may be left on site if they provide habitat value. Large trunks may also be moved to appropriate locations within the Natural Area and used for recreational or maintenance purposes.

REGENERATION AND INVASIVE SPECIES CONTROL

During the first few years after tree removal activities, remaining trees within the stand may suffer shock from changing environmental conditions. Once the initial shock has passed, tree growth may accelerate. Growth of understory non-native brush and shrub species will likely be promoted as a result of the opening of the canopy created by the removal of trees. The understory vegetation should be managed as appropriate for that particular Natural Area in accordance with site-specific management recommendations (Section 6). Within most MA-1 and MA-2 areas, regeneration of invasive tree species will be prevented and seedlings and saplings of invasive tree species will be removed by hand. Tree stumps of some exotic species may be treated (hand painted or sprayed) with herbicide to prevent re-growth.

EROSION CONTROL

The potential for erosion resulting from tree removal is expected to be minimal because tree removal activities will be done almost entirely by crews using hand tools and chainsaws. Use of heavy equipment will be minimized within Natural Areas, thereby minimizing ground disturbance and potential soil erosion. To the fullest extent possible and with consideration given to topography, lean of the trees, landings (staging areas), utility lines, local obstructions and safety factors, trees will be cut to fall away from any creeks or ponds (CDF 2005 914.1(a) Felling practices).

Specific removal operations will be planned to avoid the potential for tree removal to result in slope instability and potential mass wasting (landslide or large erosion) events. In some areas it may be necessary to phase tree removal over several years to allow for vegetation regeneration and minimize erosion risks. The removal of large trees will be evaluated by the SFRPD Arborist prior to implementation. Site-specific erosion control best management practices should be applied as necessary to minimize erosion (Section 5.3).

SNAGS

As the stands naturally age, some of the larger overstory trees in the stand will decline in health. Snags (dead trees) which do not pose any public hazards and do not harbor infestations of

deleterious insects or diseases should be retained for wildlife function. Snags within 100 feet of structures maintained for human habitation should be removed, consistent with CDF regulations for snag retention (CDF 2005, 919.1(c)).

WILDLIFE PROTECTION

The following general standards for protection of sensitive species shall apply to tree removal activities in the Natural Areas. These standards are similar to those applied by CDF to timber harvest operations (CDF 2005 (919.2)).

1. During tree removal activities, nest tree(s), designated perch trees(s), and screening trees(s) shall be left standing and unharmed.
2. Tree removal activities shall be planned and operated to commence as far as possible from occupied nest trees.
3. When an occupied nest site of a sensitive bird species is discovered during tree removal activities, staff will protect the nest tree, screening trees, and perch trees, and establish a 150-foot buffer zones around the trees to minimize disturbance to the nesting birds. No power tools shall be used within this buffer, although hand weeding may occur within 50 feet of the nest.

Management Area 1 and 2 Urban Forests

CALCULATIONS

Vegetation within a Natural Area was mapped as discrete patches based on structural features (herbaceous versus scrub versus mosaic versus forest) and on dominant floristic features (blackberry scrub versus coyote brush scrub). These patches were digitized as “polygons” to create a Geographic Information System (GIS) database. Because the GIS polygons were determined by the dominant overstory vegetation, tree stands with dense cover and stands with sparse cover all were categorized equally as forests. All acreage information within this appendix came from the GIS data files (See Section 3).

Estimates of trees in urban forests were calculated in two ways (saplings and seedlings are not included in tree estimates). For large urban forests, an estimate of 353 trees per acre was used. For smaller urban forests, such as Fairmount Park, Dorothy Erskine Park, and Corona Heights, tree estimates were adjusted based on rough visual estimates conducted by Natural Areas Program staff. Acreage of all non-native forest series were used in the calculation of tree numbers. The total acreage was multiplied by the appropriate estimate of trees per acre to generate the total number of trees per Natural Area. The resulting estimates were then rounded. For example, the 30.06 acres of

invasive forest at Mount Davidson generated an estimate of 10,612 trees which was rounded to 11,000 trees. Acreages that resulted in tree numbers less than 1,000 were rounded to the nearest hundred and numbers less than 100 were rounded to the nearest 10 trees. These estimates were further divided into trees within each MA-1 and MA-2 area for a given Natural Area (Table F-1).

The estimate of 353 trees per acre is based on tree surveys (point quarter method) in representative urban forest stands at Glen Canyon Park. This tree per acre value is comparable to similar surveys performed in San Francisco. For example, at Mount Sutro there are “an estimated 740 trees per acre (including very small trees) and approximately 280 trees per acre over 12 inches” (Mt. Sutro Open Space Reserve Management Plan 2001). Currently, SFRPD is conducting site-specific tree inventories for the areas under its management. Tree count updates resulting from these surveys will be incorporated into the final version of this management plan.

The number of trees to be removed within MA-1 and MA-2 areas at Sharp Park was calculated based on the desired stand density. The goal in most of the MA-1 and MA-2 stands at Sharp Park is the same as for the Natural Areas within San Francisco: eventual conversion of invasive forest into grasslands and scrub. To estimate the number of trees to be removed, the stands were estimated to be reduced by either 50 percent for the moderate density goals or 75 percent for the low density goals.

The following impact assessment focuses on the potential effect of tree removal on urban forests. In many areas, scattered trees will be removed. These areas do not constitute a stand and are not discussed further.

IMPACT ASSESSMENT

The invasive forests within the Natural Areas are predominantly eucalyptus, although cypress, pine and acacia also occur. All of these species are subject to removal within this plan. Overall, there are an estimated 118,000 trees within the Natural Areas System. Of these, approximately 54,000 are at Sharp Park, leaving 64,000 within San Francisco. Total removals within the City are estimated at 3,424 trees, with 97 percent of those (3,329) located within MA-1 and MA-2 urban forests. Therefore, approximately 5 percent of the trees within the MA-1 and MA-2 areas of the urban forest in San Francisco will be removed under this plan. At Sharp Park it is estimated that management of the MA-1 and MA-2 forests will result in the removal of approximately 15,000 trees, 28 percent of the estimated trees within the Natural Area. For all urban forests covered by this plan (San Francisco and Pacifica) approximately 16 percent of the forests will be removed.

Management goals in MA-1 forests are approximately 50-100 square feet of basal area per acre after tree removal activities are completed. The goal for the MA-2 stands is slightly higher basal areas ranging from approximately 100-200 square feet per acre.

SYSTEM-WIDE ISSUES

Changes in Access

Long-term management of the MA-1 and MA-2 stands will not result in long-term changes in recreational use in the Natural Areas. Designated trails within all management areas will remain open except during actual tree removal operations when access will be limited for safety reasons. Public access to some areas may need to be temporarily restricted so plants have time to recover and develop with minimal human disturbance. Over the long term however, these areas will continue to be accessible to the public.

Erosion

Most of the removals within the Natural Areas will be conducted by hand without the use of heavy equipment. This will minimize erosion risks. Additionally, the SFRPD Arborist will be consulted in removals that involve larger number of trees and, if necessary, a phased approach will planned. Implementation of the Best Management Practices as discussed in Section 5.3 will help minimize erosion issues. In the long-term, restoration actions that include installation of native vegetation would result in completely stable areas.

Tree Failures

Tree failures occur when the trees on the outside of a stand are removed, exposing the inner trees to high winds or unstable soil conditions. In general, removal actions within the Natural Areas are planned to take individuals or very small groups of trees within existing forest and scrub habitats. The removal of larger numbers of trees will be planned by the SFRPD Arborist to minimize the risk of tree failure. Over the life of this plan, tree failure is not expected to be above that currently experienced within the forests.

CHANGES TO FAUNA

While some impact to fauna may occur during and immediately after tree removal, the long-term and gradual conversion of the urban forests to native grassland and coastal scrub or oak woodland will benefit wildlife. Although animals do use the eucalyptus and forests, these areas are relatively poor quality wildlife habitat. These forest understories are either very open, a result of the eucalyptus oils suppressing plant growth, or they are dominated by ivy that climbs the trees and eventually kills them. Neither of these habitats are very productive wildlife habitat. While some birds such as hawks and owls use the invasive forests for nesting and roosting, there will be minimal impact to these species because the overall acreage of forest to remain is very high. Overall, forest management within the Natural Areas of San Francisco is estimated to result in the removal of approximately 5 percent of the forest. At no one location will all the trees, or for that matter, more than 15 percent of the existing trees be removed from Natural Areas within the City. This means that there will be abundant forest left for those species that prefer to use this habitat. It also means that there will be an

increase in habitat for those species that are declining in the City and that prefer coastal scrub, such as wrenit (*Chamaea fasciata*), spotted towhee (*Pipilo maculatus*), white-crowned sparrow (*Zonotrichia leucophrys*), California quail (*Callipepla californica*), or grasslands, such as western meadowlark (*Sturnella neglecta*), savanna sparrow (*Passerculus sandwichensis*), western bluebird (*Sialia mexicana*), etc. These same effects would be apparent at all the Natural Areas and therefore are not discussed on a site-specific basis.

SITE-SPECIFIC ISSUES

Visual and Aesthetics

Lake Merced

Trees will be removed from stands surrounding the lake. Removals will be focused near the Mesa and adjacent to the golf course on the eastern shore of South Lake.

Short Term and Long Term. Tree removals may be visible along Skyline Boulevard, Lake Merced Boulevard, Gellert Drive and John Muir Drive. They may also be visible from the shores of the lakes and from some locations on the golf course. It is expected that removals will open up view corridors of the lake that are currently blocked by trees. These openings will remain as the forests in these areas are gradually converted to low-growing coastal scrub.

Mount Davidson

The bulk of the tree removal will occur in MA-2e on the north and western side of the Natural Area. Additional removals will occur within the grassland-forest ecotone on the eastern edge of the forest.

Short Term. Tree removals are expected to occur gradually over the life of the plan. In the short term, there will be some opening of the canopy at selected areas that may be visible from nearby vantage points.

Long Term. Over the long term, tree removal will result in the conversion of some areas of forest to scrub and grasslands. This is expected to occur gradually as trees are removed in small areas which are then revegetated. Most of Mount Davidson will still support an urban forest even when tree removals are complete.

Glen Canyon Park

Most of the removals will occur within a relatively small area to the west of the Silver Tree Day Camp that also supports coastal scrub habitat. Small numbers of trees (10), will also be removed from the riparian corridor and the grassland urban forest interface.

Short Term. The removal of trees from the grassland across from Silver Tree Day Camp will be readily apparent. The removal of trees from within the dense forest above the day camp will be less

evident because the area is partially blocked by Silver Tree Day Camp. Some canopy openings may be observed as the existing stand becomes less dense.

Long Term. Because several trees will remain in the stand on the eastern slope, the area will appear less dense but will still appear wooded (like an open savanna). The slope above the day camp will gradually be converted into scrub habitat similar to what is immediately adjacent to this forest. The urban forest immediately adjacent to this site will help preserve the forested look.

Sharp Park

Most of the trees that will be thinned from Sharp Park Forests will come from the canyon east of the archery area. There will also be some thinning that occurs near the main access road to this area and on the slope above Sharp Park Drive. Trees will be removed to protect the existing riparian corridor, coastal scrub habitats, and grasslands.

The City of Pacifica has an ordinance (636-C.S.) that defines the removal of more than 20 trees within one year as logging. Trees are defined in this ordinance as being 6 inches in diameter 12 inches from the ground. The recommended removal of approximately 15,000 trees from Sharp Park apparently conflicts with this ordinance. Therefore SFRPD will seek legal counsel from the San Francisco City's Attorney's office regarding the applicability of Ordinance 636-C.S. SFRPD staff will work with representatives of the City of Pacifica to carry out the proposed tree removal in compliance with all applicable local and state laws. Should the City require a permit for development of a trail, issuance of approvals for tree removal may be sought concurrently. Most tree removal will occur in the upper canyon. This area is outside the Coastal Zone and therefore a coastal development permit is not required.

Short Term. The removal of trees at Sharp Park will likely occur gradually over the course of this plan. Most tree removals will not be seen by park users because the canyon east of the archery range is inaccessible. Stand thinning closer to the golf course may be seen by golfers and archers.

Long Term. As tree removals are completed the canyon slopes will gradually support fewer trees and more scrub habitats. The overall look of the canyon will remain that of a wooded area for a long time following tree removal as older trees are allowed to naturally age and die.

Corona Heights

Ten trees will be removed from the north-facing slope.

Short Term. If the trees are taken out all at once, this action will be easily seen from the surrounding neighborhoods and by park users. If the trees are gradually removed over the course of the plan, it is unlikely that visitors will notice a radical change in vegetation.

Long Term. This area will be converted gradually to oak woodland. While coast live oak (*Quercus agrifolia*) does not get as tall as the pines and cypress they will replace, the area will still appear wooded. In addition, the woodlands will abut a forest of trees that will not be cut so the visual impact is not expected to be significant.

Bayview Park

Most tree removal will occur near the ridge line and on the southern slopes. Tree removal will focus on the existing edge of forests to preserve existing scrub and grassland.

Short Term. Tree removal will focus on the existing edge of forests and will be less visible to park users because a screen of trees will remain.

Long Term. The forest stand will still exist although it will be less extensive. A green backdrop will still exist.

McLaren Park

In the northern part of McLaren removal will focus on isolated and small groups of trees within existing grassland and below the amphitheater to preserve the riparian corridor and quail habitat. In the central portion of the Natural Area, removal will focus on the slopes below the water tanks.

In the southern portion of the Natural area removal will occur along forest edges and include scattered trees within the grasslands.

Short Term. The largest immediate change will be when trees within the grasslands are removed. Also, on the slope below the water tanks, the canopy will be greatly reduced, an action that may be visible to park visitors on the fire road. The line of trees along the edge of the golf course will block views from other areas.

Long Term. Grasslands will increase in magnitude and the area below the water tanks will support an area of diverse coastal scrub.

Interior Greenbelt

Tree removal will focus on the eastern border and the western tip of this Natural Area where a native understory remains and restoration of the intermittent creek is planned in one area.

Short Term. Areas selected for tree removal are not very large or dense forests. The surrounding neighborhood and visitors may notice a decrease in tree density after thinning is complete, but the overall view will not be substantially altered.

Long Term. Eventually these areas will be converted to coastal scrub or creek riparian habitats. Once the vegetation is established, the area will appear forested and natural with no evidence of tree removal or disturbance.

Dorothy Erskine Park

There are two areas from which trees will be taken to help preserve and expand the existing grasslands and coastal scrub.

Short Term. Park users may notice that there are four fewer trees at the top of the Natural Area but the remainder of the forest will remain intact. The other trees are down slope of the Natural Area and will not be visible.

Long Term. Significant forest will remain and scrub will fill in where trees have been removed.

Windthrow

Windthrow is used to describe the effects of wind on a stand of trees. When the wind blows a tree over, this action is called windthrow. When trees are removed from a stand, windthrow can increase if wind-toughened edge trees are removed, exposing the interior of the stand to unusual wind conditions. Windthrow is a natural part of forest ecosystems. It is only when stand characteristics are changed by human interaction that windthrow becomes an issue. The following discussion focuses on windthrow risks to humans and nearby residences or instances where tree removal could substantially alter windthrow rates for a given stand. In general, hazard trees which pose a threat to Natural Area visitors or residential homes will be identified by the SFRPD Arborist and removed.

Lake Merced

In general, potential windthrow hazard to people is minimal because there are no residential areas near the stands where tree removals will occur. Most of the stands at Lake Merced are relatively narrow because they grow between the roads and the lakeshore. These trees are all relatively exposed to the prevailing westerly winds. This has resulted in wind-hardened trees throughout the stand and removal of adjacent trees should not increase windthrow rates. Windthrow is likely to occur naturally within the stands and along their edges, and tree removals will not increase potential hazards of these events.

Mount Davidson

Tree removals in the MA-1 and MA-2 stands will not create windthrow hazards to residential areas because of their location within the stand and/or their location away from any homes. Prevailing winds at Mount Davidson are from the west and southwest. Because of this, removal of edge trees on the northwest side of the park (MA-1c and MA-2c) could increase the rate of windthrow within the stand. Substantial tree removal in these areas should not occur. A significant number of mature

trees should remain at the park edge to minimize the effects of wind on this stand. Small tree thinning is acceptable in the buffer area. The forest grassland ecotone is not subject to prevailing winds and trees could be removed from the forest edge without increasing the windthrow risk. Some windthrow is likely to occur naturally within the stand and its edges. It is not expected that the removal of trees from Mount Davidson will substantially alter the windthrow rates.

Glen Canyon Park

The potential windthrow hazards to people created by tree removals will be minimal because most of the trees are located downslope of residences surrounding the Natural Area. Additionally, Glen Canyon Park is located within a canyon and somewhat sheltered from the strong prevailing westerly winds. Windthrow is likely to occur naturally within the stand and along its edges, and tree removals will not increase potential hazards of these events. Neither stand removal is likely to cause significant windthrow.

Sharp Park

The windthrow rates at Sharp Park may be relatively higher following removal of trees. This Natural Area is exposed to the strong westerly winds that funnel up off the beach and through the canyon. Tree removal within these stands is planned to include a between 50 and 75 percent of the stand depending on the area. However, removal will not occur all at once. The gradual removal of trees should create a situation in which windthrow rates are not substantially elevated. Even if windthrow does increase, the risk to people is minimal because there are no residences and very few visitors to this Natural Area and the canyon east of the archery range is inaccessible.

Corona Heights

Trees removed from this Natural Area will be selected individually. Because only 10 trees are planned to be removed, the bulk of the stand will remain intact. Because most trees to be removed will come from the east slope below the ridge at Corona Heights, they are somewhat sheltered from the prevailing westerly winds. Therefore, removal of trees in this location will not create any windthrow hazards to any residential areas. As with any forest, windthrow is likely to occur naturally within the stand and its edges.

Bayview Park

The risk to nearby residences from windthrow at Bayview Park is minimal because there are no nearby homes. However, Bayview Hill is relatively exposed to winds blowing in across San Francisco Bay or southerly storm winds. Because much of the removal is planned to occur along the edges of existing stands, there could be a slight increase in windthrow if too many trees are removed at once. Most of the stands at Bayview Park are expected to be relatively wind-toughened due to their current levels of wind exposure. To minimize the potential increase in windthrow, tree removal

from forest edges should occur gradually. This should not create such a large edge gap that windthrow becomes a substantial problem within the stand.

McLaren Park

Most of the removals at McLaren Park are planned for individual trees or small groups of trees within existing grasslands. In the area downslope of Mansell near the water tanks, the overall plan is to remove enough trees to allow establishment of a coastal scrub community. This will involve a thinning of the stand. In general this will leave the edges intact and should not result in a substantial change in windthrow. Also, this area is sheltered from the prevailing westerly winds by the topography of McLaren Park and by trees lining the adjacent golf course.

Interior Greenbelt

It is expected that individual trees will be selected for removal from within the existing stands of this Natural Area. There should not be a substantial change in edge conditions or an increase in wind exposure in any of the areas where trees are to be removed. The site is located on the northeast facing slope of Mount Sutro and is protected from the prevailing westerly winds. There are no houses near enough to the harvest areas that the removal will create an increased risk from windthrow.

Dorothy Erskine Park

Dorothy Erskine Park supports approximately 100 trees of which 14 are planned for removal. The trees will be removed from areas that are somewhat sheltered from the prevailing westerly winds by stands that will remain. The selection of individual trees will not create situations where the remaining stand is exposed to wind conditions that are different than pre-harvest levels. There should be no increase in windthrow that would result from the removal of trees as planned.

Table F-1. Tree removals by management area for Lake Merced, Mount Davidson, Glen Canyon Park, Sharp Park, Corona Heights, Bayview Park, McLaren Park, Interior Greenbelt, and Dorothy Erskine Park.

Natural Area	MA	Acres	Existing Trees	Removed	Percent
Lake Merced	MA-1a	0.0	0	0	N/A
	MA-1b	5.1	1786	0	N/A
	MA-1c	0.0	9	0	N/A
	MA-1d	0.0	3	3	100%
	MA-1e	0.1	53	6	11%
	MA-1g	0.2	69	0	N/A
	MA-1h	0.3	95	0	N/A
	MA-2b	1.1	400	10	3%
	MA-2c	1.7	593	10	2%
	MA-2d	1.5	519	5	1%
	MA-2e	15.6	5500	100	2%
	MA-2f	2.9	1026	0	N/A
	All MA	43.2	12000	134	1%
Mount Davidson	MA-1a	0.1	21	0	N/A
	MA-1b	0.2	72	0	N/A
	MA-1c	3.5	1221	1000	82%
	MA-2a	0.1	35	0	N/A
	MA-2c	1.8	644	200	31%
	MA-2d	0.6	222	0	N/A
	MA-2e	4.9	1726	400	23%
	All MA	30.1	11000	1600	15%
Glen Canyon Park	MA-1e	0.1	19	0	N/A
	MA-1g	0.5	192	10	5%
	MA-2a	2.0	688	10	1%
	MA-2b	0.0	10	0	N/A
	MA-2c	0.5	172	0	N/A
	MA-2d	0.0	13	0	N/A
	MA-2e	0.6	204	100	49%
	MA-2f	0.2	77	0	N/A
	All MA	17.1	6000	120	2%

Table F-1 (cont). Tree removals by management area for Lake Merced, Mount Davidson, Glen Canyon Park, Sharp Park, Corona Heights, Bayview Park, McLaren Park, Interior Greenbelt, and Dorothy Erskine Park.

Natural Area	MA	Acres	Existing Trees	Removed	Percent
Sharp Park	MA-1a	0.1	27	0	N/A
	MA-1b	0.0	5	0	N/A
	MA-1c	0.7	239	50	21%
	MA-1e	1.9	668	0	N/A
	MA-1f	2.2	779	0	N/A
	MA-2a	5.3	1879	50	3%
	MA-2b	0.0	0	0	N/A
	MA-2c	4.5	1572	200	13%
	MA-2d	8.4	2952	50	2%
	MA-2e	2.5	866	50	6%
	MA-2f	2.5	888	444	50%
	MA-2g	13.4	4716	3537	75%
	MA-2h	9.0	3186	2390	75%
	MA-2i	12.5	4426	3320	75%
	MA-2j	5.6	1967	1476	75%
	MA-2k	20.3	7161	3581	50%
	All MA	153.3	54000	15147	28%
Corona Heights	MA-1a	0.0	3	1	33%
	MA-1b	0.0	0	0	N/A
	MA-1c	0.0	1	0	N/A
	MA-2a	0.0	1	0	N/A
	MA-2b	0.0	0	0	N/A
	MA-2c	0.0	12	10	83%
	MA-2d	0.4	36	0	N/A
		All MA	2.4	200	11

Table F-1 (cont). Tree removals by management area for Lake Merced, Mount Davidson, Glen Canyon Park, Sharp Park, Corona Heights, Bayview Park, McLaren Park, Interior Greenbelt, and Dorothy Erskine Park.

Natural Area	MA	Acres	Existing Trees	Removed	Percent
Bayview Park	MA-1a	0.0	7	0	N/A
	MA-1b	0.1	49	5	10%
	MA-1c	0.5	174	30	17%
	MA-1d	0.2	140	140	100%
	MA-1e	0.0	3	0	N/A
	MA-1f	0.2	63	10	16%
	MA-1g	0.1	32	0	N/A
	MA-2a	0.6	218	70	32%
	MA-2b	1.6	581	100	17%
	MA-2c	0.0	6	0	N/A
	MA-2d	0.7	262	0	N/A
	MA-2e	2.7	948	150	16%
	All MA	17.1	6000	505	8%
McLaren Park	MA-1a	1.3	462	50	11%
	MA-1c	0.3	100	5	5%
	MA-1d	0.1	44	20	45%
	MA-1e	1.9	676	60	9%
	MA-2a	0.5	169	40	24%
	MA-2b	9.9	3495	600	17%
	MA-2c	2.1	741	0	N/A
	MA-2d	1.0	364	0	N/A
	MA-2e	1.3	443	30	7%
	All MA	57.7	20000	805	4%
Interior Greenbelt	MA-2a	1.0	359	100	28%
	MA-2b	0.5	184	0	N/A
	MA-2c	0.3	88	40	45%
	All MA	16.4	6000	140	2%

Table F-1 (cont). Tree removals by management area for Lake Merced, Mount Davidson, Glen Canyon Park, Sharp Park, Corona Heights, Bayview Park, McLaren Park, Interior Greenbelt, and Dorothy Erskine Park.

Natural Area	MA	Acres	Existing Trees	Removed	Percent
Dorothy Erskine	MA-1a	0.2	18	5	28%
	MA-2a	0.1	11	5	45%
	MA-2b	0.2	13	4	31%
	All MA	1.4	100	14	14%