**TO:** **HONORABLE CITY COUNCIL**

**FROM:** **CITY MANAGER** **DEPARTMENT: CITY MANAGER'S OFFICE**

**DATE:** **MAY 18, 2009** **CMR: 254:09**

**REPORT TYPE:** **REPORTS OF OFFICIALS**

**SUBJECT:** **Adoption of a Mitigated Negative Declaration and the Foothills Fire Management Plan**

## RECOMMENDATION

Staff recommends that the City Council adopt the Mitigated Negative Declaration ("MND"), dated February 9, 2009, and the attached Foothills Fire Management Plan ("Plan"), dated January 15, 2009.

## BACKGROUND

The City first prepared and adopted a Foothills Fire Management Plan in 1982. The City's consultants have prepared an updated Foothills Fire Management Plan, in response to Council direction to staff and in response to changes in the Foothills, laws and regulations, and input from residents, neighboring jurisdictions, and other community members.

The Plan incorporates lessons learned from the Oakland Hills Fire of 1991 and other best practices, including working collaboratively with neighboring jurisdictions, police and fire agencies, and community partners.

The objectives driving the recommendations in the Plan are:

- Life Safety
- Structure and Infrastructure Protection
- Ignition Prevention
- Fire Containment
- Natural Resource Protection and Enhancement

The components of the Plan are:

- Fire Hazard Assessment: The consultant conducted a fire science review of fuel types, loads, topography, and other factors. The data were analyzed with various computer models and correlated on maps.
- Regional Evacuation: The consultant surveyed 19 miles of City roadways, 12 miles of which are identified as critical evacuation routes, and most of which have prolongations or feed other road systems outside the City limits.
- Review of Municipal Ordinances: The consultant found most City Municipal Codes related to the Foothills are adequate. Several updates were suggested.
- Staffing of Fire Station 8: The consultant analyzed objectives and resources for response to fires in the Foothills. The recommendation in the Plan is to maintain current staffing levels for Fire Station 8 (~$200,000 in staff overtime and ancillary costs). Police officers (directed patrol) and Open Space Ranger staffing may need to be increased during high-risk conditions (viz., Red Flag).
- Wildland Fire Management Recommendations and Mitigations: The consultant presents specified fire prevention treatments on City-owned lands and roads. An outside environmental consultant (TRA Environmental Sciences, Inc.) supplemented the evaluation of and incorporation into the Plan of best practices for recommended treatments.
- Updates to Pearson-Arastradero Trails Master Plan and Foothills Trail Maintenance Plan: The consultant reviewed existing Plans and suggested updates.
- CEQA Documentation: The consultant worked with the Planning Department and TRA Environmental Sciences, Inc. to develop the MND.
- Implementation Plan and Potential Funding: The Plan presents an overview of funding strategies. The total five-year cost, beyond what the City currently spends, to implement the recommended projects is estimated at approximately $435,000. This report will not include a plan to address the funding implications of the recommendations. Staff will return to the Council at a later date with funding plan recommendations along with other implementation measures.

While the nominal title of the Plan is fire management, the Plan necessarily includes law enforcement (evacuation, crime in the area, notification/warning and emergency public information, Block Preparedness Coordinator Program), natural resource management (Ranger staff), utilities (power lines, water supply, and related infrastructure), public works, and other topics.

## DISCUSSION

This new Plan would replace the existing Foothills Fire Management Plan, dated 1982. The City retained Wildland Resource Management (Carol Rice) as the primary consultant to develop this updated Plan, working with staff from the City Manager's Office, the Open Space Park Rangers, the Fire Department, the Police Department, and other work groups.

*Scope and Geography*

The Foothills are defined in the Fire Management Plan as lands on and to the west of Foothill Expressway and Junipero Serra Boulevard to the City limits on Skyline Boulevard.

The focus of the Plan is on lands owned by the City and roadways, since the City has responsibility and direct control over such areas. The Plan identifies 51 areas where treatments are to be conducted. These treatment areas are found within Foothills Park, Pearson-Arastradero Preserve, and 12 miles of City roadways.

The Plan also notes that the Foothills area includes a wide range of lands, buildings, and resources, such as:

- Open Space and Parks: In addition to the City-managed Foothills Park and Pearson-Arastradero Preserve, there are other open space areas in the area, including the Montebello Open Space Preserve and the Los Trancos Open Space Preserve (managed by the Midpeninsula Open Space District).
- Private Residences: There are roughly 200 homes in the City limits and hundreds more abutting or near the Palo Alto Foothills in neighboring jurisdictions in both San Mateo County and Santa Clara County.
- Private Recreation Facilities: There are several private equestrian, golf, sports complexes in the Foothills.
- Commercial Buildings: There are millions of square feet of commercial and industrial buildings in the Foothills (Stanford Industrial Park).
- Stanford University: Stanford holds substantial lands in the Foothills. These have a direct nexus to the City for police and fire services. The Palo Alto Fire Department provides service to Stanford University under contract, including the Stanford Linear Accelerator (SLAC) in San Mateo County. The Palo Alto Police Department, in addition to providing primary response coverage to large portions of Stanford lands as well as mutual aid, provides 911 dispatch of the Stanford Department of Public Safety (Stanford Police) under contract.

*Outreach and Regional Cooperation*

The City should not and cannot plan or operate in isolation regarding the Foothills. The nature of jurisdictional boundaries, interrelationships, and inter-agency cooperation (mutual aid), as well as a specific goal to include non-governmental organizations in the planning process, resulted in three formal outreach sessions to the general public, a Council presentation in October 2008, a presentation to the Parks and Recreation Commission, and numerous other meetings with our neighbors, including, but not limited to:

- Acterra
- CAL FIRE
- Friends of Foothills Park
- Los Altos Hills Fire District
- Los Trancos County Water District

- Los Trancos Woods Neighborhood
- Menlo Park Fire District (including the Town of Atherton, City of Menlo Park, City of East Palo Alto)
- Midpeninsula Regional Open Space District (MROSD)
- PA Protect Our Open Space
- Palo Alto Hills Neighborhood Association
- Pony Tracks Ranch
- Portola Pasture Stables
- San Mateo County FireSafe Council
- San Mateo County Sheriff
- Santa Clara County Fire Dept
- South Skyline Association
- Stanford Community Residential Leaseholders (SCRL)
- Stanford University
- Town of Los Altos Hills
- Vista Verde Community Association
- Woodside Fire Protection District

This outreach was not bounded merely by the need to collect opinions for the Plan. One key recommendation of the Plan is to form an ongoing working relationship with these neighbors, to increase the overall resilience of the Foothills against fires, natural disasters, crime, and other threats. The Plan recommends that the City continue and expand this collaboration.

Similarly, the topic of evacuation necessitates inter-agency and private-public partnerships. While the Palo Alto Police Department is the lead agency for evacuation planning and operations, other jurisdictions must coordinate in these processes. The Plan calls for the creation of a regional evacuation and response system for the Foothills: "Foothills Regional Emergency Response and Evacuation Plan (FREREP)." This plan would provide for standardized signage and evacuation route nomenclature and protocols. The Block Preparedness Coordinator (BPC) Program will be an integral component, as residents who are BPCs can open gates and serve as "eyes and ears" for first responders. The FREREP would also facilitate an "all hazards" approach, covering crime prevention, missing persons (lost child or person at-risk), and other issues affecting the Foothills region.

*Wildland Fire Management Recommendations and Mitigations*

There are approximately 330 acres of City land (out of approximately 2,000 acres) that are recommended to undergo some level of fire mitigation treatments. Such treatments will follow best management practices to reduce deleterious environmental impacts. In many cases, treatments can actually enhance resources (removal of non-native, invasive species).

During the outreach meetings, staff found that many neighbors and residents did not have a clear understanding that "treatment" does not mean "clear cutting" or the removal of all flora and fauna. In reality, the reduction of fuel-load and methods to contain fires allows for the park-like aesthetic of the area to remain.

Furthermore, certain current fire prevention treatments will be curtailed or eliminated. Treatments will also be staggered; not all 330 acres will be treated in a given year. While the total acreage under treatment is to increase from the current approximately 200 acres, the total acreage treated in a given one year period will decrease (in most cases, only 100 acres would be treated annually, according to the Plan, p. 46). For example, the City already performs annual weed abatement, mowing, and other fuel-load-reduction actions. The Plan now provides that some such treatments can be done on a rotational basis on up to five year intervals, as opposed to every year.

Some areas will no longer be treated for fuel reduction (*e.g.*, Madrone and Valley View fire roads in Foothills Park), since they are not tied to the objectives of the Plan.

*Implementation Plan*

The Plan presents a general framework to guide the City in planning and allocating resources to the Foothills. Staff is developing a Work Plan to implement the recommendations.

At this point, since funding has not yet been identified, the Work Plan is constrained to elements that do not require substantial resources outside of existing budgets.

Staff is working with Wildland Resource Management to investigate government grants, volunteer programs, Fire Safe Council funds, and other external means of financing or offsetting costs.

Any field activities (treatments) will be prioritized by their relation to life safety: fuel breaks, evacuation routes, perimeter treatments, and defensible space.

However, several elements of the Work Plan do not require substantial funding (or can be performed at a slower rate using existing resources). Some of these elements include:

- Use this Plan as the foundation for the proposed Foothills Regional Emergency Response and Evacuation Plan (FREREP)
- Create Midpeninsula Foothills Emergency Forum (MFEF)
- Municipal Code updates
- Explore cooperative funding strategies: cost-sharing (or staff/resource sharing) with neighboring agencies (Los Altos Hills, CalTrans, Woodside Fire Prot. Dist., etc.)
- Update Geographic Information System (GIS) (new map layers/inputs from consultants)
- Special Patrols (by Fire, Police, Rangers) during times of heightened risk (Red Flag, Fire Weather)
- Conduct training, meetings, and drills for Block Preparedness Coordinators for neighborhood communication
- Revise Trail Plans for Pearson-Arastradero Preserve & Foothills Park
- Volunteer Program: develop plan for use of volunteers for treatment (perhaps thorugh Acterra, Fire Safe Council, etc.)

- Educate and work with adjacent landowners (homeowners and businesses) to reduce hazards and improve coordination
- Develop Joint Information Center (JIC): work with neighboring jurisdictions to ensure that emergency public information (EPI) is coordinated. Training for Public Information Officers (PIOs) and other staff on: Community Alerting and Notification System (CANS), evacuation, KZSU 90.1 FM radio, the Emergency Alert System (EAS), etc.
- Include Plan in the City Emergency Operations Plan (EOP)

Staff will continue to develop the Work Plan and adapt it, based on funding and staffing strictures.

## RESOURCE IMPACT

*Costs*

The total five-year cost to implement the recommended projects is estimated at slightly less than $700,000. Staff estimates that approximately $53,000 is currently spent annually for current treatments, which is $265,000 over five years, so net new funding required may be approximately $435,000.

The largest cost, at slightly more than $400,000, is to manage 19 fire containment areas. The initial treatment for segments of major evacuation routes is estimated to cost about $192,960.

To implement and maintain the policies and procedures recommended in the Plan, supplemental staff time will be required from the:

- City Manager's Office
- Open Space Park Rangers
- Fire Department
- Police Department
- City volunteers

Please refer to Section 5.4 of the Plan for the consultant's discussion of funding strategies.

## POLICY IMPLICATIONS

Approval of this Plan is consistent with current City policies and regulations regarding fire prevention, evacuation, and related matters.

This Plan also supports the three Council priorities of Environmental Protection, Economic Health of the City (*e.g.*, protecting private business facilities as well as critical utilities), and Civic Engagement for the Common Good (*e.g.*, partnership with neighborhoods and the Block Preparedness Coordinator Program).

## ENVIRONMENTAL REVIEW

This Plan is a project subject to review under the California Environmental Quality Act (CEQA). A Mitigated Negative Declaration (February 9, 2009) was prepared and circulated for public comment from February 10, 2009, through March 11, 2009. The City has concluded that any adverse environmental impacts of the treatments proposed in the Plan can be fully mitigated to protect against any potential negative environmental impacts.

The City retained the services of TRA Environmental Sciences, Inc., an independent biology and ecology consulting firm. This firm was also previously involved in the preparation and environmental review of the Foothills Park Trail Maintenance Plan (2004) and the Pearson-Arastradero Trail Management Plan (2001). TRA completed a full analysis of potential impacts to plants, animals, and other natural resources, and concluded that potential impacts could be adequately mitigated through implementation of best practices and mitigation measures which were incorporated into the MND.

Recommended best practices and mitigation measures include:

- Site inventory prior to treatment to determine the location of sensitive sites. Exploration into the use of knowledgeable volunteers to conduct a more detailed, site-wide survey is warranted.
- Site planning and design to determine specific vegetation treatment actions based on fire management benefits, environmental impact, and required mitigation activities.
- Protection during vegetation treatment using best management practices tailored to impacted sensitive resources.
- Protection of disturbed environmentally sensitive areas following either specific fire management actions.
- Prior to any treatment being started, a qualified biologist (or trained staff expert) shall work with personnel involved "regarding protected species and habitats in the project area, the limitations on areas that can be accessed on foot or with equipment, and the legal consequences of take of protected species or habitat." (Mitigated Negative Declaration (February 9, 2009), BIO-1, p. 2.) This recommendation is consistent with the approach adopted for trail improvements or maintenance as outlined in the Council-adopted Foothills Maintenance Plan (2004) and Arastradero Trail Management Plan (2001).

While there are a myriad of sensitive plants, animals, and other resources in the Foothills area, the treatment areas do not necessarily impinge upon all types. For example, according to the Biological Impact Assessment (January 8, 2009), "There are no Palo Alto-designated heritage trees in the Foothills Fire Management Plan Update area." (p. 22)

Sensitive environmental areas and habitats, in general, tend to be outside the priority treatment areas: 1) evacuation routes and 2) around buildings and certain public safety infrastructure.

During the CEQA Public Comment Period, the City received comments from the public via letters, e-mail messages, and the City's web site. The Parks and Recreation Commission also provided comments at their February 24 meeting.

Key issues and concerns include the following:

1) **Concern that the proposed measures may degrade the visual character of the area**

The City received public comments expressing concern that treatments would unreasonably alter the appearance of the park and preserve lands.

There will be localized changes to the treatment areas: near roadsides, structures, and along Trappers Ridge.

The changes along roadsides will be:

- Mowed grass, creating a more uniform, tended, look
- Shrubs under trees will be removed, creating a more open and park-like appearance. Views will extend further back from the roadside where topography of vegetation does not block the view.

However, changes resulting from treatments will not adversely affect the visual character of the area:

- Non-native plants are targeted for removal.
- Native trees will not be cut down, in most cases, but will be "limbed up," meaning that lower branches will be trimmed to 8-feet height (or 1/3rd the height of short trees).
- Views will extend farther back from the roadside, as foliage is trimmed back.

In some cases, there will be more foliage. For example, the appearance of Trappers Ridge will change. Less will be mowed each year, with more grass allowed to grow along the ridge. The visitor will see more groups (or clumps) of shrubs in grass where either continuous grass or continuous shrubs now exist.

Vegetation around structures will be managed to a greater extent. The structure may be more visible as shrubs are reduced in volume and lower branches of trees trimmed within 100 feet of the structure. Grass will be mowed within 30 feet of the structure, creating a more tended appearance. Such treatments are required by law.

2) **Concern that treatment measures could result in more weedy plants and patches and create "increased fodder" for fires**

Treatments call for targeting removal of weedy plants within the management areas. Much of the mowing or grazing currently performed or done in the recent past in Pearson-Arastradero Preserve was, in fact, done at the request of Acterra in order to reduce the weedy plants and patches. Management of timing and techniques will be employed to provide a competitive edge to native plants at the detriment of weeds. Mitigation measures and best practices will be utilized to prevent any significant adverse impact to habitats, plants or animals.

Some plants that grow after the management has been performed can take advantage of the reduced competition. They grow later in the spring and during the summer. They may create more volume for a fire to burn, in some limited areas, but they also have a short window of conditions under which ignition can occur. Such fuels may have the potential to move rapidly, but have low flame lengths, meaning they are easier to extinguish, compared to the fuel types and loads currently in those areas.

**3) Concern that treatments will create increased erosion and negative impacts to hillside habitats**

Actions to prevent erosion are called for in the ten listed mitigation measures that will take place in conjunction with the fuel management work. These measures include avoiding sensitive sites and operation when the soil is wet. Hillside habitats are maintained using best management practices used for other treatments, such as creating islands to prevent fire spread without adverse impact to flora and fauna in the area.

Best practices also limit the creation of bare soil. In cases where such soil is exposed, staff will deploy measures to confine erosion.

Work is also to be done along the roadside. In areas where erosion is possible from mechanized vehicles, heavy equipment is limited to work on the road surface only, with cutting performed by an articulated arm that does not cause accelerated erosion.

**4) Concern that fire management may conflict with City plans and park designations**

Fuel management is already routinely conducted in both Foothills Park and Pearson-Arastradero Preserve and has been done for many years. The trails plans for each of the areas allow for work to be done to maintain public safety. For example, the Foothills Park Trails Maintenance Plan (January 29, 2002) identifies fuel breaks as part of the maintenance regimen.

Best management practices to promote native vegetation are encouraged under current planning documents for both landholdings.

Current codes and regulations require fuel management adjacent to roads, structures, barbeques and other locations. This work is not discretionary. Sections 4290 and 4291 of the California Public Resources Code, for example, mandate Defensible Space be established for structures in the Foothills. Parks and preserves are not exempt from such laws.

**5) Concern that stream banks in Wild Horse Valley may not remain stable if shrubs are removed**

Shrubs will be trimmed back, but their roots will not be removed. The cutting operation will not necessarily involve soil surface disturbance. Shrub removal will result in a regrowth of the shrubs and new growth of grasses within months (see above for erosion

control methods). The shrubs roots that provide soil stability are not disturbed. The new cover of grass foliage offers raindrop splash protection and grass roots offer greater surface soil holding capacity.

Additionally, Mitigation Measure Geology 6 requires a buffer of 25-50 feet be maintained between operations and water bodies or designated riparian areas. Rainwater run-off barriers will be installed and managed in all treatment and operating areas.

## ATTACHMENTS

Attachment A: Palo Alto Foothills Fire Management Plan Update (Draft, January 15, 2009)

Attachment B: Mitigated Negative Declaration (February 9, 2009)

Attachment C: Biological Impact Assessment (January 8, 2009)

Attachment D: Public Comments (various from web site, e-mail, letter, etc.)

Attachment E: Minutes of the Parks and Recreation Commission, Feb. 24, 2009

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# Palo Alto Foothills Fire Management Plan Update

## WILDLAND FIRE RISK ASSESSMENT AND MITIGATION PROGRAM

**DRAFT**

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**January 15, 2009**

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# PART A – FIRE HAZARD ASSESSMENT AND FUEL MANAGEMENT PLAN/ PROJECTS

# 1 EXECUTIVE SUMMARY

The Fire Management Plan update process addresses a broad range of integrated activities and planning documents to address and mitigate the impacts of fire hazards in the Palo Alto Foothills Area. The area of interest includes the areas west of Foothills Expressway to the city limits of Palo Alto. Fire mitigation project areas include the boundaries of Foothills Park and Pearson-Arastradero Preserve within this area of interest.

The Fire Management Plan Update addresses the following key items:

- Fire Hazard Assessment
- Regional Evacuation Routes
- Review of Municipal Ordinances
- Staffing of Station 8
- Wildland Fire Management Recommendations and Mitigations
- Updates to Pearson-Arastradero Trails Master Plan and Foothills Trail Maintenance Plan
- CEQA Documentation
- Implementation Plan and Potential Funding

**Community Participation.** Community participation in the development of the plan began with the refinement of the scope of work and selection of the consultant team. Three community meetings were held at key points in the planning process to gather continued input from the community. A stakeholder group made up of adjacent jurisdictions, neighborhood associations, special interest groups, volunteers etc. also participated in the planning process. An environmental review in accordance with the California Environmental Quality Act (CEQA) was undertaken by City Staff in conjunction with the plan development.

**Fire Hazard Assessment.** There are many ways to assess fire hazard. Most utilize the three main factors of fuels, weather, and topography, with possible inclusion of elevation or fire history. Fire behavior was chosen as the means to assess fire hazard since it can identify locations where containment may be easiest, and where access may be precluded during the time of a fire. In addition, fire behavior outputs can identify locations where structures or natural resources may be unduly harmed by a wildfire, as well as locations where fire effects may be inconsequential to natural resources.

Not every area identified as a potential fire hazard can be modified to produce low-intensity fires. Not only would this be too costly, but environmental impacts would also be unacceptable.

**Results of Fire Behavior Analysis.** Fire behavior was analyzed for the entirety of the Foothills Area, including adjacent neighborhoods, property owned by Midpeninsula Regional Open Space District (MROSD), and Stanford University. Flame length, rate of fire spread and potential for crown fire were three characteristics considered in the analysis. The following are generalities observed:

Flame lengths follow fuel types, with long flame lengths in chaparral and untreated grass, and short flame lengths in woodlands and mowed grass. The largest areas of long flames are located in Foothill Park and Monte Bello Open Space Preserve. Low fire spread rates were predicted in woodlands and forests, and fast

spread rates in untreated grass and chaparral. There is very little active crown fire predicted within the Foothills area, however, the potential for trees to torch is high throughout the treed portion of the Foothills area. Torching is caused by low-hanging limbs, or ladder fuels.

**Wildland Fire Management Recommendations and Best Management Practices**

Treatments were strategically placed to achieve the following goals:

- Life Safety
- Structure and Infrastructure Protection
- Ignition Prevention
- Fire Containment
- Resource Enhancement

Treatments were identified for 51 project areas. The most visible recommended set of projects will be to conduct roadside treatments along Page Mill Road, Arastradero Road, Los Trancos Road, and Skyline Boulevard. Other projects entail the continuation of mowing along trails and some boundaries, grazing along the selected segments of the perimeter of both Parks/Preserves, treatments to install and maintain defensible space around structures, treatments around barbeques to minimize the chance of ignitions, and treatments to bolster the success of fires containment efforts within the parks. Fuel management treatments can also enhance natural resources, through targeting non-native invasive plants as part of biomass removal – potentially with grazing animals, mechanical mowing and hand labor - and conducting prescribed fires in selected areas under conditions consistent with fire control.

Best management practices are included for each treatment type, based on the sensitivity of the resource. These include practices that consider the timing intensity of the treatment, or selection of the type of treatment methods (e.g., whether the project would entail mowing or grazing, hand labor or mechanical equipment), the strata of treatment (e.g., whether the project would remove lower tree limbs, or instead involve grass mowing), and the scale of the treatment (e.g., to treat small or large patches).

**Review Recommendations Regarding Pearson-Arastradero Trails Master Plan and Foothills Trail Management Plan**

- Addition of fuel management and fuel reduction zones
- Location of prescribed burns
- Modify fuel break width for performance standards
- Modify roadside treatment standards
- Include fire hazard in regulatory, warning and education signs (especially prescribed fires)

**Regional Evacuation Routes**

The Palo Alto Police Department has responsibility within City limits for evacuation operations under state law. However, multiple jurisdictions will likely be involved in an event in the Foothills. Evacuation routes

should not be blocked anywhere, regardless of jurisdiction or ownership; this is especially important because most of the regional evacuation routes span multiple cities, ownership categories and protection jurisdictions. The following recommendations will help reach a reasonably safe condition along the regional evacuation routes.

- Formalize agreements with adjacent landowners for ingress and egress routes (from parks) and offsite refuge areas

- Develop partnerships to address regional evacuation routes from residential and public areas (Regional Evacuation Plan, Community Notification (multi-jurisdictional) and Unified Command)

**Analysis and Recommendations Regarding Staffing of Station 8**

An analysis of the staffing level of Station 8 was conducted that considered the distribution and concentration of fire personnel and equipment in relation to the incidents. The recommendation was to maintain current staffing levels. Response times for incidents are significantly longer from other stations, even when considering mutual aid offered by other jurisdictions. The fire behavior analysis indicates the potential for fast-moving fires of high intensity, further justifying the current staffing levels.

**Review of Municipal Ordinances**

The existing code is comprehensive; only minor changes are recommended. These include:

- Expand Wildland Urban Interface Fire Area (between Foothill Blvd & Highway 280)

- Fire Protection Planning: Begin early in permitting process

- Expand Defensible Space Requirements: Maintain roof free of materials

- Expand Access Requirements: bridge load limits, parking restrictions

- Additional guidance for Maintenance of Defensible Space

- Ignition Source Control

- Fencing

- Signage

- Mechanical Equipment Ignition Prevention

- Restriction on Smoking at Pearson-Arastradero Preserve

**Implementation Plan and Potential Funding for Fire Management Recommendations**

Implementation of this plan will be managed by the City of Palo Alto staff, including the Fire Department, the Police Department (evacuation, notification, neighborhood preparedness coordinators), and Open Space (rangers). Volunteer groups, such as Acterra, Friends of Foothills, and other groups should continue to be involved and encouraged to help with the implementation. Further, the City should work with mutual aid government agencies and other stakeholders on an ongoing basis.

**Prioritization of Treatments**

The following is the priority of treatment types:

1. Life Safety
2. Structure and Infrastructure Protection
3. Ignition Prevention
4. Fire Containment
5. Resource Enhancement

**Cost Estimates**

The total five-year cost to implement the recommended projects is estimated at slightly less than $700,000. The largest cost, at slightly more than $400,000, is to manage 19 containment areas. The initial treatment for segments of major evacuation routes is estimated to cost almost $178,000. The use of California Youth Authority Crews may offer a means to reduce costs for the hand labor-based treatments. Without volunteers pre-treatment surveys and follow-up may cost $100,000 over the next five years.

# 2 INTRODUCTION

The Palo Alto Foothills consist of a mix of urban, semi-urban and open space lands on the eastern slope of the Santa Cruz Mountains. Within the city limits of Palo Alto, the Palo Alto Foothills area west of the Foothills Expressway and Junipero Serra Boulevard represents a Wildland Urban Interface area (WUI) with significant impacts to public safety, cultural and economic activities, and environmental and natural resource management. The Palo Alto Foothills Area includes two city-managed areas: Foothills Park and the Pearson-Arastradero Preserve. In an effort to implement an updated Fire Management program for the Foothills, the City of Palo Alto conducted a review of the fire hazards, mitigation activities, and environmental considerations for the area to develop recommendations for wildland fuels and fire management.

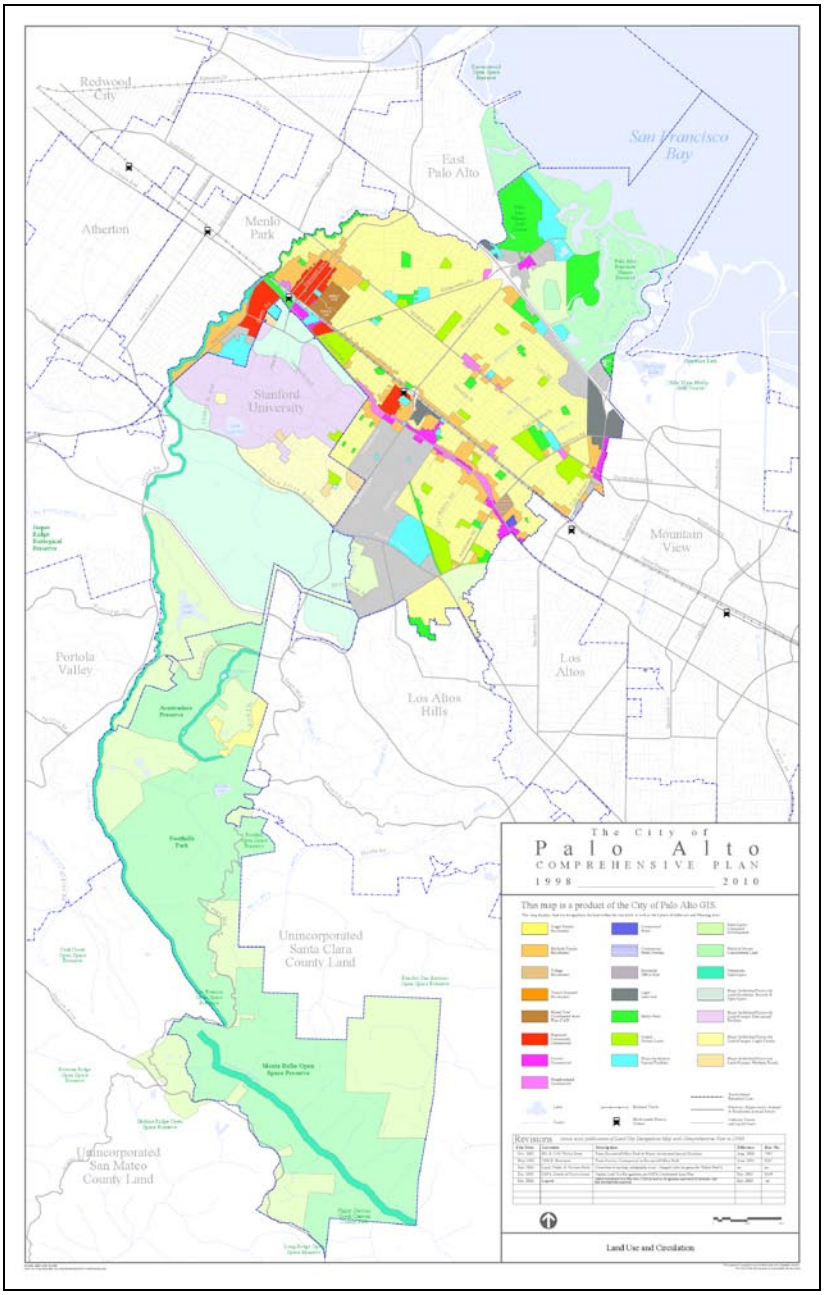


***Figure 1: City of Palo Alto Overview.***

## 2.1 Goals and Objectives

The City of Palo Alto developed, maintains, and executes a Fire Management Plan focused on reducing losses from wildland fire. In support of this long-term objective, the City of Palo Alto initiated an update process for the Foothills Fire Management Plan to prepare recommendations for consideration and possible inclusion in future budgets.

This Foothills Fire Management Plan update process focused on the three primary goals:

- Develop recommendations for wildland fuels and fire management to reduce fire hazard in Palo Alto's Wildland Urban Interface west of Foothill Expressway to an acceptable level of risk.
    - Review and incorporate the 1982 Foothills Fire Management Plan and 1997 staff update.
    - Identify appropriate management recommendations to reduce wildland fuel loads in the Pearson-Arastradero Preserve and Foothill Park.
- Maintain ecological and aesthetic values of Foothill Park and Pearson-Arastradero Preserve consistent with fire reduction goals.
- Provide a fuel management plan for Foothills Park and Pearson-Arastradero Preserve that is cost effective and sustainable for the City of Palo Alto.

The Fire Management Plan update process involved a combination of City staff personnel from a wide cross section of city operations, stakeholders from across the Palo Alto area, and members of the Palo Alto community. In order to ensure that the fire management recommendations addressed environmental and cultural conditions that can affect resource and priority decisions, the update process included a series of specific objectives.

- Assess fire hazards within the project area. Develop fuel classification, weather condition assumptions, and other fire hazard inputs used to model the fire hazards for the project area.
- Develop wildland fire management recommendations. Identify both developed and sensitive natural resources at risk and develop treatment and best management practices to protect those resources. Prepare appropriate California Environmental Quality Act (CEQA) document.
- Consider current refuge areas, ingress and egress routes and make recommendations for evacuation from residential and public areas.
- Identify potential funding plans and external funding opportunities.
- Update the Foothills Fire Management Plan incorporating input from the community.
- Review and recommend appropriate revisions to existing City municipal ordinances pertaining to fire prevention.
- Review and make appropriate recommendations to current levels of staffing, equipment and other response resources at Station 8 in Foothills Park.

- Recommend revisions to the Pearson-Arastradero Preserve Trail Master Plan and Foothills Park Trail Maintenance Plan pertaining to firefighting access or vegetation management for fire hazard reduction along trail corridors.

## 2.2 Planning History

The City of Palo Alto developed a Foothills Fire Management Plan in 1982. The 1982 Plan provides the planning framework for fire control activities for the City and the Palo Alto Foothills Area. The goal of the 1982 Fire Management Plan is "to reduce government costs and citizen losses from wildland fire by increasing initial attack success and/or protecting assets at risk through focused pre-fire management activities."

In 1997, the City of Palo Alto staff developed a draft update to this plan. Although the draft update was not formally adopted, the 1997 Draft Palo Alto Foothills Fire Management Plan provides an updated framework and interim objectives for fire management within the Foothills Area.

The 1997 Draft Palo Alto Foothills Fire Management Plan identified four fire management objectives:

1. Identify fire pre-suppression, suppression and post-suppression activities to maintain or enhance the status quo, and prevent adverse impacts on people, structures and natural resources consistent with Palo Alto Fire Department's fire protection mission.

    a. Prevent or reduce the threat of death or injury to foothills residents and visitors.

    b. Prevent or reduce loss or damage to structures and natural resources.

2. Suppress fire in the Hazardous Fire Area before it gets out of control.

    a. Perform effective initial attack, with Fire Station 8 staffed.

    b. Develop pre-fire suppression plans (initial attack to 4-hour effort).

    c. Incident Command System (ICS) training, focusing on multi-jurisdictional response and enhancing Palo Alto Fire Department (PAFD) skills and abilities in specific ICS positions.

3. Review and update evacuation routes out of the Hazardous Fire Area.

4. When feasible and as part of a regional effort, establish optimal fire frequencies, use pre-suppression control measures (including controlled / prescribed burns) to restore optimal fire regimes and for natural plant communities.

The 1997 draft plan identified several hazard mitigation categories to meet Palo Alto's Fire Management goal and objectives.

- Fuel Management

    - Roadside clearance – Page Mill Road, Arastradero Road, Los Trancos Road and Skyline Boulevard were identified as evacuation routes as well as firebreaks.

    - Fuel Break/ Ignition Control system in Foothills Park and Pearson-Arastradero Preserve

  - Prescribed burning to reduce fuel load, re-establish a normal fire regime and educate and inform the public. High fuel loads, limited burn windows and requirements for pre-burn preparations have limited opportunities to date.

- Pre-fire Actions

  - Foothills Park/ Pearson-Arastradero Preserve practices including visitor safety islands and evacuation plans, fire-safe park maintenance practices, daily weather taking (establish daily Burn Index), annual pre-fire season staff briefing, interagency training, use restrictions during critical fire weather.

  - Cooperative efforts with Midpeninsula Regional Open Space District (MROSD), the Woodside Fire Protection District, and other partner agencies regarding construction of fuel breaks, identification of evacuation routes and interagency training, public information about evacuation pre-planning.

  - Private Dwellings and Open Land including fire codes for new development and public education and code enforcement.

- Suppression and Post Suppression

  - Suppression capability including Foothills Fire Facility (Station 8); Mutual Threat Zone/ mutual aid/ automatic aid contracts; interagency/ ICS training.

  - Suppression Plan including maintenance of response cards, basing response on nationally-recognized fire danger rating indices, use any and all mutual aid resources to confine fires at initial attack, and to follow fire management zone pre-planning documents.

  - Post Suppression Plans.

  - Cultural Resources (no significant cultural resources exist in the City Limits, but potential always exists for discovery of new sites).

The 1997 draft plan strategically divided the Hazardous Fire Area into eight fire management zones (FMZs) to merge individual property and resource concerns with fire control challenges (Figure 2). Each zone has a map showing boundaries, existing control lines and text description of activities to be considered by the Incident Commander, safety precautions and other tactical or site-specific information.

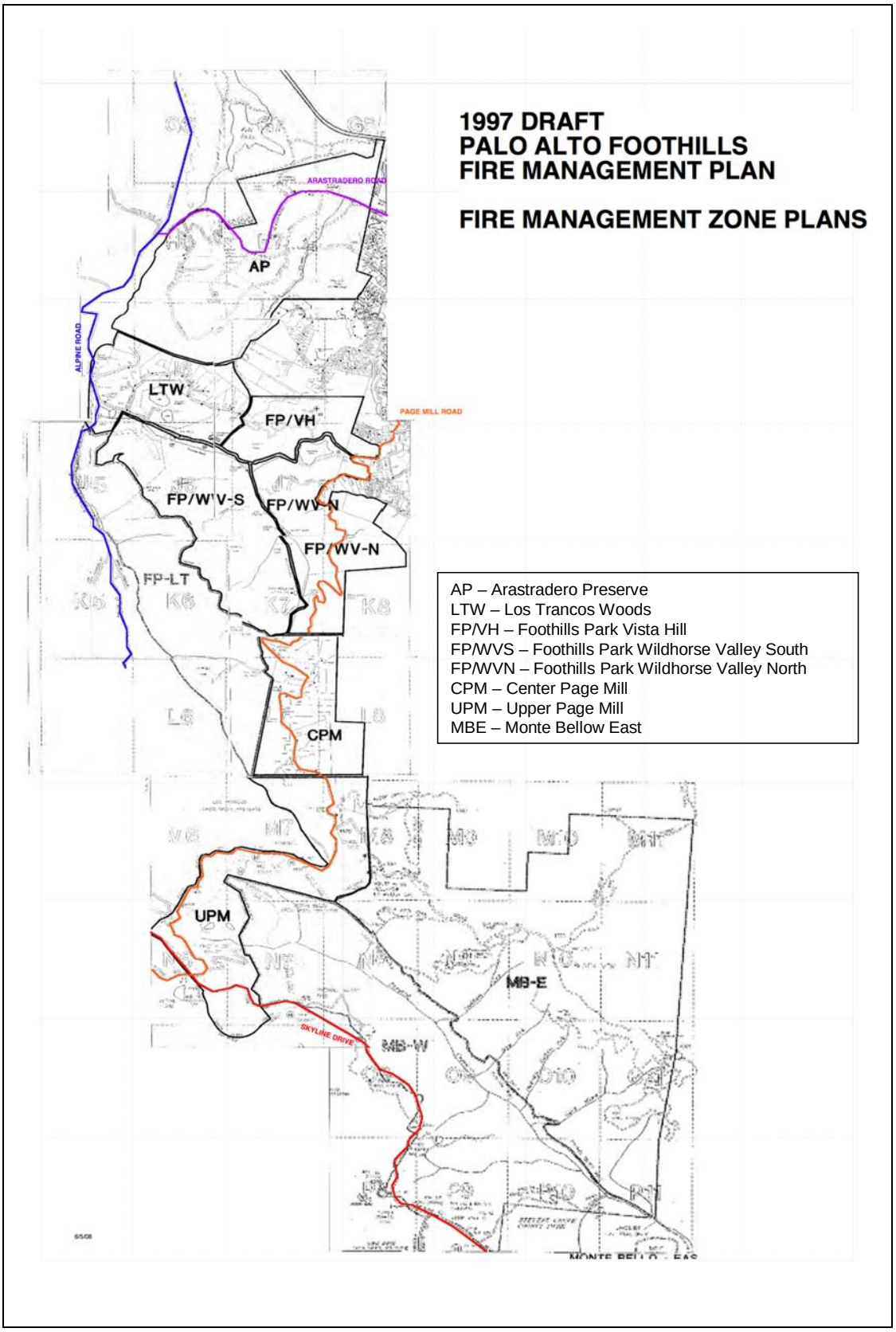


***Figure 2: 1997 Fire Management Zones.***

## 2.3 Scope of the Plan

The Fire Management Plan update process addresses a broad range of integrated activities and planning documents to address and mitigate the impacts of fire hazards in the Palo Alto Foothills Area. The area of interest includes the areas west of Foothills Expressway to the city limits of Palo Alto. The fire mitigation project areas include the boundaries of Foothills Park and Pearson-Arastradero Preserve within this area of interest.

The Fire Management Plan Update addresses the following key items:

- Fire Hazard Assessment
- Regional Evacuation Routes
- Wildland Fire Management Recommendations and Mitigations
- Recommendations for the Foothills Park Trails Maintenance Plan and the Pearson-Arastradero Trails Management Plan
- Review of Municipal Ordinances
- Staffing of Station 8
- Implementation Plan and Identification of Potential Funding

## 2.4 Planning Process

The process used in developing the Update to the Foothills Fire Management Plan involved several departments of the City and many stakeholders. The consultants and City held three meetings with the stakeholders between April and September 2008.

Invited Stakeholders included:

- Acterra
- Arrillaga Property: 500 Los Trancos Road
- CAL FIRE
- Friends of Foothills Park
- Los Altos Hills Fire District
- Los Altos Hills: ARES/RACES
- Los Trancos Water District
- Los Trancos Woods Neighborhood
- Menlo Park Fire District
- Midpeninsula Regional Open Space District
- PA Protect Our Open Space
- Palo Alto Hills Neighborhood Assoc
- Pony Tracks Ranch
- Portola Pasture Stables
- San Mateo County FireSafe Council

- San Mateo County Sheriff
- Santa Clara County Fire Dept
- South Skyline Association
- Stanford Community Residential Leaseholders (SCRL)
- Stanford University
- Town of Los Altos Hills
- Vista Verde Community Association
- Woodside Fire Protection District

There were also three meetings with the community during the same time period. The meetings were held at the Interpretive Center at Foothills Park and at the Palo Alto Hills Golf and Country Club in Palo Alto.

# 3 EXISTING CONDITIONS

## 3.1 Fire Hazard

There are many ways to assess fire hazard. Most utilize the three main factors of fuels, weather, and topography, with possible inclusion of elevation or fire history. Fire behavior was chosen as the means to assess fire hazard since it integrates the effects of fuels, weather, and topography. Hazard assessments developed by the State and the California Fire Alliance were evaluated for potential use. However, the assessments were larger scale than appropriate for the purposes of this plan. The decision was made to use a more detailed, site-specific hazard assessment.

Fire behavior predictions identify locations where containment may be easiest, and where access may be precluded during the time of a fire. In addition, fire behavior outputs can identify locations where structures or natural resources may be unduly harmed by a wildfire, as well as locations where fire effects may be inconsequential to natural resources.

### 3.1.1 Vegetation and Fire Fuels

The Palo Alto Foothills contains a mix of potential wildland fire fuel regimes that, combined with the topography and weather for the regime, pose a potential risk for wildland fire (Figure 3).

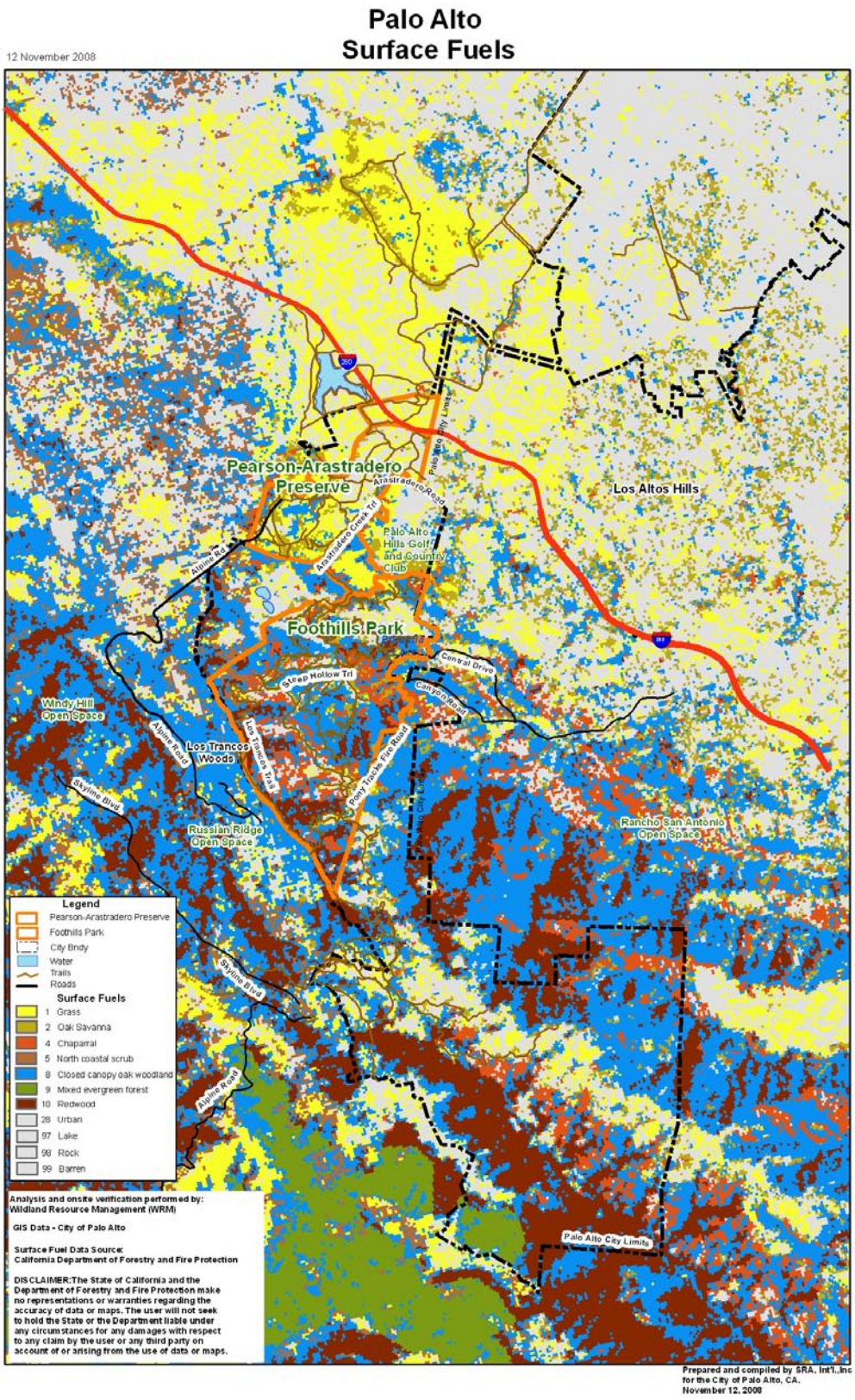


***Figure 3: Wildland Surface Fuels.***

## 3.1.2 Fire Behavior

### 3.1.2.1 Fire Behavior Modeling

FlamMap is particularly well suited for the Foothill Fire Management Area fire assessment. FlamMap generates a spatial depiction of simulated fire behavior that may be used to assess relative hazards throughout the area.

FlamMap is a computerized fire behavior prediction model developed by the USDA Forest Service at the Intermountain Forest Fire Research Laboratory.[1] FlamMap was developed to predict fire behavior characteristics across a landscape. The first such landscape analysis of fire behavior characteristics was performed for the San Francisco Public Utilities Commission Bay Area watersheds, then applied across the East Bay Hills after the Oakland Hills Fire. FlamMap is currently in the public domain.

The heat transfer formulas in FlamMap are based on the software program, BEHAVE, which has been used in wildfire prediction since the 1970's. FlamMap uses the same heat transfer algorithms as BEHAVE along with numerous other algorithms to predict crown fire potential, ember distribution, effects of terrain on wind, direction and slope, and more.

FlamMap allows prediction of fire behavior on a spatial basis, by modeling the locations of flame length, heat release, and rate of spread along with type of fire (crown fire, surface fire, or a fire that torches individual trees) throughout an entire area. FlamMap simulations assume the entire area is aflame under the same conditions at the same time to determine spatial differences in fire behavior.

### 3.1.2.2 Spatial Input Files

The spatial data inputs to FlamMap characterize the terrain, weather, and fuels on the site with eleven different data layers. The spatial input data files are described in Figure 4.

*Figure 4: Spatial Data Required for Fire Behavior Modeling.*

| Level | Purpose | Source |
|---|---|---|
| ***Elevation*** (feet above sea level) | This is necessary for adiabatic adjustment of temperature and humidity between elevations and for conversion of fire spread between horizontal and slope distances. | USGS digital elevation models |
| ***Slope*** (Percent of inclination from the horizontal) | Slope is used to compute steepness effects on fire spread and solar irradiance. | USGS digital elevation models |
| ***Aspect*** (Azimuth values degree clockwise from north) | Aspect is used to compute effects on fire spread and solar irradiance. | USGS digital elevation models |
| ***Fuel Model*** | Fuel models, organized and described according to the | FRAP |

[1] (FlamMap is available from Systems for Environmental Management, PO Box 8868, Missoula, MT, 59807, or from www.fire.org/tools.)

| Level | Purpose | Source |
|---|---|---|
| | Fire Behavior Prediction System in terms of fuel volume, structure, and chemistry. The fuel models were mapped by CalFire in the Forest Resource Assessment Program (FRAP). | |
| ***Canopy Cover*** | Canopy cover is necessary to compute shading and wind reduction factors. Canopy cover was mapped for the LandFire Program. | LandFire Program |
| ***Tree Height*** | Tree height is used to compute spotting distance and crown fire characteristics. Decision rules regarding tree heights were applied to FRAP surface fuels. | Crosswalk from FRAP surface fuels |
| ***Crown Base Height or Height to Live Canopy*** | Crown base height is an important parameter for determining the transition from surface fire to crown fire. This value incorporates the effects of ladder fuels in increasing vertical continuity and assisting transition to crown fire. Crown base height was mapped for the LandFire Program. | LandFire Program |
| ***Weather and Wind*** | Weather is important to determine environmental conditions during the simulation. The weather data theme describes the maximum and minimum temperatures and relative humidity, and the time in which the maximum and minimum temperature occurs in order to dry and moisten fuels accordingly. Weather data that CalFire based fire-related policy decisions (defined as "average-bad" conditions) was used for this project. | CalFire-defined weather for average bad fire danger |

***Figure 4: Spatial Data Required for Fire Behavior Modeling.***

### 3.1.2.3 User-Defined Inputs

The model allows the user to customize fuel models or fuel moisture with special files[2].

***Custom Fuel Model Files*** - custom fuels can be used to more accurately describe the types of fuel models found on the site. Custom fuel models use a standard fuel model as a base. In cases where especially flammable vegetation are present (eucalyptus and pines), the heat content of the dead and live fuels could be raised. In cases where the foliage are expected to be moister, the initial fuel moisture of the living material can be raised. Fuel volumes and heights in grazed grasslands can also be reflected in a custom model. For the Palo Alto hazards assessment no custom fuel models were used.

***Fuel Moisture Files*** - defines the initial fuel moisture for each size class of fuels, for each fuel model. The moisture content of live woody fuels and live herbaceous fuels are similarly defined for each fuel model. This file specifies the moisture in the fuels of various sizes, and specifies how much moisture is in leaves. Based on this information, the weather files either dry out or add moisture to fuels depending on ambient conditions. The fuel moisture file used for the Palo Alto hazard assessment portrays the "average worst" fire danger as defined by CalFire. The "average worst" generally applies to the conditions that exist fewer than 10 percent of the time. It is also known as the 90$^{th}$ percentile weather conditions.

[2] User-defined inputs could capture the effects of Sudden Oak Death through development of a custom fuel model and associated reduced fuel moisture.

### 3.1.2.4 FlamMap Results

Fire behavior was analyzed for the entirety of the Foothills area, including adjacent neighborhoods, property owned by Midpeninsula Regional Open Space District and Stanford University. Three factors are especially pertinent for prioritizing locations of high fire hazard: crown fire activity, flame length and rate of spread.

***Crown Fire Potential*** - Crowning activity indicates locations where fire is expected to travel through and likely consume the crowns. When a fire burns through tree crowns, countless embers are produced and are distributed, sometimes at long distances. These embers can start new fires, which can each grow and confound the finest fire suppression forces. For management purposes, prediction of torching or crown fire is highly correlated with fire severity. Crown fire activity is of concern wherever it occurs because of its impacts and the containment challenges.

There is very little active crown fire predicted within the Foothills area, however, the potential for trees to torch is high throughout the treed portion of the Foothills area. Torching is caused by low-hanging limbs, or ladder fuels (Figure 5). The Crown Fire Potential across the Palo Alto area of interest is depicted in Figure 6.


***Figure 5: Comparison of Torching and Active Crown Fire.***

***Flame Length*** - Flame length closely corresponds to fire intensity, which can predict fire severity. This factor most influences probability of house damage and ease of fire control. A flame length of eight feet is usually looked at as a cut-off point for decisions whether to attack the fire directly, or instead attempt control through indirect methods.

Fire intensity was determined to be the most important factor in many studies of structural damage from fire. Flame lengths are often used as a proxy for fire intensity because they are highly correlated to fire intensity. Long flame lengths may justify treatment where they occur near sensitive values-at-risk.

Flame lengths follow fuel types, with long flame lengths in chaparral and untreated grass, and short flame lengths in woodlands and mowed grass. The largest areas of long flames are located in Foothill Park and Monte Bello Open Space Preserve. Predicted Flame Length is depicted in Figure 7.

***Rate of Spread*** - The rate of spread is most closely associated with the ability to contain a fire. Rates of spread analyses point to the needs for increased access, detection, reporting, and fuel management to slow fire spread in strategic locations.

Low fire spread rates were predicted in woodlands and forests, and fast spread rates in untreated grass and chaparral. Predicted Rate of Spread is depicted in Figure 8.

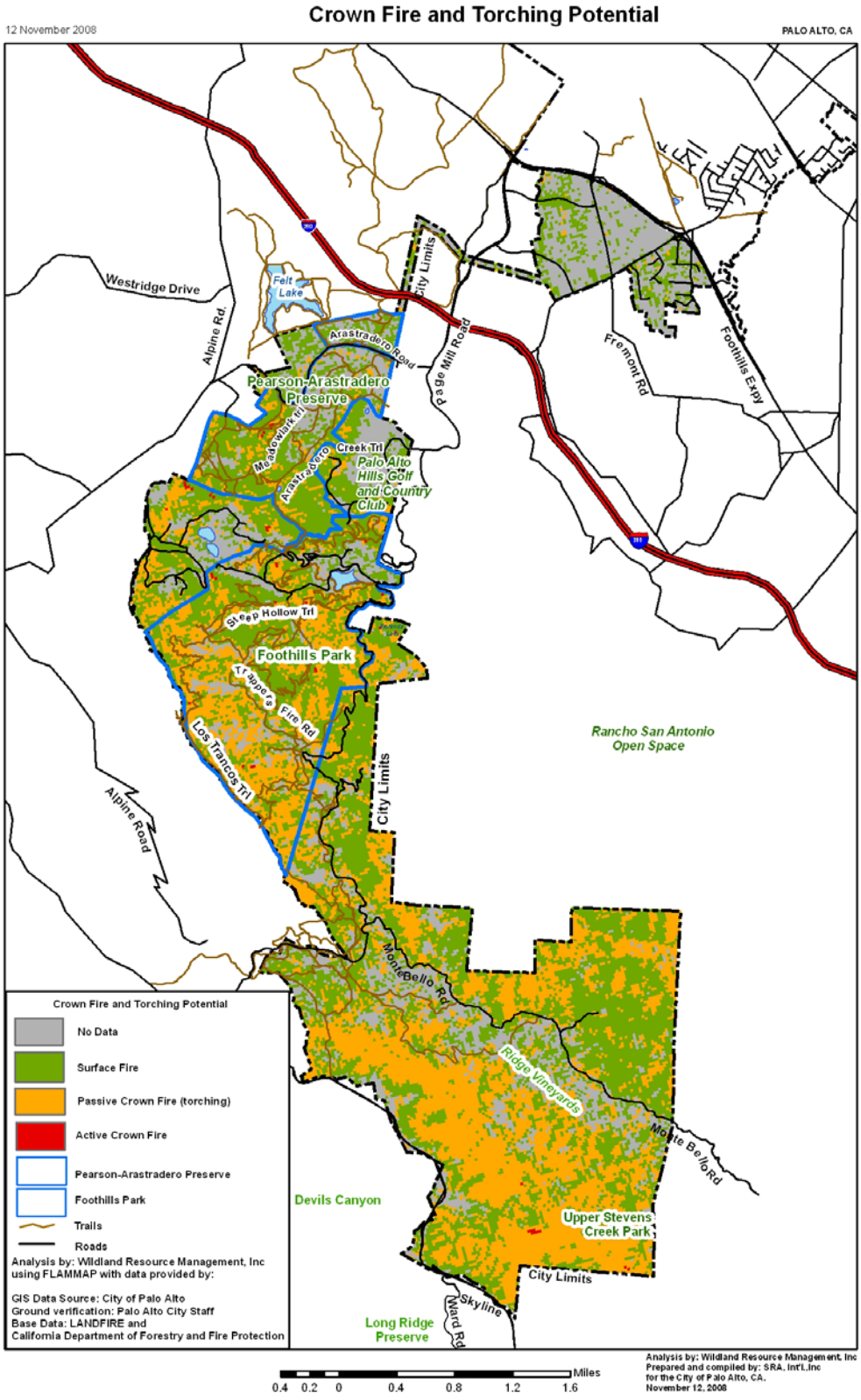


***Figure 6: Crown Fire and Torching Potential.***

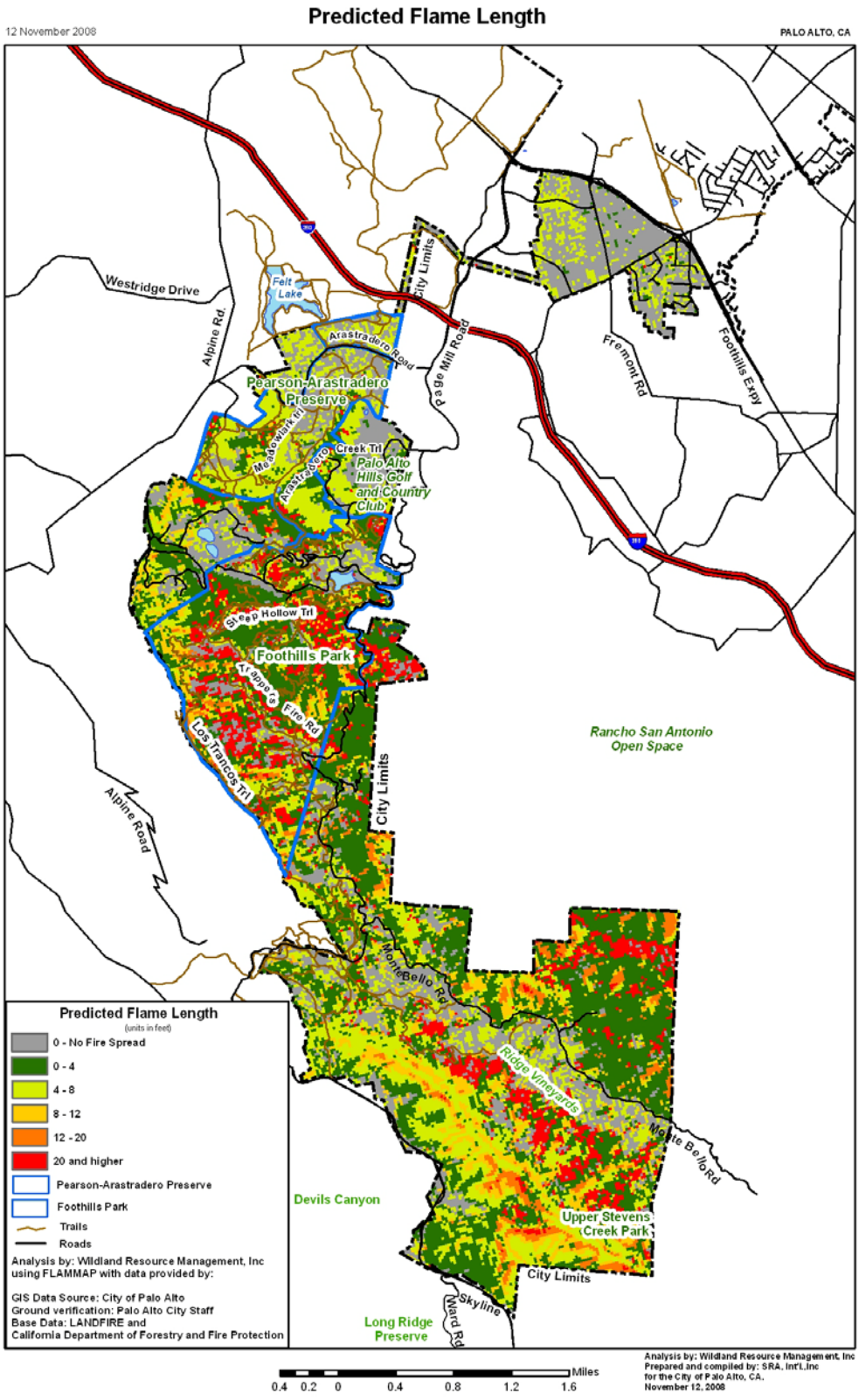


***Figure 7: Predicted Flame Length.***

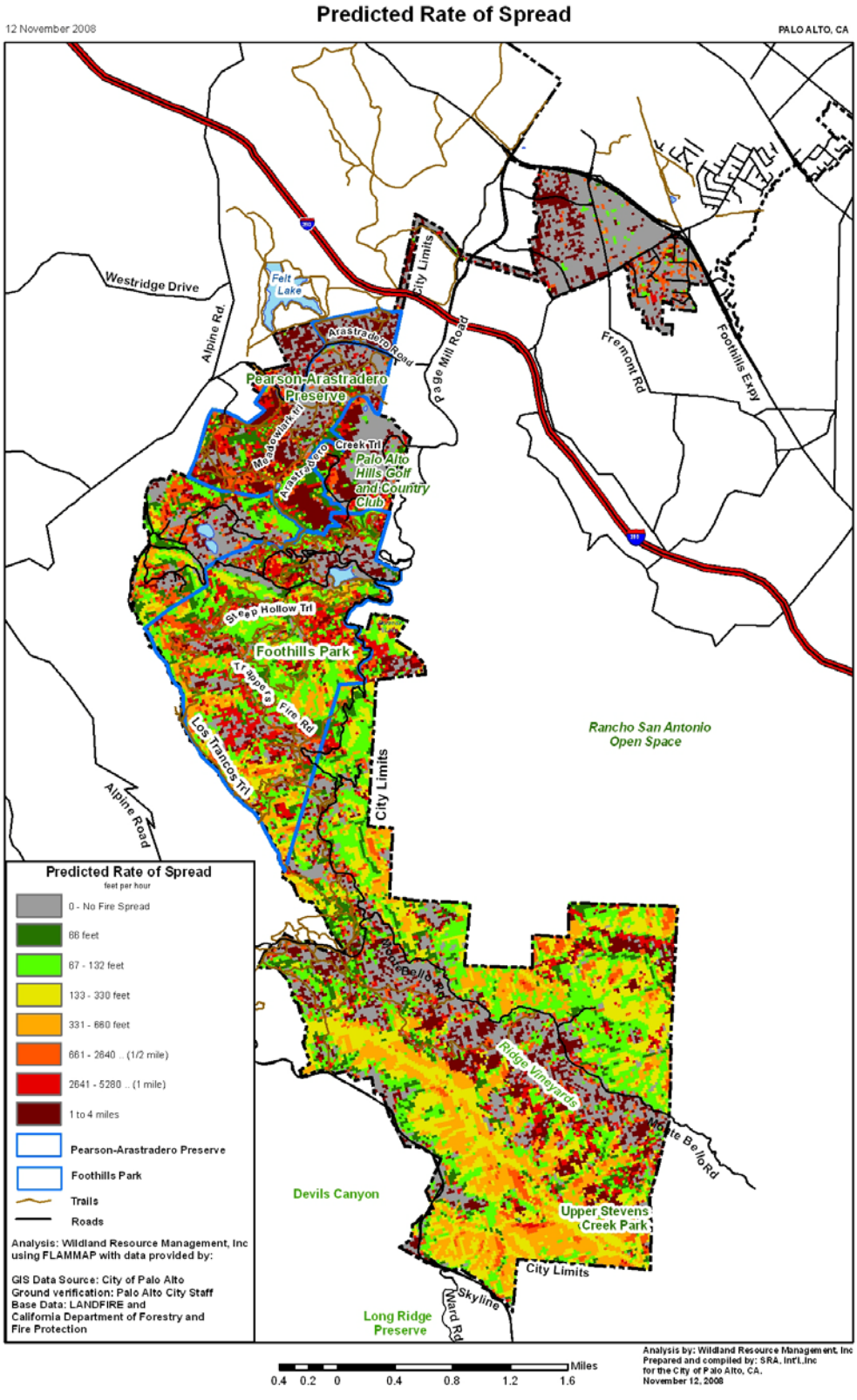


***Figure 8: Predicted Rate of Spread.***

## 3.2 Fire Suppression Capabilities

The Department's response area in the WUI Fire Area covers nearly 10 square miles, from Skyline Boulevard in the Palo Alto foothills to Foothill Blvd and from Page Mill Road to Los Trancos Road. Approximately 200 residences and large business complexes (some of them exceeding a million square feet in area) are located in Palo Alto's Wildland Urban Interface Fire Area. The City of Palo Alto Emergency Operations Plan (June 2007) notes that 11 health care facilities, 10 schools and 25 government-owned buildings are located in the wildland urban interface threat areas, along with 19 miles of roadway that are subject to high, very high or extreme wild fire threat.

The Fire Department has 122 personnel organized in four areas:

- Emergency Response (Operations)
- Environmental & Safety Management (Fire Prevention Bureau)
- Training & Personnel Management (Support)
- Office of Emergency Services

The Fire Department staffs seven full time stations located strategically throughout the City. To provide coverage in the sparsely developed hillside areas, an additional fire station in the foothills is operated during summer months when fire danger is high.

The Fire Department facilities are located as follows:

*Fire Administration*
250 Hamilton Avenue, City Hall

Fire Station 1
301 Alma Street

*Fire Station 2*
2675 Hanover

*Fire Station 3*
799 Embarcadero Road

*Fire Station 4*
3600 Middlefield Road

*Fire Station 5*
600 Arastradero Road

*Fire Station 6*
711 Serra Street, Stanford

*Fire Station 7*
2575 Sand Hill Road, Menlo Park

*Fire Station 8*
Foothills Park

Rangers from the Open Space and Parks Division perform a vital service aiding fire suppression, providing detection, notification and initial size-up of fires, along with evacuation or reconnaissance. The Rangers offer detailed local knowledge, and support the Station 8 firefighters. Currently ten staff are fully trained and equipped for first response. There are four trucks with 150-200 gallons of water.

The City of Palo Alto has secured many agreements that augment fire suppression capabilities. They participate in the California Master Mutual Aid Agreement and supporting separate agreements. During a

proclaimed emergency, inter-jurisdictional mutual aid will be coordinated at the County Operational Area (Santa Clara County OES, or EOC, if activated), or Mutual Aid Regional level whenever the available resources are:

- Subject to state or federal control.
- Subject to military control.
- Located outside the requesting jurisdiction.
- Allocated on a priority basis.

The current Insurance Service Organization rating for the City of Palo Alto is ISO Class 2.

## 3.3 Access

Regional access to the Foothills Area is provided by Highway 280, Foothill Expressway and Skyline Boulevard. Page Mill Road serves as a major north-south connector from Highway 280 to Skyline Boulevard. Los Trancos Road provides access along the western boundary of the Palo Alto Foothills Area from Alpine Road south to Los Trancos Woods. Page Mill Road and Los Trancos Road have several long sections that are steep, windy and narrow.

Circulation is limited within the Foothills Area. Arastradero Road links the western and eastern portions. Alpine Road and Los Trancos Road provide access to portions of the western part of the City. Moody Road and Altamont Road are other important circulation routes in Los Altos Hills.

## 3.4 Sensitive Resources

The Palo Alto Foothills Area includes a mix of social and environmental attributes that may be adversely affected by wildland fire or proposed fuel treatments and strategies. Areas that hold cultural or environmental significance enhance the quality of life in the City of Palo Alto and provide habitat for a variety of plant and wildlife species. These sensitive resources are valuable to the Palo Alto community and to the ecosystem; they should be protected and preserved. Actions are proposed that will reduce the risk of fire spreading to sensitive resources and otherwise minimize the damage to those resources.

Social and cultural factors that may exist in the area affect fire management planning and include specific land uses such as agriculture and rangeland, the presence of public service utilities and structures, and the presence of historical or cultural artifacts. Environmental concerns include vegetation communities, wildlife habitat, soil and erosion conditions, and water and air quality. Figures 9 and 10 provide an overview of potential sensitive resource locations throughout the two parks.

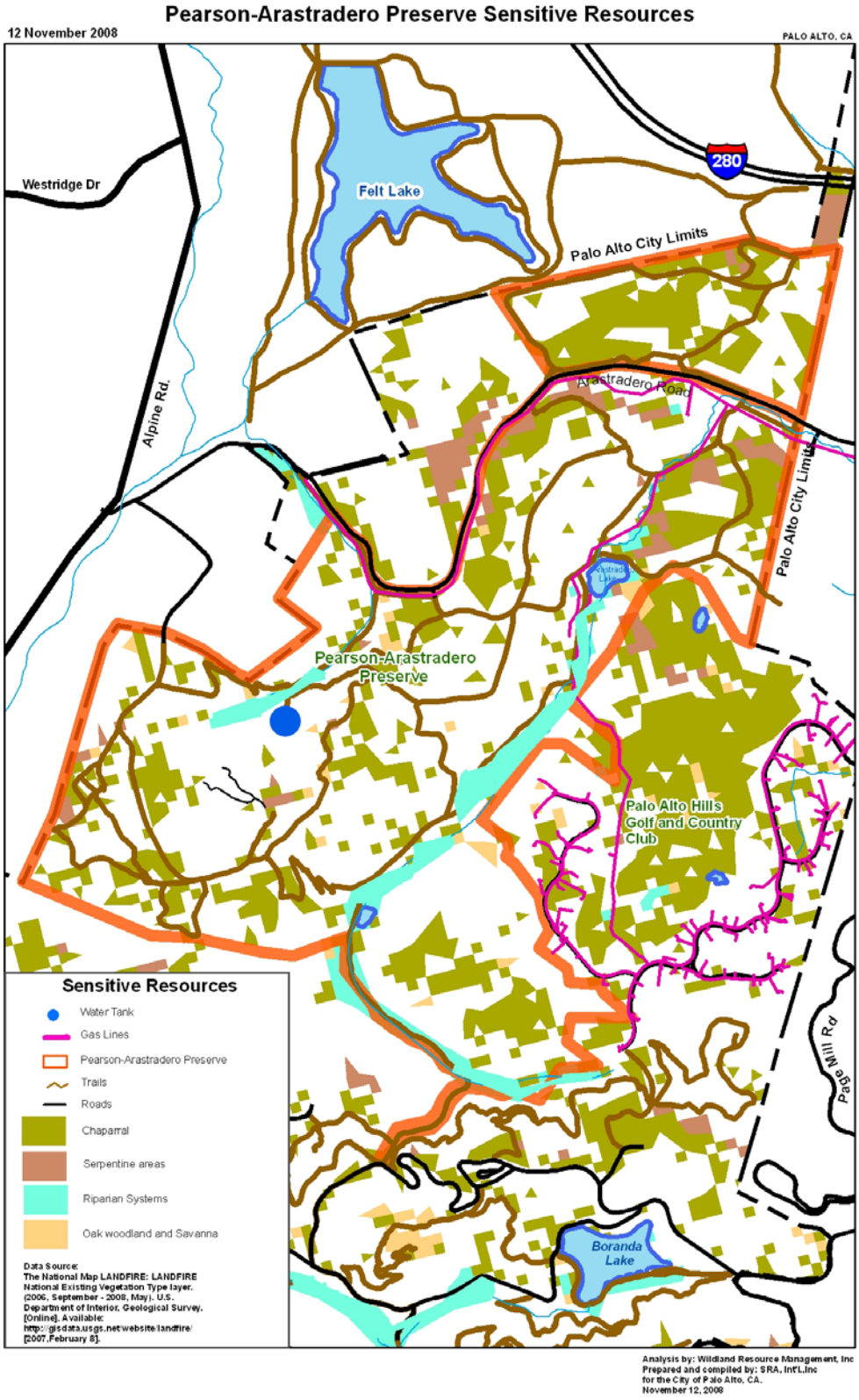


***Figure 9: Locations of Cultural and Environmental Sensitive Resources in Pearson-Arastradero Preserve.***

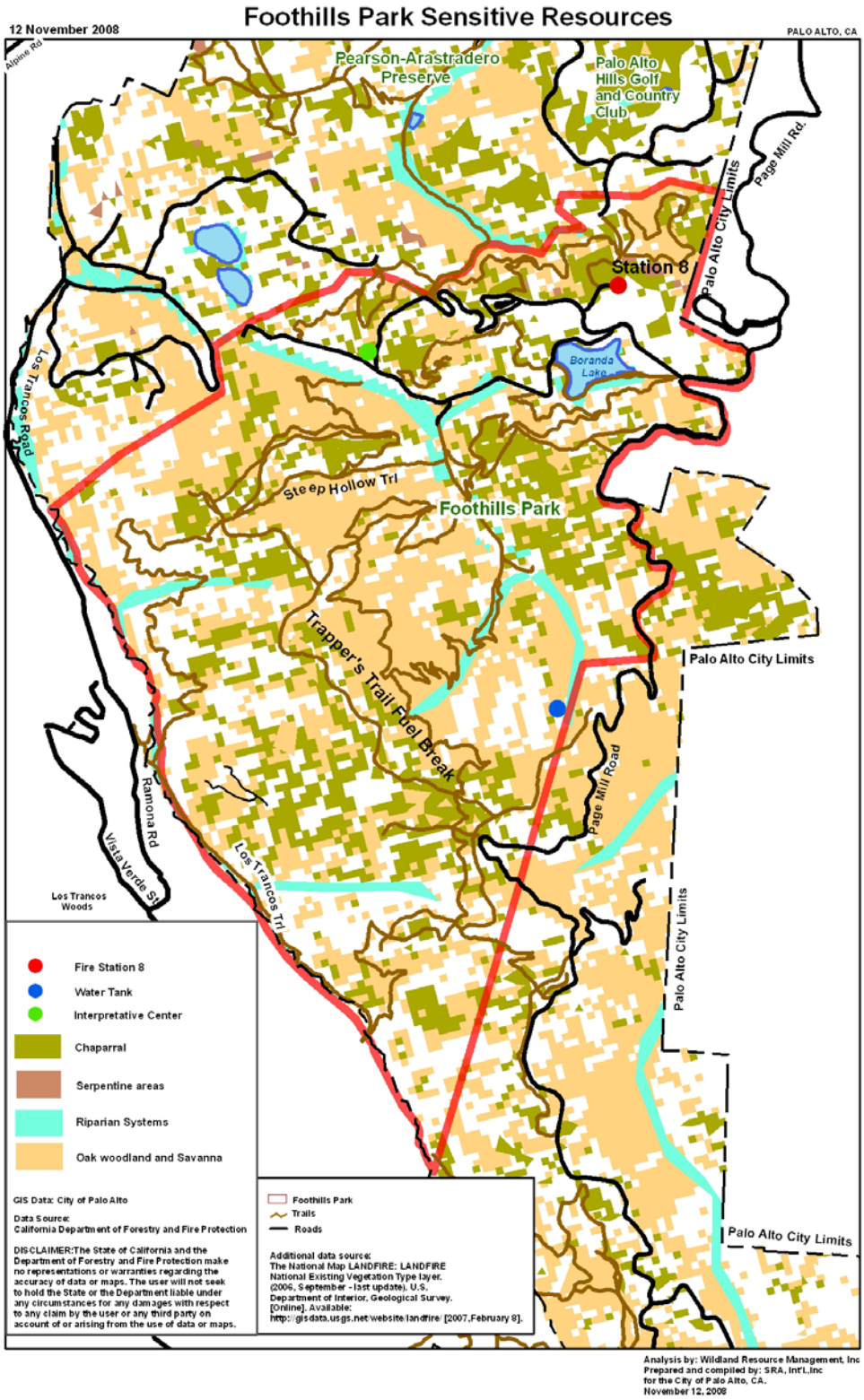


***Figure 10: Locations of Cultural and Environmental Sensitive Resources in Foothills Park.***

## 3.4.1 Social and Cultural Features

Social and cultural features are areas and activities that have a special community attribute or contribution ranging from the value of personal property to the functioning of public service and public safety operations. Foothills Park and Pearson-Arastradero Preserve are both open space areas dedicated for park, recreation and conservation purposes. They are generally undeveloped except for park amenities, utilities, public service and safety infrastructure, and roads and trails. The projects in this plan pertain directly to the lands within Foothills Park and Pearson-Arastradero Preserve, and along the evacuation routes within the City limits of Palo Alto. The lands adjacent to the parks include residential and private property as well as public and private open space, and are affected by fire management through code modification, fire department staffing, and other non-project measures that reduce the risk of fire spreading to these resources along with minimizing potential damages. The residential and private property adjacent to the parks include:

- Open space owned and managed by the Midpeninsula Regional Open Space District and Stanford University
- Private residences in the Town of Los Altos Hills, Town of Portola Valley, City of Palo Alto, Santa Clara County, and San Mateo County
- Neighborhoods/associations such as Altamont, Los Trancos Woods, Vista Verde, Blue Oaks, Portola Valley Ranch, Palo Alto Hills, Montebello, South Skyline, and others
- Privately-held recreation facilities, such as equestrian centers and the Palo Alto Hills Golf and Country Club
- The site of what was a private research facility (the American Institute of Research)

Both Foothills Park and Pearson-Arastradero Preserve contain utility lines and access roads that are used and maintained by the City of Palo Alto. The Pearson-Arastradero Preserve contains overhead electrical utility lines that enter the Preserve from Arastradero Road and extend along Arastradero Creek. South of Foothills Park, transmission lines run east-to-west across the southern edge of the park near Page Mill Road and Montebello. The Arastradero and Foothills parks contain several reservoirs, booster stations, and water and sewage lines. The external, aboveground portions of this infrastructure represent potential features that must be taken into consideration either as values at risk to wildland fire or included in fire mitigation treatment planning and execution.

The primary structures within the two parks include the Foothills Park interpretive center, Pearson-Arastradero Gateway interpretive center, Fire Station 8, a maintenance complex, and three public restrooms. No significant cultural or historical sites have been found within the park areas. However, the Foothills area is similar to other areas in the Santa Cruz Mountains that have provided hunting, fishing, and encampments for Native American tribes. A potential exists for discovery of cultural or historic sites.

## 3.4.2 Environmental Features

Environmentally sensitive areas are those that have specific characteristics which the community, State, or nation has determined to be worthy of protection or preservation. These can include the maintenance of a diverse plant and wildlife ecosystem or the protection of endangered or threatened species. The Palo Alto Foothills hold a specific environmental value within the City of Palo Alto as a conservation area as well as a mixed-use area supporting private and public activities.

Foothills Park and Pearson-Arastradero Preserve consist of a mix of grassland, mixed evergreen, oak woodland, riparian areas (creek, lake), and chaparral. The two parks are located in the watershed of Los Trancos Creek and Arastradero Creek. Foothills Park contains the headwaters of Arastradero Creek and is downstream of Los Trancos Creek and contains Boronda Lake. The Arastradero Creek, an unnamed tributary to Arastradero Creek, and an unnamed tributary to Los Trancos Creek run through the Arastradero Preserve. The Pearson-Arastradero Preserve also contains a small lake, called Arastradero Lake, and John Sobey Pond.

The Palo Alto Foothills contain several environmental areas that deserve specific consideration in the Fire Management Plan. These areas represent the combined contributions of unique wildland habitat capable of supporting a mix of wildlife, a diverse plant and wildlife population containing several protected and monitored species, and a mix of ecosystems ranging from riparian areas to serpentine soils.

#### 3.4.2.1 Species and Wildlife

The variety of environmental conditions in Foothills Park and Pearson-Arastradero Preserve provide habitat for a broad range of wildlife and plants – including some designated as protected or sensitive either by the State of California or the Federal government (Figure 11).

The parks provide known habitat for two protected species and potential habitat for several others – particularly in the riparian zones and areas near Boronda Lake and Arastradero Lake. The California Red-Legged Frog and Steelhead Trout are known to inhabit Los Trancos Creek. In addition, the riparian areas, grasslands, and oak woodlands above Los Trancos as well as Boronda Lake may provide additional foraging and breeding habitat for the California Red-Legged Frog.

Several species of sensitive plants and animals have been locally identified within the parks. In addition, the parks provide potential habitat for a variety of bird and plant species of concern, ranging from plants such as the Santa Clara Red Ribbon to mammals such as the San Francisco Dusky-footed Woodrat. The potential habitats for these species include the riparian and wetland areas along Los Trancos, Boronda Lake, Arastradero Lake, and John Sobey Pond; the serpentine soil areas identified in Pearson-Arastradero Preserve; and the Oak Woodland and Chaparral zones. In addition to these sensitive species, there are also plant species of local concern, such as Phacelia and bush poppies.

The following is a table highlighting sensitive species that may be present in the parks. It is possible that additional sensitive species or habitat areas may be discovered in the future.

*Figure 11: Sensitive Species Known or Potentially Occurring in Foothills Park or Pearson-Arastradero Preserve.*

| Federal Status | California Status | Asset Name | Geographic Extent | Mapping Location |
|---|---|---|---|---|
| Endangered | Endangered | San Francisco garter snake (Thamnophis sirtalis tetrataenia) | POTENTIAL HABITAT - potential habitat in Boronda Lake; suitable habitat in Arastradero Lake. | Boronda Lake, Arastradero Lake |
| N/A | Protected | Ringtail (Bassariscus astutus) | POTENTIAL HABITAT - Forage habitat in riparian zone; possible nesting in hollow trees in riparian zones. Los Trancos Creek provides most likely habitat. | Los Trancos Creek |

| Federal Status | California Status | Asset Name | Geographic Extent | Mapping Location |
|---|---|---|---|---|
| N/A | Endangered | Point Reye's meadowfoam (Limnanthes douglasii sulphurea) | POTENTIAL HABITAT - freshwater marsh occurs in Arastradero Lake; some wet areas in grassland near Arastradero Creek may provide habitat. | Arastradero Lake, Arastradero Creek and tributary grasslands |
| Endangered | CNPS: Rare, threatened, or endangered in CA | Contra Costa goldfields (Lasthenia conjugens) | NOT LIKELY - Could possibly occur in wet areas in grassland, although the likelihood is very low. | |
| Endangered | Endangered | San Mateo thorn-mint (Acanthomintha duttonii) | UNKNOWN - Info pulled from CNDDB Palo Alto topo map - not mapped. | |
| Species of concern | DFG: Species of special concern | Western pond turtle (Actinemys marmorata) | POTENTIAL HABITAT - Potential habitat in Boronda Lake, Los Trancos Creek, and Arastradero Creek; possible sighting in Arastradero Lake; habitat onsite includes Arastradero Creek, John Sobey Pond, Arastradero Lake, and the unnamed tributary to Los Trancos Creek. | Boronda Lake, Los Trancos Creek, Arastradero Creek, John Sobey Pond, Arastradero Lake, Tributary for Los Trancos Creek |
| Threatened | DFG: Species of special concern | California red-legged frog (Rana aurora draytonii) | KNOWN and POTENTIAL HABITAT - potential breeding habitat at Boronda Lake, Los Trancos Creek and tributaries, John Sobey pond, and Arastradero Lake; foraging habitat in riparian zones, grassland, and oak woodland above Los Trancos Creek and tributaries; May occur on Los Trancos Trail. | (1) Boronda Lake, Los Trancos Creek and tributaries, John Sobey Pond, Arastradero Lake<br>(2) Riparian Zones<br>(3) Grasslands, Oak Woodlands in vicinity of Los Trancos Creek<br>(4) Los Trancos Trail |
| Threatened | DFG: Species of special concern | California tiger salamander (Ambystoma californiense) | POTENTIAL HABITAT - breeding habitat may occur in the "bowl" near the top of the Pearson-Arastradero Preserve, which is in proximity to the unnamed tributary to Los Trancos Creek | Unnamed tributary to Los Trancos Creek |
| Threatened | DFG: Species of special concern | North Central Coast steelhead/sculpin stream | KNOWN HABITAT - Los Trancos is a known steelhead stream. | Los Trancos Creek |
| Threatened | DFG: Species of special concern | Steelhead Trout (Oncorhynchus mykiss irideus) | KNOWN HABITAT - Los Trancos is a known steelhead stream. | Los Trancos Creek |
| N/A | CNPS: Rare, threatened, or endangered in CA | Ben Lomond buckwheat (Eriogonum nudum var. decurrens) | POTENTIAL HABITAT - Habitat present in chaparral and woodland. | Chaparral, woodland |

| Federal Status | California Status | Asset Name | Geographic Extent | Mapping Location |
|---|---|---|---|---|
| N/A | CNPS: Rare, threatened, or endangered in CA | Big-scale balsamroot (Balsamorhiza macrolepis) | POTENTIAL HABITAT - Habitat present in grassland and oak woodland. | Grassland, Oak Woodland |
| N/A | CNPS: Rare, threatened, or endangered in CA | Delta tule pea (Lathyrus jepsonii) | POTENTIAL HABITAT - fresh water marsh occurs in Arastradero Lake, and may occur in Arastradero Creek and the tributary to Arastradero Creek. | Arastradero Lake, Arastradero Creek and tributary to Arastradero Creek |
| N/A | CNPS: Rare, threatened, or endangered in CA | Legenere (Legenere limosa) | POTENTIAL HABITAT - Potential habitat along drainages, Boronda Lake. | Boronda Lake |
| N/A | CNPS: Rare, threatened, or endangered in CA | Robust monardella or Round-headed coyote mint (Monardella villosa ssp. globosa) | PRESENT/POTENTIAL HABITAT – Locally identified habitat present in woodland and chaparral. Every trail has either woodland or chaparral, or both habitats. | Woodland and chaparral |
| N/A | CNPS: Plant of limited distribution | Santa Clara red ribbons (Clarkia concinna automixa) | PRESENT (Foothills)/POTENTIAL HABITAT - Habitat present in oak woodland areas along trails | Oak Woodland |
| N/A | CNPS: Rare, threatened, or endangered in CA | Santa Cruz manzanita (Arctostaphylos andersonii) | POSSIBLE HABITAT/NOT LIKELY - Low possibility in oak woodland and chaparral. Every trail has either woodland or chaparral, or both habitats. | Oak woodland and chaparral |
| N/A | CNPS: Rare, threatened, or endangered in CA | Serpentine-based plants | KNOWN - two areas of serpentine soil have been identified in Arastradero; one is in grassland and the other is in chaparral. No occurrences in Foothills although some soil/landcover data have noted potential areas. | Areas of Serpentine Soil in Arastradero (Grassland, chaparral). Some potential areas in Foothills |
| N/A | CNPS: Rare, threatened, or endangered in CA | Dudley's lousewort (Pedicularis dudleyi) | NOT LIKELY - Coniferous forest, maritime chaparral. These habitats are not present in Foothills Park. | |
| Endangered | CNPS: Rare, threatened, or endangered in CA | Showy Indian clover (Trifolium amoenum) | NOT LIKELY (Foothills)/POSSIBLE (Arastradero) - Info pulled from CNDDB Palo Alto topo map, seeps in grassland. | |
| Threatened | N/A | Bay checkerspot butterfly (Euphydryas editha bayensis) | NOT LIKELY - serpentine grassland areas either too small or not present | |

| Federal Status | California Status | Asset Name | Geographic Extent | Mapping Location |
|---|---|---|---|---|
| N/A | CNPS: Plant of limited distribution | Gairdner's yampah (Perideridia gairdneri) | KNOWN - in grassland, riparian areas of Arastradero. | Riparian, Grasslands |
| N/A | CNPS: Plant of limited distribution | Mexican mosquito fern (Azolla mexicana) | POTENTIAL HABITAT - Potential habitat in Boronda Lake; Arastradero Creek from John Sobey Pond to Arastradero Lake | Boronda Lake; Arastradero Creek from John Sobey Pond to Arastradero Lake |
| N/A | CNPS: Rare, threatened, or endangered in CA | White-flowered rein orchid (Piperia candida) | POSSIBLE HABITAT - Potential habitat along portions of Chamise, Coyote, Fern Loop, Los Trancos, Panorama, Toyon and Woodrat Trails. | Oak Woodland |
| N/A | DFG: Species of special concern | Long-eared owl (Asio otus) | POTENTIAL HABITAT - May use oak woodland and riparian corridors in Foothills Park. Includes Chamise, Costanoan, Coyote, Fern Loop, Los Trancos, Panorama, Sunrise, Trappers, and Woodrat Trails. | Oak Woodland, Riparian Zones |
| N/A | Species of special concern | Big brown bat (Eptesicus fuscus) | POTENTIAL HABITAT - Potential forage habitat. | Oak Woodland, Riparian Zones |
| N/A | Species of special concern | California myotis (Myotis californicus) | POTENTIAL HABITAT - Potential forage habitat. | Oak Woodland, Riparian Zones |
| N/A | BLM: Sensitive | Long-eared myotis (Myotis evotis) | POTENTIAL HABITAT - Potential forage habitat. | Oak Woodland, Riparian Zones |
| N/A | IUCN: Species of concern | Long-legged myotis (Myotis volans) | POTENTIAL HABITAT - Potential forage habitat. | Oak Woodland, Riparian Zones |
| N/A | Species of special concern | Mexican free-tailed bat (Tadarida brasiliensis) | POTENTIAL HABITAT - Potential forage habitat. | Oak Woodland, Riparian Zones |
| N/A | IUCN: Species of concern | Silver haired bat (Lasionycteris noctavigans) | POTENTIAL HABITAT - Potential forage habitat. | Oak Woodland, Riparian Zones |
| N/A | DFG: Species of special concern; BLM: Sensitive; IUCN: Species of concern; USFS: Sensitive | Townsend's western big-eared bat (Corynorhinus townsendii townsendii) | POTENTIAL HABITAT - Potential forage habitat. | Oak Woodland, Riparian Zones |

| Federal Status | California Status | Asset Name | Geographic Extent | Mapping Location |
|---|---|---|---|---|
| N/A | IUCN: Species of concern; BLM: Sensitive | Yuma myotis (Myotis yumanensis) | POTENTIAL HABITAT - Potential forage habitat. | Oak Woodland, Riparian Zones |
| N/A | DFG: Species of special concern; BLM: Sensitive; IUCN: Species of concern; USFS: Sensitive | Pallid bat (Antrozous pallidus) | POTENTIAL HABITAT - throughout Pearson-Arastradero Preserve. | Oak Woodland, Riparian Zones |
| Species of concern | DFG: Species of special concern; BLM: Sensitive; IUCN: Species of concern; USFS: Sensitive | Foothill yellow-legged frog (Rana boylei) | POTENTIAL HABITAT - Potential habitat in Los Trancos Creek and tributaries. May occur on Los Trancos Trail; suitable habitat in Arastradero Creek and the unnamed tributary to Los Trancos Creek. | Los Trancos Creek, Arastradero Creek, Tributary |
| None | Locally unusual | BlueGrey Gnatcatcher (Polioptila caerulea) | PRESENT – Locally identified in North Coastal Scrub, coyote brush. | Arastradero Creek and Juan Bautista de Anza Trail |
| N/A | CNPS: Rare, threatened, or endangered in CA | Franciscan onion (Allium peninsulare var. franciscanum) | POTENTIAL HABITAT – Habitat present in oak and mixed evergreen woodland, and grasslands. | Oak Woodland, Grasslands, Evergreen Woodlands |
| Species of concern | DFG: Species of special concern: IUCN: Species of concern | Saltmarsh common yellowthroat (Geothlypis trichas sinuosa) | POTENTIAL HABITAT – May use Boronda Lake. Riparian habitat, John Sobey pond and Arastradero Lake. | Riparian Zones including Boronda Lake, John Sobey pond, Arastradero Lake |
| N/A | CNPS: Rare, threatened, or endangered in CA | San Francisco collinsia (Collinsia multicolor) | POTENTIAL HABITAT – Habitat present in oak woodland. | Oak Woodland |
| N/A | DFG: Species of special concern; IUCN: Species of concern | San Francisco dusky-footed woodrat (Neotoma fuscipes annectens) | PRESENT/POTENTIAL HABITAT – Known to occur along Woodrat Trail. Nesting habitat in riparian vegetation and oak woodland, forage in all habitats on site. | Woodrat Trail, restoration site near Arastradero Road, and Arastradero Creek Trail |

| Federal Status | California Status | Asset Name | Geographic Extent | Mapping Location |
|---|---|---|---|---|
| N/A | CNPS: Rare, threatened, or endangered in CA | Western leatherwood (Dirca occidentalis) | POTENTIAL HABITAT (Arastradero)/KNOWN (Foothills) – Oak woodland and riparian; Foothill woodland, mixed evergreen forest and riparian. Occurs on site along the Los Trancos and Steep Hollow Trails. | Los Trancos and Steep Hollow Trails in Oak Woodlands and Riparian areas |
| N/A | CNPS: Plant of limited distribution | Forget-me-not popcorn flower (Plagiobothrys myosotoides) | POTENTIAL HABITAT (Foothills)/NOT LIKELY (Arastradero) – Habitat present in chaparral. | Chaparral in Foothills |
| N/A | CNPS: Rare, threatened, or endangered in CA | Slender-leaved pondweed (Potamogeton filiformis) | NOT LIKELY – Possibly in Arastradero Creek/Boronda Lake and unnamed creeks in the Preserve, presumed extinct in Santa Clara County; not known from San Mateo County. | |
| N/A | CNPS: Rare, threatened, or endangered in CA | Congdon's tarplant (Centromadia/Hemizonia parryi ssp. Congdonii) | NOT LIKELY (Foothills)/POSSIBLE (Pearson-Arastradero) – Info pulled from CNDDB Palo Alto topo map, seeps in grassland. | |
| N/A | CNPS: Rare, threatened, or endangered in CA | Fragrant fritillary (Fritillaria liliacea) | NOT LIKELY (Foothills)/POSSIBLE (Pearson-Arastradero) – Info pulled from CNDDB Palo Alto topo map, seeps in grassland. | |

***Figure 11: Sensitive Species Known or Potentially Occurring in Foothills Park or Pearson-Arastradero Preserve.***

### 3.4.2.2 Soils and Geology

Soil erosion occurs when soil materials are worn away and transported by wind or water. The soils that comprise Foothills Park and Pearson-Arastradero Preserve include some soil and slope combinations that represent potential erosion hazards that could be accentuated by wildland fire events that remove significant portions of vegetation or some forms of fuel treatments that disturb ground cover. Figure 12 lists the potential erosion hazards posed by soil mapping units that comprise portions of the parks. Due to the presence of several highly and moderately erodible soil types, the areas that represent significant hazards from either fire or treatment are those with slopes in excess of 15 %.

| Soil Mapping Unit | Soil Name | Location | Erosion Hazard |
|---|---|---|---|
| Los Gatos-Maymen Complex (50-75% slope) | Los Gatos Gravelly Loam | Foothills Park & Pearson-Arastradero Preserve | Very High |
| | Maymen Rocky Fine Sandy Loam | Foothills Park | Very High |
| Los Gatos Clay Loam (15-30% slope) | Los Gatos Clay Loam | Foothills Park | Moderate |

| Soil Mapping Unit | Soil Name | Location | Erosion Hazard |
|---|---|---|---|
| Los Osos Clay Loam (15-30% slope) | Los Osos Clay Loam | Pearson-Arastradero Preserve | Moderate |
| Azule Clay Loam (15-30%) | Azule Loam | Pearson-Arastradero Preserve | Slight to Moderate |
| Cropley Clay (2-9% slope) | Cropley Clay | Foothills Park | Slight |
| Pacheco Clay Loam | Pacheco Clay Loam | Pearson-Arastradero Preserve | Slight |
| Pleasanton Loam | Pleasanton Loam | Pearson-Arastradero Preserve | Slight |

***Figure 12: Soil Types in Foothills Park and Pearson-Arastradero Preserve.***
*Derived from STATSGO2 data and research from City of Palo Alto Trail Management Plans.*

# 4 FUEL MANAGEMENT IN CITY PARKS

Not every area identified as a potential fire hazard can be modified to produce low-intensity fires. Not only would this be too costly, but environmental impacts would also be unacceptable. Fires that burn in un-treated areas will not benefit from treatment elsewhere. The exception is that the fire may be contained in the treated area, thereby never reaching the untreated area.

## 4.1 Identifying Potential Treatment Areas

Selection of pre-fire fuel treatment areas is based on the probability of the event and the potential damage of that event. Factors taken into consideration are:

- **Need for enhanced access and egress**: Actions to promote life safety and efficient emergency response is of utmost importance. Roadside treatments that aid safer access and evacuation have a high likelihood and magnitude of benefit.

- **Ignition locations:** Treatments are located either where ignitions are likely to occur or could spread into (e.g. a grassy spot near a road, or near a barbeque). Even where an area would burn with great ferocity, if there is only a remote chance of ignition, it has a lower treatment priority.

- **Adjacency to improvements or other sensitive values at risk from wildfire:** The closer the fuel source is to a structure, heavily used area, or environmentally sensitive area, the higher the treatment priority. Therefore, an area in the interior of a Park/Preserve, well removed from other vulnerabilities, should not be treated with the same priority as a hazardous situation near valuable and/or vulnerable resources.

- **Propensity of the treatment to aid containment:** Treatments that facilitate access or create locations where containment is likely to be successful have greater benefit because they improve fire suppression success. Also, a fire that is easy to contain will be more likely to have fewer environmental impacts from the suppression action itself.

In the end, the most intense fire, and possibly the largest potential fire size, may not be highest on the treatment priority list. This may be because the likelihood of the event coupled with the potential damage from the fire would not yield the highest risk.

## 4.2 Establishing Project Objectives

Projects are justified by various objectives, spanning the need to keep fires from crossing boundaries, minimizing damage to developed areas, and minimizing damage to natural resources. Others comply with regulations, which themselves are intended to increase access, facilitate fire suppression and minimize resource damage.

The following table (Figure 13) is an outline of project goals and actions:

| Project Goal | Actions |
|---|---|
| Maintain ability for safe access and egress and refuge during suppression activities | • Roadside and driveway fuel modification to reduce fire intensity to allow for firefighting vehicles access and ensure safe passage for staff and visitors to pre-determined safety zones.<br>• Improve access to potential wildfire locations to increase effectiveness of firefighting resources (road realignments, access upgrades)<br>• Identify areas for potential use for firefighter safety and refuge during a fire (safety zones) |
| Minimizing damage to developed areas | • Reduce potential for ember production,<br>• Manage fuels along borders with structures, anywhere around structures (within 100 feet)<br>• Retrofit structures to make them more ignition-resistant<br>• Enhance firefighting effectiveness<br>• Reduce fuels around other facilities at risk (e.g. communications equipment, high use recreation areas) |
| Reduce damage to structures and developed areas from wildfire near structures | • Manage fuels per Defensible Space Guidelines to reduce flame length to 2 feet within 30 feet of structures |
| Reduce potential for ignitions | • Roadside fuel treatments<br>• Reduce fuels around barbeque sites and selected electrical transmission lines<br>• Ensure mechanical equipment has features to minimize ignitions<br>• Conduct fuel management in a manner that prevents ignitions |
| Facilitate containment and control of a fire | • Strategically compartmentalize fuels in order to facilitate containment and control<br>• Modify fuels to reduce fire intensity and allow firefighters better access to the fire, slow spread of fire and make firefighting actions more effective,<br>• Modify fuels to allow for backfires |
| Reduce the chance of damage to life and property by keeping fire from crossing boundaries – Participate in cooperative projects with adjacent landowners | • Fuel management to compartmentalize the landscape<br>• Fuel management along the borders of the Park/Preserve<br>• Modification of the volume or structure of the fuels to reduce chance of ember production<br>• Modification of the volume or structure of the fuels to enhance firefighting effectiveness |
| Minimize damage to natural resources | • Conduct pre-treatment surveys for sensitive species<br>• Follow best management practices during fuel management<br>• Fuel management around fire-sensitive areas to reduce fire intensity<br>• Use of modified fire suppression in sensitive areas |
| Fuel modification for ecosystem health | • Reduce invasive species<br>• Perform selected prescribed burns to promote fire-adapted native species |

***Figure 13: Project Goals and Actions.***

## 4.3 Current Fuel Management Program

Fuel Management is not new in the two parks. The two parks have a long history of managing vegetation to both promote fire safety and to enhance natural resources (Figures 14 and 15). In some cases, projects attain both goals. Previous projects in Foothills Park encompass discing along park boundaries, grazing with goats in Las Trampas Valley, maintenance of a mowed fuel break along various locations, including a broad fuel break sometimes 200-ft wide along Trappers Ridge, and more narrow fuel breaks along the Madrone Fire Road, Shotgun Fire Road, Pony Tracks Fire Road, and around Station 8. Fuel management in Pearson-Arastradero includes discing along park boundaries, mowing 14 different broad areas within the park, and maintenance of vegetation along park roads. Figures 16 and 17 highlight specific mowing and grazing areas for both parks from 2001 to 2008.

**Grading** (of the fire roads) has been a component of the contract between Van der Steen General Engineering and Palo Alto for annual firebreak maintenance.

Grading has been performed as part of this contract only in the last three years; low annual rainfall and erosion has not warranted grading. To minimize grading work, city employees from all departments are strictly prohibited from driving the bare soil roadways that do not have asphalt or compacted rock. Grading, as a component of the contract, is specified as only when necessary.

**Discing** has been performed by City staff for the last 7+ years. After trials with several methods, the City found that a two discing cycles work best. The first cycle is performed when the threat of spring rains has diminished, drainages or low areas are dry, and annual grasses are still green. The depth of discing is less than 6-inches, and causes a disruption of the growth of the annual grasses (less biomass). The second cycle of discing is after the annual grasses have cured/dried but there is still some soil moisture. Discing is full depth or up to 10-inches. Completely dry soil makes traction nearly non-existent, which is a safety hazard for the equipment operator, and produces copious amounts of dust to the surrounding area during both discing and grading operations.

**Mowing** is routinely conducted during the early summer by City staff for resource enhancement. Figure 16 indicates the areas within Pearson-Arastradero Preserve that are mowed at least annually. Approximately 200 acres are routinely mowed. Outside of the areas mowed for resource enhancement, large areas are mowed annually in Foothills Park as part of a fuel break. A fuel break is mowed on Trappers Trail, varying from 100-ft to 300-ft in width. Another area routinely mowed is along Pony Tracks Fire Road from the intersection of Los Trancos Trail to Page Mill Road. Most areas are less than 100-ft but the area between Pony Tracks and Los Trancos Trail can reach 300-ft in width.

**Grazing** with sheep and goats is a relatively new component of the fuel management program within the City of Palo Alto Parks. Approximately 5 acres were grazed in 2007 in Las Trampas Valley in Foothill Park, the picnic areas near the road.

**Defensible Space** is maintained near existing structures in Foothills Park and Pearson-Arastradero Preserve. This employs the use of hand labor to limb trees and shrubs, cut grass, landscape with fire-resistant plants, and irrigate selected plants.

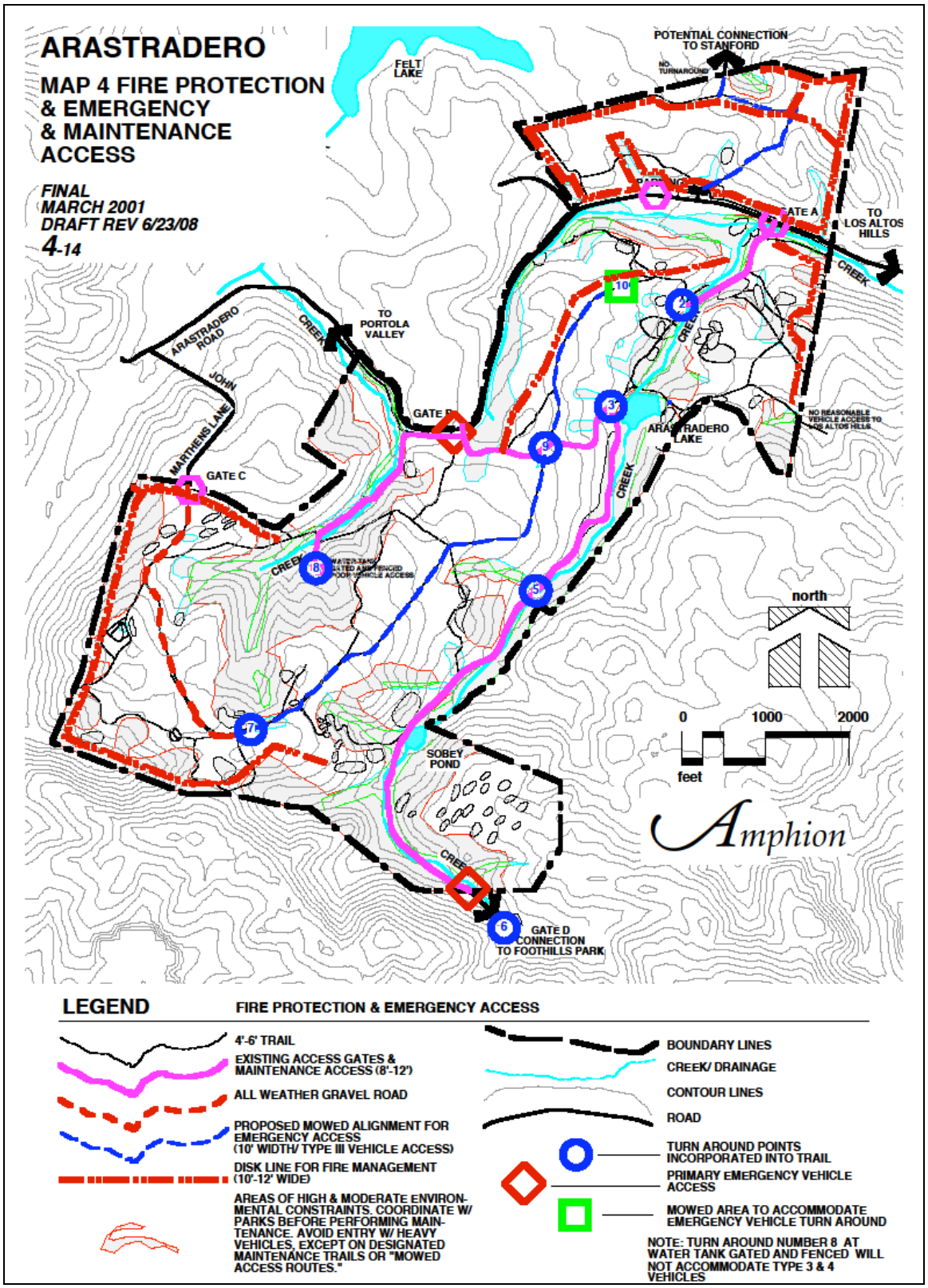


***Figure 14: Pearson-Arastradero Preserve Current Fuel Management Areas.***

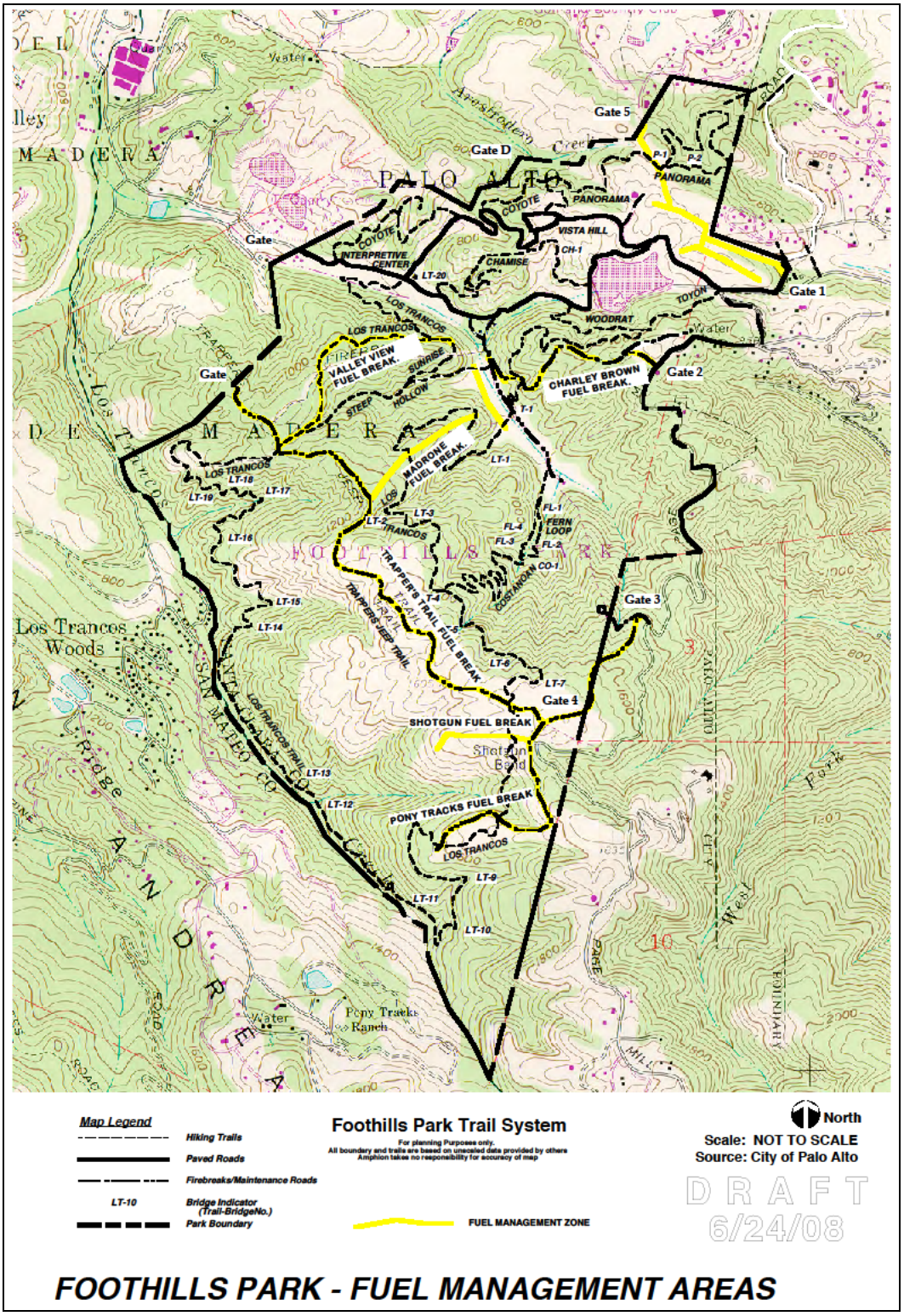


***Figure 15: Foothills Park Current Fuel Management Areas.***

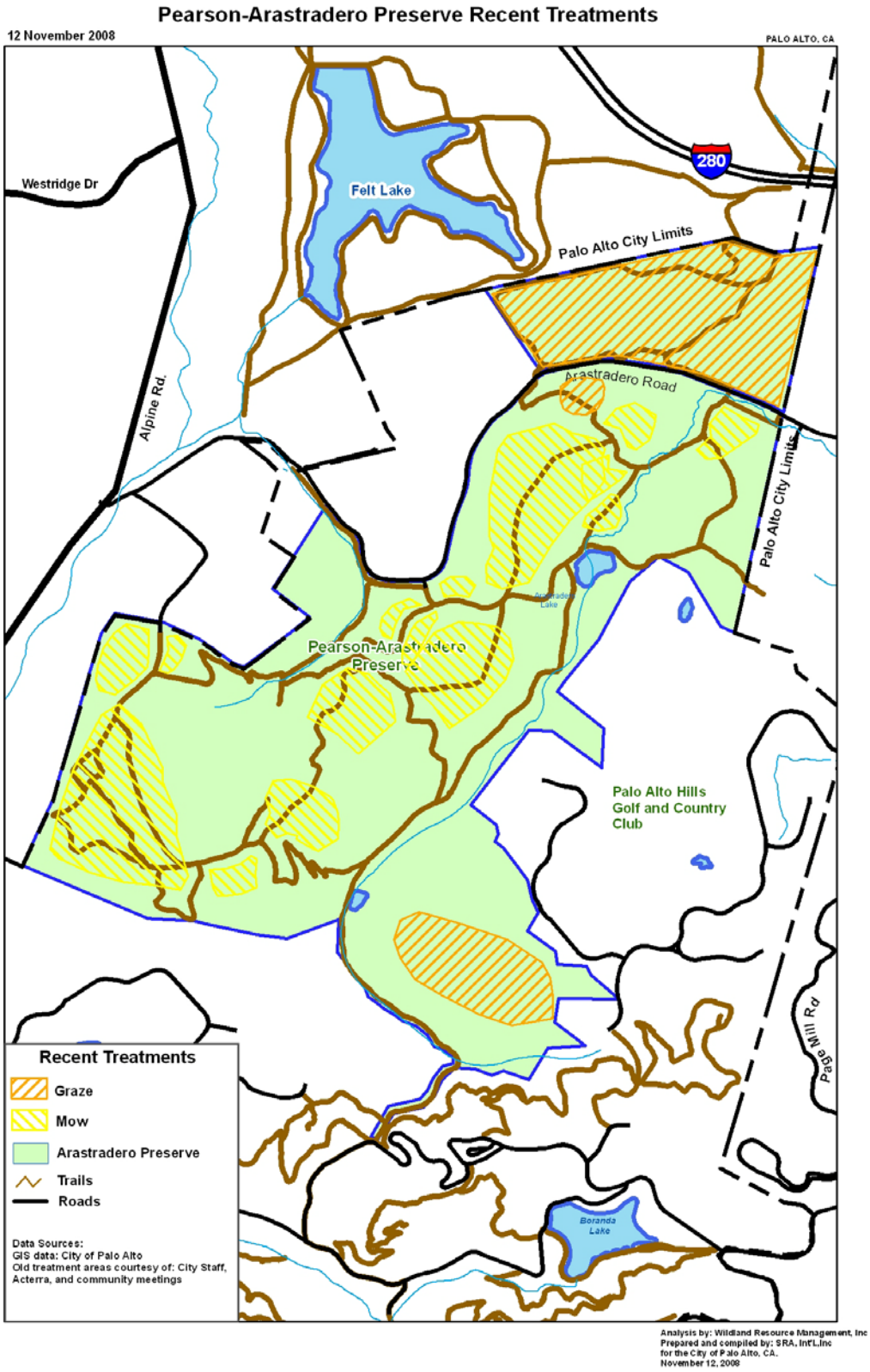


***Figure 16: Recent Treatments in Pearson-Arastradero Preserve.***

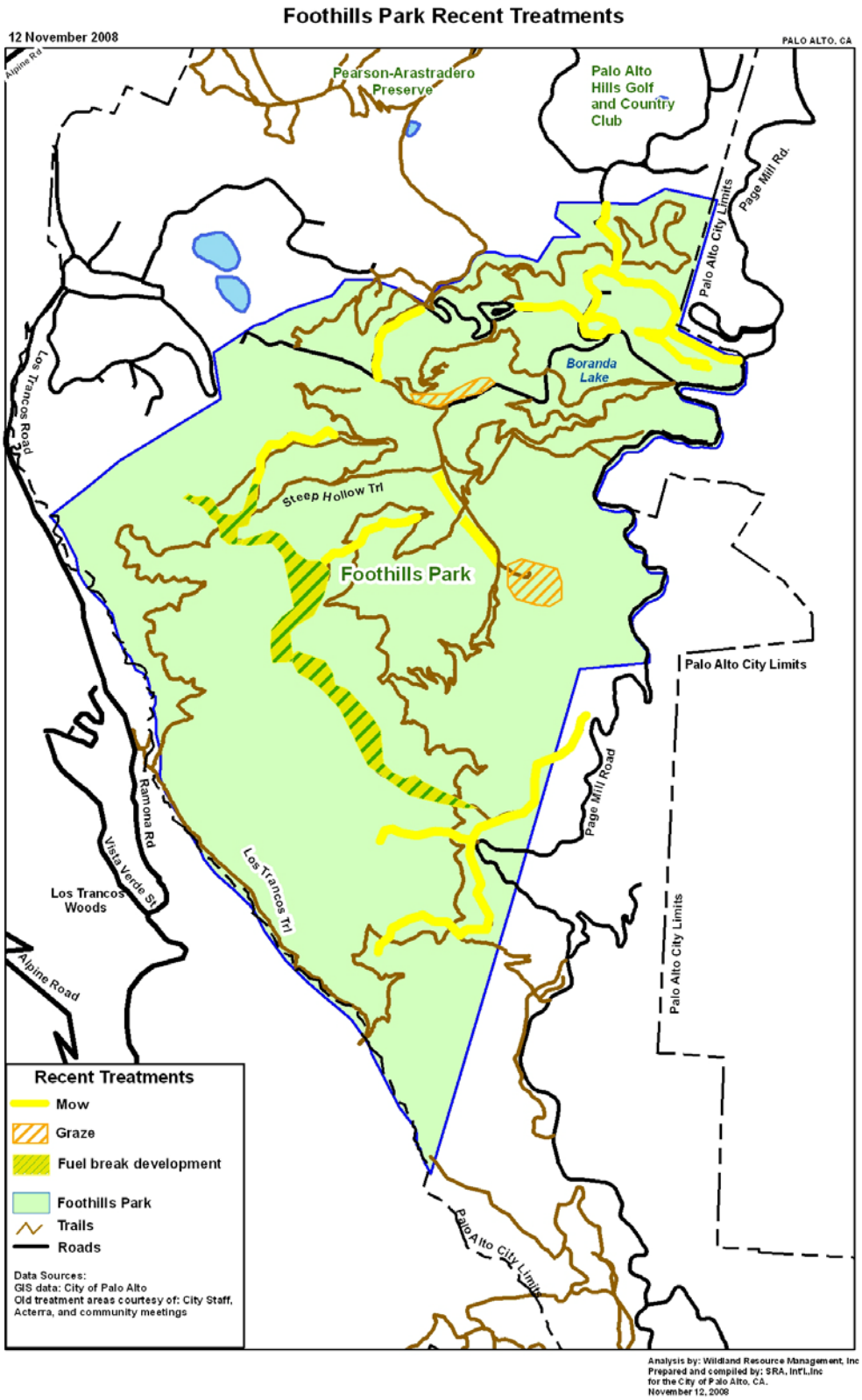


***Figure 17: Recent Treatments in Foothills Park.***

## 4.4 Project Description

### 4.4.1 Scope of Recommended Fuel Management Projects

The scope of the projects encompasses the two parks in the foothills of Palo Alto: Foothills Park and Pearson-Arastradero Preserve. In addition, treatments along four roads extend outside the parks themselves but are confined to City boundaries or rights-of-ways: Page Mill Road, Arastradero Road, Los Trancos Road, and Skyline Boulevard.

### 4.4.2 Project Description Summary

Fuel management is proposed on 330 acres of Foothills and Arastradero Parks to protect lives, enhance the safety of improvements in and around the parks and to enhance ecosystem health. Fuel management falls into the following categories: roadside treatments along potential evacuation corridors, creation and maintenance of firefighter safety zones, creation and maintenance of defensible space around structures in the parks, and treatments to aid containment of fires in and within the park.

Treatments are performed on a rotational basis with intervals of approximately every five years, with an anticipated area of approximately 100 acres treated annually after the initial treatments are performed.

Vegetation types that will be treated include:

- Grasslands
- North Coastal Scrub
- Chaparral
- Oak Woodland
- Riparian Woodland (limited areas and limited treatment only)

### 4.4.3 Project Objectives

Projects are justified by various objectives, spanning the need to keep fires from crossing boundaries, minimizing damage to developed areas and minimizing damage to natural resources. Others comply with regulations, which themselves are intended to increase access, or facilitate fire suppression.

A variety of projects reduce the chance of damage to life and property. There are projects that keep fire from crossing boundaries, which could be in the form of fuel management to compartmentalize the landscape, or fuel management along the borders of the parks, or modification of the volume or structure of the fuels to reduce chance of ember production or enhance firefighting effectiveness.

Other projects focus on minimizing damage to developed areas, and may be distinct from efforts to reduce fire size, particularly where fire growth is in the wildland. Methods to minimize damage to structures would encompass the following actions: stop ember production, manage fuels along borders with structures, anywhere around structures (up to 100 feet), retrofit structures to make them more ignition-resistant, and enhance firefighting effectiveness.

While fire is a natural force in the foothills of Palo Alto, fuel management also aims to minimize damage to natural resources within the City of Palo Alto. This may include fuel management around sensitive areas such as riparian corridors, or use of fire where needed for resource management. The skillful application of controlled burning would be justified where fire exclusion is harmful, for example, where species require fire for seed germination, or where native grasslands experience brush encroachment, or where an unnatural accumulation of understory fuels (both live and dead) develops. Enhancing firefighting effectiveness, so that fire response can better apply or restrain fire's impacts on sensitive natural resources may further justify projects.

Finally, some projects are further justified by local regulations. For example, the City of Palo Alto regulations require installation and maintenance of 100-ft defensible space around structures, fuel management for a minimum width of 10-ft along roads, and maintenance of 13.5-ft high vertical clearance over roadbeds.

## 4.4.4 Priority

Fuel management is not possible, nor advisable, on every acre of the wildlands in the two City parks. Not even all the areas of high hazard can be treated with a reasonable level of funding, so prioritization needs to occur. Finding the most effective location and scope is a challenge because of uncertainties around relative fire hazard, erosion, potential, ignition potential, cost of implementation, environmental impacts of the management itself, and social values attached to the project location.

Selection of fuel treatment areas is based on several factors, including the probability of the event, the potential damage of that event, ignition locations, adjacency to improvements or other sensitive values at risk from wildfire, and the propensity of the treatment to aid containment.

## 4.4.5 Project Locations

The following table (Figure 18) and maps (Figures 19 and 20) summarize the project locations. Each treatment location was selected to achieve a specific objective. Many treatments are associated with roadsides, structures and City Park/Preserve boundaries. Treatments for containment are strategically located at ridgetops, in places that have access, are not too steep for mechanical treatments, avoid riparian areas, and are not prone to soil erosion. Sections 4.4.7 through 4.4.13 provide additional information regarding project treatments by project type.

*Figure 18: Listing of Project Locations.*

| Designation | Project | Description |
|---|---|---|
| **Life Safety** | | |
| **Foothills Park** | | |
| F.F1 | Firefighter Safety Zone 1 | Trappers Ridge & Los Trancos Trail |
| F.F2 | Firefighter Safety Zone 2 | Trappers Ridge & Madrone Fire Road |
| F.F3 | Firefighter Safety Zone 3 | Trappers Ridge high point |
| F.F4 | Firefighter Safety Zone 4 | Trapper Ridge south end |

| Designation | Project | Description |
|---|---|---|
| F.E1 | Evacuation Route - Page Mill Road | Within PA City from Arastradero to southern Pony Tracks |
| F.E2 | Evacuation Route - Park Road | Entrance to Maintenance Yard Las Trampas Valley |
| F.E3 | Evacuation Route - Park Northwest | Interpretive Center to the 600-700 block of Los Trancos Road |
| F.E4 | Evacuation Route - Park Northeast | Boronda Lake to Alexis Drive |
| F.E5 | Secondary Evacuation Route - Wildhorse Valley | Wildhorse Valley from Towle Campground to Las Trampas Valley |
| **Pearson-Arastradero** | | |
| A.E1 | Evacuation Route – Arastradero Road | Arastradero Road |
| **Off-site** | | |
| PA.1 | Evacuation Route Page Mill Road | |
| PA.2 | Evacuation Route Arastradero Road | |
| PA.3 | Evacuation on Los Trancos Road between Santa Clara County boundary and Oak Forest Court | |
| PA.4 | Evacuation Route Skyline Blvd. | |
| **Structure and Infrastructure Protection** | | |
| **Foothills Park** | | |
| F.D1 | Defensible Space | Entry Gate and Restroom |
| F.D2 | Defensible Space | Station 8 |
| F.D3 | Defensible Space | Restrooms at Orchard Glen |
| F.D4 | Defensible Space | Interpretive Center |
| F.D5 | Defensible Space | Maintenance Shop Complex |
| F.D6 | Defensible Space | Boronda Pump Station at Campground |
| F.D7 | Defensible Space | Park Tank |
| F.D8 | Defensible Space | Boranda Water Tank |
| F.D9 | Defensible Space | Dahl Water Tank |
| **Pearson-Arastradero** | | |
| A.D1 | Defensible Space | Gateway Building and Restrooms |
| A.D2 | Defensible Space | Pump Station |

| Designation | Project | Description |
|---|---|---|
| A.D3 | Defensible Space | Corte Madera Water Tank |
| **Ignition Prevention** | | |
| **Foothills Park** | | |
| F.I1 | Ignition Prevention | Lakeside Picnic Area |
| F.I2 | Ignition Prevention | Shady Cove Picnic Area |
| F.I3 | Ignition Prevention | Encinal and Pine Gulch Picnic Areas |
| F.I4 | Ignition Prevention | Orchard Glen Picnic Area |
| F.I5 | Ignition Prevention | Oak Grove Group Picnic Area |
| F.I6 | Ignition Prevention | Towle Camp |
| **Containment** | | |
| **Foothills Park** | | |
| F.C1 | Containment | Trappers Trail |
| F.C2 | Containment | Pony Tracks south of Trappers Ridge |
| F.C3 | Containment | Pony Tracks north of Trappers Ridge |
| F.C4 | Containment | Bobcat Point |
| F.C5 | Containment | North of Entry Gate |
| F.C6 | Containment | Valley View Fire Road |
| **Pearson-Arastradero** | | |
| A.C1 | Containment | Property boundary adjacent to Liddicoat |
| A.C2 | Containment | Property boundary adjacent to Stanford and Portola Pastures |
| A.C3 | Containment | Redtail Loop Area |
| A.C4 | Containment | Property boundary adjacent to Paso del Robles |
| A.C5 | Containment | Property boundary Laurel Glen - north |
| A.C6 | Containment | Property boundary Laurel Glen - south |
| A.C7 | Containment | Property boundary west of Meadow Lark Trail |
| A.C8 | Containment | Property boundary adjacent to former private research facility |
| A.C9 | Containment | Property boundary adjacent to John Marthens Lane |

| Designation | Project | Description |
|---|---|---|
| A.C10 | Containment | Arastradero Creek (to Juan Bautista trail) |
| A.C11 | Containment | Meadow Lark to Juan Bautista Trail |
| A.C12 | Containment | Meadow Lark south |
| A.C13 | Containment | Bowl Loop Trial |
| A.C14 | Containment | Arastradero to Rx fire area |
| A.C15 | Containment | Acorn Trail |
| A.Rx1 | Containment | Juan Bautista Prescribed fire north |
| A.Rx1 | Containment | Acorn Trail Prescribed fire south |

***Figure 18: Listing of Project Locations.***

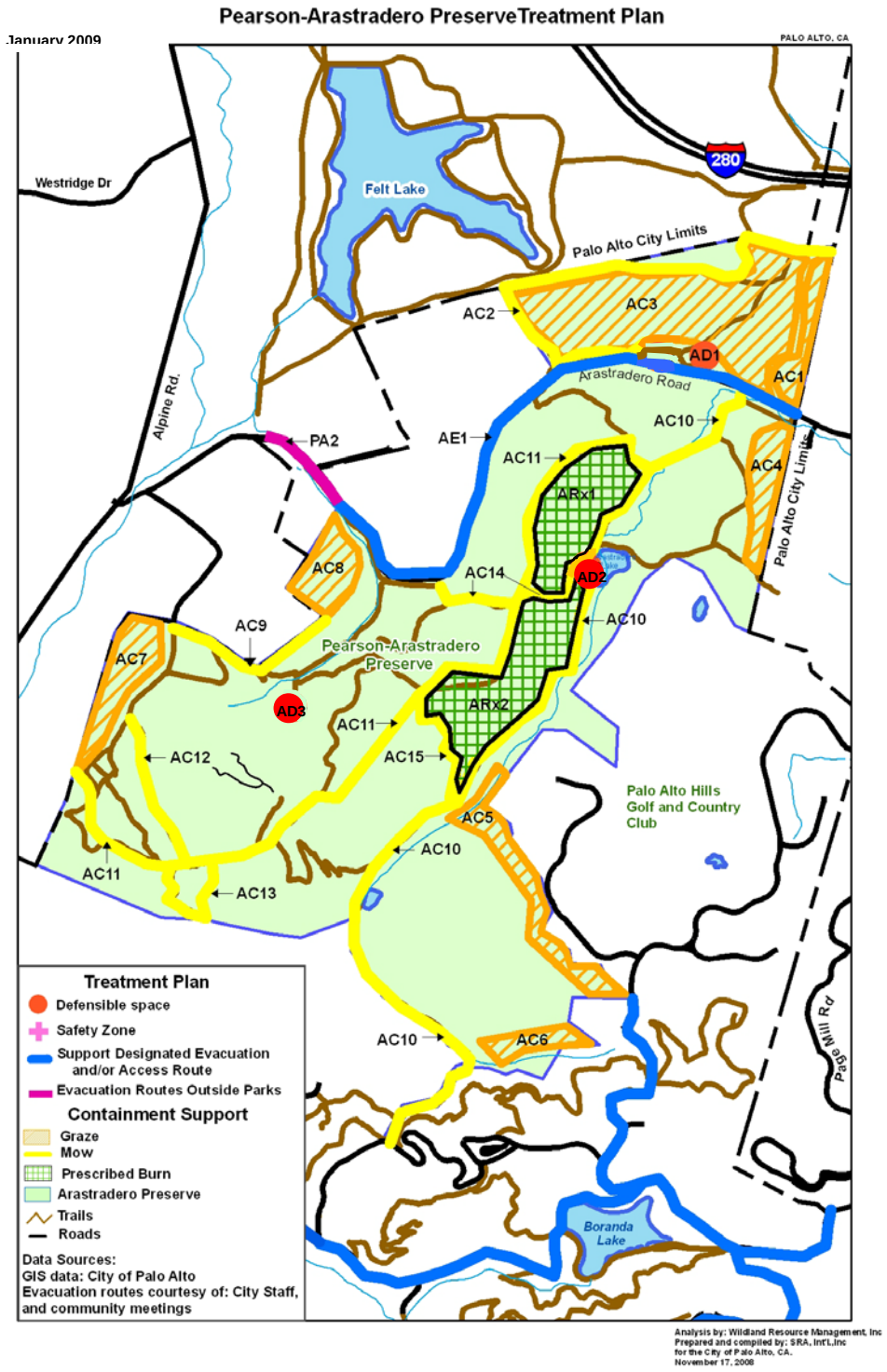


***Figure 19: Proposed Treatment Locations in Pearson-Arastradero Preserve.***

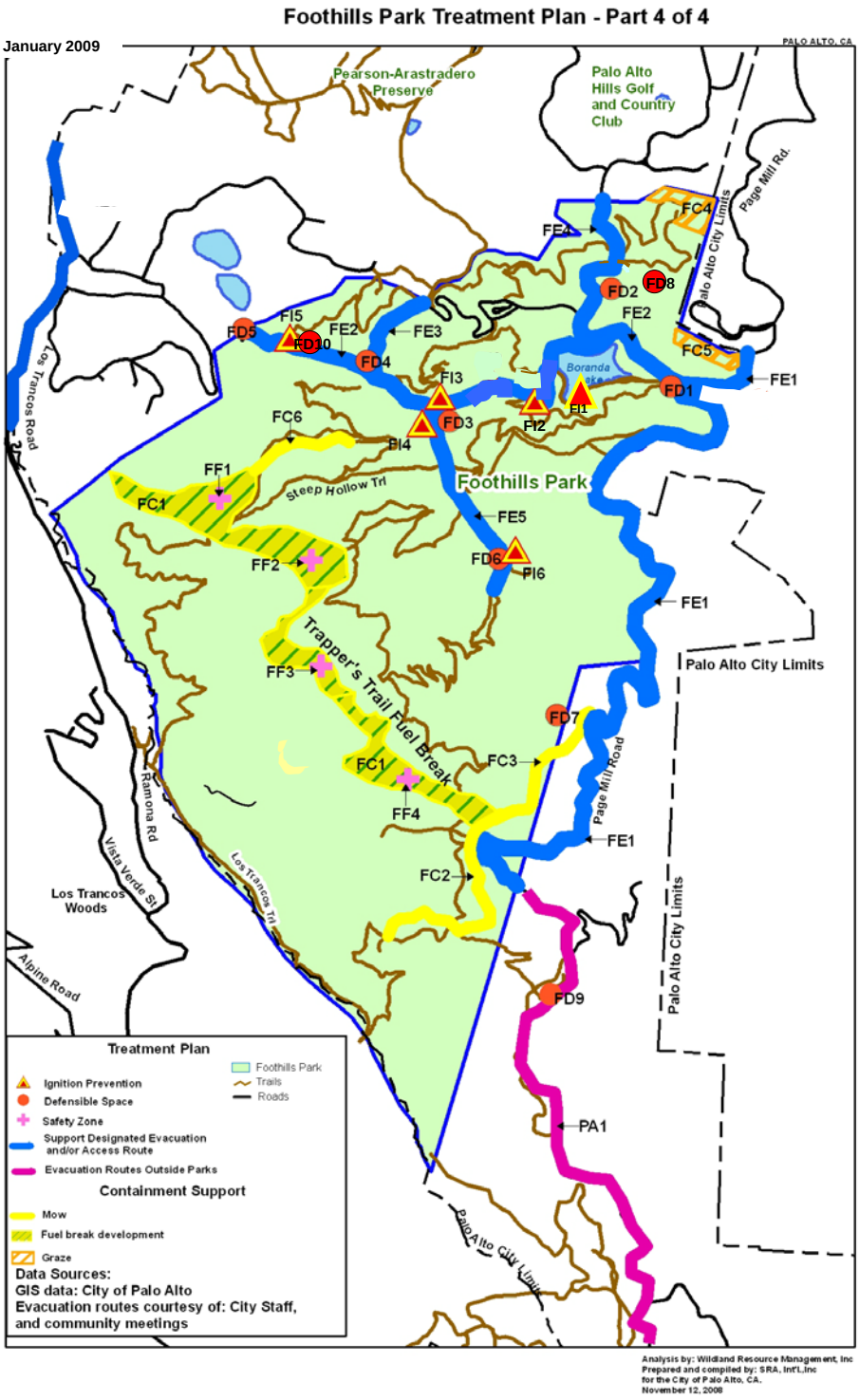


***Figure 20: Proposed Treatment Locations in Foothills Park.***

## 4.4.6 Project Dimensions and Post-Treatment Standards

The dimensions of the treatments follow in the table below (Figure 21). The treatments that will occur within the project area depend on the vegetation type and treatment method. The post-treatment standards for each treatment type and a description of the treatment methods are also included.

| Project Types | Dimension | Treatment Frequency | Comments |
|---|---|---|---|
| ***Roadside Treatments*** | | | |
| Major evacuation routes | 30 feet on both sides of pavement edge | Rotate 3-5+ years depending on fuel type | Annual for first 10 feet with grass fuels |
| Secondary evacuation routes | 15 feet on both sides of pavement edge | Rotate 3-5+ years depending on fuel type | |
| ***Defensible Space*** | 100-ft from structure | Annual | Follow-up treatments may not be required annually |
| ***Ignition Prevention*** | 10-ft from barbeque | Annual | |
| ***Firefighter Safety Zones*** | 100-ft radius | Annual | |
| ***Containment Fuel Breaks*** | | | |
| Area treatment | Within 300-ft of ridgetop of Trappers Ridge | Rotate 3-5+ years | |
| | Areas designated goat grazing within park | Rotate 3-5+ years | |
| | Two designated potential prescribed burn units per map | Rotate 3-5+ years | |
| Perimeter treatment | | | |
| Brush/understory | In designated areas within 300 feet of park boundary | Rotate 3-5+ years | |
| Grass | Discing or mowing 15-45 feet from park boundary, as practical | Annual | |
| Eucalyptus Removal | Individual tree removal | One time | Follow up to ensure no stump sprouts |

***Figure 21: Treatment Methods and Intervals.***

## 4.4.7 Roadside and Driveway Fuel Modification for Safe Access and Egress

### 4.4.7.1 Specific Goal of Action

The most important goal for this set of projects is to reduce fire intensity near roads to allow firefighting vehicles to pass and ensure safe passage for staff and visitors to pre-determined safety zones, or safe locations out of the parks. In addition, the projects outside of the City parks/preserves are aimed at facilitating access and egress between different portions of Palo Alto's wildland urban interface.

### 4.4.7.2 Location and Description of Projects

Projects would be located along roads and driveways of varying width, depending on whether the road is a major or secondary evacuation route.

- 10 feet where flames are predicted to be less than eight feet in length (generally in grassy locations and in oak woodlands), such as along Wildhorse Valley in Foothills Park.

- 30 feet from pavement edge along major evacuation routes that are Page Mill Road, Los Trancos Road, Arastradero Road, Skyline Boulevard, and the road from the Foothills Park Entry Gate to the Maintenance Shop.

Palo Alto should work cooperatively with Los Alto Hills, the Town of Portola Valley, CalTrans, San Mateo County, Santa Clara County, and other agencies to ensure vegetation along Page Mill Road, Arastradero Road, Los Trancos Road, and Skyline Blvd. are mowed, trees are maintained, and other treatments are implemented and sustained.

Figure 22 lists the location and description of proposed safe access and egress projects. Figure 23 provides a graphical representation of major evacuation routes that are external to the two preserves.

| Designation | Project | Description | Distance | Treatment Method |
|---|---|---|---|---|
| ***Foothills*** | | | | |
| F.E1 | Page Mill Road | Within PA City from Arastradero to southern Pony Tracks | 13,855 ft | mowing, grazing, hand labor |
| F.E2 | Evacuation Route - Park Road | Entrance to Maintenance Yard Las Trampas Valley | 7,211 ft | mowing, grazing, hand labor |
| F.E3 | Evacuation Route - Park North west | Interpretive Center to the 600-700 block of Los Trancos Road | 1,263 ft | mowing, grazing, hand labor |
| F.E4 | Evacuation Route - Park North east | Boronda Lake to Alexis Drive | 2,618 ft | mowing, grazing, hand labor |

| | | | | |
|---|---|---|---|---|
| F.E5 | Secondary Evac Route | Towle Campground to Las Trampas Valley | 2,818 ft | mowing, grazing, hand labor |
| ***Pearson-Arastradero*** | | | | |
| A.E1 | Evacuation Route | Arastradero Road | 6,337 ft | mowing, grazing, hand labor |
| ***Off-site*** | | | | |
| PA.1 | Page Mill Road | From Foothill Park South to Skyline Blvd. | 11,980 ft | mowing, grazing, hand labor |
| PA.2 | Arastradero Road | From Page Mill to Arastradero Pk, and from Arastradero Pk to Los Trancos | 940 ft | mowing, grazing, hand labor |
| PA.3 | Evacuation Route - Los Trancos | Los Trancos Road between Santa Clara County boundary and Oak Forest Court | 4,406 ft | mowing, grazing, hand labor |
| PA.4 | Skyline Blvd. | Skyline Blvd.[3] | 7,907 ft | mowing, grazing, hand labor |

***Figure 22: Listing of Project Locations for Evacuation and Access.***

[3] *CalTrans is responsible for treatments within the designated right-of-wa,y which is variable in width (generally 2-30-ft). Regardless the City of Palo Alto is committed to conduct treatments on City lands adjacent to the road.*

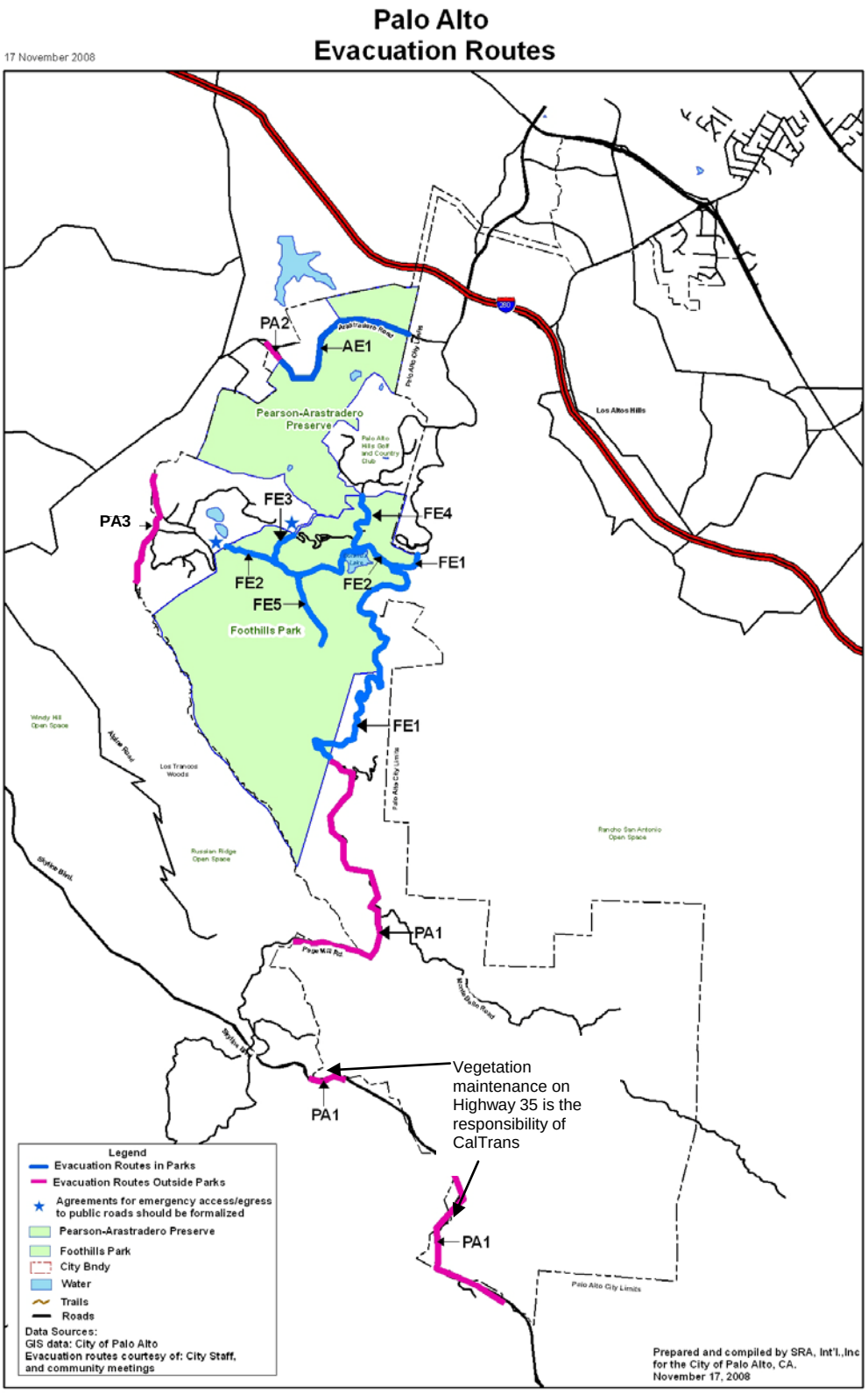


***Figure 23: Evacuation Routes External to Foothills Park and Pearson-Arastradero Preserve.***

## 4.4.8 Fuel Modification for Firefighter Safety Projects

### 4.4.8.1 Specific Goal of Action

This project goal is specific to the safety of firefighters during emergency response. In times of emergency, a safe refuge comprised of low fuels is vital.

### 4.4.8.2 Location and Description of Projects

These projects would install and maintain four firefighter safety zones within Foothills Park. Specifically, they are located on the Trappers Trail fuel break, at Los Trancos Trail, Madrone Fire Road, at the high point on Trappers Ridge and the south end of Trappers Ridge.

| Designation | Project | Description | Acreage | Treatment Method |
|---|---|---|---|---|
| ***Foothills*** | | | | |
| F.F1 | Firefighter Safety Zone 1 | Trappers Ridge & Los Trancos Trail | > 1 acre | mow, graze |
| F.F2 | Firefighter Safety Zone 2 | Trappers Ridge & Madrone Fire Road | > 1 acre | mow, graze |
| F.F3 | Firefighter Safety Zone 3 | Trappers Ridge high point | > 1 acre | mow, graze |
| F.F4 | Firefighter Safety Zone 4 | Trapper Ridge south end | > 1 acre | mow, graze |

***Figure 24: Listing of Project Locations for Fire Fighter Safety Fuel Modification.***

## 4.4.9 Structure and Infrastructure Projects – Defensible Space

### 4.4.9.1 Specific Goal of Action

- Reduce damage to structures, developed areas and critical infrastructure from wildfire by reducing flame length to two feet within 30 feet of structures by managing fuels per Defensible Space Guidelines in Section 1.6.8. In some cases, treatment will need to extend to 100 feet in order to reduce flames to two feet within thirty feet of a structure.

- Minimize negative effects of fuel manipulation on wildlands

- Reduce damage to wildlands from wildfire

### 4.4.9.2 Location and Description of Projects

This vital suite of projects is located generally within 100 feet from structures that are currently in use, which includes entry gates, interpretive centers, restrooms, and maintenance or infrastructure facilities. Some of the projects are to protect the water and electrical services provided to the park. In addition, fire-resistant features should be installed when these structures are remodeled or repaired. The structures in the Parks/ Preserve can serve as a demonstration of the types of actions that should occur in private yards as part of compliance with local codes and ordinances. The following lists specify which structures need defensible space established and maintained annually:

The area around structures is currently treated, however the actions recommended will bolster survivability of structures.

| Designation | Project | Description | Acreage | Treatment Method |
|---|---|---|---|---|
| ***Foothills*** | | | | |
| F.D1 | Defensible Space | Entry Gate and Restrooms | > 1 acre | hand labor |
| F.D2 | Defensible Space | Boranda Water Tank | > 1 acre | hand labor |
| F.D3 | Defensible Space | Restrooms at Orchard Glen | > 1/2 acre | hand labor |
| F.D4 | Defensible Space | Interpretive Center | > 1 acre | hand labor |
| F.D5 | Defensible Space | Maintenance Complex | > 1 acre | hand labor |
| F.D6 | Defensible Space | Boronda Pump Station at Campground | > 1 acre | hand labor |
| F.D7 | Defensible Space | Park Tank | > 1/2 acre | hand labor, grazing |
| F.D8 | Defensible Space | Station 8 | > 1/2 acre | hand labor, grazing |
| F.D9 | Defensible Space | Dahl Water Tank | > 1/2 acre | hand labor, grazing |
| F.D10 | Defensible Space | Oak Grove Restrooms | > 1/2 acre | hand labor, grazing |
| ***Pearson-Arastradero*** | | | | |
| A.D1 | Defensible Space and Restrooms | Gateway Building | > 1 acre | hand labor, mowing |

| | | | | |
|---|---|---|---|---|
| A.D2 | Defensible Space | Corte Madera Pump Station | > 1 acre | hand labor, mowing |
| A.D3 | Defensible Space | Water Tank | > 1 acre | hand labor, mowing |

***Figure 25: Listing of Project Locations for Defensible Space.***

## 4.4.10 Ignition Prevention Fuel Management Projects

### 4.4.10.1 Specific Goal of Action

Ignitions from barbeques may occur in Foothills Park. Ignition prevention relies upon fuel management, coupled with education, signage, and enforcement of park rules regarding fire safety. Under extreme fire weather conditions, the parks may be closed to the public. The fuel management will consist of the following:

- Follow standards for defensible space for a 30-ft radius from the barbeque site.
- Remove vegetation to create a non-combustible zone for a 10-ft radius from the barbeque site.

### 4.4.10.2 Location and Description of Projects

| Designation | Project | Description | Acreage | Treatment Method |
|---|---|---|---|---|
| ***Foothills*** | | | | |
| F.I1 | Ignition Prevention | Shady Cove Picnic Area | > 1/4 ac | hand labor |
| F.I2 | Ignition Prevention | Encinal Picnic Area | > 1/4 ac | hand labor |
| F.I3 | Ignition Prevention | Pine Gulch Picnic Area | > 1/4 ac | hand labor |
| F.I4 | Ignition Prevention | Orchard Glen | > 1/4 ac | hand labor |
| F.I5 | Ignition Prevention | Oak Grove Group Picnic Area | > 1/4 ac | hand labor |
| F.I6 | Ignition Prevention | Towle Camp | > 1/4 ac | hand labor |

***Figure 26: Listing of Project Locations for Ignition Prevention.***

## 4.4.11 Fuel Modification for Containment Ease

### 4.4.11.1 Specific Goal of Action

The specific goal of modifying fuels in the two parks is to compartmentalize fuels in order to facilitate the containment and control of a fire. The treatment areas are positioned in strategic locations, usually on a

ridgetop, with access, avoiding areas that would preclude the use of mechanical equipment such as steep slopes or riparian areas. Fuels are modified to reduce fire intensity and thus allow firefighters better access to the fire, making firefighting actions more effective. Fuel modification also creates more opportunities to backfire, which occurs during wildfires where fire suppression crews create large firebreaks in advance of the fire front. Fuel modification can also slow the spread of a fire, further enhancing fire control efforts. Where trees abut grasslands in the new fuel breaks, it is especially important to limb trees and remove shrubby understory from trees along the edge of the forest canopy in order to break vertical continuity between grass and tree canopy. This action will remove the "ladder fuels" that promote crown fires and hinder fire containment.

### 4.4.11.2 Location and Description of Projects

In Pearson-Arastradero, the projects entail discing and mowing along the grassy perimeter of the preserve, and grazing in the shrubby areas that abut residences. Grazing of shrubby areas near residences need not occur every year, but rather on an approximate three-year rotation. Strips of grass along selected trails are likewise recommended for mowing to enhance containment and access. Two prescribed fires are recommended in the interior of the preserve as another means to remove fuels to reduce wildfire intensity and aid containment during a wildfire.

In Foothills Park, a series of fuel breaks are recommended in shrubby fuels. In the fuel breaks, a rotation of treatments is recommended. The fire roads would be graded annually, and grass mowed within 10-30 feet of the road. Additional mowing/brush cutting would extend to the break in topographic slope, which could be located as far away from the road as 200-ft. This type of mowing would occur in any one location approximately every 3 years; the intent is to maintain the area in a mixture of grass with less than 30 percent canopy cover of shrubs. While treatments may vary over time, the recommended rotation is between rest, mowing/brush cutting and grazing.

| Designation | Project | Description | Acreage or Distance | Treatment Method |
|---|---|---|---|---|
| ***Foothills*** | | | | |
| F.C1 | Containment | Trappers Trail | 72.51 acres | mowing, grazing |
| F.C2 | Containment | Pony Tracks south of Trappers Ridge | 2,975 ft | mow annually 10-ft on either size of road, use a brush hog (or grazing animals) to mow areas to the break in slope both under wooded canopy and in grasslands with cover of coyote brush greater than 30% |
| F.C3 | Containment | Pony Tracks north of Trappers Ridge | 2,461 ft | mowing, grazing |
| F.C4 | Containment | Bobcat point | 5.28 acres | graze with goats |

| | | | | |
|---|---|---|---|---|
| F.C5 | Containment | North of entry Gate | 3.47 acres | graze with goats |
| F.C6 | Containment | Valley View Fire Trail | 1,459 ft | mowing |
| ***Pearson-Arastradero*** | | | | |
| A.C1 | Containment | Property boundary adjacent to Liddicoat | 5.39 acres | grazing, mowing |
| A.C2 | Containment | Property boundary adjacent to Stanford and Portola Pastures | 5,371 ft | grazing, mowing |
| A.C3 | Containment | Within Redtail Loop Trail, to entire eastern boundary of Preserve | 48.72 acres | grazing |
| A.C4 | Containment | Property boundary adjacent to Paso del Robles | 7.71 acres | grazing |
| A.C5 | Containment | Property boundary Laurel Glen - north | 11.22 acres | grazing |
| A.C6 | Containment | Property boundary Laurel Glen - south | 4.05 acres | grazing |
| A.C7 | Containment | Property boundary west of Meadow Lark Trail | 9.71 acres | grazing, mowing |
| A.C8 | Containment | Property boundary adjacent to 1791 Arastradero Rd. | 8.08 acres | grazing (mowing is not possible) |
| A.C9 | Containment | Property boundary adjacent to John Marthens | 1,726 ft | mowing |
| A.C10 | Containment | Arastradero Creek to Arastradero Road | 10,222 ft | mowing, hand labor near riparian zone |
| A.C11 | Containment | Meadow Lark to Juan Bautista Trail | 8,893 ft | mowing |
| A.C12 | Containment | Meadow Lark | 1,569 ft | mowing |
| A.C13 | Containment | Bowl Loop | 1,388 ft | mowing |
| A.C14 | Containment | Arastradero to extended split RX1 and RX2 | 1,830 ft | mowing |
| A.C15 | Containment | Acorn Trail | 1,218 ft | mowing |

***Figure 27: Listing of Project Locations for Containment Ease.***

## 4.4.12 Fuel Modification for Ecosystem Health

### 4.4.12.1 Specific Goal of Action

Only a few projects that benefit ecosystem health as their primary justification have been identified in this phase; however, many of the other projects enhance natural resources while achieving other management goals. In all cases, the goal of the action is to restore a species distribution and volume of biomass to a condition of effective fire suppression through grazing and prescribed fire.

The City should conduct fuel modification to reduce the invasion of coyote bush into grasslands and thus reduce expected heat output. The project located along Trappers Trail consists of mowing chaparral on a rotational basis every two-to three years. This will release native grasses, produce more food for wildlife and provide diversity of age and vegetation structure. Another project is to re-introduce fire in the grasslands of Pearson-Arastradero through prescribed burning a selected interior area on a rotational basis. In both cases, the objectives are to maintain grasslands and restore the native pattern of vegetation on the landscape. A third project to enhance ecosystem health is to graze, with sheep or goats, broad areas that are currently being mowed for grass and invasive weed management.

Other fuel management projects also enhance ecosystem health. Reducing the amount and height of understory shrubs creates a vegetative structure that is more open at the forest floor, with less biomass and is vertically discontinuous; this mimics the pre-fire-suppression era. This would be done either with goat herds or with hand labor forces.

### 4.4.12.2 Location and Description of Projects

| Designation | Project | Description | Acreage | Treatment Method |
|---|---|---|---|---|
| ***Foothills*** | | | | |
| F.C1 | Containment | Trappers Trail | 72.51 acres | mowing, grazing |
| ***Pearson-Arastradero*** | | | | |
| A.Rx1 | Containment | Juan Bautista Prescribe fire north | 18.25 acres | Rx fire, grazing |
| A.Rx2 | Containment | Acorn Trail Prescribed fire south | 24,45 acres | Rx fire, grazing |
| A.C3 | Containment | Within Redtail Loop Trail, to entire eastern boundary of Preserve | 48.72 acres | grazing, mowing |

***Figure 28: Listing of Project Locations for Ecosystem Health.***

## 4.4.13 Cooperative Fuel Management Projects for Offsite Fire Containment and Evacuation Ease

### 4.4.13.1 Specific Goal of Action

The goal of this project is to prevent a wildfire from spreading into the parks. The City should work with adjacent landowners to institute and maintain the vegetation in a condition that would facilitate containment and ease evacuation operations.

Another cooperative project would be to work to reduce the frequency and impact of sudden oak death, particularly on the western edge of Palo Alto.

### 4.4.13.2 Location and Description of Projects

Cooperation with neighbors is important in the installation and maintenance of fire-safe conditions on lands adjacent to or near the City parks. Most importantly, the enhancement of roadside treatments along Page Mill Road requires cooperation with several other landowners and agencies, as enumerated previously. Cooperative projects also include the formalization of agreements for passage through properties during time of emergency evacuation with public and private land owners and managers. The City should develop partnerships to address regional evacuation routes from residential and public areas, as detailed in the following section. Cooperative projects also include fuel management on City-owned open space adjacent to private structures. In some cases, such as on the western edge of Foothill Park east of Carmel and Ramona Road in Los Trancos Woods, access through private parcels would enable fuel management on City lands that would benefit both parties involved.

Sudden Oak Death has been observed in many locations within the Foothills area. At this time the areas are small and consist of one or two trees. The urgency for treatment of these affected areas is related to its location. Dead trees near structures, City property boundaries and along roads should be treated first. For example, dead trees along evacuation routes would get higher priority than those in the middle of remote woodland. However, if entire stands die, or sudden oak death changes the fuel characteristics of the stand, the priority and potential treatments would change. The location and extent of stands affected by Sudden Oak Death should be monitored.

Treatment should be consistent with the City policy regarding Sudden Oak Death. Treatments generally entail removal of dead material smaller than six inches in diameter. The trunks of the trees may remain if needed for wildlife habitat, however it is often difficult to retain just the larger material. The proximity of California bay to the foliage of oaks has been linked with the spread of Sudden Oak Death. Removal or trimming of bay trees to separate the foliage is another strategy to prevent further spread.

# 5 IMPLEMENTATION PLAN

However valuable and imperative the plan may be, implementation is the key to achieving the goals set forth by the plan. There are several recommendations that can facilitate implementation of the fire management plan.

## 5.1 Implementation Strategies

The creation of an Implementation Team within the City staff will support implementation. The team would benefit from representatives that could help with project design, cost estimation and budgeting, evacuation planning, and community outreach. The team would include in its mission development of educational material for the community. Implementation Team should include staff from the City Manager's Office, the Fire Department (Chief, Operations, Fire Marshal, CERT), the Police Department (Chief, Homeland Security, Communications/Dispatch, PIO), the Planning Department, Open Space/Parks, Public Works, and Utilities.

The City should support the formation of a Midpeninsula Foothills Emergency Forum (MFEF). The MFEF would collaborate on resource management issues. The scope would include pursuit of grants, equipment and resource sharing (such as mechanical equipment and expertise) and joint design of projects especially on City boundaries, or along co-owned/managed roads. The City should work with stakeholder/ partners on common issues. For example, Los Altos Hills, Stanford, Los Trancos Woods, Los Trancos Water Department, MROSD, and private neighbors all have concerns and potentially partial solutions for access and egress constraints. Each partner may have a particular asset to contribute, whether it is available funds or ready volunteers, or expertise in the subject of need. Collaboration creates a stronger base from which fruition of the plan can more readily occur.

This interagency organization would be separate from the existing FireSafe Councils; participation would include CEO-level discussions and staff liaisons from each participating agency.

The City should participate in local FireSafe Councils, in both Santa Clara County and San Mateo County[4]. FireSafe Councils can help in obtaining federal funds because the local FireSafe Councils have an already-written Community Wildfire Protection Plan, which is a prerequisite for national funding. Interagency collaboration is also fostered by FireSafe Councils. The local San Mateo FireSafe Council also facilitates access to the use of subsidized California-youth authority hand labor crews. These crews have a long track record of successful fuel management projects at surprisingly low costs. The San Mateo FireSafe Council also has a chipping program to alleviate the burden of disposing of biomass from fuel management projects.

The City should also implement projects in City park/preserves through its regular budget process. The City has a history of fuel management that should be continued. Fuel management will continue to be funded through the normal budget process, to encompass continued mowing, occasional grazing, maintenance of defensible space around structures and resource enhancement projects.

Funding specific prescribed burns is also expected through the budget process if not funded by grants or conditions tied to this project. For example, a prescribed burn in Alameda County was required as a mitigation measure for a necessary project to expand a facility near a creekbed. Similarly, projects that

[4] Participation in the San Mateo County FireSafe Council would be as an interested party but not to take official action or receive any financial benefit.

enhance natural resources can be used as mitigation measures for worthwhile projects that may have negative impacts.

While it is not expected that the City would make a profit from natural resources, the value of its grasslands as feed could be used to offset the cost of using livestock as a resource management tool. Similarly, the City should make an effort to obtain value from wood recovered from dead tree removal, potentially though innovative wood-based art projects.

The City has a rich bank of volunteer groups; projects could be implemented with the help of volunteer groups. Relationships with stakeholders such as Acterra, Friends of Foothills, 4-H, and other should be fostered. Roles for these groups could include the performance of pre-treatment surveys, construction and placement of raptor perches, support of grazing operations (movement of portable livestock fences or water sources), or distribution of educational and evacuation directional signs. Corporate volunteerism can be directed to fuel management projects.

The adoption of new codes may be less obvious than the implementation of specific projects. Regardless, the adoption of recommended changes in the City code may have more long-lasting and far-reaching effects throughout the City. These recommendations should be pursued.

Similarly, the continuation of Station 8 staffing should be viewed as a part of the implementation of this plan.

## 5.2 Priorities

The priority of the projects has been emphasized earlier in this report. Life safety concerns – those focusing on egress and emergency response access – are the highest priority. The projects that address this objective should be immediately pursued. The maintenance of firefighter safety zones is similarly high in priority.

Fuel management projects that prevent the ignition of structures are of the next highest priority. This would include the maintenance of defensible space around City structures and vital infrastructure facilities. These projects are mandated by law. Fuel management to prevent the spread of fires to off-site structures from City property are within a level of reasonable care expected from a City; these projects are also considered a type of containment project.

Fuel management that promotes containment of fires within City property is next in priority. These projects support the response to infrequent, yet potentially catastrophic fires. In addition, these fuel management projects prevent the more ordinary events from becoming catastrophic.

Projects that enhance natural resources are difficult to fund. However, fuel management offers occasions to both enhance natural resources and fire safety. Every fuel management project should be viewed as an opportunity to simultaneously enhance natural resources and promote fire safety.

The following criteria (not ordered by importance) can help determine the schedule of recommended fuel treatment project:

- Benefit of project in minimizing **structure damage** or chance of damaging wildfire.
- **Probability** of damaging wildfire (based on fuel loading and vegetation structure).
- Potential for **ecological benefit** (or damage without fire).

- **Divergence of fuel loading** and vegetation structure from natural conditions (i.e. deviation from natural fire regime).

- A **window of opportunity**, based on funding timelines, availability of personnel or equipment, or other factors.

- If using prescribed fire, some areas may need to be burned in a particular **sequence** to minimize the potential for escape.

## 5.3 Fuel Management Project Costs

Costs are variable, depending on the project design, site features, access, requirements for insurance, traffic and fencing control, staging, move-in costs, bonding, administration, wage reporting and other city requirements, such as governing regulations, or resource restrictions (i.e. species of concern).

Considering only the direct project-related costs, the unit costs of various treatment methods can vary dramatically between the types of treatment methods, but within the treatment methods as well. Similarly, the site conditions, weather, and other external factors that affect unit costs of some treatment methods are:

- Height, density, species, and arrangement of existing vegetation;

- Desired vegetation conversion and management objectives;

- Size, accessibility, slope, soil stability, and vegetation types onsite;

- Need for multiple treatment types at a site over a short period of time (cumulative costs); and

- Planning and monitoring to develop follow-up treatment prescription.

The following table describes unit costs associated with the treatment methods.

| Treatment Method | Estimated Unit Cost ($ per Acre) | Notes/Other Considerations |
|---|---|---|
| ***Hand Labor Treatments*** | | |
| Weed Whipping | 1,500 | |
| Chaparral Brush Removal | 2,140 [a] | |
| Hand-Pulling | 2,000 | |
| Vista Pruning | $1/linear ft / 50-250 [b] | Roadside treatments – no shrubs |
| Mosaic/Drip-Line Thinning | $2/linear ft / 3,500 [a] | Roadside treatments with shrubs |
| Organic Mulch | 575-1,600 [b,c] | Same as chipping/mulching |

| Treatment Method | Estimated Unit Cost ($ per Acre) | Notes/Other Considerations |
|---|---|---|
| ***Mechanical Treatment*** | | |
| Grading | 500-600 [b,c] | |
| Mowing | 500-600 [b,c] | |
| Chipping/Mulching | 575-1,600 [b] | |
| Roadside Mowing with Shrubs | $1/linear ft | |
| ***Prescribed Burning*** | | |
| Broadcast Burning | 60-400 [b] | Fixed costs are high, should use $25,000 per burn rather than per-acre costs |
| ***Grazing*** | | |
| Sheep | 200 [b] | |
| Goats | 500 | |
| ***Chemical Treatment*** | | |
| Stump Application | 200 | |
| Foliar Application | 500 | |

***Figure 29: Unit Costs for Fuel Reduction Treatment Methods.***

[a] The Sea Ranch Association Fuels Management Implementation, 2002 confirmed 2008.
[b] Applegate, Oregon Fire Plan. http://www.wildfireprograms.com/search.html?displayId=237
[c] Fire Plan, http://www.wildfireprograms.com/search.html?displayId=237

## 5.3.1 Project Cost Estimates

The following is a compilation of cost estimates for the 51 recommended treatment areas in Pearson-Arastradero Preserve and Foothills Park, and along selected segments of major evacuation routes in the City of Palo Alto. The total five-year cost amounts to approximately $700,000.

**Costs of Firefighter Safety Zones = $800 annually**

The costs of each firefighter safety zone was estimated as $200 per zone, based on the cost to mow a grassy area of approximately one acre in size. Mowing costs of unobstructed grass are approximately $200/hr, which includes the cost of the machinery and operator, and a spotter. The production rate of area mowing is approximately one acre per hour. This cost does not include move-in costs, because it assumes the mowing for firefighter safety is part of a larger mowing contract.

Because the safety zones need to be treated annually, the cost of treating all the firefighter safety zones is $800 per year.

**Costs of Initial Treatment along Evacuation Routes = $192,960 initial treatment, $86,400 total for the subsequent 4 years**[56]

The treatment along roads identified as evacuation routes would include a mixture of machinery-based mowing (including mowing with an articulated brush-cutting head that cuts brush) and the use of hand labor. In circumstances where wider areas can be treated, grazing animals, principally goats, can be used to perform initial treatments along evacuation routes.

The total length of evacuation routes is slightly more than 12 miles, or 63,740 linear feet, which encompasses those areas highlighted in blue on Figures 17 and 18 and in Section 4.4.7.2.

The estimate of costs for this type of treatment assumes an operation that would use the machinery wherever possible as a cost containment measure. One can assume one-half of the length can be treated with machinery for the first 10-ft off the roadside. The remainder of the area would need to be treated by hand.

Estimates are based on treating both sides of the road for 30-ft, or a 60-ft wide strip, or almost 24 miles of linear treatment. Treatment recommendations state that areas of oak woodland need be treated for only 10-ft in width because expected fire behavior is relatively calm; however, for cost estimates, every length of the roads were estimated being treated for 30-ft width.

The most inexpensive treatment is roadside mowing of grassy areas with few shrubs or trees. This is expected to occur on approximately ¼ of the length of the roadside, for the first 10-ft off the road. Roadside mowing of grass expected to cost approximately $200/hour for the machinery, operator and spotter; production rates generally run around 300 linear feet per hour, or a little less than 18 hours to treat a mile. Production is reduced by the need to pick up the cutting head to move to a new site, and the need to avoid areas of trees. Using this production rate, mowing of approximately 108 hours, or for a cost of $**21,600**.

The next most cost-effective treatment is use machinery to cut roadside shrubs within the first 10-ft of the road. Shrubs near the roads are more common, occurring on approximately ½ of the length of the roads. A cost of $200/hr for the machinery, operator and spotter is used. Production is reduced to 200 linear feet per hour, requiring 26.4 hours to cut brush for a mile. A little more than 316 hours would be required to treat the estimated 12 miles of shrubs, for a cost of **$63,360**.

Machinery has the potential to start fires from causing sparks in dry vegetation. A dedicated fire watch for the operation during fire season is recommended, at an additional cost of **$15,000**, based on 214 hours of operation during fire season, assuming one-half of the machinery-based work is performed during fire season. The remainder of the treatments will require hand labor to remove shrubs, limb the lower branches of trees smaller than three inches in diameter. This would be required on ¼ of the first 10-ft of the roads, and the entirety of the remaining 20 feet off main evacuation routes.

Hand labor crews with a supervisor typically cost $1200/day. The production rate for this type of tree limbing and shrub removal is one-tenth of an acre each day, or $10,000 per acre. Subtracting the areas treated with mechanical equipment, approximately 93 acres will need to be treated using hand labor crews, at a cost of **$93,000**.

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[5] Personal communication with J. Squadroni, of Environtech, January 2009, regarding roadside treatment costs. These cost were confirmed, based on worked performed by Environtech, including roadside treatments on Los Trancos Road in early 2000's and in Carmel Valley more recently.

[6] Personal Communication with Mike Philbin, Central Coast Land Clearing, October, 2008. Cost estimates based on work performed in 2008 on roadside treatments in Carmel Valley and in Santa Cruz County.

Government-subsidized hand crews that utilize people in the California Youth Authority system can result in dramatic cost reductions. Costs of hand labor crews can be reduced by a factor of ten.

Maintenance would consist of mowing the first 10-ft from the pavement edge yearly, at an annual cost over the next four years of $21,000 per year.

**Costs of Maintaining Defensible Space around Park/Preserve Structures and Infrastructure = $17,800**

Treatments to maintain defensible space around each of the structures and infrastructure facilities in the City Park/Preserve entail the use of hand labor to limb trees, remove shrubs under trees, and to mow grass. Some of the structures, such as the Gateway interpretive Center in Pearson-Arastradero Preserve, have little tree cover so mowing would comprise the treatment. Others, such as the pumping station in Pearson-Arastradero will require a higher level of effort because of a greater volume of shrubs and trees within 100 feet of the structure. Limbing and shrub removal need to only be done on a five-year interval, however mowing is required annually.

The treatments encompass the red solid circles on Figures 17 and 18 and those described in Section 4.4.9.2.

Generally the area of treatments ranges from ¼ acre to 1 acre. Mowing of the area around the structures is estimated as $100/structure, performed annually. Using hand labor to remove shrubs under trees and to remove lower branches of trees is estimated as $1,500/acre, performed every five years. There are nine structures identified in Foothills Park, with a total estimated cost of $14,100 over the next five years; Pearson-Arastradero Preserve has four such structures, with an accompanying $3,700 cost for treatment during the next five years.

## Costs of Creating/Maintaining Containment Areas $403,486

**Containment Areas in Foothills Park**

Treatments to enhance the actions to contain fires span two different shapes and sizes of treatments. Area treatments are recommended in Foothills Park for Trappers Trail, the Pony Tracks South of Trappers Ridge, the Bobcat Point Containment Zone and the area north of the Foothills Park Entry Gate. Shrubs and lower tree branches should be trimmed within the containment areas on a three-year interval of time. The grass in Trappers Trail and Pony Tracks South of Trappers Ridge will be mowed every three years, with the exception of a width of 30 feet on both sides of the graded trail. Shrubs in the Bobcat Point Containment Zone and the North of Entry Gate Containment Zone are recommended to be treated every five years. Grass in the other containment zones is to be mowed annually in order to bolster containment efforts during fire suppression.

Trappers Trail Containment Zone – 72.5 acs. The cost estimate of treatment is based on a rotation of treatments on a three-year cycle, and an annual treatment of mowing of a band of grass for a 30-ft width on both sides of the graded trail. One third of the area would be mowed in any year. One-third grazed, and one-third left to re-grow. This rotational treatment will allow more forage and cover for wildlife, and provide greater diversity of plants and vegetation structure. The cost of grazing one-third of the area, or roughly 25 acres, is estimated at $500/acre, or a total annual cost of $12,500. Costs of grazing are estimated to be lower than other areas because grassy nature of the area will facilitate fencing. Mowing is similarly lower in cost, at $500/acre, or an annual cost of $12,500, also because of previous treatments on the site. The total annual treatment cost for this area would be $25,000, or **$125,000** combined for the next five years.

Pony Tracks South of Trappers Ridge Containment Zone – 7 ac. The cost estimate of treatment is also based on a rotation of treatments on a three-year cycle, and an annual treatment of mowing of a band of grass for a 30-ft width on both sides of the graded trail (if the area is not grazed). Because of the small size of the

treatment area, the entire area can be mowed one year, grazed another, and left to rest a third. Using mowing and grazing costs of $500/acre, the five-year cost of treatment would be **$14,000**.

Pony Tracks North of Trappers Ridge Containment Zone – 2460 ft. The treatment cost is based on annual mowing along both sides of the graded trail. Using the production rate of 300 feet per hour and an hourly cost of $200/hr for an equipment operator and spotter, the cost of this treatment is estimated at $1640, or **$8,200** for the next five years.

Bobcat Point Containment Zone – 5.5 acs. Costs for grazing this treatment area with goats are estimated at $700/acre because the area has not been previously treated and fencing may be challenging. This would result in a cost of $3850. The treatment interval is recommended to be 5-years, so the 5-year cost of treatment would total **$3,850**.

North of Entry Gate Containment Zone - 3.5 acs. This area is similar in its treatment recommendation to the Bobcat Point Containment Zone. Grazing costs are estimated at $700/acre, with a 5-year interval between treatments. The one-time treatment cost is **$2,450**, as is the 5-year treatment cost.

Valley View Fire Trail Containment Zone – 1460 ft. The treatment cost is based on annual mowing along both sides of the graded trail. Using the production rate of 300 feet per hour and an hourly cost of $200/hr for an equipment operator and spotter, the cost of this treatment is estimated at $1,000, or **$5,000** for the next five years.

**Containment Areas in Pearson-Arastradero Preserve**

In Pearson-Arastradero Preserve, fifteen areas are recommended for treatments to facilitate containment during fire suppression. Of these, seven are areas where grazing is recommended, with a total acreage of almost 95 acres. The size of the areas to be grazed ranges from slightly more than four acres to almost 50 acres. Of the area to be grazed, 54 acres is comprised of grass, with few fencing challenges. However, smaller areas that amount to 41 acres to the south and west on the Preserve border are shrubby and have not been previously treated. Given the variability of the condition, the cost for grazing is estimated at $500/acre, or a total initial cost of $47,500. The grassy areas should be grazed annually, at a cost of $135,000. The shrubby areas need by treated only once every five years, at a cost of $20,500. The five-year cost thus totals **$155,500.**

Mowing the grass on both sides of graded trails is a recommended annual treatment. The linear length of this treatment is 26,846 feet, or slightly more than 5 miles. Using the production rate of 300 feet per hour and an hourly cost of $200/hr for an equipment operator and spotter, the cost of this treatment is estimated at $17,897, or **$89,486** for the next five years.

Two areas are recommended as suitable for a prescribed burn to facilitate containment and enhance natural resources. The costs for this treatment method are especially difficult to estimate because some of the operation serves as training. Often, adjacent agencies provide additional equipment and resources at no cost. A large portion of the costs associated with prescribed burning is involved in planning and obtaining the necessary permits, notification of appropriate agencies and the public and reporting of the results of the burn. Because of the uncertainty regarding the cost, an estimated cost of $25,000 per burn is set. An interval of 5 years is recommended, so a five-year cost for the two treatment areas would total **$50,000**.

**Costs of Conducting Pre-Treatment Surveys = $100,000**

Pre-treatment surveys and post-treatment follow-up are part of the best management practices associated with the recommended treatments. The cost for the pre-treatment surveys and post-treatment follow-up is

estimated at $20,000/yr, or **$100,000** for the total 5-year cost. This cost can be reduced if knowledgeable volunteers are involved in the survey or monitoring efforts. Estimates for the survey costs assume the City identifies treatments planned for the year and contracts with a biological consulting firm to perform targeted surveys in the treatment areas.

## 5.4 Funding Strategies to Support Fuel Management

Multiple funding sources provide greater stability, more funds, increased continuity, more stakeholders, the potential to expand the scope of work. Each funding mechanism has unique requirements, strengths and weaknesses. Some are best suited for one-time expenditures such as capital improvements while others are aimed at ongoing maintenance activities. The "strings" attached to each mechanism should be considered. It is advisable to match funding mechanisms with priority projects.

**Funding Mechanisms at a Glance**

| Funding Mechanism | Characteristics | | | | |
|---|---|---|---|---|---|
| | *Need for Collaborative Process* | *Funding for Capital Improvements / Initial Treatment* | *Funding for Maintenance* | *Relative ease of obtaining funding* | *Longevity/ sustainability of funds* |
| General Funds | Advised | ☆ | ❍ | ❍ | ✗ |
| Self-funding | no | | ☆ | ☆ | ☆ |
| Owner self fund | no | ❍ | ❍ | ☆ | ☆ |
| Public Grant Funding | Advised; may be required | ☆ | ✗ | ✗ | ✗ |
| Private Donation/ Gifts/ Volunteerism | Advised | ☆ | ❍ Volunteers | ✗ | ✗ |
| Bonds | Advised | ❍ | ❍ | ✗ | ✗ |
| Assessment Districts (LLAD) | Advised | ✗ | ☆ | ✗ | ☆ |

☆ Relatively easy ❍ Neutral ✗ Difficult

***Figure 30: Funding Mechanisms.***

A key to expanding funding mechanisms is to demonstrate the value of the projects. Highlighting the value of fuel management is effectively done at a grass-roots level, through collaboration with stakeholders. This is especially important for mechanisms that require community-wide support through votes or donations of money or in-kind services.

The discussion under Section 8.1 Implementation Strategies discusses the importance of partnering with other agencies, the use of volunteers to leverage City funds, and the funding of fuel reduction work through the normal budgeting process. This is the most common locally-controlled source of funds, often covering education, code adoption, and capital improvements. While this seems to be the most reliable long-term source of funds, even self-funding projects are vulnerable to a shift in priorities (because these projects need to compete with other community public service needs) or a downturn in economic markets.

Funding projects with grants requires that the City match projects with funding sources. Creativity can yield surprising avenues for funding. For example, funds from Homeland Security may be justified to purchase equipment that washes off weed seeds from vehicles because of concerns about decontamination. In this case the same equipment can be used as a solution to disparate concerns.

Bonds may be used for capital improvement projects, especially related to evacuation. These are typically used for very expensive capital improvements such as water supply and distribution or development/ enhancement of improved access. Last, assessment districts can fund specific fuel projects that address specific geographic regions for a specific period of time. For example, assessment districts may co-fund utilities and water improvements.

Funding strategies should consider the total amount required, the schedule and duration of funds required, the focus of spending – whether it is capital or maintenance-related projects – the geographic area and the project types. Funding strategies also need to consider the effort required to obtain and administer the funds. Grants may require matching funds in the form of hard cash or in-kind services that can range from relatively simple to complex forms and justification. The National Database of State and Local Wildfire Hazard Mitigation Programs (www.wildfireprograms.usda.gov) presents how other communities have obtained funds and what they have done with those funds.

Regardless of funding mechanism, several common challenges need to be considered. When raising money for long-term projects, it is critical to build in factors for inflation and cost-escalation. Raising funds for ongoing maintenance is more difficult than raising seed money for one-time demonstrations.

## 5.5 Grant Opportunities

In the past ten years, an unprecedented amount of federal and state aid has been available for fire hazard reduction. Most federal aid is linked to proximity to federal lands, which may pose a disadvantage for the City of Palo Alto. One exception to this linkage is funding through the Department of Homeland Security.

The California FireSafe Council website hosts a "one-stop-shopping" application process where an applicant can obtain an e-grant concept paper. However even this website does not cover all programs.

The Federal Emergency Management Agency (FEMA) has a funding program that provides assistance to fire departments through its Assistance to Firefighters Grant (AFG) and the Fire Prevention and Safety Grant Program. AFG is limited to fire departments, while the Fire Prevention and Safety Grants are open to a wider range of organizations. FEMA has two disaster mitigation programs: the Hazard Mitigation Grant Program (HMGP) and the Pre-Disaster Mitigation Program (PDM). HMGP funds are available to states after a disaster has been declared to mitigate future risk from any type of disaster. Amounts are linked to the total emergency funds. Funds from the PDM facilitate cooperation between state and local authorities with funds awarded competitively for both planning and project implementation activities at the state and local levels as a sub-grantee. This program addresses the more traditional agency focus of earthquakes and floods; the extent of funding for wildfire-related projects is yet to be determined.

The State Fire Assistance includes supplemental appropriate allocation through the National Fire Plan, in addition to a regular appropriation distributed by formula to state foresters through the USDA Forest Service. These funds can be used to plan and implement hazard mitigation projects, including fuel management, prevention and mitigation education, and community hazard reduction. The process for obtaining funds is competitive and available nationwide, with 35 percent distributed among the states to meet firefighting preparedness and safety needs.

Obtaining funds through grants often involve intricate application process or include administrative burdens associated with monitoring how funds are spent and complex reporting requirements. Using funds for ongoing projects is a concern because the sustainability of grant funding is sometimes questionable.

Grant opportunities often become available for a short period of time. Requirements and levels of funding change annually. For example, the federal Department of Homeland Security and the Federal Emergency Management Agency recently announced a new policy for funding wildfire mitigation. On September 8, FEMA Mitigation Chief David Maurstad issued a policy that describes how the post-disaster Hazard Mitigation Grant Program (HMGP) and the Pre-Disaster Mitigation grant program (PDM) can be used for wildfire mitigation activities by eligible grant applicants.

Activities eligible for funding under these grants include creation of defensible space through removing or reducing vegetation; the application of non-combustible building envelope assemblies, use of ignition-resistant materials, and proper retrofit techniques for structures; and hazardous fuels reduction vegetation management or thinning within two miles of at-risk structures. Check with your state Emergency Management Office or FEMA Regional Mitigation staff (http://www.fema.gov/about/regions/index.shtm) for more information about HMGP and PDM grants.

# 6 TREATMENT STANDARDS AND METHODS

## 6.1 Treatment Standards for Vegetation Types

For each vegetation type group, the resulting fuel bed characteristics after treatment are described[7]. Following the vegetation prescriptions, a set of guidelines for creation and maintenance of a fire safe area (defensible space) around residences and other improvements are recommended. In all vegetation types, preference for removal should be given to non-native invasive species.

### 6.1.1 Prescription for Grasslands

- Mow or graze to no longer than 4 inches in height, or disc
- Native grasses should be mowed to a height no shorter than 4 inches and may be mowed later in the year to accommodate seed ripening and seed distribution [8]
- Maintain brush cover less than 30%
    - less than 20% where slope steepness is greater than 20%
    - Requires annual treatment, usually requiring treatment of all grass near structures within 2 weeks of starting to mow.
- Alternatively, prescribed burn in late spring or early fall with a resulting cover of not less than 20%

### 6.1.2 Prescription for North Coastal Scrub and Chaparral

- Mow/grind to cut and mulch shrub tops within treatment area; alternatively,
- Create islands of less than 12 feet in diameter or 2 times the height of tallest shrub (whichever is smaller) can remain. Clumps should be natural in appearance including specimens of variable age classes

[7] These standards/prescriptions were initially developed by Amphion, Inc. for use by the FEMA-funded East Bay Hills Vegetation Management Consortium (VMC). These standards/prescriptions have been reviewed and adopted by the following agencies in the consortium: Cities of Berkeley, Oakland, and Piedmont; East Bay Municipal Utility District; East Bay Regional Park District; University of California; Lawrence Berkeley Laboratory; and PG&E. As part of the review process, a Citizen's Advisory Committee and a Technical Advisory Committee, which were comprised by a cross-section of members of the public, reviewed and commented on the standards. The reference is Amphion Environmental, Inc. 1995. Fire Hazard Mitigation Program and Fuel Management Plan for the East Bay Hills, prepared for the East Bay Hills Vegetation Management Consortium, Oakland, California.

[8] Acterra is available to advise on the timing of native grass seed cycles, especially in relation to invasive weed seed cycles.

- Distance between islands shall be greater than 2 times the height of tallest shrub or a minimum of 8 feet, whichever is greater

- Retain between 20-30 percent of brush areas in brush crown cover

- The removal of brush should be based on criteria which are listed in approximate order of importance to fuel management objectives:

    - Relative flammability - remove the most flammable species first.

    - Plant vigor - remove shrubs of low vigor, dying or dead shrubs.

    - Sprouting capability - remove species with sprouting capacity first.

    - Effects of plant species on soils - i.e. retain shrubs with slope-holding capacity, that increase soil nutrients (ceanothus).

    - Value for wildlife food and cover.

    - Aesthetic values.

    - The order of priority will change according to local conditions such as the relative abundance of each species. For example, where coffeeberry is not abundant, it may be placed high in priority to retain. Attempts should be made to maintain diversity of species.

- Maintain a crown cover of less than 30%

- Can convert to grass, especially in fuel breaks

- Maintain less than 20% dead material in the shrub canopy

- Protect oak, madrone, buckeye and trees shorter than 6 feet in height. Cut out shrubs below drip lines and within 6 feet from edge of tree canopy

- Anticipate 3-5 year treatment cycle

| Priority For Removal Follows: | Remove Only If Necessary |
|---|---|
| chamise | coffeeberry |
| coyote bush | buckeye |
| poison oak | ceanothus |
| Himalaya blackberry | wild currant |
| northern sticky monkey flower | California blackberry |
| coastal sage brush | bush lupine |
| scrub oak | madrone |
| manzanita | toyon |
| | oaks |

***Figure 31: Initial Priority of Removal for Brush.***

### 6.1.3 Prescription for Oak Woodlands

- Prune branches up to 3 inches in diameter for a height of 8 feet. Prune up to a maximum of 1/3 the height of trees that are less than 24 feet tall.
- Maintain under 5 tons/acre of duff no deeper than 3 inches.
- Leave all trees bigger than 8 inches diameter. Leave 1/3 of the trees under 8 inches to retain a range of size categories and species. Maintain a stand density of less than 50 trees per acre as long as canopy is still closed.
- Can mulch site to a maximum depth of 2 inches to prevent invasion of noxious weeds.
    - Treatment cycle is from 7-10 years.

### 6.1.4 Prescription for Riparian Forest

Avoid treatment. Where necessary:

- Create or maintain an 8 feet vertical clearance between live needles and understory fuel. Remove all dead material. Prune branches up to 3 inches in diameter. Prune up to a maximum of 1/3 the height for trees less than 24 feet in height.
- Maintain less than 10 ton/ac. Depth of duff no greater than 5 inches.
- Mulch to between 2 and 5 inches in depth.

- Treatment cycle is between 10-15 years.

### 6.1.5 Defensible Space Guidelines

Palo Alto staff will be responsible for maintaining a 100 feet wide defensible space on all sides of any structure in the two parks. All dead plants and combustible materials shall be removed within 100 feet of each structure to establish and maintain a defensible space. Removal of combustible materials includes, but is not limited to, the following actions:

- Cut grass and weeds to less than 4 inches. Cutting of native grass and wildflowers may be delayed until after seed set unless they form a means of rapidly spreading fire to any structures.

- Remove all dead plant material from within 100 feet of each structure. This includes keeping the ground, roofs, decking, and balconies free of dead leaves, needles or other plant debris. This also includes removing from trees loose papery bark, and dead branches smaller than 3 inches in diameter, to 8 feet above ground. Remove all dead branches from within live ground covers, vines, and shrubs. Refer to Figure 1 explaining pruning.

- All live vines and live branches smaller than 3 inches in diameter shall be cut up to a height of 8 feet above ground. Figure 32 provides a description of pruning best practices.

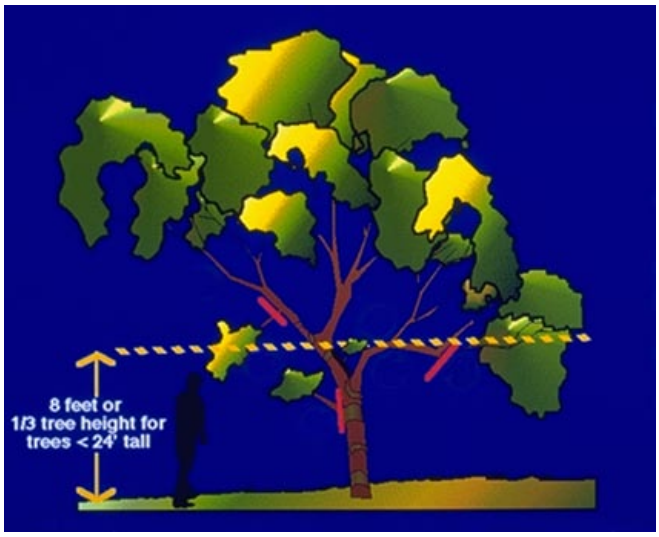


***Figure 32: Pruning Example.***

*Prune branches to a height of 8 feet above the ground. In young trees, prune branches on the lower one-third of the height of the tree. Do not disturb or thin the tree canopy, as this promotes growth in the understory, which is more easily ignited.*

- Remove plants as necessary to break vertical continuity between ground covers, shrubs, trees, and decks or overhangs on buildings. Vertical separation is the distance from the top of shrubs or ground cover to adjacent trees, designed to minimize the spread of fire to the crown of trees or structure roofs. Vertical spacing should be a minimum of 8 feet or 2 times the height of the understory plants to the leaves or needles of adjacent overstory trees, decks or overhangs, whichever provides greater separation. For overstory trees under 24 feet in height, the minimum clearance can be reduced to 1/3

of the overall height of the overstory tree provided this reduced clearance does not form a means of rapid transmission of fire.

- In areas without a tree overstory, create shrub islands per the standard for north coastal scrub. Within 100 feet of improvements, grass between shrub islands should be mowed when cured (dry).

- Remove all branches within 10 feet of any chimney or stovepipe including chimneys on adjacent properties.

- Chipped materials can remain on the site provided the chipped mulch layer is no greater than 2 inches in depth.

## 6.2 Description of Treatment Methods

### 6.2.1 Summary

Fuels can be removed on a large scale by prescribed burns, grazing animals, and mechanical treatment. In small open space areas and around structures, hand labor is effective in reducing the fuel load. Eucalyptus tree removal may be effective in specific locations of high risk. Fuels can be redistributed on a large or small scale through mechanical treatments, such as mowing, discing, or grading.

In all the following treatments except hand labor, economies of scale are dramatic; the larger the project, the greater the efficiency.

### 6.2.2 Timing of Treatments

The timing of the initial or follow-up treatments is important to achieve the desired fuel management performance standards and resource management objectives. Given the variable nature of fuels through changes in weather and season over time, the schedule of the treatment may often be just as important as the type of treatment selected. For example, treatments in grasslands typically take place when grass cures or dries out. Cutting grass too early will be ineffective, as the grass will usually grow back, negating the treatment. Conversely, cutting grass too late will leave the grass in a hazardous condition during periods of high fire danger. Fuel treatments also need to be conducted when the weather is not too dry or windy, as some treatment types - especially mechanical treatments - may inadvertently start fires.

Timing the treatment methods appropriately can reduce potential impacts to special-status species or sensitive wildlife species. It is likely that there will be some months of the year when particular practices need to be implemented (e.g., pre-treatment nesting surveys or avoidance of breeding habitat) to avoid adverse affects to special-status species.

Timing treatments to either control or avoid the spread of invasive plant species or insect pests is also critical. For example, treatments performed when plants have set or are setting seed will spread the seed whether it is a native plant or invasive weed. Treatments should therefore take advantage of differences in the timing of seeding of native plant species and avoid periods when invasive species are in seed. Pruning of pines and eucalyptus should be done when insect pests are not flying to minimize the associated spread and damage from these insects. Pruning should take place from November to April to minimize the susceptibility to bark beetles or red turpentine beetles. In most cases, the timing and method of treatment can be modified to accommodate local habitat needs and still reduce fire hazard to an acceptable level.

## 6.2.3 Hand Labor

Hand labor involves pruning, cutting or removal of weeds or shrubs either by hand or with hand-held equipment. This process is slow and expensive, but most selective and has little impact beyond the removal of the target plants. This technique generates considerable debris when pulling, pruning, and cutting vegetation. The debris is not always removed from the site due to the high cost of doing both the clearance and removal by hand. Not removing the debris, however, leaves a significant hazard, possibly greater than pre-treatment because the debris may be voluminous, dry, well aerated, and quite flammable. This method is most commonly used by residents to reduce fuel volume on private lands, or by hand crews on short-term contract with the City of Palo Alto to reduce hazard adjacent to improvements. Some expertise is required to work with trouble species such as poison oak, to prune oaks and control shrubs, and to identify new fuel hazards as they arise. Hand labor encompasses the operations of pruning and weed-whipping, tree removal, pruning, bark pulling, removal of dead wood within the tree/shrub canopy, litter removal and mulching, and establishing new plant material. Hand labor allows use of a wide variety of methods to reduce fuel load, including both chemical and mechanical treatments.

**Hand Labor - Pruning** Trees and shrubs must be hand-pruned to vertically separate fuels. Pruning lower branches of trees is usually done with a hand-held pole saw (with or without a motorized chain saw attached). Lower branches on shorter trees can be pruned with loppers.

**Hand Labor - Weed-whipping** Like mowing, weed whipping reduces fire hazard by reducing the fuel height. However, it is done by hand to avoid harming rock outcrops and desired small plants (such as oak regeneration and landscape material). This treatment is generally limited to small material such as grass or short herbs. Weed whipping may be accomplished any time of the year, and regardless of whether the material has cured.

Weed whipping is performed with a hand-held, gas powered tool that cuts grasses and very thin woody material with a fast-spinning fishing-line type of cutter. Because this method is performed manually, it can be used to selectively remove certain vegetation. Most large woody stems are not cut by the treatment, however seedlings (such as oak seedlings) can be severely damaged. Treatments can be completed with greater care than the others (however the height to which plants are cut may be difficult to control if the operator is not experienced) and minimize soil disturbance and erosion. It is also often the only type of treatment possible on steep slopes and in wooded areas. The average weed whipping rate is 750 square feet/hour.

The schedule for a skilled laborer should be tailored to the timing of their tasks. For example, selective weed whipping of annual grasses before they set seed while leaving native bunch grasses until after these plants set seed can shift the proportion of vegetative cover over time to more bunch grasses. This shift in type of grasses can shorten the length of time the landscape is prone to ignition. Similarly, thistle reproduction can be minimized by cutting while they are growing, but before they set seed. Pruning should be done from November to April; this schedule avoids spreading destructive bark beetles and/or other pathogens.

The cost varies from $10,000 per acre to approximately $1,500 per acre, depending on the time of year, extent of project, and level of detail required.

## 6.2.4 Mechanical Treatments

Mechanical treatments, including mowing, weed whipping, discing, and grading, rearrange rather than reduce the actual fuel load. Heavy machinery is usually used in flat areas where terrain and the presence of rocks or numerous trees do not prohibit travel. This type of machinery should not be used on slopes over 30% because of concerns for worker safety as well as erosion control and slope stability issues.

**Heavy machinery: attachments to tractors (brush hogs, flail, mowers, tiger mowers)**

Roadside mowing is a prime example of the use of heavy machinery with attachments. A variety of attachments serve numerous purposes. For example, a brush hog attachment cuts and breaks brush plants off and produces a mulch of the brush debris. Mowers that cut or flail grass and small woody plants are also attached to tractors. Attachments (such as mowers) with articulated arms that reach as far as 20 feet away from the tractor reduce the area over which the tracks must travel, and offer more maneuverability. These articulated arms also cut and/or break off material. Heavy machinery is a moderately fast, and a relatively inexpensive treatment. There is little control over which plants are cut, but machines can travel around isolated areas of concern.

Heavy machinery should not be used when the ground is soft in order to prevent ruts and bared soil. Soil movement can be caused by all users on foot, bicycle, equestrian and vehicles (patrol vehicles and fire apparatus). Soil movement can be ruts or minor depressions, which will lead to large ruts or voids. This technique can be used at almost any other time of year, but is faster when done in the summer or fall when brush is brittle and grass has cured. It must not be used during times of high fire danger because the machines can start fires. The under-carriage of the machine and attachments should be washed off after use in areas of weed infestations.

**Grading and Discing** involves stripping a swath of land bare of vegetation with a tractor and blade. It is very effective in producing fire trails 8 to 12 feet across and as a maintenance tool for access routes. Generally, grading is done mid-spring, by a contractor when there is still residual moisture in the soil, but after the threat of spring rains has diminished[9]. Costs are reasonable, (from $100 to $300 per acre) and relate to the size of the project and condition of trail surface.

However, there are several disadvantages to this treatment. By removing all competing vegetation, grading creates an excellent establishment site for weedy species, which may be serious fire hazards. Untimely grading, for example, in mid-summer, can help sow seeds of weedy exotics, such as yellow star thistle, mustard and Italian thistle. In addition, annual grading causes soil disturbance and alters drainage patterns. Runoff, blocked from cross-drainage by the banks on either side of a graded fire trail, is redirected down the trail. This situation favors coyote bush and exotic grasses, leading to a shift in the grassland species composition. Grading spoils will need to be feathered into the sides or smoothed back into grading area annually.

Discing involves cultivating or turning over the upper 10" of soil, and produces an uneven surface with a discontinuous fuel distribution and is appropriate only if mowing or grazing is not applicable that year or in a specific location. Rate of production is quite high; normally the operator can disc land parcels of two acres or less within one day. Discing is normally performed annually once grass has cured (so the grass will not grow back that season). A tractor with discer attachment can typically cultivate a swatch 15 feet wide in a single pass. While this is an effective barrier to surface fire spread, it is also an ideal disturbed area with prime growing conditions for weeds and distribution of their seeds. Surface erosion can be significant in areas prone to this process.

[9] Residual soil moisture makes the soil pliable or workable, and allows the soil to compact. When grading is performed when the soil is completely dry, the soil is very difficult to work. Pearson-Arastradero has high clay content soils and causes premature soil movement unless the contractor supplements soil moisture with a water truck, which is an additional expense.

### 6.2.5 Grazing with Sheep and Goats

This method includes the intentional use of sheep and goats to consume vegetation thus reducing the amount or density of fuel. These types of livestock are not recommended to create a fuel break, but can be used to maintain this type of pre-suppression feature. Similarly, livestock can prevent grasslands from shrub encroachment, and an oak woodland free of significant understory. The option is effective where the plants are palatable to the animals selected. Control of the livestock and prevention of the impacts of overgrazing is critical to successful use of this technique. As a fuel management technique, livestock need not graze every year.

Grazing can reduce or encourage weedy pest plants depending on the timing and intensity of grazing. A range management plan and a grazing monitoring program needs to be established to identify the impacts and ensure that the animals are removed once fuel management goals are met. Perennial grasses may require modifications from management of annual grasses using grazing animals. Because presence of healthy perennial grass stands has many benefits, these modifications are generally recommended. The benefits of perennial grasses are that they cure later in the season, which limits the opportunity for ignition. Mowing typically can be scheduled over a longer time period. Rotation of grazing animals is preferred over greater grazing pressure. Typically, perennial grasses react best when grazing is applied after seed maturation - from late spring through the fall. Goats may import seeds from another weedy site. The herd can be quarantined at goat herd's ranch for three days where they will be fed alfalfa to clear out their systems. The herder can also use short-haired goats that will carry fewer seeds in their fur.

The herding instinct of sheep and goats allows professional herders to range in very mobile bands without the installation and maintenance of permanent fences. Portable electric fences are commonly used to help control the herd and the outcome of their grazing. Goats will browse materials up to 6 feet above the ground creating a desirable vertical separation between the canopy and ground cover. However, measures must be taken to prevent girdling of trees by goats browsing on bark. Herd movement has the advantage of breaking off dead material in a stand as well as punching a humus layer into the soil (if the ground is somewhat moist) and thereby removing available fuel. Grazing treatments need to be repeated, however, following up or alternating with a different, complementary technique can extend its effectiveness.

If work is needed to be done during May-July, scheduling can present a challenge because many clients in the greater area desire the service at that time. To minimize the negative effects of grazing on a specific plant, goats should graze after seed set of that particular plant. During initial fuel reduction treatments, goats may be most cost-effective in the late fall or early spring when demand for their services, and possibly price are reduced. Multi-year contracts, and contracts for larger areas typically lower the costs per acre. Providing a place where the herd can stay during the winter also lowers costs for treatment. Providing a water source for livestock is another way to reduce costs. Water sources can be as rudimentary as a plastic wading pool or a portable trough.

A herd of 200-300 goats can generally treat one acre per day. Costs can vary from $300 to $1000 per acre with an average of $700 per acre, depending on fencing requirements as well as type and density of vegetation present. The cost includes transportation, the shepherd's salary, supplements and healthcare for the goats, fencing and insurance.

### 6.2.6 Broadcast Prescribed Burns

Prescribed burning reintroduces fire into the ecosystem as a "natural treatment" and can promote native flora and aid containment of fires by reducing fuel volumes.

Prescribed burns are usually performed by the local fire protection district. CalFire may be willing to participate in a limited prescribed burning program as part of their hazard reduction efforts within the Vegetation Management Program, even though the project area would be outside the State Responsibility Area. If burns were conducted by CalFire, the State would not only assume liability, but also share costs. Regardless, it is likely that CalFire and other nearby fire protection districts and departments would offer mutual cooperation and/or assistance.

Several precautions, such as installing firebreaks and notifying various agencies, must be taken before performing a prescribed burn. Treatment boundaries are often road and trail crossings, which reduces the number of fire breaks that need to be created by fire personnel, thereby reducing labor costs and time needed to prepare for the burn as well as minimizing the amount of surface soil disturbance and potential for soil erosion.

Prescribed burning requires the development and approval of a prescription or burn plan, which is typically developed by the local fire protection district in consideration of fuel reduction requirements, local weather conditions, and available resources for fire management. The soot and smoke generated, as well as the chance of escape, make prescribed burns a public safety concern. Planning and coordination with interested parties must be an integral part of the program.

Broadcast burning may occur throughout the year; however, it is usually conducted during late spring when the ground is still wet or during fall or winter after plants have completed their yearly growth cycle and their moisture content has declined. Spring burns are preferred by some fire staff to ensure a greater measure of public safety, however, there may be impacts to animal and plant reproduction activities. Fall burns are more closely aligned with the natural fire cycle found in California. If a prescribed burn were to be conducted in the fall, the period before leaves or new herbaceous material covers the slopes will be short (possibly a month or two).

Prescribed burning can enhance the local grasslands and promote the abundance of wildflowers. Any small oaks or shrubs to be retained will need to be protected during the burn to prevent their mortality. While the abundance of wildflowers the subsequent years is an appealing sight, the burned area will be temporarily blackened.

### 6.2.7 Eucalyptus Tree Removal

By removing eucalyptus trees their canopy no longer contributes to a fire in the form of a crown fire or ember production. Additionally the production of surface fuels is reduced since biomass production (branches, leaves, duff etc.) is decreased. This technique has positive impact on reducing spotting potential, heat output, spread rate and, potentially, ignitability depending upon what replaces the overstory.

Tree removal varies from cutting of individual trees, to removal of entire overstory canopy. This process can be slow and expensive, but can be selective with limited impact beyond the removal of the target plants (depending upon scale of removal). Sometimes harvesting techniques can be quite rapid. If the whole tree is not harvested, the technique generates considerable debris (from tree branches) that should be removed using machinery to haul. The boles of trees hauled away and other debris should be either hauled away or may be burned later as a part of a prescribed burn (pile or broadcast). A portion of debris may be left as a sort of erosion control measure and to cover bare spots.

And bats may use eucalyptus trees as perches and nesting sites. Replacement perches and nesting platforms for raptors can be constructed, located, and installed prior to removal of the trees to minimize displacement of raptors. If the tree harbors a maternal bat roost, removal should be coordinated with the appropriate wildlife

agencies, including the California Department of Fish and Game and possibly the US Fish and Wildlife Service. Volunteers can locate and construct the raptor perches and nesting platforms, with guidance from suitable experts (e.g. Audubon Society or the Point Reyes Bird Observatory).

Tree removal creates patches of disturbance by the removal operation. Subsequent treatment of the area is dependent upon the species that encroach into these patches. Removal of exotics or weed species on an annual basis should be anticipated until an acceptable stable vegetation type is re-established.

Sprout removal is often required as a follow up treatment, involving the application of herbicides and/or other techniques such as grinding the stump or placing plastic over the stump.

### 6.2.8 Herbicide Application to Control Invasive Plants

Using herbicides to control invasive plant species that exacerbate wildfire risk is used as part of an Integrated Pest Management[10] program and in combination with other treatment measures (e.g., mowing, burning and hand removal). Application following another treatment method in which plants are trimmed or shortened can increase the effectiveness of the chemical treatment. Herbicides can also be used to kill herbaceous plants in exposed areas, such as roadside grass and weeds, and are typically applied while the grasses and weeds are still actively growing. Foliar treatments are generally not applied within seven days of significant rain because the herbicide may be washed off before it is effective, and not on windy days because of concerns for spray drift.

The use of Garlon 4 Ultra herbicide can be used to treat areas of eucalyptus resprouting, removing the need to completely uproot or grind down the eucalyptus stump. Foliar application of Roundup to eucalyptus re-sprouts is another typical, successful chemical treatment, and can be used to eliminate small-diameter fuels in areas of high ignition risk. The use of a thistle-specific herbicide, Transline, is effective in controlling the spread of yellow star thistle, artichoke thistle, and bull thistle.

Herbicides do not remove any vegetation from an area's fuel load; the dead plant matter continues to exist at the site and could continue to be a fire hazard if not collected and disposed. Health, safety and environmental concerns have limited the widespread use of chemicals over the past 20 years, and repeated use of chemicals is not preferred due to the prevalence of unwanted species building resistance to herbicides. Additionally, concerns regarding water quality and other potential environmental impacts that may occur with prolonged use of and exposure to herbicides and other chemical applications further limit their frequent or widespread use as a treatment.

Application of herbicides is typically performed by hand, and can include sponging, spraying, or dusting chemicals onto unwanted plants. Hand application provides flexibility in application and is ideally suited for small treatment areas. Roadside application of herbicides may employ a boom affixed to or towed behind a vehicle.

Herbicide application requires specific storage, training and licensing to ensure proper and safe use, handling, and storage. Only personnel with the appropriate license are allowed to use chemicals to treat vegetation. Herbicide application is also only applied per a prescription prepared by a Pesticide Advisor licensed in that county. Personal protection equipment is essential to limit personnel exposure to chemicals.

[10] Integrated Pest Management is a strategy that uses an array of biological, mechanical, cultural, and hand labor, to control pests, with the use of herbicides as a least-preferred method of control.

## 6.3 Best Management Practices

The protection and preservation of culturally and environmentally sensitive areas is one of the primary drivers for development of an updated Fire Management Plan. The development of a comprehensive plan not only protects these features from the affects of fire, but ensures that vegetation treatment, fuel management, or fire mitigation efforts are planned and executed in a manner that prevents potential additional adverse impact. The following steps are considered best management practices for the continued protection of environmental areas. These steps are ideally suited to on-going fire management planning and the execution of specific fire management actions described within this plan.

- Detailed site inventory prior to treatment to determine the location of sensitive sites. Exploration into the use of knowledgeable volunteers to conduct a more detailed, site-wide survey is warranted.

- Site planning and design to determine specific vegetation treatment actions based on fire management benefits, environmental impact, and required mitigation activities.

- Protection during vegetation treatment using best management practices tailored to impacted sensitive resources.

- Protection of disturbed environmentally sensitive areas following either specific fire management actions.

The above vegetation treatment actions have been commonly used throughout the State of California. Through their implementation, a series of best practices has emerged to limit their adverse impact on the environment and to assist in the selection and planning of their application.

### 6.3.1 Hand Labor

Due to the direct relationship of personnel to the environment in which they operate, hand labor can represent an approach that provides the least adverse impact to environmentally sensitive areas. However, specific fire management goals and the characteristics of the sensitive area or resource must be assessed to develop an actual work plan and associated activities. The following management practices and considerations should be implemented during site planning and project execution.

- Provide or confirm adequate training, experience, and oversight to ensure that personnel are familiar with hand labor operations and planning, site conditions, potential and identified sensitive resources, and the identification of specific environmental features or conditions that must be avoided.

- Avoid treatment actions during conditions that may affect water or run-off including during storms or severe weather or immediately following severe weather.

- Avoid excessive foot or vehicle traffic on slopes, unimproved or non-designated trails, or outside of preexisting roads or access points.

- Inspect areas for nesting birds to determine if activity should be postponed or adjusted by the establishment of a buffer area.

- Clean all tools and equipment following actions and prior to movement into new environmental areas to prevent the spread of invasive or non-native plants.

## 6.3.2 Mechanical Treatments

Due to the potential for large equipment use, rapid action, and large-scale area operations, mechanical treatments can have significant adverse impacts on sensitive areas. As a result, pre-planning and site supervision are extremely important for any planned mechanical treatment actions. The following management practices and considerations should be implemented during site planning and project execution.

- Provide or confirm adequate training, experience, and oversight to ensure that personnel are familiar with mechanical treatment operations and planning, site conditions, potential and identified sensitive resources, and the identification of specific environmental features or conditions that must be avoided.

- Avoid treatment actions during conditions that may affect water or run-off including during storms, periods of precipitation, or immediately following severe weather. In addition, avoid scheduling any treatment actions during seasons with significant predicted precipitation. Cease operations or postpone planned operations including movement of vehicles or equipment during precipitation conditions that may combine with vehicle activity to cause damage to roads, trails, or adjacent land areas.

- Plan treatment actions and equipment selection to minimize damage or alterations to existing soils. Determine locations of potentially erosive soils prior to treatment. Restrict operations that may adversely affect sensitive soil systems such as serpentine soil areas, erosion prone soils, or riparian zones. Restriction may include using road-based operations only, and avoiding riparian set-backs established by regulatory agencies.

- Maintain a buffer of 25-50 feet between operations and water bodies or designated riparian areas. Avoid crossing drainage channels, run-off areas, or dry streambeds. Install and manage run-off barriers for rainwater in all treatment and operating areas. Restrict mechanical removal of trees to areas further than 50 feet from drainage channels.

- Restrict vehicle traffic to preexisting roads or pre-planned access points based on equipment size and operations. Limit transport and support equipment to existing roads. Limit heavy equipment use to slopes less than 30%. Install erosion control measures on all vehicle roads and traffic areas.

- Maintain strict monitoring and control of fueling and maintenance operations. All maintenance actions that may produce spills should be executed in areas with secondary containment protection, away from any water bodies or drainage areas. Clean up of all spills should be done on-site, with materials ready for use. Inspection of equipment for new leaks and mechanical problems should be performed daily, prior to operations.

- Inspect areas for nesting birds to determine if activity should be postponed or adjusted by the establishment of a buffer area.

- Clean equipment following actions and prior to movement into new environmental areas to prevent the spread of invasive or non-native plants.

- Plan operations around expected seeding conditions of targeted species (either prior to or sufficiently afterwards) to ensure efficiency of treatment action.

- Cease actions during periods of high fire danger or during red flag conditions. Ensure that all mechanical equipment have approved spark arrestors and comply with California Public Resources Code (PRC) sections 4431, 4435, 4442, and 4437 to limit potential for ignition of incidental fires.

- Maintain on-site fire suppression resources to include shovel, water pump, fire extinguisher, and two-way radio or communications for fire reporting.

### 6.3.3 Grazing with Sheep and Goats

- One of the primary adverse impacts of grazing is over-grazing and the resulting exposure of bare ground. Over-grazing can increase the potential for soil erosion, water run-off and drainage, elimination of native plant species, and spread of non-native plants and weeds. Prepare a grazing management plan by a certified range specialist that specifies goals, stocking levels, grazing periods, installation of range improvements (such as water sources) to evenly distribute utilization of feed, and monitoring and performance criteria.

- Develop a site-specific annual grazing plan that includes project-level plans for stocking, timing, and resource management goals.

- Prior to introduction, all animals should be quarantined and fed weed-free forage to limit spread of invasive or unwanted plant species as well as prevent spread of livestock diseases.

- Limit grazing to non-riparian areas.

### 6.3.4 Broadcast Prescribed Burns

Prescribed burns can have significant impacts on sensitive areas both from environmental and cultural standpoint. The planning and execution of a prescribed burn must be carefully developed. A prescribed burn can adversely affect the duff layer, generate large and unpredicted amounts of smoke, and transition from a controlled event to one that is uncontrolled and dangerous.

- Provide or confirm adequate training, experience, and oversight to ensure that personnel are familiar with broadcast prescribed burn operations and planning, site conditions, potential and identified sensitive resources, and the identification of specific environmental features or conditions that must be avoided.

- Develop a smoke management plan describing desired outcomes and specific actions for onsite personnel including a test burn, continual evaluation of smoke dispersal, monitoring of wind patterns, and monitoring of potential visibility impacts to primary roads and highways.

- Develop public safety plans to be executed throughout the prescribed burn cycle including press and information releases, signs and notifications, patrols on roads and access points, and development of a fire contingency plan.

- Maintain a buffer between the prescribed burn area and water bodies or drainage into riparian zones. Buffers should be a minimum of 25 feet for 5% slopes, 75 feet for 5-10% slopes, and 250 feet for 10% or greater slopes. No prescribed fires should be ignited near streams or in riparian zones.

- Plan the prescribed burn to minimize post-fire erosion into water bodies and drainages through natural barriers, proper construction of fire lines along contours, and proper erosion control barrier deployment. Minimize prescribed burning in areas with highly erodible soils.

- Cultural and social sites and structures shall be excluded from burn area through planning, hand-lines, or other fire protection operations. On-site personnel will be briefed on locations and features of cultural or social sites to include incident command or response personnel. Avoid prescribed burns in areas with utility infrastructure, existing property or structures, or archeological sites.

- Manage fuel moisture through pre-fire assessment and potential fuel modification. Prior to prescribed burn, remove ladder fuels into the tree canopy to increase safety and reduce torching.

- Conduct prescribed burns only on designated burn days as authorized by BAAQMD.

- Inspect areas for nesting birds to determine if activity should be postponed or adjusted.

### 6.3.5 Herbicide Application

The application of herbicides for vegetation treatment should focus on the goal of applying the least amount of chemical required to achieve a desired outcome, consistent with the City of Palo Alto's Integrated Pest Management policy. Best management practices for herbicide application are centered on limiting adverse or unintended impacts of herbicides due to run-off, wind-spread, or post-treatment exposure.

- Provide or confirm adequate training, experience, and oversight to ensure that personnel are familiar with herbicide operations and planning, site conditions, potential and identified sensitive resources, and the identification of specific environmental features or conditions that must be avoided. Herbicide application is only applied per a prescription prepared by a Pesticide Control Advisor licensed in that county, and applied by a licensed Pesticide Control Applicator.

- Develop public safety plans to be executed throughout the treatment cycle including press and information releases, signs and notifications, and fencing or area restrictions.

- Develop a spill contingency plan and maintain strict monitoring and control of operations. Clean up of all spills should be done on-site, with materials ready for use.

- Chemical treatments within habitat of California Red-legged Frog should be conducted according to U.S. District Court injunction and order covering 66 pesticides (Oct 2006) and subsequent EPA effects determinations.

- Clean equipment following actions and prior to movement into new environmental areas.

- Avoid treating areas adjacent to water bodies, riparian areas, and primary drainage access. Follow all herbicide labels and directions in determining applications near water resources or riparian habitats. Limit aerial application to greater than 100 feet from water resources. Limit ground and hand application to greater than 50 feet.

- Avoid treating areas used for livestock operations or intended as grazing areas.

# PART B – POLICY REVIEW AND SUPPLEMENTAL RECOMMENDATIONS

# 1 EVACUATION AND REFUGE

## 1.1 Identification and Notification

The complexity of jurisdictional boundaries and responsibilities necessitates that the City of Palo Alto participate in 1) a standing forum that includes all stakeholders and 2) creating of coordinated, regional plans.

Emergency Public Information (EPI) is generally disseminated via broadcast radio (the Emergency Alert System and KZSU 90.1 FM), telephone and e-mail, two-way radio contact with neighborhood leaders and Disaster Service Workers Volunteers (via ARES/RACES ham radio and other systems), and via public address systems such as speakers on first responder vehicles.

New mass-communication systems for telephone and e-mail have recently been deployed in local jurisdictions:

- Palo Alto: Community Alerting Notification System (CANS)
- Los Altos Hills: a similar systems to CANS
- Stanford: also CANS
- San Mateo County: a county-wide system, www.smcalert.info <http://www.smcalert.info/>
- Santa Clara County: a county-wide system is pending

These systems are currently not coordinated, An incident that starts in Palo Alto and spreads to Woodside could cause 1) a failure to notify all involved or affected and 2) inconsistent or conflicting information. The National Incident Management System (NIMS) provides that events where multiple jurisdictions are involved may establish a Joint Information Center (JIC) to coordinate the efforts of all Public Information Officers (PIOs). In addition, Open Space and Park Division radios lack adequate channels (especially tactical channels) for the growing need. This will be more crucial as affected agencies switch to digital communication systems. We recommend that a pre-plan for a Foothills JIC be created which would include notification procedures for all potentially-involved dispatch centers, and that the Open Space and Park Division radios be updated.

A regional evacuation plan for the Foothills should also be created: "Foothills Regional Emergency Response and Evacuation Plan (FREREP)". This plan would provide for standardized signage and evacuation route nomenclature and protocols. The Palo Alto Police Department has developed a draft plan that could be an initial model.

Furthermore, locked gates on evacuation routes must be properly labeled and signed and first responders (including, in some cases, authorized local residents) must have keys or other access methods. For example, the Los Trancos Road gate to the back of Foothills Park is not labeled. In another example: A Los Trancos Neighborhood Preparedness Coordinator could be issued a key and given an assignment to open that gate in the event of an emergency.

Existing evacuation plans should be reviewed, updated as needed, and integrated into the FREREP. For example, the Los Trancos/Vista Verde Neighborhood evacuation plans are posted at the following location:

http://www.vistaverdeca.org/emergency_response_info.html

The (private) Pony Tracks Ranch provides emergency vehicle egress (into Palo Alto via the "stub" of Alpine Rd. on to Page Mill) as well as a safe refuge area:

http://www.vistaverdeca.org/about9.html

## 1.2 Regional Cooperation

After the tragic Oakland Hills Fire of 1991, several local jurisdictions came together to form the East Bay Foothills Forum. The same underlying conditions and principles support the formation of a similar group in the Palo Alto area, which could perhaps be called "The Midpeninsula Foothills Emergency Forum (MFEF)".

## 1.3 Temporary Refuge

Places of temporary refuge are located in areas of low hazard, in places that are regularly maintained (at least annually) in a low-fuel volume condition. Los Trampas Valley is the best example of a suitable location, however this site may also be used as by incident management teams during longer duration fires.

To enhance the effectiveness of these temporary refuges, the park staff should perform an evacuation drill. The firefighters safety zones on Trappers Ridge are NOT temporary refuge areas for anyone but firefighters with proper training and equipment.

There are opportunities for off-site refuge; private properties in the area could provide temporary refuge, but agreements between the City and property owners would need to be formalized.

# 2 CODES AND REGULATIONS

The 2007 California Building Standards Code became effective statewide on January 1, 2008. Included in the new code are the 2007 versions of the California Building Code (based on the 2006 International Building Code), and California Fire Code (based on the 2006 International Fire Code). With Ordinance 4975 and 4976, the City of Palo Alto adopted these codes and local amendments to the State model codes with supportive Findings of Fact, which were filed with the State Building Standards Commission. These codes became effective in Palo Alto on January 1, 2008. The codes are comprehensive and have included the key elements recommended by the model codes.

## 2.1 Existing Codes and Ordinances

Codes related to wildland urban interface fires can be found in both the building code and fire code.

### 2.1.1 Fire Code

Title 15 of the Palo Alto Municipal Code adopted the California Fire Code, 2007 Edition, including Appendices B and C, and Chapters 3, 4, 5 and 25 and Chapter 1 Appendix of the International Fire Code. Sections 15.04.520 – 15.04.587 address wildland urban interface fires.

Key components of the fire code include:

- Definition of the Wildland Urban Interface Fire Area: "*…all areas west of Highway 280 and all other areas recommended as "Very High fire Hazard Severity Zone" by the director of CDF."* (Section 15.04.520*).*

- Requirement for Preparation of Fire Protection Plan: Addition of section 4703.1 through 4703.4 requires a site specific wildfire risk assessment be prepared by an applicant when required by the fire code official. (Section 15.04.530)

- Requirements for Defensible Space: Addition of section 4707.1 – 4707.2 define the requirements for an effective defensible space within 30 feet of buildings, with an additional defensible space 100 feet when required by fire code official due to site conditions. This section also defines corrective actions and the ability of the executive body to correct conditions and make the associated expense of such correction a lien upon the property. (Chapter 15.04.530). In addition, Section 15.04.130 adds Section 304.1.2.1 that provides authorization for the fire chief to cause removal of weed or combustible materials.

- Access Requirements: Addition of sections 4714 through 4714.3 establishes access requirements for all driveways and fire apparatus roads. (Section 15.04.550)

    - Driveways require clearances of 12 feet wide and 13.5 feet high. The code requires turnarounds for driveways greater than 150 feet in length and turnouts and turnarounds for those greater than 200 feet in length and 20 feet wide. It requires that vehicle speed limits be posted on entrances to bridges, on driveways and private roads.

    - Fire apparatus roads require clearances of 20 feet width and 13.5 feet height. Dead end roads greater than 150 feet in length are required to have turnarounds.

- In addition, Section 15.04.170 amends Section 504.4 to require that access control devices (including bars, grates, gates, electric or magnetic locks or similar devises that could inhibit rapid fire department emergency access) be approved by the fire code official and be provided with an approved means for deactivation or unlocking by the fire department.

- Water Supply: Addition of sections 4715 through 47159 defines water supply requirements including water sources, hydrants, adequate water supply, obstructions, identification, testing and maintenance, clearance of fuel and standby power. (Section 15.04.560)

- Automatic Fire Sprinklers: Addition of Sections 4716 through 467716.3 adds the requirement for new buildings to be provided with an approved automatic fire sprinkler. Existing buildings are required to provide an approved automatic fire sprinkler when modifications are made that increase the building area. (Section 15.04.570)

- Requirements for Suppression and Control: Addition of Sections 4717 through 4717.3.5 add general requirements applicable to new and existing properties to provide necessary fire protection measures. These include vegetation control, maintenance of defensible space with measures that increase the requirements of Section 4707 (Section 15.04.530). These measures address (Section 15.04.580):

    - Trees: Maintain horizontal clearance of 10 feet from any structure. Pruning to remove limbs located less than 6 feet. Regularly remove deadwood and litter from trees.

    - Roadway Clearance: Clear brush or vegetative growth within 10 feet on each side of portions of fire apparatus access roads and driveways.

    - Electrical Transmission and Distribution Lines: Clearance requirements provided for the various line voltages between electrical lines and vegetation.

    - Access Restrictions: Provides the authorization for the fire code official to close WUI areas to entry (exceptions made for residents, and authorized police or fire personnel.)

- Ignition Source Control: Additions of Sections 4717.4 through 4717.4.10 provide regulations to prevent the occurrence of wildfires. These sections address clearance from ignitions sources; smoking; equipment generating heat, sparks or open flames; fireworks; outdoor fires, outdoor fireplaces, permanent barbecues and grills; reckless behavior. (Section 15.04.584)

- Control of Storage: Addition of Section 4717.7 provides additional requirements for storage of hazardous materials; liquefied petroleum gas installations; explosives and combustible materials. (Section 15.04.585).

- Dumping: Additions of Section 4717.6 provides regulations related to dumping of waste material and ashes or coal. (Section 15.04.586)

- Protection of Pumps and Water Storage Facilities: Addition of Section 4717.7 added regulations to increase the reliability of water storage and pumping facilities and protect such systems from intrusion by fire. (Section 15.04.587)

- Land Use Limitations: Addition of Section 4717.8 places limits on land use to reduce the potential threat to life safety by requiring permits for temporary fairs, carnivals, public exhibitions and similar uses.

- Emergency Communications: Section 15.04.190 requires, by the addition of Section 5.11.1, that new buildings or buildings expanding by more than 20%, or that change occupancy classification must provide an approved system or equipment that will allow for adequate emergency radio coverage.

### 2.1.2 Building Code

Title 16 of the Palo Alto Municipal Code adopted the California Building Code, 2007 Edition. In general these sections support the adopted Title 15 Fire Code. Key components of the building code that address wildland urban interface fire include:

- Wildland Urban Interface (WUI) Fire Area: The same definition as in Title 15 applies and amends Section 702A of the California Building Code. (Section 16.04.140)

- Sprinkler System: Section 903.2 is amended to provide an automatic sprinkler system throughout all buildings designated in the WUI Fire Areas (except any non-habitable structures accessory to a single family residence that have a gross floor area of 500 square feet or less). It also includes the requirement for modifications to existing structures that expand the gross floor area as listed in the Fire Code. (Section 16.04.150)

- Roofing Requirements: Section 1505.14 amends the roofing requirements in the WUI Fire Area. A Class A fire retardant roof covering is required where more than 50% of the total roof area is replaced within any one year period, for new structures and in the alteration, repair or replacement of the roof of existing structures. Roofing requirements shall also comply with Section 704A.1. (Section 16.04.170)

Chapter 7A of the California Building Code provides additional requirements for materials and construction methods for exterior wildfire exposure. It expands the roofing and attic ventilation requirements that came into effect for new buildings applying for a building permit after December 1, 2005. This portion of the code addresses:

- Roofing assemblies, coverings, roof valleys and roof gutters.

- Attic ventilation, eave or cornice vents and eave protection.

- Exterior wall coverings, openings, vents, exterior glazing and window walls and exterior door assemblies.

- Decking, floors and underfloor protection.

- Ancillary buildings and structures.

## 2.2 Recommendations

There are several areas that could be expanded to further improve safety in the Palo Alto WUI Fire Area. These could be done as code revisions to further enhance the code or as guidelines that are used in enforcement of existing codes. Other best practice measures may be incorporated into City contracts and used in public education:

- Expand Section 15.04.520, the *Area Defined as Wildland Urban Interface (WUI) Fire Area*, to include the lands between Foothill Expressway / Junipero Serra Boulevard and Highway 280.

- Expand Section 15.04.530 *General Requirements for WUI Fire Areas* (4703.1 *Fire Protection Plan Preparation*) to require that Fire Protection Planning begin early in the planning/ permitting process so the location of access roads, driveways and structures can be influenced to increase fire safety and emergency response. Require the plan to also address implementation and funding of defensible space vegetation management (especially important for commonly held private open space).

- Expand Section 15.04.540 *Defensible Space* (4707.1 General Item 5.) to include all ground, decking and balconies in addition to the specified *"maintain roof of a structure free of leaves, needles or other dead vegetative growth."*

- Expand Section 15.04.550 *Access Requirements (4714.2 Driveways and 4714.3 Fire Apparatus Roads)* to add standards related to gradient and horizontal and vertical curvature, bridge load limits, parking restrictions during high fire danger weather and requirements for emergency vehicle access.

- Expand Section 15.04.580 *General Requirements for WUI Fire Areas* (section 4717.2 *Vegetation Control)* to provide additional guidance for Maintenance of Defensible Space (see following guidelines).

- Expand Section 15.04.584 *Ignition Source Control* (section 4717.4.7 *Outdoor Fires*) to identify that abatement by burning is unlawful unless by permit and unless all other applicable permits are obtained from appropriate governing jurisdictions. Burn permits are only issued to working agricultural properties.

- Fencing: Add a section requiring fences be constructed of either noncombustible material or of timbers with a minimum of one-inch nominal thickness. For example a typical fencing might consist of open wire mesh with four-inch posts and stringers that have a minimum one-inch nominal thickness. Fences should be designed with removal panels or gates so during a wildfire they do not convey fire to adjacent structures.

- Signage: Add a section requiring street, road and building address signs to have a minimum letter height of 4 inches, be 1/2 inches thick, reflectorized, painted a color contrasting with the background color of the sign, mounted on non-combustible poles and visible within 100 feet traveling from both directions.

- Mechanical Equipment Ignition Prevention: Requirements should be included in all City contracts for construction or maintenance work in the WUI Fire Area that address ignition prevention such as equipment (spark arrestor, overheating protection etc.), refueling, clearance of work area, cessation of work during periods of high fire danger weather and requirements for fire suppression equipment. This is becoming more critical for new diesel-powered vehicles because clean air/emission require exhaust particulate burning systems can more easily start fires if the vehicles are taken off-road.

- Smoking: More stringent rules regarding smoking in Pearson-Arastradero Park are recommended. Restrictions should be similar to those in place at Foothills Park.

## 2.3 Exterior Hazard Abatement

The following information is provided as a set of guidelines that can be developed into educational material to facilitate compliance with existing codes. The code currently addresses treatments for exterior hazard abatement in a general way; this section provides more specificity regarding the spacing of vegetative fuels.

### 2.3.1 For parcels of land one acre or less maintain parcel in complete abatement.

- For a distance of 30 feet a structure on slope steepness less than 30 percent grade, or 70 feet on slopes greater than 30 percent grade, from all property boundaries cut dry grass and non-woody vegetation to less than 3 inches yearly, no later than June 1.
    - This may require re-mowing if late season rains promote grass growth after the first cutting.
    - With prior approval of the Fire Department cutting of native grass and wildflowers may be delayed until after seed set provided they do not form a means of rapidly transmitting fire to any structures.
- Leaves and humus may not exceed two inches in depth anywhere in a landscaped area; however, bare earth should not be exposed in over 50% of the site and no one bare patch should be larger than 15 square feet.
- All dead vegetation (i.e. dry grass, leaves and humus) must be removed under trees and within shrubs, vines and semi-woody plants every year by June 1.
- Dead branches must be removed from mature trees and all vines, to 8 feet above ground.

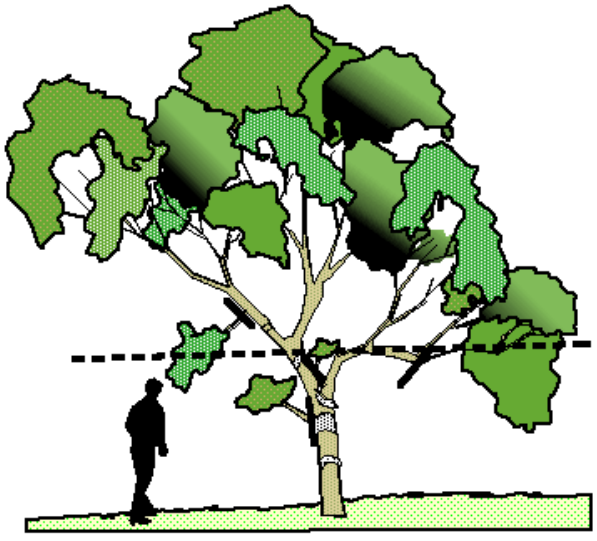

***Figure 33: Pruning Example.***

*Prune branches to a height of 8 feet above the ground. In young trees, prune branches on the lower one-third of the height of the tree. Do not disturb or thin the tree canopy. This promotes growth in the understory, which is more easily ignited.*

- Limbs of trees and large-form shrubs that are smaller than three inches in diameter shall be pruned to provide clearance of three times the height of the understory plant material or 8 feet, whichever is higher. Trees shorter than 24 feet in height shall be pruned of the lower one-third branches (Figure 33).

- The vertical distance between the ground and the lowest tree branches should be 3 times the height of any shrubs planted beneath the trees or 6 feet whichever is higher. Plants under trees should generally be shorter than 18 inches in height. Taller shrubs, including vines, semi-woody species and all chaparral species, may be near (six horizontal feet from tree crown) but not under trees.

- Remove all dead trees deemed a fire hazard by the Fire Department.

- Individual plants or shrub masses will be separated so that groupings/shrub masses will be no wider than two times the grouping height, or 120 square feet in area. Distinct groupings of shrubs (which includes vines, semi-woody species, all types of brush, and all chaparral species) will be designed to dampen the spread of fire. Alternatively, shrubs can be cut and maintained to a height of two feet.

***Figure 34: Shrub Spacing.***

Design groups of plants small enough to provide horizontal separation between groups. This allows proper maintenance and helps slow the spread of fire. Each shrub or group of plants should measure no wider than two times its height, or less than 120 sq.ft. (or 6 ft x 20 ft). The space between groups should be greater than three times the height of the shrubs, or at least a 12 ft. distance

- A vertical clearance of 5 feet shall be maintained between roof surface and portions of trees or other vegetation overhanging any building or structure.

- Wood piles must be enclosed in a non-combustible storage unit.

## 2.3.2 For parcels larger than one acre in size

- Maintain the area (space) within 100 feet of any structure on the parcel per the specific requirements for lots less than one acre in size.

- Maintain the area (space) within 100 – 250 feet from any structure on the parcel per the following specific requirements:

    - Shrub masses will be separated so that groupings will be no wider than two times the grouping height, or 120 square feet in area. Distinct groupings of shrubs (which include vines, semi-woody species, all types of brush, and all chaparral species) will be designed to dampen the spread of fire. Alternatively, shrubs can be cut and maintained to a height of two feet.

    - All dead vegetation (i.e. dry grass, leaves and humus) must be removed under trees and within shrubs, vines and semi-woody plants every year by June 1.

    - Dead branches must be removed from mature trees and all vines, to 8 feet above ground.

  - Trees, and large tree-form shrubs, shall be pruned to provide clearance of three times the height of the understory plant material or 8 feet, whichever is higher. Limbs that are smaller than three inches in diameter are to be pruned up to eight feet off the ground, and in trees shorter than 18 feet, the lower one-third of the height of the tree. See Figure 33.

  - The vertical distance between the ground and the lowest tree branches should be 3 times the height of any shrubs planted beneath the trees or 6 feet whichever is higher. Plants under trees should generally be shorter than 18 inches in height. Taller shrubs, including vines, semi-woody species and all chaparral species, may be near (six horizontal feet from tree crown) but not under trees.

- If a structure is within 100 feet of property boundary on adjacent lot, provide 30-foot firebreaks following as closely as possible to the property line and along one side of all fence lines. Fire breaks are a continuous strip of ground that is mowed to three-inch height, or disced, or dozed.

- Remove all dead trees deemed a fire hazard by the Fire Department.

- Trees on the top of ridges shall be maintained to limit torching, through pruning to provide clearance of three times the height of the understory plant material or 8 feet, whichever is higher. Limbs that are smaller than three inches in diameter are to be pruned up to eight feet off the ground, and in trees shorter than 18 feet, the lower one-third of the height of the tree as in Figure 33.

- Within 15-feet of all public or private roadways or driveways, all grass must be mowed, disced or sprayed to 3 inches height.

- In grasslands, 30-foot firebreaks and crossbreaks that divide the parcel into approximately 5-acre sections. Firebreaks and crossbreaks are a continuous strip of ground that is mowed to three-inch height, or disced, or dozed, following as closely as possible to the property line and along one side of all fence lines, ditches, and on top of all ridges. When terrain is too steep or rugged for a tractor, a hand-mowed firebreak may be required.

- Active Pastureland: **15-foot wide firebreaks** and crossbreaks are required if a sufficient number of animals are present to steadily reduce height of grass during the summer months to 3 inches or less by the end of August. If not active, 30-foot width is required.

- Active Cropland: 15-foot wide firebreaks and crossbreaks required if crop is to be harvested by mid-June. If later, 30-foot width is required.

# 3 FIRE PROTECTION – STATION 8

The following is a description, appraisal and recommendation regarding staffing of, equipment for and other response resources related to Station 8 in Foothills Park.

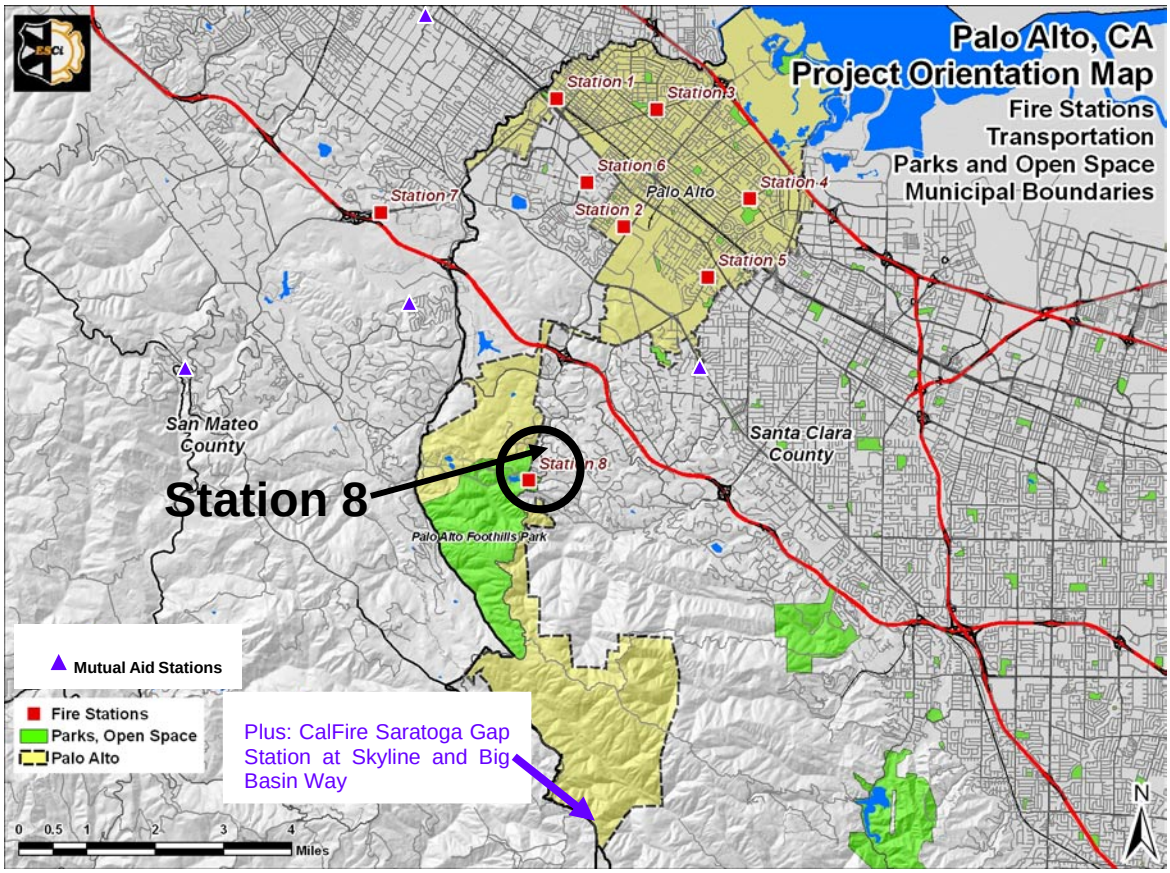


***Figure 35: Fire Protection Resources.***

## 3.1 Description

Fire Station number 8 of the Palo Alto Fire Department is located at 3300 Page Mill Road in Palo Alto, CA. It is a *seasonal* fire station that is only staffed during the daylight hours. This amounts to 12 hours per day. The period of time it is staffed is usually from July 1st to November 1st of each year. This is essentially the fire season for the area being protected and involves about 120 days of coverage. Whenever there is a declared high fire danger day or the burn index indicates an ignition threat the station may be staffed beyond the 12-hour period and outside of the fire season when appropriate.

The staffing of the station currently includes 1 Captain, 1 Apparatus Operator/Engineer and 1 Firefighter. These positions are filled through overtime allocations rather than being post positions. Initially a fire response unit located at Foothill Park was staffed with only 2 persons. It was upgraded to 3 persons following the Arastradero Fire of 1985 in the lower foothills to be consistent with contemporary fire staffing practices and when Station #8 was constructed.

The apparatus that responds from this station is a Type III Engine Company. This is an apparatus that is primarily designed to respond to wildland fires instead of structure fires. This is similar to the types of companies used by major wildland agencies.

The station provides an initial attack capability to an area that involves about 25 square miles of urban-wildland interface area. There are approximately 150 dwellings in the area, but that is not the primary risk. The fire history of this specific area is relatively free of major events in the past decades. The last reported major fire in the vicinity of the upper foothills was in 1912. Significant fires in the lower foothills (primarily light fuels) occurred in 1985, 1992, 2000 and 2007.

However, that one factor creates an impact upon existing fuel loads. The lack of major fires in the past has resulted in fuel densities that may be ready to support a wide area fire. It has been estimated that the medium and high density fuels are about three times their normal density.

The secondary response units into this area are deployed from the "El Monte" fire station of Santa Clara County Fire located to the north and the Palo Alto Stations #2 and #5. The County Fire Station is equipped with Type I and Type IV engines. Currently there is no direct link to this station in the dispatching of equipment. Depending upon who reports an emergency in the area the call could go directly to the City of Palo Alto or it could be routed through the Santa Clara County Communication Center and Palo Alto would then be notified.

The standard response into this area varies upon the level of dispatch. On medium or high dispatch days the Palo Alto Fire Department responds Engine 8 to reports of wildland fires and supports it with another Type III (3 personnel) that is cross staffed by the truck company from Station #6 on the Stanford Campus, one Type I from Station #2 (3 personnel), 2 Type IV cross-staffed patrol units from Stations #2 and #6 (6 personnel), one Paramedic ambulance from Station #2 (2 personnel) and one Battalion Chief from Station #6.

Furthermore, the dispatch system provides a brush unit from the Santa Clara County El Monte Fire Station in Los Altos Hills at Foothill Community College (4 personnel from 1000-1900 hours) and can respond an additional 4 Type I's (12 personnel) and 3 Type IV Brush units (9 personnel). Lastly, the system has the depth to provide additional resources from other mutual aid entities in the same area (e.g. Cal Fire Ranger Unit resources located in Cupertino and San Martin). These include additional Type III units (3 or more), air assets, hand crew resources, bulldozers and command staff to complete an overhead requirement in the event of a major fire. Other Type 1, Type III and Type IV resources may be made available through the Santa Clara County Mutual Aid System.

The City of Palo Alto does currently not have an adopted Standards of Cover document, but operates with an informal response goal of 5 to 6 minutes for attendance of at least 90% of its calls for service. The department also provides paramedic (advanced life support – ALS) response to the basic built out portion of the city within 8 minutes for at least 90% of those types of calls (these response goal benchmarks are exclusive of the foothills area). Station 8 has not normally been considered an ALS resource. In the past 2 years a priority has been established to staff Engine 8 with an ALS resource whenever possible.

The staffing for the station is provided in the overtime budget. Last year the amount set aside to provide coverage was $200,000.

## 3.2 Appraisal

The primary purpose of placing a wildland unit into this area is to prevent any ignitions from spreading beyond a reasonable fire perimeter before an adequate full fire alarm assignment and an effective response

force can be placed on the scene. The first 10 minutes of a wildland fire are critical to restricting the size of the ultimate fire. Depending upon the fuel type and density, the slope and aspect and the effects of wind upon a flame front, the period of time that it takes to get initial control of an incipient fire is very important. This is especially true in light fuels, when a fuel is running uphill and/or when fire conditions that consist of high temperatures, low humidity and wind conditions exist. The fire behavior assessment of the Foothills Area indicates a high potential for fast-moving fires.

The secondary purpose of having the unit in place is to establish a point of control for the development of an incident command system in place to address the escalation of the fire, if it is not controlled in the first 10 minutes.

The first purpose addresses the need for "distribution". In the language of response coverage the distribution of resources is the placement of companies, based upon risk factors to be readily available to handle the first few minutes of fire or emergency control.

The second purpose addresses the need for "concentration". This terminology is used to describe the deployment of an adequate amount of resources to deal with the ultimate size of the fire. These two concepts are inter-related in that fires that are controlled early do not need as many resources to be eventually deployed. Therefore, early intervention is a form of cost avoidance.

This is the basic operating assumption of all seasonal fire resources. Major wildland agencies such as Cal-Fire, the U.S. Forest Service and other wildland agencies use the concept of seasonal and part time staffing configurations to minimize fire size to as small an area as possible.

## 3.3 Recommendation

The staffing of this station by utilization of overtime fire personnel is a reasonable method of addressing the risk and hazards in the area. It is a cost effective way of reducing the impact of potential wildland fires in the study area. The elimination of this company places the responsibility for initial attack upon fire companies that are more remote and therefore are more likely to have lengthy response times into the area.

The staffing pattern of 3 fire fighters is the minimum for the safe and effective operation of an initial attack unit for a wildland fire. This station and its current staffing configuration should be retained in the future. In addition, staffing a police officer and maintaining a ranger staff presence in the Foothills Area during high fire risk days should be considered. This type of personnel offers extra fire detection capability and is available to assist with evacuation should an incident require that particular action.

# 4 TRAIL PLAN UPDATE

## 4.1 Pearson-Arastradero Preserve Trails Management Plan (March 2001)

The Trails Master Plan for Pearson-Arastradero Preserve recognizes that the preserve is located in the Hazardous Fire Area (Section 3.3). The plan identifies management objectives, strategies and recommended actions to meet Fire Department objectives. It recognizes the need to coordinate with the Fire Department to develop and implement a fire suppression plan that will maximize the safety of the users and the adjacent properties, without adversely impacting the natural environment. It includes fire prevention methods for firelines on the perimeter, as well as fuel reduction zones to compartmentalize the preserve for fire suppression in the event of a fire.

### 4.1.1 Recommended Revisions

Since the Trails Master Plan was adopted in 2001, there have been new facilities developed at the Gateway Interpretive Center and a new access to Foothills Park. Fuel management recommendations take into account these new facilities, as well as recommend the following additions and modifications to the 2001 Trails Plan:

- Addition of fuel management along the evacuation route (Arastradero Road) and management of defensible space around the Gateway Interpretive Center, parking lot and staging area to include projects A.E1 and A.D1, A.D2, A.D3 and A.D4.

- Addition of fuel reduction zones within the interior of the preserve along existing trails for containment including projects A.C9, A.C10, A.C11 and A.C12.

- The Master Plan identifies an option for the Fire Department to use controlled burns as a part of their wildland fire prevention plan. Two potential areas are recommended: Juan Bautista Prescribed Fire North (A.Rx1) and Acorn Trail Prescribed Fire South (A.Rx2).

- Modify firebreak width and performance standards.

- Addition of roadside treatment standards to Clearing and Brushing for those trails that also serve as emergency vehicle access for clearances of 13.5 feet vertical clearance and 10 feet horizontal clearance.

- Addition to Regulatory, Warning and Educational Signs regarding fire hazard signs, education information on fuel management and prescribe fire.

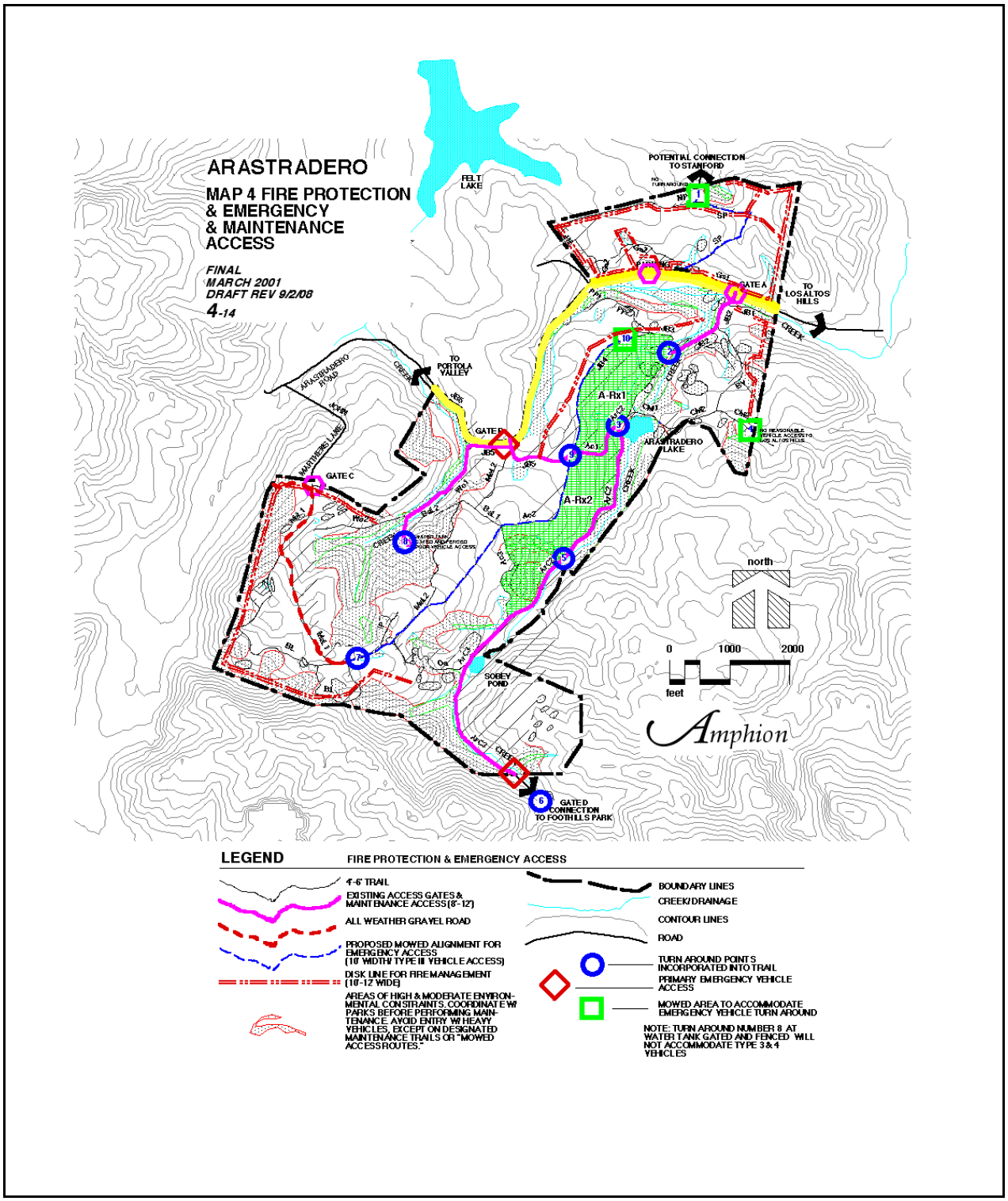


***Figure 36: Emergency/Maintenance Access Points.***

*Map depicts the emergency/maintenance access points of entry, trail travel routes to be maintained for use by the Fire Department and Utilities Department when servicing the Preserve. This map also shows disc lines and indicates those sensitive resource areas in the Preserve that should not be accessed by heavy vehicles. The map has been modified to incorporate the new facilities and associated modifications to fire control treatment areas.*

### 4.1.2 Existing Fire Mitigation and Fuel Management in the Arastradero Trails Management Plan

Hazardous Fire Area: The Preserve is identified in the Hazardous Fire Area. (Section 3.3)

Utilities: Access for maintenance and repair of existing utilities facilities is by all-weather surface roads that can accommodate heavy vehicles for repairs. Primary entrance is Gate B. Clearance of fuels for 10' radius around poles having operable devises. Tree trimming is generally done every 2 to 3 years with ground clearing done annually. (Section 3.4)

Management Objectives, Strategies and Recommended Actions. Objective is to coordinate with Fire Department to develop and implement a fire suppression plan that will maximize the safety of the users and the adjacent properties, without adversely affecting the natural environment (Section 4.5 and Map 4):

- Access: Provide adequate access for Type 3 and 4 vehicles.
- Fire Prevention Techniques: Use least environmentally intrusive prevention methods
- Firebreak and Control Strategies: Prevent fires from spreading on adjacent properties as well as coming into the preserve. Firebreaks/disc lines should be implemented only where they serve their intended function in fire prevention and suppression.
- Temporary Closures: Provide an option for park staff to close the Preserve when conditions such as high fire danger could pose a threat to the public.

Access (Section 4.5 pg 4-9 and Section 7-2 pp 7-7-7-9).

- Provide a 40 to 45 foot "drive" between Arastradero Road and Access Gates A and B to provide a safe place for Fire Department staff to safely park their Type 3 and 4 vehicles when opening the Preserve entry gates.
    - Ensure that all six access points can accommodate fire vehicles at all times. These access points include:
        - The parking lot
        - The access gate on Arastradero Road adjacent to the west of the parking lot
        - Gate A (access limited to the existing turn-around on the west side of the first concrete bridge spanning Arastradero Creek)
        - Gate B, which serves as the primary Utilities Department access
        - Gate C, which is located off John Marthens Lane
        - Gate D - Vista Hill Gate in Foothills Park (one-way uphill, except in emergency situations)
    - Close, restore and annually mow designated emergency access routes within the Preserve as needed to create a circulation route for Type 3 and 4 vehicles in the case of emergency.

- Provide emergency turn-around capability where access roads dead-end (hammer-head configuration needed for vehicle turn-around).

    - To minimize potential impacts to the natural resources, these designated vehicle 'turn-arounds' will be the only acceptable turning points for motor vehicles within the Preserve. The final siting of new 'turn-arounds' (#2, 5 and 9) should be flagged prior to construction and the Open Space and Parks Division Manager should be advised of pending construction. Each turn-around should be clearly delineated and mapped to prevent removal of or impact to sensitive biological resources. Refer to Table 9 – Vehicle Turn-around Design Summary.

    - Recognizing that these turn-arounds are to be used for routine maintenance, construction and patrol. In special circumstances where larger fire trucks and over sized utility vehicles must access the Preserve, these vehicles may not be able to use the turn-arounds and will have to travel through the Preserve in a one way direction. In this case, it is recommended that the vehicles enter and leave through Gates B and D. In the case of a wildfire, public safety will override resource protection. In this case, the Fire Department may be required to override these vehicle guidelines to be able to suppress a fire.

Refer to *Map 36 Fire Protection & Emergency & Maintenance Access* for:

- Emergency/maintenance access points of entry.

- Trail travel routes to be maintained for use by the Fire Department and Utilities Department when servicing the Preserve.

- Disc lines.

- Sensitive resource areas in the Preserve that should not be accessed by heavy vehicles.

- Use a uniform maintenance gate at all major entry points with a universal locking device to facilitate routine and emergency access into the Preserve by multiple department staff.

<u>Fire prevention methods (Section 4.5 pg 4-9 and Section 7.5 Vegetation Management pg 7-39)</u>

- Fire prevention methods to be used at the Preserve include:

    - Establishing fire lines on the perimeters of open space lands, leaving the interior areas in their natural condition. These cover many of the recommended containment projects including: A.C1, A.C2, A.C3, A.C4, A.C5, A.C6, A.C7 and A.C8.

    - Posting signs indicating the severity of the fire danger (low, moderate, high, very high, and extreme) during the fire season.

    - Posting signs “No Fireworks” June 20 to July 10.

    - Use herbicides as approved by the Open Space and Parks Division Manager, where appropriate in implementing the wildland fire prevention plan.

Refer to *Map 4 Fire Protection & Emergency Access of the Trail Master Plan* for disc lines and areas that are to be mowed annually to maintain emergency vehicle access through the Preserve. This map also indicates those sensitive resource areas in the Preserve that should not be accessed by heavy vehicles.

Firebreak and Control (Section 4.5 pg 4-10 and Section 7.5 Vegetation Management pg 7-39)

- Firebreaks should be disced 24 feet wide or 1 ½ times the fuel height adjacent to the road, structures and where they can compartmentalize an area to reduce the risk of a fire igniting and/or spreading.
- Firebreaks should be eliminated where they are not providing any benefit to fire prevention or suppression.
- Ideally discing should be performed twice a year, first in late spring and then when the disc lines have "cured."
- If new activities/developments occur inside or adjacent to the Preserve perimeters, then the location of the disc lines should be reevaluated and expanded as appropriate.

In addition, though not currently used, maintain an option for the Fire Department to perform controlled burns in the future as part of their overall fire prevention plan.

Temporary Closures (Section 4.5 pg 4-10) of the Trail Master Plan

The City Fire Department in consultation with Open Space staff may close the Preserve when there is a threat to public safety. When such emergencies occur, the Fire Department is to notify the Police Department and the Open Space and Parks Division staff of emergency closures so they can notify the public. Emergency closures may occur when:

- Weather conditions create a critical fire danger;
- Arsonists are known to be present in the area;
- Staff resources have been pulled away for other emergencies; and/or
- Other threats to public safety are present or suspected.

High Maintenance Trails - Clearing and Brushing (Section 6.2 Trails Maintenance System & Section 7.5 Vegetation Management)

The trail clearing limits for down logs and tree limbing should be 10 feet high and 3 feet wide on each side of the trail. (Refer to Section 7, Figure 16 of the Trail Master Plan for trail clearing and brushing limits). Trail brushing limits for shrubby and herbaceous plant species extending into the trail should be 10 feet high and 3 feet wide on each side of the trail. These plants should be cleared to ground level. Clearing widths should be directed to providing clear passage and providing an average sight line of 100-feet. Low growing and slow growing shrubs and ground cover less than two feet in height should be left undisturbed.

Specific Trail Recommendations for Trails (Section 6.4)

- Acorn Trail - Segment 1 (Ac1): Maintain existing vehicle turn-around at booster pump station. Refer to Map 4 of the Trail Master Plan- Fire Protection & Emergency & Maintenance Access - Turn-around Point 3.

- Arastradero Creek Trail - Segment 2 (ArC2): Providing a new vehicle turn-around in a hammerhead configuration near intersection of former Acorn Trail (now Route F) to accommodate Type 3 and 4 emergency fire vehicles. The turn-around area should be defined using the following: grading a level area and landscaping. Such vegetation should consist of native species, similar to nearby, existing vegetation and should be placed in a natural configuration to prevent the vegetation from creating an unsafe condition or adverse visual impact. The final siting of the turn-around should be completed under the advisement of the Open Space and Parks Division Manager. Refer to Map 4 of the Trail Master Plan - Fire Protection & Emergency & Maintenance Access – Turn-around Point 5.

- Arastradero Creek Trail - Segment 3 (ArC3): Locate an emergency/maintenance vehicle turn-around in a hammerhead configuration at the existing gate on the east side of the trail. Move the gate back to accommodate Type 3 and 4 emergency fire vehicles. Improvements to the turn-around area should be confined to the existing, flat graded pad. Minimize annual pruning to area necessary to provide for vehicle access. Refer to Map 4 of the Trail Master Plan- Fire Protection & Emergency & Maintenance Access - Turn-around Point 6.

- Corte Madera Trail - Segment 2(CM2): Mow the area at junction with Bay View Trail to provide room for Type 3 and 4 emergency vehicles to perform a hammerhead vehicle turn-around following procedures outlined in Section 7.2. Maintain a minimum cover of 2 inches to minimize potential erosion impacts. Refer to Figure 36 Fire Protection & Emergency & Maintenance Access - Turn-around Point 4.

- Gateway Trail - Segment 1 (Ga1): Providing a 40 to 45 foot "driveway" between Arastradero Road and Access Gate A to allow a safe pull out for maintenance and emergency vehicles accessing the Preserve[11]. Design of maintenance drive must take into account the existing 10-foot wide crossing over a concrete culvert. The culvert is located approximately 28 feet from the edge of pavement.

- Juan Bautista de Anza National Historic Trail - Segment 2 (JB2): Develop turn-around in a hammerhead configuration to accommodate Type 3 and 4 emergency fire vehicles. Locate on west side of bridge in the area that is nearly flat and already contains hardened surfaces and non-native grassland. Avoid nearby riparian habitat and serpentine soils. Refer to Map 36 Fire Protection & Emergency & Maintenance Access - Turn-around Point 2.

- Juan Bautista de Anza National Historic Trail - Segment 4 (JB4): Mow an area near the junction of the Portola Pastures Trail to provide room for Type 3 and 4 emergency fire vehicles to turn-around following procedures outlined in Section 7.2. Maintain a minimum cover of 2 inches to minimize potential erosion impacts. Refer to Figure 36 Fire Protection & Emergency & Maintenance Access - Turn-around Point 10.

- Juan Bautista de Anza National Historic Trail - Segment 5 (JB5): Developing an emergency Type 3 and 4 vehicle hammerhead turn-around at the junction with Segment 4 of the Juan Bautista de Anza Trail. Improvements to the area should be confined, to the greatest extend possible, to the existing graded area at the trail junction. Refer to Map 4 - Fire Protection & Emergency & Maintenance Access – Turn-around Point 9.

[11] Like many of the recommendations, this has already been accomplished.

- Juan Bautista de Anza National Historic Trail - Segment 5 (JB5): Providing a 40 to 45 foot "driveway" between Arastradero Road and Access Gate B to allow a safe pull out for maintenance and emergency vehicles accessing the Preserve.

- Stanford Pastures Trail (SP): One year after the trail tread has been established mow an area near the boundary of the Preserve to provide room for Type 3 and 4 emergency fire vehicles to turn-around following procedures outlined in section 7.2. Maintain a minimum cover of 2 inches to minimize potential erosion impacts. Refer to Map 33 Fire Protection & Emergency & Maintenance Access - Turn-around Point 1.

- Meadowlark Trail (MeL1): Develop a hammerhead vehicle turn-around for Type 3 and 4 emergency vehicles to turn-around near the old barn site. Improvements to the turn-around should be confined to the existing graded pad that formerly served as the driveway for the old barn. Refer to Map 33 Fire Protection & Emergency & Maintenance Access – Turn-around Point 7.

- Woodland Trail Segment 1(Wo1): Maintain existing, paved vehicular turn-around that encircles the water tank for utility vehicles. Note that this turn-around is not suitable for Type 3 and 4 fire vehicles due to the tight turning radius around the tank. Refer to Map 4 - Fire Protection & Emergency & Maintenance Access – Turn-around Point 8.

## 4.1.3 Vegetation Management

### 4.1.3.1 Brushing and Clearing Defined

Brushing and clearing constitutes the removal of vegetative materials as required to provide adequate vertical and horizontal clearance for safe passage along a trail.

### 4.1.3.2 Techniques for Maintaining a Clear Passageway

Vegetation on the south sides of the trail should be pruned to allow passage, but should be preserved, as much as possible, to protect the aesthetic quality of the trail. Typically, vegetation is cleared to a height of 10 feet and 2 to 3 feet to either side of the trail edge to accommodate equestrian use. A minimum sight distance of 100 feet should be maintained, where feasible to facilitate safe shared use of the trail system.

Good pruning practices should be followed, including cutting branches almost flush with the limb, and cutting stumps at ground level or below. Large limbs should be pruned almost flush with the trunk. Dead and dying limbs and snags, which may fall on the trail, should be removed. Typically, ground cover plants and low shrubs should not be removed except on the actual trail tread.

Where specific trail segments (Refer to Section 6) recommend controlling invasive, non-native plants, the *Arastradero Preserve Management Plan* management strategies should be used. This means that vegetation management adjacent to the trails should be performed in a way that maximizes the safety of the users and minimizes adverse environmental impacts. Appropriate management techniques include in order of preference, control with "beneficial insects", where they have been determined through study not to have detrimental environmental impacts, removal by hand pulling, or pruning with weed whips or (as a last choice) with chemicals. When weed whips are employed, a 2-inch minimum cover should be retained to minimize exposure of bare earth and resulting impacts from splash erosion and gullying. Herbicides should only be used as approved by the Open Space and Parks Division Manager. In addition, the chemicals must be applied in accordance with California State law and must adhere to the conditions set forth in the City's "Integrated

Pest Management Plan" to ensure the safety of staff, visitors and wildlife and to reduce or eliminate the possibility of chemicals entering the creek.

Where a trail is located on a side slope, the vegetation on the uphill side will be more intrusive and should be cut back more severely than on the downhill side.

Low growing vegetation should be allowed to return to cut slopes to increase soil stability. Replant areas with vegetation indigenous to those areas or compatible with plantings already in place.

Overhanging limbs should be cut back flush with the tree trunk, brush should be grubbed out and disposed of out of sight of the trail and scattered not stacked. Excess rock should be disposed of in the same manner as brush and limbs. All loose roots protruding over one inch above the trail tread should be cut out to at least 4 inches beyond the margins of the tread and to a depth of 4 inches below tread level and removed. Holes resulting from root removal should be filled and compacted with mineral soil and or rock, not exceeding 2 inches in diameter.

Advance warning of all vegetation management activities in the Preserve shall be given to the Open Space and Parks Division Manager at least one week in advance of the work.

| **Turn-around** | **Existing Conditions** | **Recommended Actions** |
|---|---|---|
| #1<br><br>Trail: SP | Mowed grassland dominated by non-native plants | Mow area near boundary of the Preserve for Type 3 & 4 emergency fire vehicles to turn-around. Maintain 2" min. grass cover. |
| #2<br><br>Trail:JB2 | Area is nearly flat & already contains hardened surfaces and non-native grassland | Perform minor grading to develop hammerhead turn-around for Type 3 & 4 emergency fire vehicles on west side of bridge in the area that is nearly flat. Avoid nearby riparian habitat and serpentine soils. |
| #3<br><br>Trail: Jct. ArC & Ac | Existing hardened surface adjacent to lake & utility booster station. | Maintain the existing vehicle turn-around at booster pump station. No grading or vegetation removal required. |
| #4<br><br>Trail: CM2 | Mowed grassland dominated by non-native plants | Mow area at junction of Bay View Trail for Type 3 & 4 emergency fire vehicles to turn-around. Maintain 2" min. grass cover. |
| #5<br><br>Trail:ArC2 | Grassland dominated by non-native plants on opposite side of utility road from creek & does not affect creek zone | Perform minor grading to develop hammerhead turnaround in area that is nearly flat near junction of Route F (now scheduled for closure) for Type 3 & 4 emergency fire vehicles. Define area with native vegetation in a natural configuration. Avoid nearby riparian habitat. |
| #6<br><br>Trail: ArC3 | Existing dirt driveway. No grading or vegetation removal required | Locate at existing gate on the east side of the trail. Move gate back to accommodate Type 3 & 4 emergency fire vehicles. Confine turn-around area to existing graded pad. Minimize annual pruning to area necessary for vehicle access. |
| #7 | Existing drive to old barn site. No grading or | Confine turn-around to existing graded pad that formerly served |

| | | |
|---|---|---|
| Trail: MeL1 | vegetation removal req. | as the driveway for the old barn. |
| #8<br><br>Trail: Wo1 | Existing road around the water tank. Tight radius will not accommodate Type 3 & 4 vehicles | Maintain existing, paved vehicular turn-around that encircles water tank for utility vehicles. |
| #9<br><br>Trail: Jct. JB 4 & 5 | Flat grassland area at junction of two trails. Minor grading may be necessary | Perform minor grading to develop hammerhead turnaround at the junction Juan Bautista de Anza Trail Segs. 4 & 5. Confined work (to the greatest extend possible) to existing graded area at the trail junction. |
| #10<br><br>Trail: JB 4 | Mowed grassland | Mow an area near junction with Portola Pastures Trail to provide room for Type 3 & 4 emergency fire vehicles to turn-around. Maintain 2" min. grass cover. |

***Figure 37: Vehicle Turn-around Design Summary.***

*Final siting of all turn–around to be approved by Open Space and Parks Division Manager prior to initiating any grading.*

## 4.2 Foothills Park Trails Maintenance Plan (January 29, 2002)

The Trails Master Plan for Foothills Park recognizes that the preserve is located in the Hazardous Fire Area (HFA) and Mutual Threat Zone (MTZ). The plan identifies the existing fuel break system but focuses on maintenance of the existing trails.

### 4.2.1 Recommended Revisions

The following are recommended additions and modifications to the 2002 Trails Maintenance Plan:

- Addition of fuel management along the additional evacuation routes to northwest (Interpretive Center to The 600-700 block of Los Trancos Road), northeast (Boronda Lake to Alexis Drive), and from Towle Campground along Wildhorse Valley to Las Trampas Valley.

- Addition of four Firefighter Safety Zones along Trappers Ridge Trail at Los Trancos Trail, Madrone Fire Road and two highpoints (high point and south end); projects # F.F1, through F.F4.

- Addition of annual maintenance of defensible space around the Interpretive Center, parking lot and staging area, campgrounds, pumping stations to include projects F.D1 through F.D8.

- Addition of annual maintenance ignition reduction projects at picnic sites and campgrounds to include projects F.I1 through F.I7.

- Addition of fuel reduction zones along existing trails for containment including projects F.C1 (Trappers Trail), F.C2 (Pony Tracks south of Trappers Ridge), F.C3 (Pony Tracks north of Trappers Ridge), F.C4 (Bobcat Point) and F.C5 (north of entry gate).

- Modify tables for managing trails within specific vegetation types to accommodate fuel modification performance standards for the containment projects.

- Addition to Regulatory, Warning and Educational Signs regarding fire hazard signs, education information on fuel management and prescribed fire.

### 4.2.2 Existing Fire Mitigation and Fuel Management in the Foothills Park Trails Maintenance Plan

Staff Responsibilities (Executive Summary, page 104)

The foothills parks are staffed by rangers that are based out of the Foothills Park office. Park rangers are responsible for patrolling, monitoring and maintaining Foothills Park. They oversee the fieldwork of the California Conservation Corps (CCC) work program, as well as other volunteer work programs at the Park. Rangers also lead guided nature walks and give nature slide shows. In addition, while the primary responsibility for fire and medical emergencies lies with the City Fire Department, rangers will typically be the first response team for fire and medical emergencies within the park.

Park Maintenance/Utility/Emergency (e.g. fire) (Section 2.4 pg 2-5)

There are three other entry points off Page Mill Road that maintenance and emergency vehicles use to provide access from Page Mill Road. These are labeled as Gates 2, 3 and 4. Gate 2 provides access to the Charlie Brown firebreak and Toyon Trail. Gate 3 provides access to the Park Reservoir, a 1.5 million gallon city water reservoir. Gate 4 provides access to the Trapper's Fire Trail and to the southern portion of the Los Trancos Trail. In addition, utility vehicles and park maintenance/patrol vehicles wanting to access the Arastradero Creek Trail (Segment 3) within Arastradero Preserve enter Foothills Park and access this trail from Gate D. Gate D is located on the one-way road that leads from the Interpretive Center to Vista Hill in Foothills Park. There is also an access easement from Los Trancos Road in Portola Valley connecting to the service yard at the north end of the park. This easement is only accessible by park staff.

Hazardous Fire Area (Section 2.4 pg 2-6): The Park is identified in the Hazardous Fire Area because of the tremendous vegetation fuel load and the potential for extended response times in the event of a fire due to limited access/egress into the park. The area has also been designated as a Mutual Threat Zone (MTZ) by agreement with the California Department of Forestry and Fire Protection. This means that a fire within the City's jurisdiction is a threat to the State's jurisdiction and vice versa.

Firebreaks (Section 2.4 page 2-6 – 2-8): To meet the City's objective of "*reducing government costs and citizen losses from wildland fire by increasing initial attack success and or protecting assets at risk through focused prefire management objectives*" a fuel break system has been designed and implemented for Foothills Park. The main firebreak (by distance and location) is the Trapper's Firebreak Trail. It is two miles long, essentially running along the spine of the park. There are also several smaller breaks that are maintained as access roads for fire response. These branching firebreaks, which are located throughout the park, and the Trappers Firebreak Trail, are graded and compacted to a width of 10 feet or greater to accommodate the City Fire Department's Type 3 and 4 vehicles. These firebreak trails have the potential to be reduced in width, or substituted with shaded fuel breaks if environmentally desirable. (A shaded fuel break allows annual grasses to return to the land, but not medium or heavy fuels.)

Evacuation (Section 2.4 Page 2–8): In addition to the firebreak trail network, "safety islands" have been identified in the park and an evacuation plan has been developed for the park. The primary evacuation route (as identified in the Palo Alto Comprehensive Plan) is Page Mill Road. The main road through the park connects to an access easement that provides an alternate evacuation route between Page Mill Road and Los Trancos Road.

Natural Resources Management Objectives Adjacent to the Trail (Section 3.4 pg 304). Retaining native vegetation except in areas where City personnel determine that plants are creating a fire or safety hazard, or where vegetation is located within the tread of routinely maintained roads, trails and designated firebreaks

Noxious Plants and Pathogens (Page 4-17 – 4-24): Control and prevention of non-native invasive plant species is recognized as quite important. Infestations of non-native invasive plant species have been found to alter ecosystem functions such as nutrient cycles, hydrology, and wildfire frequency. Non-native invasive plant species pose a complex problem, but the management of the spread is a key factor in preventing long-lasting and negative effects on the native ecosystem. The plan recognizes that trail maintenance activities need to address the fact that most of these species gain a foothold by invading soil that has been disturbed, such as through re-grading or vegetation clearing that results in the removal of ground cover plants adjacent to the trail tread. The plan includes a table of the non-native invasive plants of greatest ecological concern. (Table 4-6 page 4-18 – 4-24.)

Sudden Oak Death (SOD) (page 4-24 – 4-25): Sudden Oak Death is caused by the pathogen *Phytophthora ramorum* that kills oaks and several other California woodland species found in Foothills Park. The pathogen appears to kill trees and shrubs swiftly and has greatly affected the visual integrity and diversity of the California Oak woodland as it is defined today. First discovered in California on Tan Oaks in 1995, it has now been confirmed in ten California counties, including Santa Clara County. **Note**: Information available on this SOD has expanded since the maintenance plan was developed in 2002.

Trails Maintenance Program Development (Section 5.2 pg 5-2): Trail inspections are integral to all trail maintenance operations. Inspections should occur on a regularly scheduled basis, the frequency of which will depend on the amount of trail use, the location, age, and the types of structures and the types of soil/terrain. At a minimum, all trail and trail structures/features should be inspected at least once a year at the close of the winter "wet season". All trail inspections should be documented in writing in a field log. Conditions that have the potential to be the most hazardous to the public, which should be watched for during field inspections, include:

- Heavy fuel loads which could create a high or critical danger fire hazard in the park.

Other Staff Duties Related to Park Protection & Trail Activities (Section 5.3 pg 5-9): While the primary responsibility for fire and medical emergencies lies with the City Fire Department, Park Rangers will typically be the first response team for fire and medical emergencies within the Park. Foothills Park Rangers have received various limited levels of fire fighting training and are dispatched as a resource to fires and other emergency calls. They are a valuable resource as they provide enhanced local knowledge of the area, and can be used to augment Engine Eight or to perform other tasks, such as evacuation or reconnaissance. The Palo Alto Fire Department has rated the Rangers control of public areas and Park maintenance practices, which augment the City's fuel management system as outstanding (Palo Alto Draft Fire Management Plan, April 1997).

Trail Maintenance Guidelines (Section 6 pages 6-1 – 6-81): Section 6.3 provides an overview in table format of the existing trail characteristics (Table 6-1 page 6-4 through 6-8). The tables currently do not include information regarding whether the trail segments are a part of the firebreak system.

Section 6.5 (pages 6-10 through 6-21) includes management strategies for maintaining hiking trails. A series of tables provides a summary of managing trails within grasslands/ oak savanna (Table 6-2), chaparral (Table 6-3), mixed woodlands (Table 6-4) and bay woodlands (Table 6-5). These tables include treatments of the vegetation ground plan, middle plane and overhead canopy. They do not specifically address management practices to be used if the trail is a part of a fire containment area. Section 6-8 includes Vegetation

Management Recommendations text that expands upon the summary tables with additional descriptions and standards (pages 6-56 – 6-63).

Trail Communication Tools (Section 6.11 pg 6-77 through 6-81): Trail signs include temporary/ permanent closures for hazards associated with critical fire danger (page 6-80). Interpretive trail guides and programs offer the opportunity to educate visitors about the biological diversity of Foothills Park and the importance of staying on trails to avoid damaging this unique resource (page 6-81).

# 5 REFERENCES

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# *City of Palo Alto*
# *Department of Planning and Community Environment*
# *California Environmental Quality Act*
# *DRAFT MITIGATED NEGATIVE DECLARATION*

## I. DESCRIPTION OF PROJECT

**Date:** February 9, 2009

**Project Name:** Foothills Fire Management Plan Update

**Project Location:** The project area is located in the most southern region of the City of Palo Alto, in the northern part of Santa Clara County, west of U.S. Highway 280. The project area includes the two parks in the foothills of Palo Alto: Foothills Park and Pearson Arastradero Preserve. In addition, the project includes segments of Skyline Boulevard, Page Mill, Arastradero, and Los Trancos Road.

**Applicant:** City of Palo Alto
Department of Planning and Community Environment
Clare Campbell, Planner

**Owner:** City of Palo Alto
250 Hamilton Avenue
Palo Alto, CA 94301

**Project Description:**

The proposed 2009 update to Palo Alto Fire Management Plan proposes fuel management on approximately 330 acres of Foothills and Arastradero Parks to protect lives, enhance the safety of improvements in and around the parks and to enhance the natural resource ecosystem health. Fuel management fall into the following categories: roadside treatments along potential evacuation corridors, creation and maintenance of firefighter safety zones, creation and maintenance of defensible space around structures in the parks, ignition prevention, and treatments to aid containment of fires in and within the park.

## II. DETERMINATION

**In accordance with the City of Palo Alto's procedures for compliance with the California Environmental Quality Act (CEQA), the City has conducted an Initial Study to determine whether the proposed project could have a significant effect on the environment. On the basis of that study, the City makes the following determination:**

_____ **The proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION is hereby adopted.**

__X__ **Although the project, as proposed, could have a significant effect on the environment, there will not be a significant effect on the environment in this case because mitigation measures have been added to the project and, therefore, a MITIGATED NEGATIVE DECLARATION is hereby adopted.**

The attached initial study incorporates all relevant information regarding the potential environmental effects of the project and confirms the determination that an EIR is not required for the project.

In addition, the following mitigation measures have been incorporated into the project:

**BIO - 1:** A qualified biologist or park staff trained to do so by a qualified biologist shall conduct a tail-gate training session to all relevant personnel who will be performing treatments regarding protected species and habitats in the project area, the limitations on areas that can be accessed on foot or with equipment, and the legal consequences of take of protected species or habitat. The training shall be repeated for new personnel coming to the project site. Dogs shall be prohibited from the project site.

**BIO - 2:** Vegetation removal in any vegetation type from February 15 to August 31 shall require a survey for nesting birds by a qualified biologist or by park staff trained to do so by a qualified biologist and avoiding removal of nests in active use. If raptor nests are detected, a buffer area will need to be established around the nest in consultation with the California Department of Fish and Game. The buffer may be 250 feet.

**BIO - 3:** Vegetation removal in areas of serpentine soil, oak woodland, chaparral, coastal scrub and riparian forest habitats shall require a survey for rare plant species by a qualified biologist/ botanist prior to vegetation removal. Known rare plant locations should be treated in a way that benefits the rare species. This may include limiting the area of treatment in order to provide a buffer around the plant(s), or may include selectively trimming competitive vegetation adjacent to the plant(s). Some species may benefit from disturbance; the specific actions to be taken should be determined in consultation with a botanist. The plant survey shall be performed during the bloom period. After surveys in the same locations over three separate years, subsequent surveys are not necessary in that area unless there a newly listed plant species could occur in the habitat. This should be determined by consulting the California Department of Fish and Game.

**BIO - 4:** Vegetation removal, including dead and downed debris, shall require a survey for presence of San Francisco dusky-footed woodrat by a qualified biologist or by park staff trained to identify woodrat houses by a qualified biologist. If woodrat houses are found, disturbance should be avoided and a minimum five-foot buffer should be provided around the house. If, for public safety reasons, it is necessary to move the house, the process must be coordinated with the California Department of Fish and Game. All relevant workers shall receive instruction regarding woodrat houses prior to their start of work.

**BIO - 5:** Prior to the removal of any tree that is 12 inches or more in diameter breast height, a survey for perennial bat roosts and, during the breeding season from February 15 to August 31, raptor nests shall be conducted by a qualified biologist or park staff trained by a qualified biologist to identify these resources is required. If present, removal cannot continue without CDFG guidance.

**BIO - 6:** Discing within 500 feet of a lake, pond or creek, shall require a biological survey to determine impacts to California red-legged frog, California tiger salamander, San Francisco garter snake and Western pond turtle and whether permits are required from the USFWS/CDFG.

**BIO - 7:** Discing in grassland shall require a pre-construction survey for American badger, California red-legged frog and burrowing owl by a qualified biologist.

**BIO - 8:** Trimming of coast live oaks shall follow the City's Tree Ordinance (Title 8). Coast live oak or Valley oaks that are 11.5 inches in diameter or more measured at 54 inches above grade may not be removed without a permit, and may not be pruned such that more than 25 percent of the crown is removed or the tree is left unbalanced.

**BIO - 9:** Wetlands mapped in Pearson Arastradero Preserve shall be avoided when weed-whipping or mowing. Modify the Fire Management Plan Best Management Practice that requires that a grazing plan be prepared to include protection of drainages and wetlands from the impacts of grazing animals.

**BIO - 10:** For treatments in Foothills Park or on Page Mill Road along the Park border, a pre-work survey for stands of locally important plants shall be conducted, and the plants avoided as long as it does not impair public safety. Field crews shall be educated about the sensitivity of these plant species. For additional information, see Table 3 in Appendix A of the Biological Assessment (Source Reference #5).

**BIO - 11:** For proposed treatments, clean all tools and equipment following actions and prior to movement into new environmental areas to prevent the spread of invasive or non-native plants.

**BIO - 12:** Measures shall be taken to clean equipment, tires, and shoes to prevent the spread of Sudden Oak Death, and that any materials infected with the disease be disposed of in accordance with State or County Agricultural Commission guidelines. To reduce the possibility of spreading the disease, it is recommended that

work not be done in wet or muddy conditions, and that infested areas be avoided to the extent feasible. Additional guidelines are available from the County Agricultural Commissioner.

**BIO - 13:** A qualified biologist shall be present onsite to monitor all treatment work. The biological monitor shall have the authority to stop work if deemed necessary to protect state or federally protected species, and shall work directly with the City staff. Prior to the start of work each day, the monitor shall thoroughly inspect the treatment area and adjacent habitat areas to determine if any protected species are present in the area and shall remain onsite through out the day while work activities are occurring. If a protected species is encountered, the onsite biological monitor shall determine whether treatment activities are remote enough from the animal that it will not be harmed or harassed.

**BIO - 14:** Treatment equipment and materials shall be staged in an already disturbed area such as improved trails or existing roads.

**BIO - 15:** Prior to introduction, all grazing animals shall be quarantined for three days and fed weed-free forage to limit spread of invasive or unwanted plant species, as well as prevent spread of livestock diseases.

**BIO - 16:** Grazing shall be limited to non-riparian areas.

**BIO - 17:** Maintain a buffer between the prescribed burn area and water bodies or drainage into riparian zones. Buffers should be a minimum of 25 feet for 5% slopes, 75 feet for 5-10% slopes, and 250 feet for 10% or greater slopes. No prescribed fires shall be ignited near streams or in riparian zones.

**BIO - 18:** Herbicide treatments within habitat of California Red-legged Frog shall be conducted according to U.S. District Court injunction and order covering 66 pesticides (Oct 2006) and subsequent EPA effects determinations.

**BIO - 19:** Avoid herbicide treatments in areas adjacent to water bodies, riparian areas, and primary drainage access. Follow all herbicide labels and directions in determining applications near water resources or riparian habitats. Limit aerial application to greater than 100 feet from water resources. Limit ground and hand application to greater than 50 feet.

**Geology - 1:** The City shall conduct treatment actions in a manner that avoids erosion and adverse affects on sensitive soil systems by avoiding treatment in sensitive soils and potentially erosive soil areas. This mitigation measure shall be implemented through development of a study that identifies all potentially erosive soils prior to beginning treatment actions and development of an erosion control plan subject to review and approval of City Staff that restricts treatment operations that may adversely affect the sensitive soil systems.

**Geology - 2:** Avoid treatment actions during periods of precipitation, or immediately following severe weather.

**Geology - 3:** (Hand Labor) Avoid excessive foot or vehicle traffic on slopes, unimproved or non-designated trails, or outside of preexisting roads or access points.

**Geology - 4:** (Mechanical). In addition to avoiding treatment actions during periods of precipitation, or immediately following severe weather, avoid scheduling any treatment actions during seasons with significant predicted precipitation. Cease operations or postpone planned operations including movement of vehicles or equipment during precipitation conditions that may combine with vehicle activity to cause damage to roads, trails, or adjacent land areas.

**Geology - 5:** (Mechanical) Plan treatment actions and equipment selection to minimize damage or alterations to existing soils.

**Geology - 6:** (Mechanical) Maintain a buffer of 25-50 feet between operations and water bodies or designated riparian areas. Avoid crossing drainage channels, run-off areas, or dry streambeds. Install and manage run-off barriers for rainwater in all treatment and operating areas. Restrict mechanical removal of trees to areas further than 50 feet from drainage channels.

**Geology - 7:** (Mechanical) Restrict vehicle traffic to preexisting roads or pre-planned access points based on equipment size and operations. Limit transport and support equipment to existing roads. Limit heavy equipment use to slopes less than 30%. Install erosion control measures on all vehicle roads and traffic areas.

**Geology - 8:** (Grazing) The City shall conduct grazing operations in a manner that avoids over-grazing and prevents erosion by appropriately limiting the intensity and scope of grazing. This mitigation measure shall be implemented through development of a grazing management plan prepared by a certified range specialist that specifies goals, stocking levels, grazing periods, installation of range improvements (such as water sources) to evenly distribute utilization of feed, and monitoring and performance criteria to address the potential erosion conditions created by over-grazing.

**Geology - 9:** (Grazing) Develop a site-specific annual grazing plan to be approved by a certified range specialist that includes project-level plans for sticking, timing, and resource management goals.

**Geology - 10:** (Burns) The City shall conduct prescribed burns in a manner that minimizes post-fire erosion into water bodies and drainage through the use of natural barriers, fire lines along contours, erosion control barrier deployment, and avoidance of areas with highly erodible soils. This mitigation measure shall be implemented through development, prior to conducting a prescribed burn, of a prescribed burn erosion control plan (or included in the prescribed burn plan) subject to review and approval by City Staff.

**Hazards - 1:** All treatment methods involving fueling and maintenance operations shall be strictly monitored and controlled. This mitigation measure shall be implemented by conducting all maintenance actions that may produce spills should be executed in areas with secondary containment protection, away from any water bodies or drainage areas; cleaning up all spills shall be done on-site, and clean-up materials shall be maintained on site so they are readily available for use. Inspection of equipment for new leaks and mechanical problems should be performed daily, prior to operations.

**Hazards - 2:** Cease actions during periods of high fire danger or during red flag conditions. Ensure that all mechanical equipment have approved spark arrestors and comply with California Public Resources Code (PRC) sections 4431, 4435, 4442, and 4437 to limit potential for ignition of incidental fires.

**Hazards - 3:** Maintain on-site fire suppression resources to include shovel, water pump, fire extinguisher, and two-way radio or communications for fire reporting.

Herbicide Application

**Hazards - 4:** The City shall conduct herbicide application in a manner that uses the least amount of chemical required to achieve a desired outcome; the herbicide treatment shall be consistent with the City of Palo Alto's Integrated Pest Management policy.

**Hazards - 5:** Provide or confirm adequate training, experience, and oversight to ensure that personnel are familiar with herbicide operations and planning, site conditions, potential and identified sensitive resources, and the identification of specific environmental features or conditions that must be avoided. Herbicide application shall only be applied per a prescription prepared by a Pesticide Control Advisor licensed in Santa Clara County, and applied by a licensed Pesticide Control Applicator.

**Hazards - 6:** The City shall conduct herbicide application in a manner that protects public safety by informing the public of treatment and restricting access, when deemed appropriate. This mitigation measure shall be implemented through development of a public safety plan, which shall include requirements for press and information releases, signs and notifications, and guidelines for fencing or area restrictions, and shall be subject to review and approval of the Pesticide Control Advisor and the Directors of Community Services and Fire Department, and the terms of which shall be executed throughout the treatment cycle..

**Hazards - 7:** The City shall conduct herbicide application in a manner that protects against and minimizes damage from spills by maintaining strict monitoring and control of operations, and providing for clean up of all spills to be done on-site, with clean-up materials readily available for use. This mitigation measure shall be implemented through development of a spill contingency plan subject to review and approval of the Pesticide Control Advisor and the Directors of Community Services and Fire Department.

**Hazards - 8:** Chemical treatments within habitat of California Red-legged Frog shall be conducted according to U.S. District Court injunction and order covering 66 pesticides (Oct 2006) and subsequent EPA effects determinations.

**Hazards - 9:** Clean equipment following actions and prior to movement into new environmental areas.

**Hazards - 10:** Avoid treating areas adjacent to water bodies, riparian areas, and primary drainage access. Follow all herbicide labels and directions in determining applications near water resources or riparian habitats. Limit aerial application to greater than 100 feet from water resources. Limit ground and hand application to greater than 50 feet.

**Hazards - 11:** Avoid treating areas used for livestock operations or intended as grazing areas.

**Prepared by Project Planner**

02-09-09
**Date**

Adopted by City Council, Attested by
Director of Planning and Community Environment

Date

# ENVIRONMENTAL CHECKLIST FORM
## City of Palo Alto
## Department of Planning and Community Environment

# PROJECT DESCRIPTION

## 1. PROJECT TITLE

Foothills Fire Management Plan Update

## 2. LEAD AGENCY NAME AND ADDRESS

City of Palo Alto
Department of Planning and Community Environment
250 Hamilton Ave.
Palo Alto, CA 94303

## 3. CONTACT PERSON AND PHONE NUMBER

Clare Campbell, Planner
City of Palo Alto
650-617-3191

## 4. PROJECT SPONSOR'S NAME AND ADDRESS

City Manager's Office
City of Palo Alto
250 Hamilton Avenue
Palo Alto, CA 94303

Contact: Kenneth Dueker

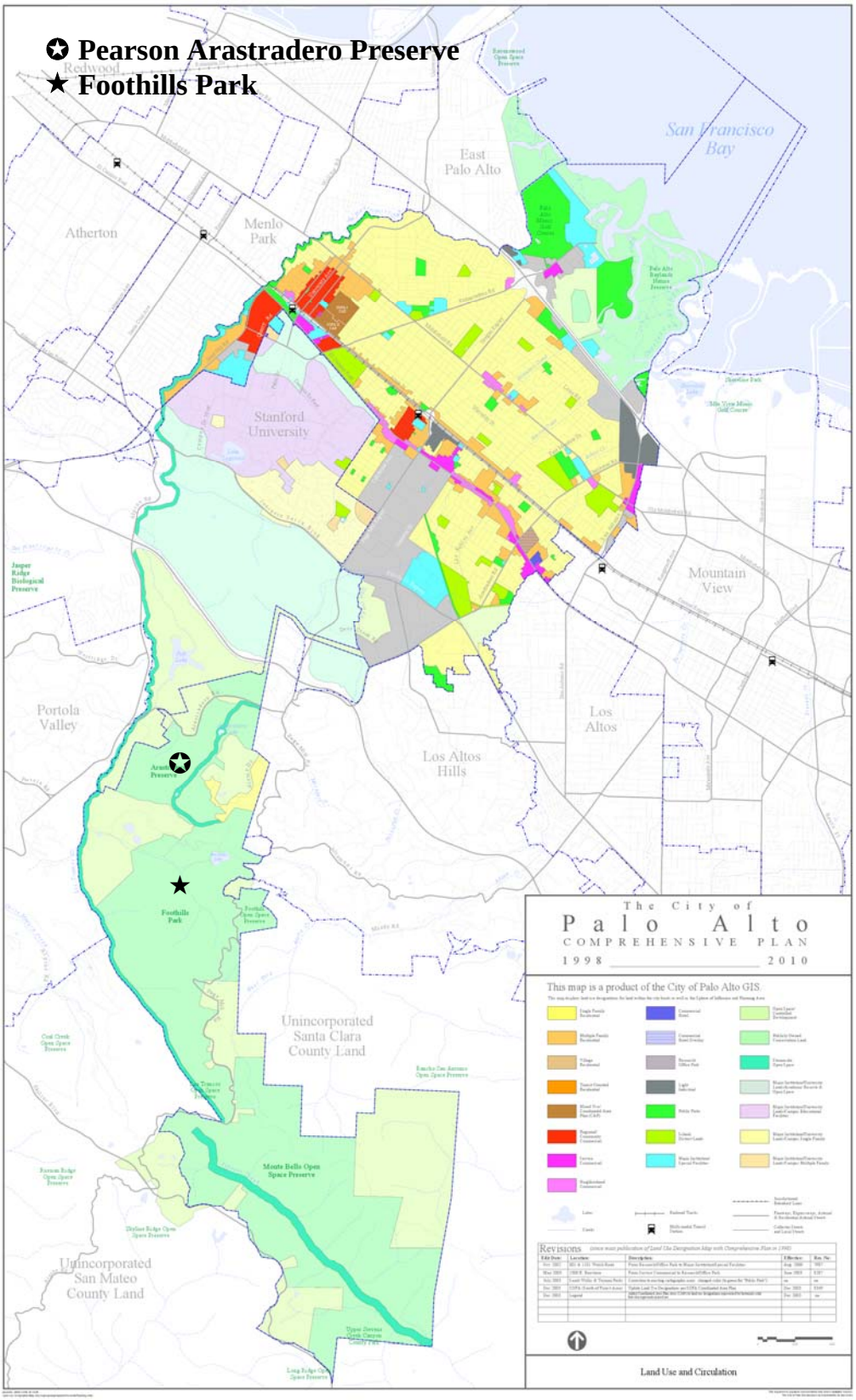
## 5. APPLICATION NUMBER

Not Applicable

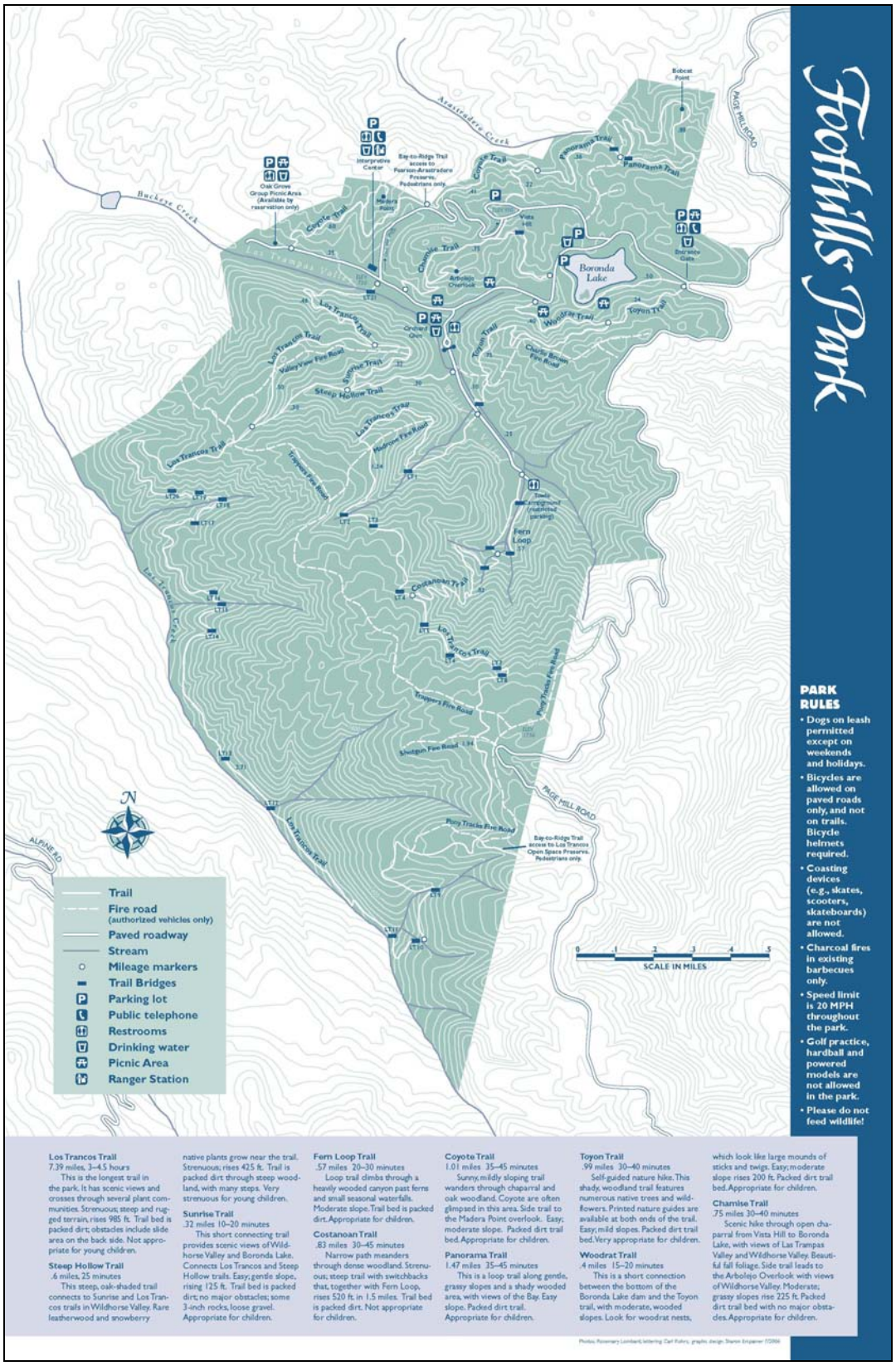
## 6. PROJECT LOCATION

The project area is located in the most southern region of the City of Palo Alto, in the northern part of Santa Clara County, west of U.S. Highway 280. The project area includes the two parks in the foothills of Palo Alto: Foothills Park and Pearson Arastradero Preserve. In addition, the project includes segments of Skyline Boulevard, Page Mill, Arastradero, and Los Trancos Road.

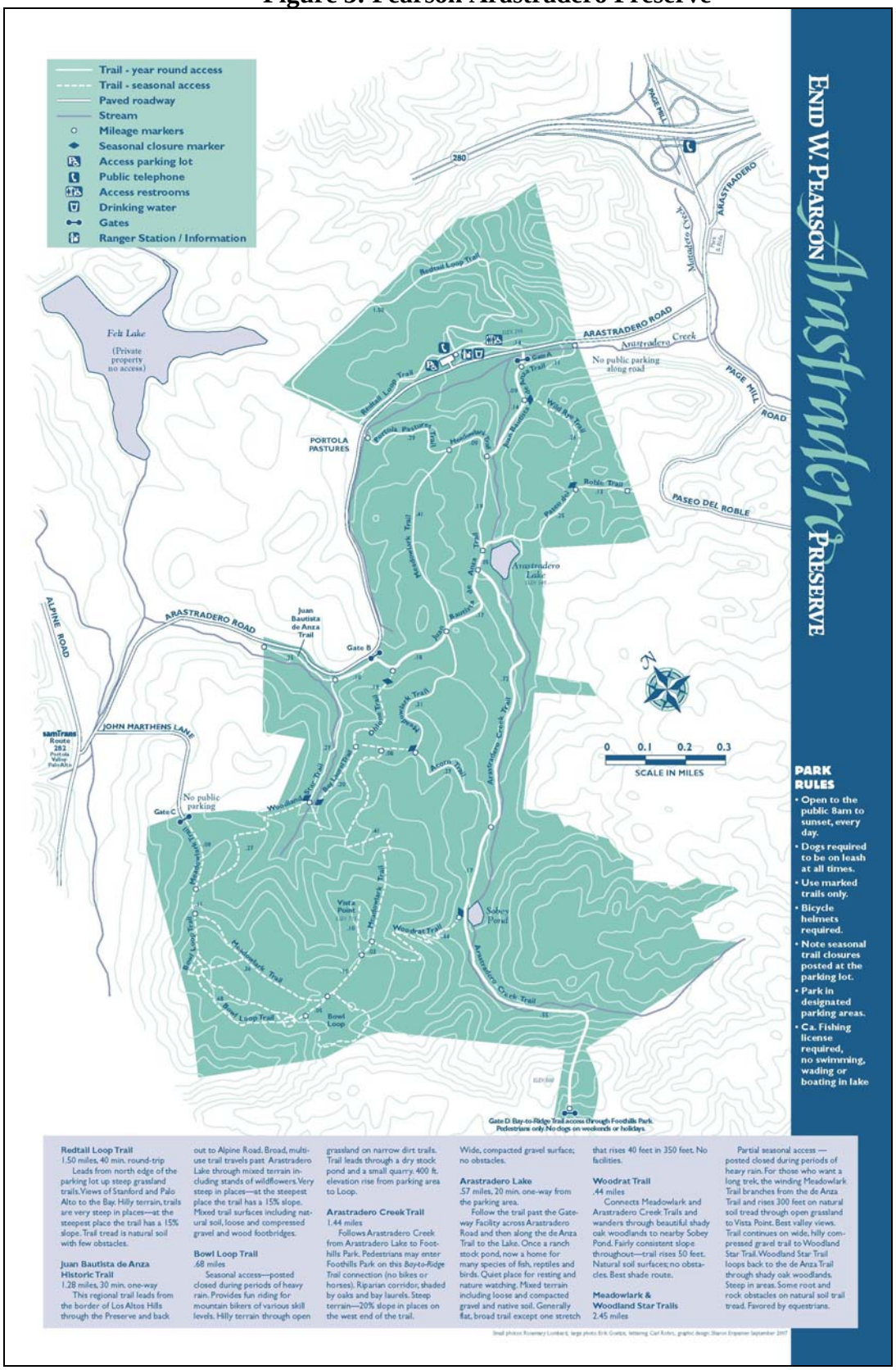
**Figure 1: City of Palo Alto**



## Figure 2: Foothills Park



## Figure 3: Pearson Arastradero Preserve



## 7. COMPREHENSIVE PLAN DESIGNATION

The project area, Foothills Park and Pearson Arastradero Preserve, is comprised of three land use designations that are described in the Palo Alto 1998 – 2010 Comprehensive Plan. There are no proposed changes in the use; the existing park use is an appropriate use for these land use designations.

Foothills Park is designated as Public Park. This land use provides for open lands whose primary purpose is active recreation and whose character is essentially urban. These areas have been planted with non-indigenous landscaping and require a concerted effort to maintain recreational facilities and landscaping.

Pearson Arastradero Preserve is designated as Publicly Owned Conservation Land and Streamside Open Space. The Publicly Owned Conservation Land designation provides for open lands whose primary purpose is the preservation and enhancement of the natural state of the land and its plants and animals. Only compatible resource management, recreation, and educational activities are allowed. The Streamside Open Space designation describes the corridor of riparian vegetation along a natural stream. Hiking, biking, and riding trails may be developed in the streamside open space. The corridor will generally vary in width up to 200 feet either side of the center line of the creek.

## 8. ZONING

The project area, Foothills Park and Pearson Arastradero Preserve, has the base zoning of Public Facility (PF). In addition to this base zoning, Pearson Arastradero has an added zoning overlay of Site and Design (D) that requires proposed development projects to undergo a more critical design review. The PF zone district is designed to accommodate governmental, public utility, educational, and community service or recreational facilities. There are no proposed changes in the use; the existing park use is an allowable use in this zone district.

## 9. PROJECT DESCRIPTION

The City of Palo Alto developed a Fire Management Plan in 1982. The 1982 Plan provided the planning framework for fire control activities for the City and the Palo Alto foothills area. The goal of the 1982 Plan was "to reduce government costs and citizen losses from wildland fire by increasing initial attack success and/or protecting assets at risk through focused pre-fire management activities." In 1997, the City of Palo Alto staff developed a draft update to the 1982 Plan. Although the draft update was not formally adopted by the City Council, it provided an updated framework and interim objectives for fire management within the foothills area. The City of Palo Alto initiated an update process for the Foothills Fire Management Plan (Plan) that involved a combination of City staff personnel from a wide cross section of city operations, stakeholders from across the Palo Alto area, and members of the Palo Alto community.

The Palo Alto Foothills consist of a mix of urban, semi-urban and open space lands on the eastern slope of the Santa Cruz Mountains. Within the city limits of Palo Alto, the Palo Alto Foothills area west of the Foothills Expressway and Junipero Serra Boulevard represents a Wildland Urban Interface area (WUI). The City's Fire Department's response area in the WUI

covers nearly 10 square miles, from Skyline Boulevard in the Palo Alto foothills to Foothill Boulevard and from Page Mill Road to Los Trancos Road. Approximately 200 residences and large business complexes (many of them exceeding a million square feet in area) are located in Palo Alto's WUI. The City's Emergency Operations Plan (June 2007) notes that 11 health care facilities, 10 schools and 25 government-owned buildings are located in the wildland urban interface threat areas, along with 19 miles of roadway that are subject to high, very high or extreme wild fire threat. The Plan addresses fire hazard protection within Foothills Park and Pearson Arastradero Preserve, which represent the majority of the Wildland Urban Interface fire area, as well as the major evacuation routes in proximity to these parks.

The proposed 2009 update to Palo Alto Fire Management Plan (Plan) proposes fuel management on approximately 330 acres of Foothills and Arastradero Parks to protect lives, enhance the safety of improvements in and around the parks and to enhance the natural resource ecosystem health. Fuel management fall into the following categories: roadside treatments along potential evacuation corridors, creation and maintenance of firefighter safety zones, creation and maintenance of defensible space around structures in the parks, ignition prevention and treatments to aid containment of fires in and within the park.

Fuel management is justified by various objectives, spanning the need to keep fires from crossing boundaries, minimizing damage to developed areas and minimizing damage to natural resources. Other fuel management complies with regulations, which themselves are intended to increase access, or facilitate fire suppression. A variety of fuel management practices reduce the chance of damage to life and property. There are techniques that keep fire from crossing boundaries, which could be in the form of fuel management to compartmentalize the landscape, or fuel management along the borders of the parks, or modification of the volume or structure of the fuels to reduce chance of ember production or enhance firefighting effectiveness.

The proposed Plan also addresses several issues aside from the proposed fuel management strategies for the Foothills. These other components are contained in a section of the Plan that includes recommendations related to administration of the Plan, including consistency between the Foothills Park Trails Maintenance Plan and the Pearson Arastradero Trails Management Plan, review of Municipal Ordinances, review of staffing of Fire Station 8, suggested implementation plan, and identification of potential funding . Those policy recommendations are purely administrative and do not amount to activities for which it is foreseeable that a direct or indirect change in the physical environment would result. Therefore, the environmental impacts that are discussed in this checklist refer specifically to the components of the Plan that address physical changes to the project area as a result of the proposed fuel management strategies for the Palo Alto Foothills.

**Fuel Management**

Not every area identified as a potential fire hazard can be modified to produce low-intensity fires. Not only would this be too costly, but environmental impacts would also be unacceptable. Fires that burn in un-treated areas will not benefit from treatment elsewhere. The exception is that the fire may be contained in the treated area, thereby never reaching the untreated area.

**Identifying Potential Treatment Areas**
Selection of pre-fire fuel treatment areas is based on the probability of the event and the potential damage of that event. Factors taken into consideration are:

- **Need for enhanced access and egress**: Actions to promote life safety and efficient emergency response is of utmost importance. Roadside treatments that aid safer access and evacuation have a high likelihood and magnitude of benefit.

- **Ignition locations:** Treatments are located either where ignitions are likely to occur or could spread into (e.g. a grassy spot near a road, or near a barbeque). Even where an area would burn with great ferocity, if there is only a remote chance of ignition, it has a lower treatment priority.

- **Adjacency to improvements or other sensitive values at risk from wildfire:** The closer the fuel source is to a structure, heavily used area, or environmentally sensitive area, the higher the treatment priority. Therefore, an area in the interior of a Park/Preserve, well removed from other vulnerabilities, should not be treated with the same priority as a hazardous situation near valuable and/or vulnerable resources.

- **Propensity of the treatment to aid containment:** Treatments that facilitate access or create locations where containment is likely to be successful have greater benefit because they improve fire suppression success. Also, a fire that is easy to contain will be more likely to have fewer environmental impacts from the suppression action itself.

In the end, the most intense fire, and possibly the largest potential fire size, may not be highest on the treatment priority list. This may be because the likelihood of the event coupled with the potential damage from the fire would not yield the highest risk.

**Current Fuel Management Program**
The two parks have a long history of managing vegetation to both promote fire safety and to enhance natural resources. In some cases, projects attain both goals. Previous projects in Foothills Park encompass discing along park boundaries, grazing with goats in Las Trampas Valley, maintenance of a mowed fuel break along various locations, including a broad fuel break sometimes 200-ft wide along Trappers Ridge, and more narrow fuel breaks along the Madrone Fire Road, Shotgun Fire Road, Pony Tracks Fire Road, and around Fire Station 8. Fuel management in Pearson Arastradero includes discing along park boundaries, mowing 14 different broad areas within the park, and maintenance of vegetation along park roads.

**Grading** of the fire roads has been a component of the contract between Van der Steen General Engineering and Palo Alto for annual firebreak maintenance. Grading has been performed as part of this contract only in the last three years; low annual rainfall and erosion has not warranted grading. To minimize grading work, city employees from all departments are strictly prohibited from driving the bare soil roadways that do not have asphalt or compacted rock. Grading, as a component of the contract, is specified as only when necessary.

**Discing** has been performed by City staff for the last 7+ years. After trials with several methods, the City found that a two discing cycles work best. The first cycle is performed when the threat of spring rains has diminished, drainages or low areas are dry, and annual grasses are still green. The depth of discing is less than 6-inches, and causes a disruption of the growth of the annual grasses (less biomass). The second cycle of discing is after the annual grasses have cured/dried but there is still some soil moisture. Discing is full depth or up to 10-inches. Completely dry soil makes traction nearly non-existent, which is a safety hazard for the equipment operator, and produces copious amounts of dust to the surrounding area during both discing and grading operations.

**Mowing** is routinely conducted during the early summer by City staff for resource enhancement. Approximately 200 acres are routinely mowed. Outside of the areas mowed for resource enhancement, large areas are mowed annually in Foothills Park as part of a fuel break. A fuel break is mowed on Trappers Trail, varying from 100-ft to 300-ft in width. Another area routinely mowed is along Pony Tracks Fire Road from the intersection of Los Trancos Trail to Page Mill Road. Most areas are less than 100-ft but the area between Pony Tracks and Los Trancos Trail can reach 300-ft in width.

**Grazing** with sheep and goats is a relatively new component of the fuel management program within the City of Palo Alto Parks. Approximately 5 acres were grazed in 2007 in Las Trampas Valley in Foothill Park, the picnic areas near the road.

**Defensible Space** is maintained near existing structures in Foothills Park and Pearson Arastradero Preserve. This employs the use of hand labor to limb trees and shrubs, cut grass, landscape with fire-resistant plants, and irrigate selected plants.

## Proposed Treatment

### Areas

The plan identifies 56 specific areas that are a priority for treatment. The areas generally fall into the following five categories based upon the treatment proposed: roadside treatments, defensible space, ignition prevention, firefighter safety zones, and containment fuel breaks. Each treatment location was selected to achieve a specific objective. Many treatments are associated with roadsides, structures and City Park/Preserve boundaries. Treatments for containment are strategically located at ridgetops, in places that have access, are not too steep for mechanical treatments, avoid riparian areas, and are not prone to soil erosion.

***Figure 4: Treatment Areas***

| Designation | Project | Description | Acreage | Treatment Method |
|---|---|---|---|---|
| ***Foothills Park Treatment Locations*** | | | | |
| **Evacuation Routes** | | | | |
| F.E1 | Page Mill Road | Within PA City from | 9.54 acres | mowing, grazing, hand labor |

| Designation | Project | Description | Acreage | Treatment Method |
|---|---|---|---|---|
| ***Foothills Park Treatment Locations*** | | | | |
| F.E2 | Evacuation Route - Park Road | Entrance to Maintenance | 5.96 acres | mowing, grazing, hand labor |
| F.E3 | Evacuation Route - Park North west | Interpretive Center to | 0.57 acres | mowing, grazing, hand labor |
| F.E4 | Evacuation Route - Park North east | Boronda Lake to Alexis Drive | 1.21 acres | mowing, grazing, hand labor |
| F.E5 | Secondary Evac Route | Towle Campground to | 0.97 acres | mowing, grazing, hand labor |
| F.E6 | Los Trancos | Southwest corner of | 6.07 acres | Hand labor |
| **Firefighter Safety Zone** | | | | |
| F.F1 | Firefighter Safety Zone 1 | Trappers Ridge & Los Trancos | 0.72 acre | mow, graze |
| F.F2 | Firefighter Safety Zone 2 | Trappers Ridge & Madron Fire | 0.72 acre | mow, graze |
| F.F3 | Firefighter Safety Zone 3 | Trappers Ridge high point | 0.72 acre | mow, graze |
| F.F4 | Firefighter Safety Zone 4 | Trapper Ridge south end | 0.72 acre | mow, graze |
| **Defensible Space** | | | | |
| F.D.1 | Defensible Space | Entry Gate | 0.72 acre | hand labor |
| F.D.2 | Defensible Space | Station 8 | 0.72 acre | hand labor |
| F.D.3 | Defensible Space | Restrooms at Orchard Glen | < ½ acre | hand labor |
| F.D.4 | Defensible Space | Interpretive Center | 0.11 acre | hand labor |
| F.D.5 | Defensible Space | Maintenance Complex | 0.72 acre | hand labor |
| F.D.6 | Defensible Space | Boronda Pump Station at | 0.72 acre | hand labor |
| F.D.7 | Defensible Space | Dahl Water Tank | < 1/2 acre | hand labor, grazing |
| F.D.8 | Defensible Space | Boronda Tank | < 1/2 acre | hand labor, grazing |
| F.D.9 | Defensible Space | Park Tank | < 1/2 acre | hand labor, grazing |
| **Ignition Prevention** | | | | |
| F.I.1 | Ignition Prevention | Shady Cove Picnic Area | < 1/4 ac | hand labor |
| F.I.2 | Ignition Prevention | Encinal Picnic Area | < 1/4 ac | hand labor |
| F.I.3 | Ignition Prevention | Pine Gulch Picnic Area | < 1/4 ac | hand labor |
| F.I.4 | Ignition Prevention | Orchard Glen | < 1/4 ac | hand labor |
| F.I.5 | Ignition Prevention | Oak Grove Group Picnic | < 1/4 ac | hand labor |
| F.I.6 | Ignition Prevention | Towle Camp | < 1/4 ac | hand labor |

| Designation | Project | Description | Acreage | Treatment Method |
|---|---|---|---|---|
| ***Foothills Park Treatment Locations*** | | | | |
| **Containment** | | | | |
| F.C1 | Containment | Trappers Trail | 72.51 acres | mowing, grazing |
| F.C2 | Containment | Pony Tracks south of | 1.37 acres | mow annually 10-ft on either size of road, use a |
| F.C3 | Containment | Pony Tracks north of | 1.13 acres | mowing, grazing |
| F.C4 | Containment | Bobcat point | 5.28 acres | graze with goats |
| F.C5 | Containment | North of entry Gate | 3.47 acres | graze with goats |
| F.C6 | Containment | "Valley View Fire Trail" | 3.35 acres | mowing |

## Treatment Standards

The proposed clearances of the treatments follow in the table below. The treatments that will occur within the project area depend on the vegetation type and treatment method.

***Figure 5: Treatment Methods and Treatment Intervals***

| Fuel Treatment Types | Dimension | Treatment Frequency | Comments |
|---|---|---|---|
| ***Roadside Treatments*** | | | |
| Major evacuation routes | 30 ft on both sides of pavement edge | Rotate 3-5+ years depending on fuel type | *Annual for first 10 feet with grass fuels* |
| Secondary evacuation routes | 15 ft on both sides of pavement edge | Rotate 3-5+ years depending on fuel type | |
| ***Defensible Space*** | 100-ft from structure | Annual | *Follow-up treatments may not be required annually* |
| ***Ignition Prevention*** | 10-ft from barbeque | Annual | |
| ***Firefighter Safety Zones*** | 100-ft radius | Annual | |
| ***Containment Fuelbreaks*** | | | |
| Area treatment | Within 300-ft of ridgetop of Trappers Ridge | Rotate 3-5+ years | |
| | Areas designated goat grazing within park | Rotate 3-5+ years | |
| | Two designated potential prescribed burn units per map | Rotate 3-5+ years | |
| Perimeter treatment | | | |

| | | | |
|---|---|---|---|
| - Brush/understory | In designated areas within 300 ft of park boundary | Rotate 3-5+ years | |
| - Grass | Discing or mowing 15-45 ft from park boundary, as practical | Annual | |
| - Eucalyptus Removal | Individual tree removal | One time | *Follow up to ensure no stump sprouts* |

**Timing**

The timing of the initial or consecutive treatments is important to achieve the desired fuel management performance standards and resource management objectives. Given the variable nature of fuels through changes in weather and season over time, the schedule of the treatment may often be just as important as the type of treatment selected. For example, treatments in grasslands typically take place when grass cures or dries out. Cutting grass too early will be ineffective, as the grass will usually grow back, negating the treatment. Conversely, cutting grass too late will leave the grass in a hazardous condition during periods of high fire danger. Fuel treatments also need to be conducted when the weather is not too dry or windy, as some treatment types, especially mechanical treatments, may inadvertently start fires.

Timing the treatment methods appropriately can reduce potential impacts to special-status species or sensitive wildlife species. It is likely that there will be some months of the year when particular practices need to be implemented (e.g., pre-treatment nesting surveys or avoidance of breeding habitat) to avoid adverse affects to special-status species.

Timing treatments to either control or avoid the spread of invasive plant species or insect pests is also critical. Treatments should take advantage of differences in the timing of seeding of native plant species and avoid periods when invasive species are in seed. Pruning of pines and eucalyptus should be done when insect pests are not flying to minimize the associated spread and damage from these insects. Pruning should take place from November to April to minimize the susceptibility to bark beetles or red turpentine beetles. In most cases, the timing and method of treatment can be modified to accommodate local habitat needs and still reduce fire hazard to an acceptable level.

**Methods**

Fuels can be removed on a large scale by prescribed burns, grazing animals, and mechanical treatment. In small open space areas and around structures, hand labor is effective in reducing the fuel load. Eucalyptus tree removal may be effective in specific locations of high risk. Fuels can be redistributed on a large or small scale through mechanical treatments, such as mowing, discing, or grading. In all the following treatments but hand labor, economies of scale are dramatic; the larger the project, the greater the efficiency.

**1. Hand Labor**

Hand labor involves pruning, cutting or removal of weeds or shrubs either by hand or with hand-held equipment. This process is slow and expensive, but most selective and has little impact beyond the removal of the target plants. This technique generates considerable debris when pulling, pruning, and cutting vegetation. The debris is not always removed from the site due to

the high cost of doing both the clearance and removal by hand. Not removing the debris, however, leaves a significant hazard, possibly greater than pre-treatment because the debris may be voluminous, dry, well aerated, and quite flammable. This method is most commonly used by residents to reduce fuel volume on private lands, or by hand crews on short-term contract with the City of Palo Alto to reduce hazard adjacent to improvements. Some expertise is required to work with trouble species such as poison oak, to prune oaks and control shrubs, and to identify new fuel hazards as they arise. Hand labor encompasses the operations of pruning and weed-whipping, tree removal, pruning, bark pulling, removal of dead wood within the tree/shrub canopy, litter removal and mulching, and establishing new plant material. Hand labor allows use of a wide variety of methods to reduce fuel load, including both chemical and mechanical treatments.

Pruning

Pruning Trees and shrubs must be hand-pruned to vertically separate fuels. Pruning lower branches of trees is usually done with a hand-held pole saw (with or without a motorized chain saw attached). Lower branches on shorter trees can be pruned with loppers.

Weed Whipping

Like mowing, weed whipping reduces fire hazard by reducing the fuel height. However, it is done by hand to avoid harming rock outcrops and desired small plants (such as oak regeneration and landscape material). This treatment is generally limited to small material such as grass or short herbs. Weed whipping may be accomplished any time of the year, and regardless of whether the material has cured.

Weed whipping is performed with a hand-held, gas powered tool that cuts grasses and very thin woody material with a fast-spinning fishing-line type of cutter. Because this method is performed manually, it can be used to selectively remove certain vegetation. Most large woody stems are not cut by the treatment, however seedlings (such as oak seedlings) can be severely damaged. Treatments can be completed with greater care than the others (however the height to which plants are cut may be difficult to control if the operator is not experienced) and minimize soil disturbance and erosion. It is also often the only type of treatment possible on steep slopes and in wooded areas. The average weed whipping rate is 750 square feet/hour.

The schedule for a skilled laborer should be tailored to the timing of their tasks. For example, selective weed whipping of annual grasses before they set seed while leaving native bunch grasses until after these plants set seed can shift the proportion of vegetative cover over time to more bunch grasses. This shift in type of grasses can shorten the length of time the landscape is prone to ignition. Similarly, thistle reproduction can be minimized by cutting while they are growing, but before they set seed. Pruning should be done from November to April; this schedule avoids spreading destructive bark beetles and/or other pathogens.

**2. Mechanical Treatments**

Mechanical treatments, including mowing, weed whipping, discing, and grading, rearrange rather than reduce the actual fuel load. Heavy machinery is usually used in flat areas where terrain and the presence of rocks or numerous trees do not prohibit travel. This type of

machinery should not be used on slopes over 30% because of concerns for worker safety as well as erosion control and slope stability issues.

Heavy Machinery

Heavy machinery generally means tractors with attachments, such as brush hogs, flail, mowers, and tiger mowers. A variety of attachments serve numerous purposes. For example, a brush hog attachment cuts and breaks brush plants off and produces a mulch of the brush debris. Mowers that cut or flail grass and small woody plants are also attached to tractors. Attachments (such as mowers) with articulated arms that reach as far as 20 ft away from the tractor reduce the area over which the tracks must travel, and offer more maneuverability. These articulated arms also cut and/or break off material. Heavy machinery is a moderately fast, and a relatively inexpensive treatment. There is little control over which plants are cut, but machines can travel around isolated areas of concern.

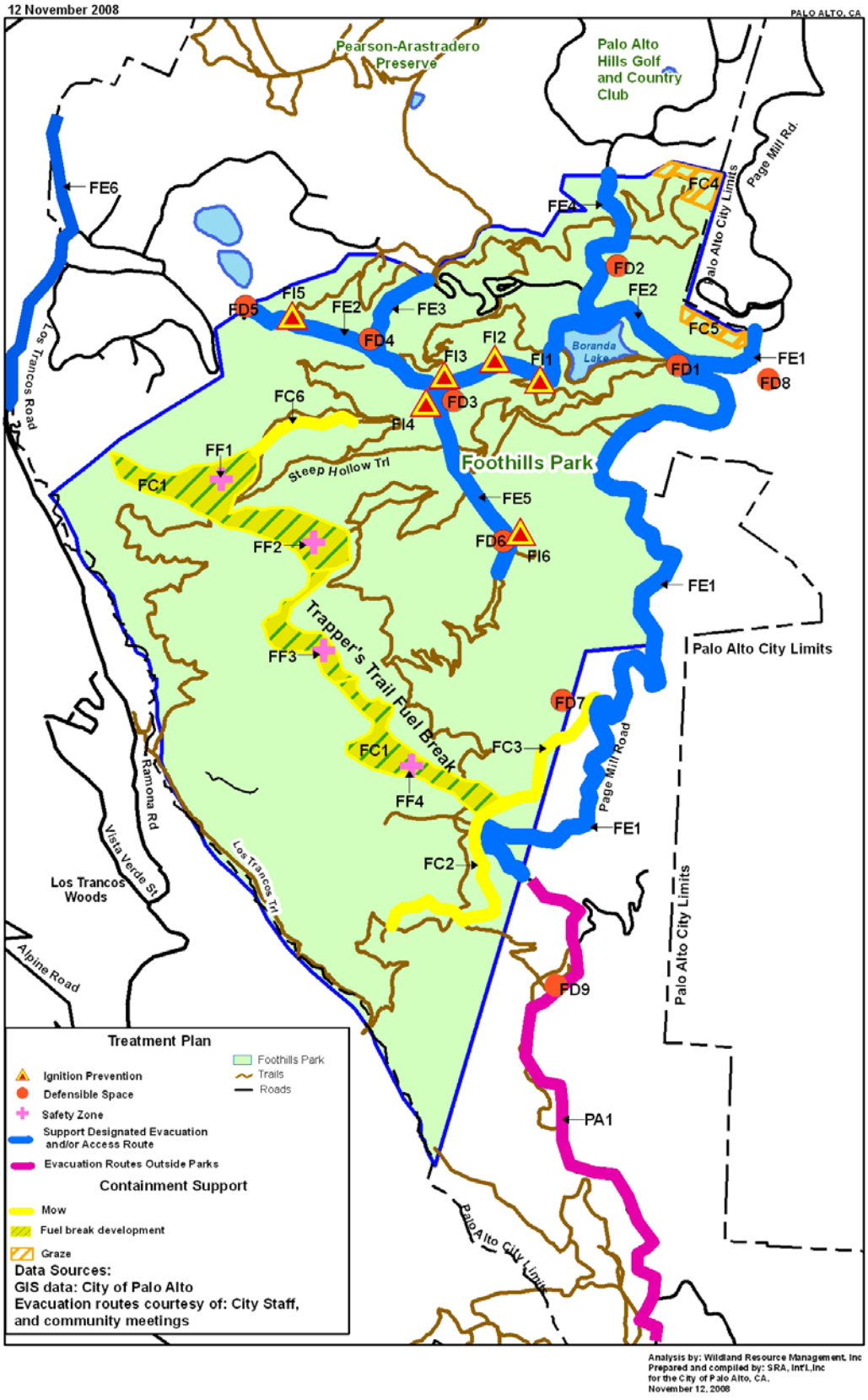
Heavy machinery should not be used when the ground is soft in order to prevent ruts and bared soil. Soil movement can be caused by all users on foot, bicycle, equestrian and vehicles (patrol vehicles and fire apparatus). Soil movement can be ruts or minor depressions, which will lead to large ruts or voids. This technique can be used at almost any other time of year, but is faster when done in the summer or fall when brush is brittle and grass has cured. It must not be used during times of high fire danger because the machines can start fires. The under-carriage of the machine and attachments should be washed off after use in areas of weed infestations.

Grading and Discing

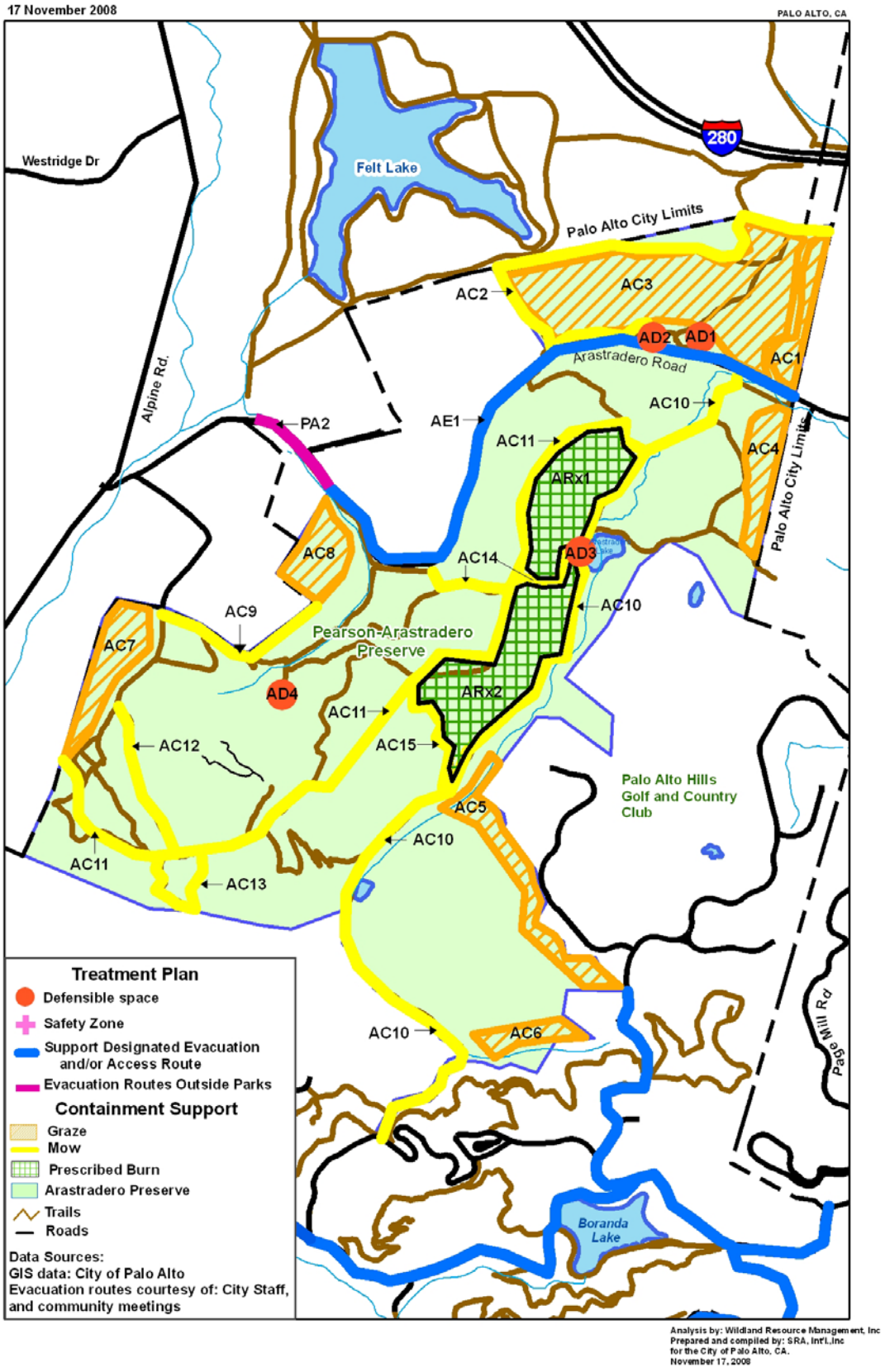
Grading and discing involves stripping a swath of land bare of vegetation with a tractor and blade. It is very effective in producing fire trails 8 to 12 feet across and as a maintenance tool for access routes. Generally, grading is done mid-spring, by a contractor when there is still residual moisture in the soil, but after the threat of spring rains has diminished. Residual soil moisture makes the soil pliable or workable, and allows the soil to compact. When grading is performed when the soil is completely dry, the soil is very difficult to work. Pearson Arastradero has high clay content soils and causes premature soil movement unless the contractor supplements soil moisture with a water truck, which is an additional expense.

There are several disadvantages to this treatment type; by removing all competing vegetation, grading creates an excellent establishment site for weedy species, which may be serious fire hazards. Untimely grading, for example, in mid-summer, can help sow seeds of weedy exotics, such as yellow star thistle, mustard and Italian thistle. In addition, annual grading causes soil disturbance and alters drainage patterns. Runoff, blocked from cross-drainage by the banks on either side of a graded fire trail, is redirected down the trail. This situation favors coyote bush and exotic grasses, leading to a shift in the grassland species composition. Grading spoils will need to be feathered into the sides or smoothed back into grading area annually.

## Figure 6: Proposed Treatment Areas for Foothill Park



## Figure 7: Proposed Treatment Areas for Pearson Arastradero Preserve



Discing involves cultivating or turning over the upper 10" of soil, and produces an uneven surface with a discontinuous fuel distribution and is appropriate only if mowing or grazing is not applicable that year or in a specific location. Rate of production is quite high; normally the operator can disc land parcels of two acres or less within one day. Discing is normally performed annually once grass has cured (so the grass will not grow back that season). A tractor with discer attachment can typically cultivate a swatch 15 feet wide in a single pass. While this is an effective barrier to surface fire spread, it is also an ideal disturbed area with prime growing conditions for weeds and distribution of their seeds. Surface erosion can be significant in areas prone to this process.

**3. Grazing with Sheep and Goats**

The grazing method includes the intentional use of sheep and goats to consume vegetation thus reducing the amount or density of fuel. These types of livestock are not recommended to create a fuel break, but can be used to maintain this type of pre-suppression feature. Similarly, livestock can prevent grasslands from shrub encroachment, and an oak woodland free of significant understory. The option is effective where the plants are palatable to the animals selected. Control of the livestock and prevention of the impacts of overgrazing is critical to successful use of this technique. As a fuel management technique, livestock need not graze every year.

Grazing can reduce or encourage weedy pest plants depending on the timing and intensity of grazing. A range management plan and a grazing monitoring program needs to be established to identify the impacts and ensure that the animals are removed once fuel management goals are met. Perennial grasses may require modifications from management of annual grasses using grazing animals. Because presence of healthy perennial grass stands has many benefits, these modifications are generally recommended. The benefits of perennial grasses are that they cure later in the season, which limits the opportunity for ignition. Mowing typically can be scheduled over a longer time period. Rotation of grazing animals is preferred over greater grazing pressure. Typically, perennial grasses react best when grazing is applied after seed maturation - from late spring through the fall. Goats may import seeds from another weedy site. The herd can be quarantined at goat herd's ranch for three days where they will be fed alfalfa to clear out their systems. The herder can also use short-haired goats that will carry fewer seeds in their fur.

The herding instinct of sheep and goats allows professional herders to range in very mobile bands without the installation and maintenance of permanent fences. Portable electric fences are commonly used to help control the herd and the outcome of their grazing. Goats will browse materials up to 6 feet above the ground creating a desirable vertical separation between the canopy and ground cover. However, measures must be taken to prevent girdling of trees by goats browsing on bark. Herd movement has the advantage of breaking off dead material in a stand as well as punching a humus layer into the soil (if the ground is somewhat moist) and thereby removing available fuel. Grazing treatments need to be repeated, however, following up or alternating with a different, complementary technique can extend its effectiveness.

If work is needed to be done during May-July, scheduling can present a challenge because many clients in the greater area desire the service at that time. To minimize the negative effects of

grazing on a specific plant, goats should graze after seed set of that particular plant. During initial fuel reduction treatments, goats may be most cost-effective in the late fall or early spring when demand for their services, and possibly price are reduced. Multi-year contracts, and contracts for larger areas typically lower the costs per acre. Providing a place where the herd can stay during the winter also lowers costs for treatment. Providing a water source for livestock is another way to reduce costs. Water sources can be as rudimentary as a plastic wading pool or a portable trough.

**4. Broadcast Prescribed Burns**

Prescribed burning reintroduces fire into the ecosystem as a "natural treatment" and can promote native flora and aid containment of fires by reducing fuel volumes. Prescribed burns are usually performed by the local fire protection district. CalFire may be willing to participate in a limited prescribed burning program as part of their hazard reduction efforts within the Vegetation Management Program, even though the project area would be outside the State Responsibility Area. If burns were conducted by CalFire, the State would not only assume liability, but also share costs. Regardless, it is likely that CalFire and other nearby fire protection districts and departments would offer mutual cooperation and/or assistance.

Several precautions, such as installing firebreaks and notifying various agencies, must be taken before performing a prescribed burn. Treatment boundaries are often road and trail crossings, which reduces the number of fire breaks that need to be created by fire personnel, thereby reducing labor costs and time needed to prepare for the burn as well as minimizing the amount of surface soil disturbance and potential for soil erosion.

Prescribed burning requires the development and approval of a prescription or burn plan, which is typically developed by the local fire protection district in consideration of fuel reduction requirements, local weather conditions, and available resources for fire management. The soot and smoke generated, as well as the chance of escape, make prescribed burns a public safety concern. Planning and coordination with interested parties must be an integral part of the program.

Broadcast burning may occur throughout the year; however, it is usually conducted during late spring when the ground is still wet or during fall or winter after plants have completed their yearly growth cycle and their moisture content has declined. Spring burns are preferred by some fire staff to ensure a greater measure of public safety, however, there may be impacts to animal and plant reproduction activities. Fall burns are more closely aligned with the natural fire cycle found in California. If a prescribed burn were to be conducted in the fall, the period before leaves or new herbaceous material covers the slopes will be short (possibly a month or two).

Prescribed burning can enhance the local grasslands and promote the abundance of wildflowers. Any small oaks or shrubs to be retained will need to be protected during the burn to prevent their mortality. While the abundance of wildflowers the subsequent years is an appealing sight, the burned area will be temporarily blackened.

**5. Eucalyptus Tree Removal**

By removing eucalyptus trees their canopy no longer contributes to a fire in the form of a crown fire or ember production. Additionally the production of surface fuels is reduced since biomass production (branches, leaves, duff etc.) is decreased. This technique has positive impact on reducing spotting potential, heat output, spread rate and, potentially, ignitability depending upon what replaces the overstory.

Tree removal varies from cutting of individual trees, to removal of entire overstory canopy. This process can be slow and expensive, but can be selective with limited impact beyond the removal of the target plants (depending upon scale of removal). Sometimes harvesting techniques can be quite rapid. If the whole tree is not harvested, the technique generates considerable debris (from tree branches) that should be removed using machinery to haul. The boles of trees hauled away and other debris should be either hauled away or may be burned later as a part of a prescribed burn (pile or broadcast). A portion of debris may be left as a sort of erosion control measure and to cover bare spots.

And bats may use eucalyptus trees as perches and nesting sites. Replacement perches and nesting platforms for raptors can be constructed, located, and installed prior to removal of the trees to minimize displacement of raptors. If the tree harbors a maternal bat roost, removal should be coordinated with the appropriate wildlife agencies, including the California Department of Fish and Game and possibly the US Fish and Wildlife Service. Volunteers can locate and construct the raptor perches and nesting platforms, with guidance from suitable experts (e.g. Audubon Society or the Point Reyes Bird Observatory).

Tree removal creates patches of disturbance by the removal operation. Subsequent treatment of the area is dependent upon the species that encroach into these patches. Removal of exotics or weed species on an annual basis should be anticipated until an acceptable stable vegetation type is re-established.

Sprout removal is often required as a follow up treatment, involving the application of herbicides and/or other techniques such as grinding the stump or placing plastic over the stump.

**6. Herbicide Application**

Using herbicides to control invasive plant species that exacerbate wildfire risk is used as part of an Integrated Pest Management[1] program and in combination with other treatment measures (e.g., mowing, burning and hand removal). Application following another treatment method in which plants are trimmed or shortened can increase the effectiveness of the chemical treatment. Herbicides can also be used to kill herbaceous plants in exposed areas, such as roadside grass and weeds, and are typically applied while the grasses and weeds are still actively growing. Foliar treatments are generally not applied within seven days of significant rain because the herbicide may be washed off before it is effective, and not on windy days because of concerns for spray drift.

[1] Integrated Pest Management is a strategy that uses an array of biological, mechanical, cultural, and hand labor, to control pests, with the use of herbicides as a least-preferred method of control.

The use of Garlon 4 Ultra herbicide can be used to treat areas of eucalyptus resprouting, removing the need to completely uproot or grind down the eucalyptus stump. Foliar application of Roundup to eucalyptus re-sprouts is another typical, successful chemical treatment, and can be used to eliminate small-diameter fuels in areas of high ignition risk. The use of a thistle-specific herbicide, Transline, is effective in controlling the spread of yellow star thistle, artichoke thistle, and bull thistle.

Herbicides do not remove any vegetation from an area's fuel load; the dead plant matter continues to exist at the site and could continue to be a fire hazard if not collected and disposed. Health, safety and environmental concerns have limited the widespread use of chemicals over the past 20 years, and repeated use of chemicals is not preferred due to the prevalence of unwanted species building resistance to herbicides. Additionally, concerns regarding water quality and other potential environmental impacts that may occur with prolonged use of and exposure to herbicides and other chemical applications further limit their frequent or widespread use as a treatment.

Application of herbicides is typically performed by hand, and can include sponging, spraying, or dusting chemicals onto unwanted plants. Hand application provides flexibility in application and is ideally suited for small treatment areas. Roadside application of herbicides may employ a boom affixed to or towed behind a vehicle. Herbicide application requires specific storage, training and licensing to ensure proper and safe use, handling, and storage. Only personnel with the appropriate license are allowed to use chemicals to treat vegetation. Herbicide application is also only applied per a prescription prepared by a Pesticide Advisor licensed in that county. Personal protection equipment is essential to limit personnel exposure to chemicals.

## 10. SURROUNDING LAND USES AND SETTING

The two parks, Foothills (1400 acres) and Pearson Arastradero (609 acres), make up approximately 2000 acres of the Santa Cruz Mountains. Foothills Park ranges in elevation from about 600 to 1800 feet above mean sea level and for Pearson Arastradero, from 300 to 750 feet above mean sea level. Both parks are heavily vegetated and contain various plant communities and a diversity of habitat for abundant wildlife. The surrounding land uses are open space (public and private), private residences in the Town of los Altos, City of Palo Alto and Santa Clara County, and a private golf course/country club.

## 11. OTHER PUBLIC AGENCIES

- Department of Fish and Game
- Santa Clara County Agricultural Commission
- Bay Area Air Quality Management District

# ENVIRONMENTAL CHECKLIST AND DISCUSSION OF IMPACTS

## EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. **[A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e. g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e. g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).]**

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "(Mitigated) Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section 17, "Earlier Analysis," may be cross-referenced).

5) Earlier analysis may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (C)(3)(D). In this case, a brief discussion should identify the following:
   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g. general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) The explanation of each issue should identify:
   a) the significance criteria or threshold, if any, used to evaluate each question; and
   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

## DISCUSSION OF IMPACTS

The following Environmental Checklist was used to identify environmental impacts, which could occur if the proposed project is implemented. The left-hand column in the checklist lists the source(s) for the answer to each question. The sources cited are identified at the end of the checklist. Discussions of the basis for each answer and a discussion of mitigation measures that are proposed to reduce potential significant impacts are included.

## A. AESTHETICS

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Substantially degrade the existing visual character or quality of the site and its surroundings? | 1, 4 | | | ✓ | |
| b) Have a substantial adverse effect on a public view or view corridor? | 1, 2-Map L4, 4 | | | ✓ | |
| c) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? | 1, 2-Map L4,4 | | | ✓ | |
| d) Violate existing Comprehensive Plan policies regarding visual resources? | 1, 2, 4 | | | ✓ | |
| e) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? | 1,4 | | | | ✓ |
| f) Substantially shadow public open space (other than public streets and adjacent sidewalks) between 9:00 a.m. and 3:00 p.m. from September 21 to March 21? | 1, 2, 4 | | | | ✓ |

## DISCUSSION:

The Plan specifies 56 treatment areas (Figures 6 & 7) and associated fuel management categories: roadside treatments along potential evacuation corridors, creation and maintenance of firefighter safety zones, creation and maintenance of defensible space around structures in the parks, fire ignition prevention, and treatments to aid containment of fires in and within the park. The proposed fuel treatment methods (e.g. grazing, mowing, discing) are confined to a specific dimension, as detailed in Figure 5, for each of the treatment areas. The Comprehensive Plan designates Arastradero and Page Mill Road and Skyline Boulevard as scenic routes; Skyline is also a State Scenic Highway. The proposed fuel treatment methods (hand labor, mechanical, grazing, prescribed burns, eucalyptus removal, and herbicides) would not significantly degrade the existing visual character of the parks or road segments. The fuel treatment method that may have a temporary visual impact to the Pearson Arastradero Preserve would be the prescribed burns. The Plan calls for two areas, see Figure 7, in Pearson Arastradero Preserve to be treated with prescribed burns on a 3-5+ year rotation. After the burn occurs, the area will be blackened, but only for a temporary period. Prescribed burning is known to enhance the local grasslands and promote an abundance of wildflowers. All treatment areas are confined to a limited dimension to attain basic fire safety. Much of the area that is proposed for treatment has undergone fuel

management treatments on a periodic basis since the original 1982 fire management plan was adopted and the expansion of treatment areas is not anticipated to create a significant aesthetic impact.

**Mitigation Measures: None Required**

## B. AGRICULTURAL RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland.

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | 1, 3, 4 | | | | ✓ |
| b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? | 1, 2-Map L9, 4 | | | | ✓ |
| c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use? | 1, 4 | | | | ✓ |

**DISCUSSION:**

The project area is not located in a "Prime Farmland," "Unique Farmland," or "Farmland of Statewide Importance" area, as shown on the maps prepared for the Farmland Mapping and Monitoring Program of the California Resources Agency. The project area is not zoned for agricultural use, and is not regulated by the Williamson Act.

**Mitigation Measures: None Required**

## C. AIR QUALITY

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Conflict with or obstruct with implementation of the applicable air quality plan (1982 Bay Area Air Quality Plan & 2000 Clean Air Plan)? | 1, 4 | | | | ✓ |
| b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation indicated by the following: | | | | | |
| i. Direct and/or indirect operational | | | | | |

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| emissions that exceed the Bay Area Air Quality Management District (BAAQMD) criteria air pollutants of 80 pounds per day and/or 15 tons per year for nitrogen oxides (NO), reactive organic gases (ROG), and fine particulate matter of less than 10 microns in diameter ($PM_{10}$); | 1, 4 | | | | ✓ |
| ii. Contribute to carbon monoxide (CO) concentrations exceeding the State Ambient Air Quality Standard of nine parts per million (ppm) averaged over eight hours or 20 ppm for one hour( as demonstrated by CALINE4 modeling, which would be performed when a) project CO emissions exceed 550 pounds per day or 100 tons per year; or b) project traffic would impact intersections or roadway links operating at Level of Service (LOS) D, E or F or would cause LOS to decline to D, E or F; or c) project would increase traffic volumes on nearby roadways by 10% or more)? | 1, 4 | | | | ✓ |
| c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? | 1, 4 | | | | ✓ |
| d) Expose sensitive receptors to substantial levels of toxic air contaminants? | 1, 4 | | | | ✓ |
| i. Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million | 1, 4 | | | | ✓ |
| ii. Ground-level concentrations of non-carcinogenic TACs would result in a hazard index greater than one (1) for the MEI | 1, 4 | | | | ✓ |
| e) Create objectionable odors affecting a substantial number of people? | 1, 4 | | | ✓ | |
| f) Not implement all applicable construction emission control measures recommended in the *Bay Area Air Quality Management District CEQA Guidelines?* | 1, 4 | | | | ✓ |

**DISCUSSION:**

The proposed fuel management treatments (hand labor, mechanical equipment, grazing, prescription burns, herbicide application, eucalyptus tree removal) are generally low to no impact on the overall air quality, with exception of the prescribed fires. All prescribed burns must go through a permit review process with the Bay Area Air Quality Management District (BAAQMD) before a burn is permitted. The BAAQMD will determine whether it is a burn day, and has the authority to permit burning when the prescription has been reached. The burn day determination maximizes the dispersal and dilution of smoke. Prescribed fires may be executed on non-burn days as necessitated by logistic concerns. Logistic concerns may include expected end-of-season precipitation, availability of personnel, or narrow prescriptions. The Prescribed Fire Incident Commander will conduct a test burn to determine if smoke dispersal requirements in the Smoke Management Plan are being met prior to starting ignition of the burn plot.

Based on the Bay Area Air Quality Management District's thresholds, it is not anticipated that the project would affect any regional air quality plan or standards, or result in a cumulatively considerable net increase of any criteria pollutant.

**Mitigation Measures: None Required**

## D. BIOLOGICAL RESOURCES

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | 1, 2-Map N1, 4, 5 | | ✓ | | |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, including federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? | 1, 2-Map N1, 4, 5 | | ✓ | | |
| c) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? | 1, 2-Map N1, 4, 5 | | ✓ | | |
| d) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or as defined by the City of | 1, 2, 4, 5 | | | | ✓ |

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| Palo Alto's Tree Preservation Ordinance (Municipal Code Section 8.10)? | | | | | |
| e) Conflict with any applicable Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? | 1, 2, 4,5 | | | | ✓ |

**DISCUSSION:**

Foothills Park and Pearson Arastradero Preserve provide habitat for a broad range of wildlife and plants, including some designated as protected or sensitive either by the State of California or through Federal designation. The Foothills Fire Management Plan will not result in adverse impacts to any special-status species with mitigation incorporated. The special-status species that are known to occur in the Foothills Fire Management Plan area are Steelhead, San Francisco dusky-footed woodrat, white-tailed kite, arcuate bush mallow, and western leatherwood. Suitable habitat for several others exists, but their presence has not been verified. The Plan will not have a substantial adverse effect on any riparian habitat or other sensitive natural community. The amount of vegetation that will be trimmed represents a minor amount of the riparian zone, and will not result in the permanent removal of riparian habitat. Adverse effects to arroyo willow riparian are not expected. Measures to protect wetland values from mowing and grazing are recommended (see measure BIO-8). The Plan incorporates mitigation so as to not have an adverse impact on wetlands. Wetlands occur in Pearson Arastradero Preserve and at Boronda Lake in Foothills Park. Implementation of the Foothills Fire Management Plan will not result in the removal or filling of wetlands, and will not affect their hydrology. Wetlands could be affected by the following treatments: A.E. 1 (Arastradero Road adjacent to the Preserve to be treated with mowing, grazing and hand labor), A.Rx. 1 and A.Rx.2 (prescribed fire in the middle of the Preserve), A.C.3 (grazing the grassland on the parking lot side of the Preserve), and A.C.11 (mowing Meadow Lark to Juan Bautista Trail). Measure BIO-9 is proposed to be included in the Fire Management Plan, which is to avoid mowing or weed-whipping wetlands, and to incorporate wetland protection measures in the grazing management plan required in the fire management plan.

The Plan does not propose activities in stream courses that would impede any fish passage and does not require the construction of any structures that would block wildlife movement. The area that the Plan covers is not within an area subject to a Habitat Conservation Plan or any similar approved planning document.

Activities proposed in the Foothills Fire Management Plan are subject to the City of Palo Alto's municipal code with regard to tree removal. Trimming or removal of coast live oak trees are subject to the requirements of Title 8, which include limits on trimming to less than 25 percent of the tree canopy and that the trimming not unbalance the tree. The Fire Management Plan may result in the removal or trimming of protected trees. Measure BIO-8 is included to require that trimming follow the tree preservation ordinance. With this measure included, the Fire Management Plan will comply with local ordinances protecting biological resources.

In order to reduce the impacts from the proposed fuel management treatments, the following mitigations are proposed to reduce the impacts to a less than significant level.

**Mitigation Measures:**

**BIO - 1:** A qualified biologist[2] or park staff trained to do so by a qualified biologist shall conduct a tail-gate training session to all relevant personnel who will be performing treatments regarding protected species and habitats in the project area, the limitations on areas that can be accessed on foot or with equipment, and the legal consequences of take of protected species or habitat. The training shall be repeated for new personnel coming to the project site. Dogs shall be prohibited from the project site.

**BIO - 2:** Vegetation removal in any vegetation type from February 15 to August 31 shall require a survey for nesting birds by a qualified biologist or by park staff trained to do so by a qualified biologist and avoiding removal of nests in active use. If raptor nests are detected, a buffer area will need to be established around the nest in consultation with the California Department of Fish and Game. The buffer may be 250 feet.

**BIO - 3:** Vegetation removal in areas of serpentine soil, oak woodland, chaparral, coastal scrub and riparian forest habitats shall require a survey for rare plant species by a qualified biologist/ botanist prior to vegetation removal. Known rare plant locations should be treated in a way that benefits the rare species. This may include limiting the area of treatment in order to provide a buffer around the plant(s), or may include selectively trimming competitive vegetation adjacent to the plant(s). Some species may benefit from disturbance; the specific actions to be taken should be determined in consultation with a botanist. The plant survey shall be performed during the bloom period. After surveys in the same locations over three separate years, subsequent surveys are not necessary in that area unless there a newly listed plant species could occur in the habitat. This should be determined by consulting the California Department of Fish and Game.

**BIO - 4:** Vegetation removal, including dead and downed debris, shall require a survey for presence of San Francisco dusky-footed woodrat by a qualified biologist or by park staff trained to identify woodrat houses by a qualified biologist. If woodrat houses are found, disturbance should be avoided and a minimum five-foot buffer should be provided around the house. If, for public safety reasons, it is necessary to move the house, the process must be coordinated with the California Department of Fish and Game. All relevant workers shall receive instruction regarding woodrat houses prior to their start of work.

**BIO - 5:** Prior to the removal of any tree that is 12 inches or more in diameter breast height, a survey for perennial bat roosts and, during the breeding season from February 15 to August 31, raptor nests shall be conducted by a qualified biologist or park staff trained by a qualified biologist to identify these resources is required. If present, removal cannot continue without CDFG guidance.

**BIO - 6:** Discing within 500 feet of a lake, pond or creek, shall require a biological survey to determine impacts to California red-legged frog, California tiger salamander, San Francisco garter snake and Western pond turtle and whether permits are required from the USFWS/CDFG.

[2] A "qualified biologist" is a person with demonstrated ability to identify special-status plant and/or animal species in the San Francisco Bay Area.

**BIO - 7:** Discing in grassland shall require a pre-construction survey for American badger, California red-legged frog and burrowing owl by a qualified biologist.

**BIO - 8:** Trimming of coast live oaks shall follow the City's Tree Ordinance (Title 8). Coast live oak or Valley oaks that are 11.5 inches in diameter or more measured at 54 inches above grade may not be removed without a permit, and may not be pruned such that more than 25 percent of the crown is removed or the tree is left unbalanced.

**BIO - 9:** Wetlands mapped in Pearson Arastradero Preserve shall be avoided when weed-whipping or mowing. Modify the Fire Management Plan Best Management Practice that requires that a grazing plan be prepared to include protection of drainages and wetlands from the impacts of grazing animals.

**BIO - 10:** For treatments in Foothills Park or on Page Mill Road along the Park border, a pre-work survey for stands of locally important plants shall be conducted, and the plants avoided as long as it does not impair public safety. Field crews shall be educated about the sensitivity of these plant species. For additional information, see Table 3 in Appendix A of the Biological Assessment (Source Reference #5).

**BIO - 11:** For proposed treatments, clean all tools and equipment following actions and prior to movement into new environmental areas to prevent the spread of invasive or non-native plants.

**BIO - 12:** Measures shall be taken to clean equipment, tires, and shoes to prevent the spread of Sudden Oak Death, and that any materials infected with the disease be disposed of in accordance with State or County Agricultural Commission guidelines. To reduce the possibility of spreading the disease, it is recommended that work not be done in wet or muddy conditions, and that infested areas be avoided to the extent feasible. Additional guidelines are available from the County Agricultural Commissioner.

**BIO - 13:** A qualified biologist shall be present onsite to monitor all treatment work. The biological monitor shall have the authority to stop work if deemed necessary to protect state or federally protected species, and shall work directly with the City staff. Prior to the start of work each day, the monitor shall thoroughly inspect the treatment area and adjacent habitat areas to determine if any protected species are present in the area and shall remain onsite through out the day while work activities are occurring. If a protected species is encountered, the onsite biological monitor shall determine whether treatment activities are remote enough from the animal that it will not be harmed or harassed.

**BIO - 14:** Treatment equipment and materials shall be staged in an already disturbed area such as improved trails or existing roads.

**BIO - 15:** Prior to introduction, all grazing animals shall be quarantined for three days and fed weed-free forage to limit spread of invasive or unwanted plant species, as well as prevent spread of livestock diseases.

**BIO - 16:** Grazing shall be limited to non-riparian areas.

**BIO - 17:** Maintain a buffer between the prescribed burn area and water bodies or drainage into riparian zones. Buffers should be a minimum of 25 feet for 5% slopes, 75 feet for 5-10% slopes, and 250 feet for 10% or greater slopes. No prescribed fires shall be ignited near streams or in riparian zones.

**BIO - 18:** Herbicide treatments within habitat of California Red-legged Frog shall be conducted according to U.S. District Court injunction and order covering 66 pesticides (Oct 2006) and subsequent EPA effects determinations.

**BIO - 19:** Avoid herbicide treatments in areas adjacent to water bodies, riparian areas, and primary drainage access. Follow all herbicide labels and directions in determining applications near water resources or riparian habitats. Limit aerial application to greater than 100 feet from water resources. Limit ground and hand application to greater than 50 feet.

**Significance after Mitigation: Less Than Significant**

## E. CULTURAL RESOURCES

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Directly or indirectly destroy a local cultural resource that is recognized by City Council resolution? | 1, 2-Map L7, 4 | | | | ✓ |
| b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to 15064.5? | 1, 2-Map L8, 4 | | | | ✓ |
| c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | 1, 4 | | | | ✓ |
| d) Disturb any human remains, including those interred outside of formal cemeteries? | 1, 2-Map L8, 4 | | | | ✓ |
| e) Adversely affect a historic resource listed or eligible for listing on the National and/or California Register, or listed on the City's Historic Inventory? | 1, 2-Map L7, 4 | | | | ✓ |
| f) Eliminate important examples of major periods of California history or prehistory? | 1, 4 | | | | ✓ |

**DISCUSSION:**

There are no known archaeological or human remains located in this area. It is unlikely that the Native Americans would have established permanent camps away from the Bay, with its abundant food source. However, they probably did travel to the foothills to hunt and gather plant material. If, during any treatment activities, any archaeological or human remains are encountered, all activity shall cease and a qualified archaeologist shall visit the site to address the find. The Santa Clara County Medical Examiner and Native American Heritage Commission of the State of California shall be notified in order to receive the appropriate direction on how to proceed.

**Mitigation Measures: None Required**

## F. GEOLOGY, SOILS AND SEISMICITY

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: | | | | | |
| i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. | 1, 4 | | | ✓ | |
| ii) Strong seismic ground shaking? | 2-Map N10, 4 | | | ✓ | |
| iii) Seismic-related ground failure, including liquefaction? | 2-Map N5, 4 | | | ✓ | |
| iv) Landslides? | 2-Map N5 | | | ✓ | |
| b) Result in substantial soil erosion or the loss of topsoil? | 1, 4 | | ✓ | | |
| c) Result in substantial siltation? | 1, 4 | | | | ✓ |
| d) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? | 2-Map N5, 4 | | | ✓ | |
| e) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? | 2-Map N5, 4 | | | | ✓ |
| f) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? | 1, 4 | | | | ✓ |
| g) Expose people or property to major geologic hazards that cannot be mitigated through the use of standard engineering | 1, 2-Map N5, 4 | | | | ✓ |

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| design and seismic safety techniques? | | | | | |

## DISCUSSION:

The entire state of California is in a seismically active area. The proposed Plan would not expose people to substantial adverse risks of loss, injury, or death since the proposed project does not include habitable construction of any kind. However, the project area is located in an area that would experience a range of weak to very violent shaking in the event of a major earthquake. The area also has the potential for earthquake induced landslides especially where sloped, and surface rupture along fault traces.

The two parks have soils that vary in degrees of potential erosion hazard (see Figure 8). The proposed fuel treatments (hand labor, mechanical equipment, grazing, prescription burns, herbicide application, eucalyptus tree removal) in themselves create some degree of erosion potential due to the disturbance of the existing vegetation and surface area. Erosion control methods and stormwater pollution protection measures should be used where appropriate. The purpose is to control sediment and minimize potential water quality impacts. The following mitigation measures must be followed to address potential soil erosion impacts to a less than significant threshold.

Figure 8: Soil Types in Foothills Park and Pearson Arastradero Preserve

| Soil Mapping Unit | Soil Name | Location | Erosion Hazard |
|---|---|---|---|
| Los Gatos-Maymen Complex (50-75% slope) | Los Gatos Gravelly Loam | Foothills Park & Pearson Arastradero Preserve | Very High |
| | Maymen Rocky Fine Sandy Loam | Foothills Park | Very High |
| Los Gatos Clay Loam (15-30% slope) | Los Gatos Clay Loam | Foothills Park | Moderate |
| Los Osos Clay Loam (15-30% slope) | Los Osos Clay Loam | Pearson Arastradero Preserve | Moderate |
| Azule Clay Loam (15-30%) | Azule Loam | Pearson Arastradero Preserve | Slight to Moderate |
| Cropley Clay (2-9% slope) | Cropley Clay | Foothills Park | Slight |
| Pacheco Clay Loam | Pacheco Clay Loam | Pearson Arastradero Preserve | Slight |
| Pleasanton Loam | Pleasanton Loam | Pearson Arastradero Preserve | Slight |

### Mitigation Measures:

**Geology - 1:** The City shall conduct treatment actions in a manner that avoids erosion and adverse affects on sensitive soil systems by avoiding treatment in sensitive soils and potentially erosive soil areas. This mitigation measure shall be implemented through development of a study that identifies all potentially erosive soils prior to beginning treatment actions and development of an erosion control plan subject to review and approval of City Staff that restricts treatment operations that may adversely affect the sensitive soil systems.

**Geology - 2:** Avoid treatment actions during periods of precipitation, or immediately following severe weather.

**Geology - 3:** (Hand Labor) Avoid excessive foot or vehicle traffic on slopes, unimproved or non-designated trails, or outside of preexisting roads or access points.

**Geology - 4:** (Mechanical). In addition to avoiding treatment actions during periods of precipitation, or immediately following severe weather, avoid scheduling any treatment actions during seasons with significant predicted precipitation. Cease operations or postpone planned operations including movement of vehicles or equipment during precipitation conditions that may combine with vehicle activity to cause damage to roads, trails, or adjacent land areas.

**Geology - 5:** (Mechanical) Plan treatment actions and equipment selection to minimize damage or alterations to existing soils.

**Geology - 6:** (Mechanical) Maintain a buffer of 25-50 feet between operations and water bodies or designated riparian areas. Avoid crossing drainage channels, run-off areas, or dry streambeds. Install and manage run-off barriers for rainwater in all treatment and operating areas. Restrict mechanical removal of trees to areas further than 50 feet from drainage channels.

**Geology - 7:** (Mechanical) Restrict vehicle traffic to preexisting roads or pre-planned access points based on equipment size and operations. Limit transport and support equipment to existing roads. Limit heavy equipment use to slopes less than 30%. Install erosion control measures on all vehicle roads and traffic areas.

**Geology - 8:** (Grazing) The City shall conduct grazing operations in a manner that avoids over-grazing and prevents erosion by appropriately limiting the intensity and scope of grazing. This mitigation measure shall be implemented through development of a grazing management plan prepared by a certified range specialist that specifies goals, stocking levels, grazing periods, installation of range improvements (such as water sources) to evenly distribute utilization of feed, and monitoring and performance criteria to address the potential erosion conditions created by over-grazing.

**Geology - 9:** (Grazing) Develop a site-specific annual grazing plan to be approved by a certified range specialist that includes project-level plans for sticking, timing, and resource management goals.

**Geology - 10:** (Burns) The City shall conduct prescribed burns in a manner that minimizes post-fire erosion into water bodies and drainage through the use of natural barriers, fire lines along contours, erosion control barrier deployment, and avoidance of areas with highly erodible soils. This mitigation measure shall be implemented through development, prior to conducting a prescribed burn, of a prescribed burn erosion control plan (or included in the prescribed burn plan) subject to review and approval by City Staff.

**Significance after Mitigation: Less Than Significant**

## G. HAZARDS AND HAZARDOUS MATERIALS

*Note: Some of the thresholds can also be dealt with under a topic heading of **Public Health and Safety** if the primary issues are related to a subject other than hazardous material use.*

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Create a significant hazard to the public or the environment through the routing transport, use, or disposal of hazardous materials? | 1, 4 | | ✓ | | |
| b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? | 1, 4 | | ✓ | | |
| c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? | 1, 4 | | | | ✓ |
| d) Construct a school on a property that is subject to hazards from hazardous materials contamination, emissions or accidental release? | 1, 4 | | | | ✓ |
| e) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | 1, 2-Map N9, 4 | | | | ✓ |
| f) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? | 1, 4 | | | | ✓ |
| g) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working the project area? | 1, 4 | | | | ✓ |
| h) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | 1, 2-Map N7, 4 | | | | ✓ |
| i) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? | 1, 2-Map N7, 4 | | ✓ | | |
| j) Create a significant hazard to the public or the environment from existing hazardous materials contamination by exposing future occupants or users of the site to contamination in excess of soil and ground water cleanup goals developed for the site? | 1, 4 | | | | ✓ |

**DISCUSSION:**

The proposed Plan includes fuel treatment methods (mechanical equipment, prescribed burns, herbicide application) that could potentially have significant hazardous impacts. The Plan includes mechanical treatments that require on-site fueling and maintenance, creating a potential for spills and leakage. The use of mechanical equipment in a high fire danger condition also creates the potential for sparks to ignite a fire. The use of herbicides could potentially have environmental impacts if strict protocols for use are not in place or followed. Mitigation measures are provided to reduce impacts from the mechanical and herbicide uses to a less than significant level. Although the use of prescribed fires to manage fuel could potentially have impacts, the BAAQMD has strict guidelines that regulate this activity to a less than significant level of impact. As a Best Management Practice, the City will develop public safety plans to be executed throughout the prescribed burn cycle, including press and information releases, signs and notifications, patrols on roads and access points, and development of a fire contingency plan.

**Mitigation Measures:**

**Hazards - 1:** All treatment methods involving fueling and maintenance operations shall be strictly monitored and controlled. This mitigation measure shall be implemented by conducting all maintenance actions that may produce spills should be executed in areas with secondary containment protection, away from any water bodies or drainage areas; cleaning up all spills shall be done on-site, and clean-up materials shall be maintained on site so they are readily available for use. Inspection of equipment for new leaks and mechanical problems should be performed daily, prior to operations.

**Hazards - 2:** Cease actions during periods of high fire danger or during red flag conditions. Ensure that all mechanical equipment have approved spark arrestors and comply with California Public Resources Code (PRC) sections 4431, 4435, 4442, and 4437 to limit potential for ignition of incidental fires.

**Hazards - 3:** Maintain on-site fire suppression resources to include shovel, water pump, fire extinguisher, and two-way radio or communications for fire reporting.

Herbicide Application

**Hazards - 4:** The City shall conduct herbicide application in a manner that uses the least amount of chemical required to achieve a desired outcome; the herbicide treatment shall be consistent with the City of Palo Alto's Integrated Pest Management policy.

**Hazards - 5:** Provide or confirm adequate training, experience, and oversight to ensure that personnel are familiar with herbicide operations and planning, site conditions, potential and identified sensitive resources, and the identification of specific environmental features or conditions that must be avoided. Herbicide application shall only be applied per a prescription prepared by a Pesticide Control Advisor licensed in Santa Clara County, and applied by a licensed Pesticide Control Applicator.

**Hazards - 6:** The City shall conduct herbicide application in a manner that protects public safety by informing the public of treatment and restricting access, when deemed appropriate. This mitigation measure shall be implemented through development of a public safety plan, which shall include requirements for press and information releases, signs and

notifications, and guidelines for fencing or area restrictions, and shall be subject to review and approval of the Pesticide Control Advisor and the Directors of Community Services and Fire Department, and the terms of which shall be executed throughout the treatment cycle..

**Hazards - 7:** The City shall conduct herbicide application in a manner that protects against and minimizes damage from spills by maintaining strict monitoring and control of operations, and providing for clean up of all spills to be done on-site, with clean-up materials readily available for use. This mitigation measure shall be implemented through development of a spill contingency plan subject to review and approval of the Pesticide Control Advisor and the Directors of Community Services and Fire Department.

**Hazards - 8:** Chemical treatments within habitat of California Red-legged Frog shall be conducted according to U.S. District Court injunction and order covering 66 pesticides (Oct 2006) and subsequent EPA effects determinations.

**Hazards - 9:** Clean equipment following actions and prior to movement into new environmental areas.

**Hazards - 10:** Avoid treating areas adjacent to water bodies, riparian areas, and primary drainage access. Follow all herbicide labels and directions in determining applications near water resources or riparian habitats. Limit aerial application to greater than 100 feet from water resources. Limit ground and hand application to greater than 50 feet.

**Hazards - 11:** Avoid treating areas used for livestock operations or intended as grazing areas.

**Significance after Mitigation: Less Than Significant**

## H. HYDROLOGY AND WATER QUALITY

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Violate any water quality standards or waste discharge requirements? | 1, 4 | | | | ✓ |
| b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? | 1, 2-Map N2, 4 | | | | ✓ |
| c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site? | 1, 4 | | | | ✓ |
| d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? | 1, 4 | | | | ✓ |

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? | 1, 4 | | | | ✓ |
| f) Otherwise substantially degrade water quality? | 1, 4 | | ✓ | | |
| g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? | 1, 4 | | | | ✓ |
| h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows? | 1, 2-Map N6, 4 | | | | ✓ |
| i) Expose people or structures to a significant risk of loss, injury or death involve flooding, including flooding as a result of the failure of a levee or dam or being located within a 100-year flood hazard area? | 1, 2-Map-N6, 4 | | | | ✓ |
| j) Inundation by seiche, tsunami, or mudflow? | 1, 4 | | | | ✓ |
| k) Result in stream bank instability? | 1, 2-Map N2, 4 | | | | ✓ |

**DISCUSSION:**

The potential impacts to water quality are associated with the potential hazards previously identified in this document related to fuel treatment methods and possible erosion risks. The mitigations that would address this potential impact to a less than significant level are the same as those listed for the geology section of this initial study.

**Mitigation Measures:**
See Geology Mitigation Measures 1-10 and Hazards Mitigation Measures 1, 4-10

**Significance after Mitigation: Less Than Significant**

## I. LAND USE AND PLANNING

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Physically divide an established community? | 1, 4 | | | | ✓ |
| b) Conflict with any applicable land use plan, | | | | | |

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? | 1, 2, 4 | | | | ✓ |
| c) Conflict with any applicable habitat conservation plan or natural community conservation plan? | 1, 2, 4 | | | | ✓ |
| d) Substantially adversely change the type or intensity of existing or planned land use in the area? | 1, 2, 4 | | | | ✓ |
| e) Be incompatible with adjacent land uses or with the general character of the surrounding area, including density and building height? | 1, 2, 4 | | | | ✓ |
| f) Conflict with established residential, recreational, educational, religious, or scientific uses of an area? | 1, 2, 4 | | | | ✓ |
| g) Convert prime farmland, unique farmland, or farmland of statewide importance (farmland) to non-agricultural use? | 1, 3, 4 | | | | ✓ |

**DISCUSSION:**

The proposed Plan does not propose adding or changing the existing land uses of the area and would not divide any existing community. The project area is not located within a local coastal program, or habitat conservation plan. Fuel management in the Foothills is compatible with maintaining the health and safety of the public parks.

**Mitigation Measures: None Required**

## J. MINERAL RESOURCES

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? | 1, 2, 4 | | | | ✓ |
| b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? | 1, 2, 4 | | | | ✓ |

**DISCUSSION:**

The City of Palo Alto has been classified by the California Department of Conservation (DOC), Division of Mines and Geology (DMG) as a Mineral Resource Zone 1 (MRZ-1). This designation signifies that there are no aggregate resources in the area. The DMG has not classified the City for other resources. There is no indication in the 2010 Comprehensive Plan that there are locally or regionally valuable mineral resources within the City of Palo Alto.

**Mitigation Measures: None Required**

## K. NOISE

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | 1, 2, 4 | | | | ✓ |
| b) Exposure of persons to or generation of excessive ground borne vibrations or ground borne noise levels? | 1, 2, 4 | | | | ✓ |
| c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? | 1, 2, 4 | | | | ✓ |
| d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? | 1, 2, 4 | | | ✓ | |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, would the project expose people residing or working in the project area to excessive noise levels? | 1, 2, 4 | | | | ✓ |
| f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? | 1, 4 | | | | ✓ |
| g) Cause the average 24 hour noise level (Ldn) to increase by 5.0 decibels (dB) or more in an existing residential area, even if the Ldn would remain below 60 dB? | 1, 4 | | | | ✓ |
| h) Cause the Ldn to increase by 3.0 dB or more in an existing residential area, thereby causing the Ldn in the area to exceed 60 dB? | 1, 4 | | | | ✓ |
| i) Cause an increase of 3.0 dB or more in an existing residential area where the Ldn currently exceeds 60 dB? | 1, 4 | | | | ✓ |
| j) Result in indoor noise levels for residential development to exceed an Ldn of 45 dB? | 1, 4 | | | | ✓ |
| k) Result in instantaneous noise levels of greater | | | | | |

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| than 50 dB in bedrooms or 55 dB in other rooms in areas with an exterior Ldn of 60 dB or greater? | 1, 4 | | | | ✓ |
| l) Generate construction noise exceeding the daytime background Leq at sensitive receptors by 10 dBA or more? | 1, 4 | | | | ✓ |

**DISCUSSION:**

The project area is located in the Foothills, where there are limited residential and commercial uses in proximity to the park perimeter. The proposed fuel treatment methods will occur within open space areas of the parks and are not anticipated to have any affects on sensitive receptors. The potential noise sources would emanate from mechanical equipment and grazing goats or sheep, and those would be temporary in duration.

**Mitigation Measures: None Required**

## L. POPULATION AND HOUSING

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | 1, 4 | | | | ✓ |
| b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? | 1, 4 | | | | ✓ |
| c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? | 1, 4 | | | | ✓ |
| d) Create a substantial imbalance between employed residents and jobs? | 1, 4 | | | | ✓ |
| e) Cumulatively exceed regional or local population projections? | 1, 4 | | | | ✓ |

**DISCUSSION:**

There is no development associated with the Plan; it would not create any new population and housing impacts for the City. The Plan addresses fuel management in the existing City parks.

**Mitigation Measures: None Required**

## M. PUBLIC SERVICES

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: | | | | | |
| a) Fire protection? | 1 | | | | ✓ |
| b) Police protection? | 1 | | | | ✓ |
| c) Schools? | 1 | | | | ✓ |
| d) Parks? | 1 | | | | ✓ |
| e) Other public facilities? | 1 | | | | ✓ |

## DISCUSSION:

The implementation of the proposed Plan would not require new public services. There is no development associated with the Plan; it would not create any new population and housing that would need additional services. The Plan addresses fuel management in the existing City parks.

**Mitigation Measures: None Required**

## N. RECREATION

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | 1 | | | | ✓ |

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? | 1 | | | | ✓ |

**DISCUSSION:**

The use of existing recreational facilities would not be impacted by the implementation of the proposed Plan. The project is designed to enhance fire safety in the parks; it would not generate new users and does not require new or expanded recreational facilities.

**Mitigation Measures: None Required**

## O. TRANSPORTATION AND TRAFFIC

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)? | 1, 2, 4 | | | | ✓ |
| b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways? | 1, 4 | | | | ✓ |
| c) Result in change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? | 1, 4 | | | | ✓ |
| d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | 1, 4 | | | | ✓ |
| e) Result in inadequate emergency access? | 1, 4 | | | | ✓ |
| f) Result in inadequate parking capacity? | 1, 4 | | | | ✓ |
| g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., pedestrian, transit & bicycle facilities)? | 1, 4 | | | | ✓ |

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| h) Cause a local (City of Palo Alto) intersection to deteriorate below Level of Service (LOS) D and cause an increase in the average stopped delay for the critical movements by four seconds or more and the critical volume/capacity ratio (V/C) value to increase by 0.01 or more? | 1, 4 | | | | ✓ |
| i) Cause a local intersection already operating at LOS E or F to deteriorate in the average stopped delay for the critical movements by four seconds or more? | 1, 4 | | | | ✓ |
| j) Cause a regional intersection to deteriorate from an LOS E or better to LOS F or cause critical movement delay at such an intersection already operating at LOS F to increase by four seconds or more and the critical V/C value to increase by 0.01 or more? | 1, 4 | | | | ✓ |
| k) Cause a freeway segment to operate at LOS F or contribute traffic in excess of 1% of segment capacity to a freeway segment already operating at LOS F? | 1, 4 | | | | ✓ |
| l) Cause any change in traffic that would increase the Traffic Infusion on Residential Environment (TIRE) index by 0.1 or more? | 1, 4 | | | | ✓ |
| m) Cause queuing impacts based on a comparative analysis between the design queue length and the available queue storage capacity? Queuing impacts include, but are not limited to, spillback queues at project access locations; queues at turn lanes at intersections that block through traffic; queues at lane drops; queues at one intersection that extend back to impact other intersections, and spillback queues on ramps. | 1, 4 | | | | ✓ |
| n) Impede the development or function of planned pedestrian or bicycle facilities? | 1, 4 | | | | ✓ |
| o) Impede the operation of a transit system as a result of congestion? | 1, 4 | | | | ✓ |
| p) Create an operational safety hazard? | 1, 4 | | | | ✓ |

## DISCUSSION:

The proposed Plan does not create significant numbers of new trips into the Foothills. The activities required to complete the proposed fuel treatments are temporary in duration and will be spread out over time; some treatments are proposed annually, while others are proposed every 3-5 years. Thus, it is not anticipated that the implementation of the Plan would result in a significant traffic impact.

**Mitigation: None Required**

## P. UTILITIES AND SERVICE SYSTEMS

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? | 1, 4 | | | | ✓ |
| b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | 1, 4 | | | | ✓ |
| c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | 1, 4 | | | | ✓ |
| d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? | 1, 4 | | | | ✓ |
| e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments? | 1, 4 | | | | ✓ |
| f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? | 1, 4 | | | | ✓ |
| g) Comply with federal, state, and local statutes and regulations related to solid waste? | 1, 4 | | | | ✓ |
| h) Result in a substantial physical deterioration of a public facility due to increased use as a result of the project? | 1, 4 | | | | ✓ |

## DISCUSSION:

The implementation of the proposed Plan would not require new services. There is no development associated with the Plan; it would not create any new population and housing that would need additional services. The Plan addresses fuel management in the existing City parks.

**Mitigation Measures: None Required**

## Q. MANDATORY FINDINGS OF SIGNIFICANCE

| Issues and Supporting Information Resources<br><br>Would the project: | Sources | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | 1, 2, 4, 5 | | ✓ | | |
| b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? | 1, 4, | | | | ✓ |
| c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | 1, 4 | | | ✓ | |

## DISCUSSION:

As detailed in the Biological Resources section of this document, there are potential impacts to sensitive wildlife species. These impacts can be reduced to levels less than significant. Please refer to the Biological Resources section of this document for details.

The Foothills Fire Management Plan provides guidelines for fuel management practices in order to protect lives, enhance the safety of improvements in and around the parks, and to enhance the natural resource ecosystem health. The proposed fuel treatments all have specific considerations to take into account when applied. The treatments that potentially have more impacts are regulated by state and local agencies to ensure proper protocols are followed before implementation. With the oversight of the regulatory agencies, the project is not anticipated to have substantial adverse effect on humans, wildlife or plants.

### Global Climate Change Impacts

Global climate change is the alteration of the Earth's weather including its temperature, precipitation, and wind patterns. Global temperatures are affected by naturally occurring and anthropogenic generated atmospheric gases, such as carbon dioxide, methane, and nitrous oxide. These gases allow sunlight into the Earth's atmosphere, but prevent radiative heat from escaping into outer space, which is known as the "greenhouse" effect. The world's leading climate scientists have reached consensus that global climate change is underway and is very likely caused by humans. Agencies at the international, national, state,

and local levels are considering strategies to control emissions of gases that contribute to global warming. There is no comprehensive strategy that is being implemented on a global scale that addresses climate change; however, pursuant to Senate Bill 97 the Governor's Office of Planning and Research (OPR) is in the process of developing CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions." OPR is required to "prepare, develop, and transmit" the guidelines to the Resources Agency on or before July 1, 2009. The Resources Agency must certify and adopt the guidelines on or before January 1, 2010.

Assembly Bill 32 requires achievement by 2020 of a statewide greenhouse gas emissions limit equivalent to 1990 emissions, and the adoption of rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions. By 2050, the state plans to reduce emissions to 80 percent below 1990 levels. While the state of California has established programs to reduce greenhouse gas emissions, there are no established standards for gauging the significance of greenhouse gas emissions; these standards are required to be in place by 2012. Neither CEQA nor the CEQA Guidelines provide any methodology for analysis of greenhouse gases.

To determine whether the proposed project would have a significant impact on global climate change is speculative, particularly given the fact that there are no existing numerical thresholds to determine an impact. However, in an effort to make a good faith effort at disclosing environmental impacts and to conform with the CEQA Guidelines [§16064(b)], it is the City's position that based on the nature of this project with its nominal increase in greenhouse gas emissions, the proposed project would not impede the state's ability to reach the emission reduction limits/standards set forth by the State of California by Executive Order S-3-05 and AB 32. For these reasons, this project would not make a cumulatively considerable contribution to global climate change associated with greenhouse gas emissions.

## SOURCE REFERENCES


1. Project Planner's knowledge of the site and the proposed project
2. *Palo Alto Comprehensive Plan 1998-2010*
3. *Palo Alto Municipal Code, Title 18 – Zoning Ordinance*
4. *Palo Alto Foothills Fire Management Plan Update*, prepared by Wildland Resource Management, Inc., January 15, 2009
5. *Biological Impact Assessment; Foothills Fire Management Plan*, prepared by TRA Environmental Sciences, Inc., January 8, 2009

## DETERMINATION

On the basis of this initial evaluation:

| | |
|---|---|
| **I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.** | |
| **I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.** | ✓ |
| **I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.** | |
| **I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect: 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.** | |
| **I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.** | |

**Project Planner**

02-09-09
**Date**

# Biological Impact Assessment

# Foothills Fire Management Plan
# Palo Alto, California

January 8, 2009

Prepared for
The City of Palo Alto

Prepared by
TRA Environmental Sciences, Inc.
Menlo Park, California

# Biological Impact Assessment

Foothills Fire Management Plan
Palo Alto, California

January 8, 2009

Prepared for
City of Palo Alto
Clare Campbell, Planning

Prepared by
TRA Environmental Sciences, Inc.
545 Middlefield Road, Suite 200
Menlo Park, California 94025

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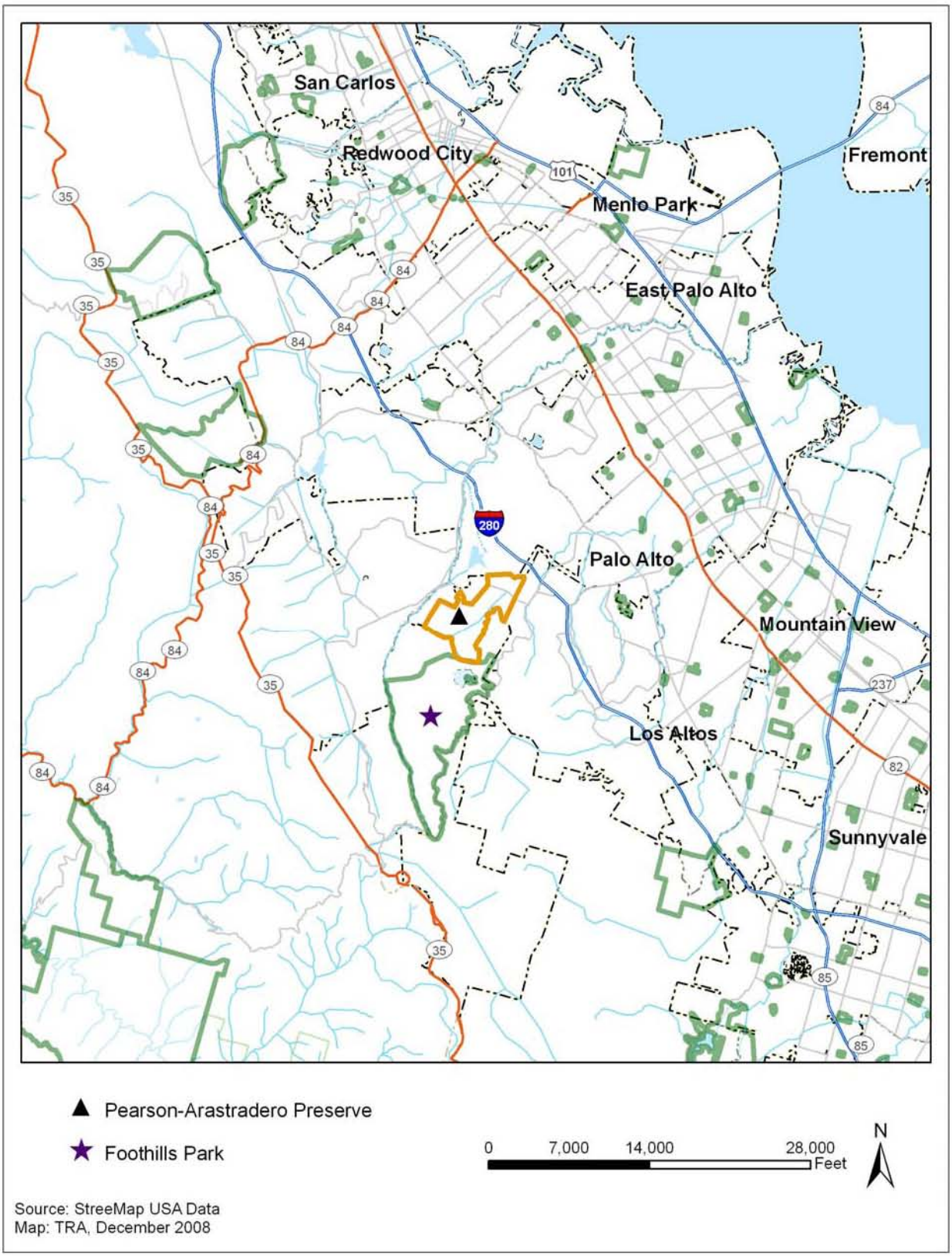
## 1.0 Project Location

The Palo Alto Foothills Fire Management Plan Update addresses fire management on city-owned property in the foothills area of the City of Palo Alto (Figures 1, 2, and 3). The foothills area extends from Foothill Expressway/Junipero Serra Boulevard to Skyline Boulevard. In general the area contains a mixture of urban, rural and open space lands. The Palo Alto Foothills Fire Management Plan Update prescribes vegetation management in two city-owned open space areas, Foothills Park and Pearson-Arastradero Preserve, and on evacuation routes within city limits along Arastradero Road, Page Mill Road, Los Trancos Road, and Skyline Boulevard. Pearson-Arastradero Preserve is located on Arastradero Road between Page Mill Road and Alpine Road. Foothills Park is located on Page Mill Road, and is contiguous with Pearson-Arastradero Preserve.

**Figure 1 Project Location**



## Figure 2 Foothills Fire Plan Area, Part A

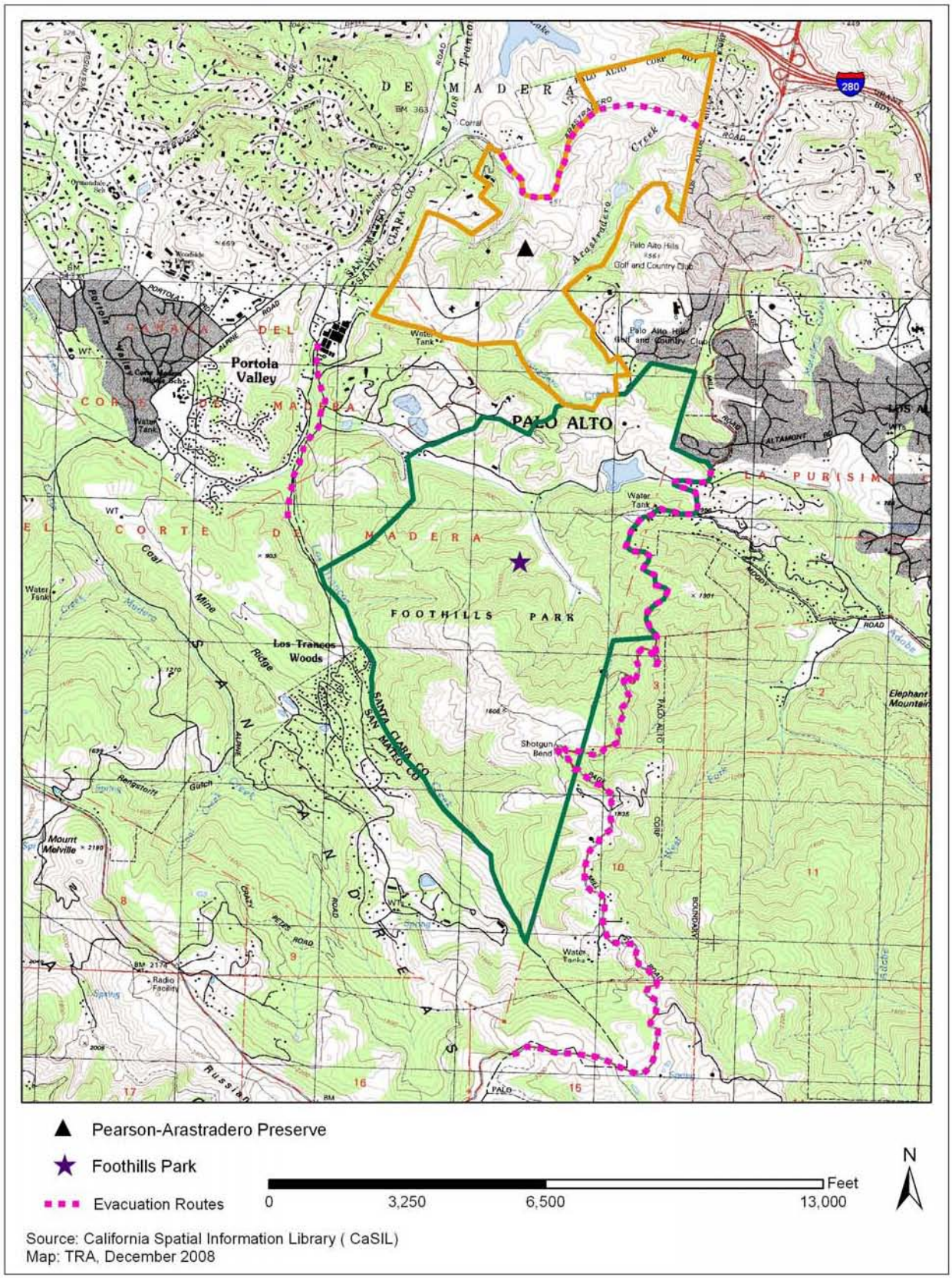
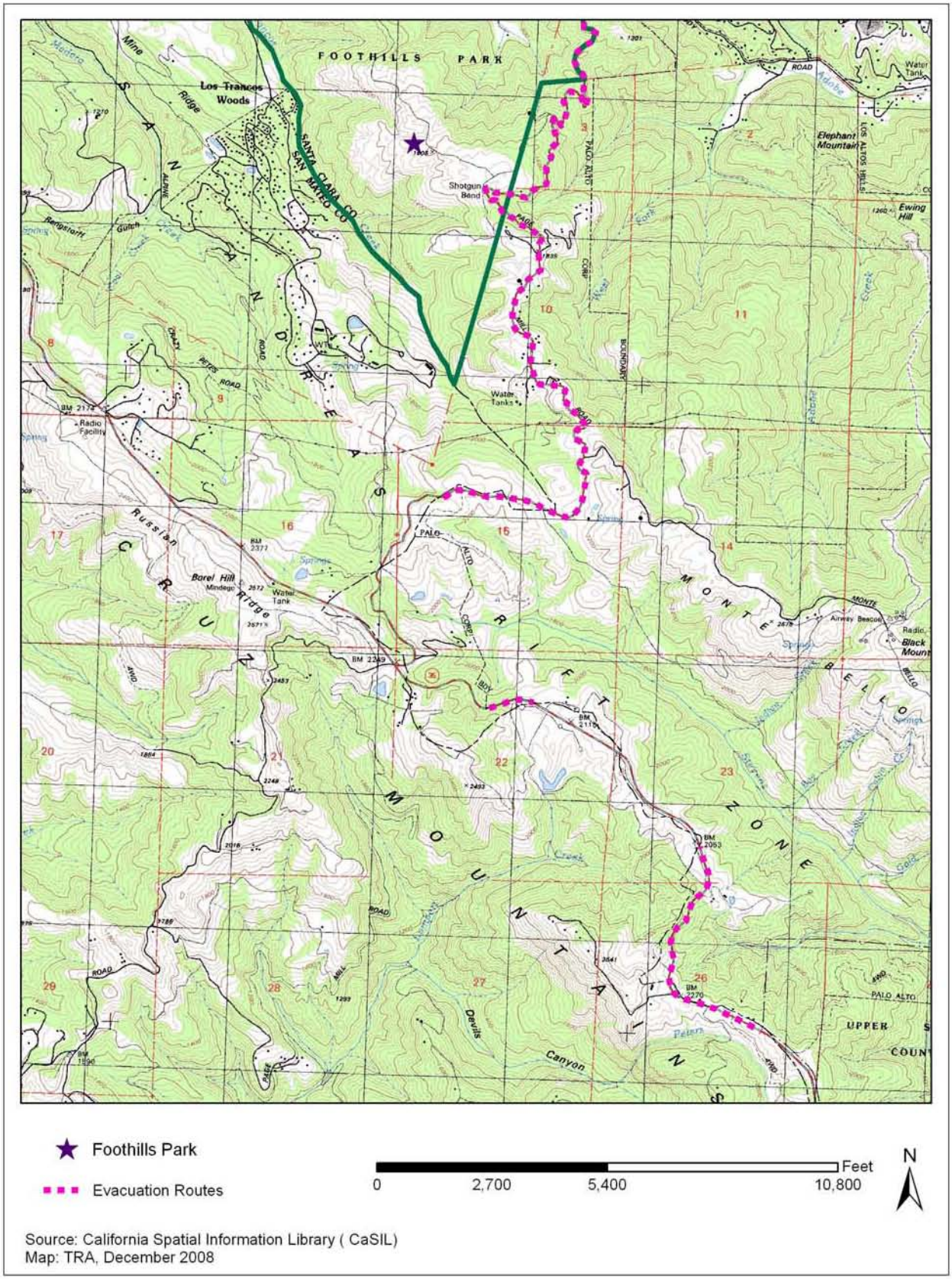


**Figure 3 Foothills Fire Plan Area, Part B**



**Summary of the Foothills Fire Management Plan**

The City of Palo Alto has updated an existing fire management plan to address vegetation, ignition prevention, defensible space and evacuation routes on city-owned land in the foothills. The area addressed in the plan includes Foothills Park and Pearson-Arastradero Preserve, as well as evacuation routes along Page Mill Road, Los Trancos Road, Arastradero Road, and Skyline Boulevard within city limits.

Currently, the City uses mowing, discing, hand labor (to trim trees and shrubs) and grazing (sheep/goats) to reduce fuel loads and provide fire breaks in the Park and Preserve. The updated fire management plan includes hand labor (weed-whipping, trimming with saws), grazing, and mowing, and introduces prescribed burning in Pearson-Arastradero Preserve. It converts most of what is currently disced to being mowed or grazed instead. It also introduces vegetation trimming within 30 feet of the roadway edge along three major evacuation routes, and requires coordination with neighboring jurisdictions. It recommends that grasses be trimmed after they have cured (i.e., summer), and that pruning occur between November and April when the chance of insect infestation is lower (at least for pines and eucalyptus). The plan also recommends that areas infested with invasive species not be trimmed at seed set in order to reduce the amount of seed that is spread around by management activities.

## 1.1. Treatment Types

The updated fire management plan is organized according to treatment type, and includes four treatment types, called 1. Defensible Space, 2. Ignition Prevention, 3. Containment, 4. Evacuation, 5. Firefighter Safety Zones, and 6. Eucalyptus. It also specifies locations where the treatments would be applied. The treatment types are summarized as follows, and the locations are described in sections 2.2 and 2.3 further below.

### *1.1.1. Defensible Space*

These activities apply to areas around structures and critical infrastructure, including entry gates, interpretive centers, restrooms, maintenance, water tanks, and pump stations. They entail cutting and removing vegetation within 100 feet of the structure. The method depends on the vegetation type.

Grassland will be weed-whipped or mowed to a height of 4 inches or less.

All dead plant material within 100 feet of the structure will be removed, including dead leaves, needles, plant debris, loose papery bark, and dead branches within live ground covers, vines, and shrubs.

In the woodland branches smaller than 3 inches in diameter within 8 feet of the ground will be removed. Plants will also be removed as necessary to break vertical continuity between ground covers, shrubs, trees and structures. The duff will be maintained no deeper than 3 inches. All trees bigger than 8 inches in diameter will be left, and at least one-third of the trees less than 8 inches in diameter will be left to retain a range of size categories and species. In heavily wooded areas the trees may be thinned to a density of less than 50 trees per acre, however the structure of the remaining woodland is more important than the absolute density of the trees (C. Rice, pers. comm.). The structure should prevent shrubs from transferring fire from the ground up into the

canopy of the trees. It is also important to keep the tree canopy dense enough to prevent or hinder the growth of shrubs in the understory.

The work will be done with hand labor, grazing, and mowing. The work will be done annually in grassland and 3 to 10 years in woodland, coastal scrub, and chaparral. Some defensible space work is currently done at the interpretive center and Fire Station 8 in Foothills Park, and at the Gateway Facility in Pearson-Arastradero Preserve.

### *1.1.2. Ignition Prevention*

These activities apply to barbeque sites in 6 picnic areas in Foothills Park. A ten-foot radius around each barbeque will be raked to bare earth. In addition, the area within 30 feet of each barbeque will be trimmed and thinned as defined for Defensible Space. All of the barbeque sites are in woodland. The treatment will be done with hand labor to treat grasses and downed debris on an annual basis, and to trim trees and shrubs as necessary every 3 to 5 years. The trimming and raking work within 30 feet of each barbeque would be a new activity.

No ignition prevention management is proposed for Pearson-Arastradero Preserve in the plan, however, the City of Palo Alto Utilities Department maintains a power line along Arastradero Creek in the preserve which is a possible ignition source. The Utilities Department clears vegetation around each pole annually, and this is expected to continue.

### *1.1.3. Containment*

These activities are intended to compartmentalize fuels so it is easier to contain and control a fire. Several methods are used. In Foothills Park, a series of fuel breaks will be maintained in grassland, coastal scrub and chaparral. These breaks border existing graded roads along Trappers Trail, Pony Tracks Trail, and Valley View Fire Trail. In addition, two areas northeast of the entry gate will be mowed or grazed; one is at Bobcat Point, and the other is on the slope adjacent to homes on Altamont Circle. No treatments are specified for Shotgun, Madrone or Charley Brown fire roads in this update. These fire breaks will only be maintained as service roads in the future, including roadside grass mowing and grading to prevent erosion (as in the past). The brush and tree trimming done in the past will not be done unless it is required to clear the road.

The roads are graded annually for access (not just for fire). Trappers Trail is currently mowed annually for a distance of 100 to 200 feet from the road. The Fire Management Plan Update proposes to reduce the area of annual mowing along Trappers Trail from 100-200 feet to 10-30 feet. The remaining area that has been mowed in the past will be mowed every three years (two years rest, one year mow), in order to encourage a grassland with no more than 30 percent cover of shrubs to grow in this area. The reason this break is so wide is that it is located at the top of a long slope of chaparral, and a fire in the chaparral could have very long flame lengths. A larger break is needed in order to be able to fight a fire in the chaparral and to provide for firefighter safety (C. Rice, pers. comm.).

The treatment along the Pony Tracks Trail and the Valley View Fire Trail is to annually mow ten feet on either side of the road, and every three years to mow to the topographic break in slope (about 50 feet from the road), with the intent of maintaining a brush cover of 30 percent or less. These trails are currently mowed in this manner.

In Pearson-Arastradero Preserve, containment entails mowing a ten-foot wide swath of grassland around the perimeter of the preserve within 15 to 45 feet of the park boundary, grazing where coastal scrub, woodland or chaparral are near homes, mowing grassland along selected trails for a width of 10 feet on either side of the trail, mowing/grazing 48.7 acres of grassland northeast of Arastradero Road, and prescribed burning/grazing in 42.7 acres of grassland southwest of Arastradero Road. The grassland treatments would occur annually, and the scrub, woodland and chaparral treatments would occur every 3 to 5 years. A strip that is currently disced near the Preserve border at Liddicoat Circle would continue to be disced annually if grazing has not created a fuel-free zone (C. Rice, pers. comm.). An area near the Preserve border at Paseo del Roble Drive would change from being disced to being grazed. Currently the perimeter and a center ridge are disced, so the Fire Management Plan Update would reduce the area that is disced and would introduce grazing and prescribed burning. A total area of about 43 acres would be burned. The treatment along the road that borders Arastradero Creek would include mowing for fifteen feet on the grassland side of the road and selective hand treatment of vegetation on the creek side of the road.

### *1.1.4. Evacuation*

These treatments are intended to reduce fire intensity next to roads to allow firefighting vehicles to pass and to ensure safe passage to people trying to reach safety zones or leave the area. The treatment extends 30 feet out from each roadway edge along the primary evacuation routes, and 15 feet from one edge of the secondary evacuation route. The riparian vegetation along Buckeye Creek, which borders one side of the secondary evacuation route, is dominated by coyote brush. This vegetation will be treated consistent with riparian treatments near Arastradero Creek in order to maintain creek bank stability. Some dead material will be removed from the top of the creek bank, but no work would occur in the creek channel.

The treatment methods include mowing, grazing and hand labor and occur in grassland, woodland, and coastal scrub. Grassland would be mowed or grazed annually to a height of 4 inches or less for ten feet from the road edge. Woodland would be grazed or would be trimmed by hand so that branches smaller than 3 inches in diameter within 8 feet of the ground are removed. Plants will also be trimmed as necessary to break vertical continuity between ground covers, shrubs, trees and structures. The duff will be maintained no deeper than 3 inches. All trees bigger than 8 inches in diameter will be left, and at least one-third of the trees less than 8 inches in diameter will be left to retain a range of size categories and species. Remove only those small trees that could enable a fire to extend to the tree canopy. In heavily wooded areas the trees may be thinned to a density of less than 50 trees per acre, however the structure of the woodland is more important than the density, with the goal of preventing fire from extending from the ground through shrubs or vines into the canopy (Carol Rice, pers. comm.). As currently required by fire code, a vertical clearance of 13.5 feet will be maintained over the roadbed. This clearance is mostly already in place.

Within Foothills Park the primary evacuation routes are the park road that extends from the entry gate around Boronda Lake and through Las Trampas Valley to the maintenance facility, the road from Boronda Lake to Alexis Drive in the northeast part of the park, and the road from the Interpretive Center to the Hewlett property in the northwest part of the park. There is a secondary evacuation route in Wild Horse Valley that extends from the Towle Campground to the main park road.

Other primary evacuation routes include Arastradero Road from Page Mill Road to the city limit, Page Mill Road from Arastradero Road to Skyline Boulevard, and portions of Skyline Boulevard within city limits. The evacuation routes are not currently treated on city-owned land, so these treatments would be new.

### *1.1.5. Firefighter Safety Zones*

These treatments provide areas where firefighters can find refuge during a fire event. Four firefighter safety zones are proposed along the Trappers Trail fuel break in Foothills Park. These areas have a 100-ft radius and are mowed or grazed annually. The treatment will affect about 4 acres of grassland/coastal scrub, and occurs in areas along Trappers Trail that are currently mowed annually.

### *1.1.6. Eucalyptus Trees*

The Fire Management Plan provides direction for trimming or removal of eucalyptus trees, but does not specify any particular trees for removal. The Fire Management Plan identifies that raptors may use eucalyptus trees as perches and nesting sites, and that replacement perches or nesting platforms can be installed prior to removal of the trees.

The existing and planned activities are summarized below. They are organized by general area, and explain how the specific treatments would be applied within those areas. The treatment locations are shown on Figures 4 and 5.

## 1.2. Treatments in Foothills Park

### *1.2.1. Entry gate, Boronda Lake, and main park road from the entry gate to Shady Cove picnic area (F.D1, F.E2)*

This area includes a structure (the entry gate) and a major evacuation route (the main park road), that are subject to the measures required for Defensible Space and Evacuation. Treatments will be completed within 100 feet of the entry gate, and extend 30 feet from either edge of the roadway.

The entry gate is surrounded by pavement, but the 100 foot distance extends into grassland and woodland. Under this treatment prescription, the grassland within 30 feet of the structure would be weed-whipped, the pavement would be cleared of leaves or other flammable debris, and the woodland would be trimmed. Trimming in the woodland would be done by hand, with the goal of reducing the chances that a fire started in the understory could extend into the tree canopy. This generally means removing branches smaller than 3 inches in diameter within 8 feet of the ground and trimming or removing understory plants as necessary to break vertical continuity between ground covers, shrubs, trees and structures. These measures would be new. A 20-foot clearance is mowed around the restroom near the entry gate approximately every other year. This restroom is in woodland, and the treatment area would extend out 100 feet from the structure.

The evacuation route is bordered by primarily grassland, some woodland, a small patch of chaparral, and Boronda Lake. The grassland would be mowed, grazed or weed-whipped within

10 feet of a structure annually to achieve a height of 4 inches or less. The grassland is dominated by non-native annual grasses, so specific measures for native grasses are not necessary. The woodland would be trimmed as described above for the entry gate. The chaparral is on a roadcut and would be left in place to prevent erosion. These measures would mostly be new; a seven-foot swath of grassland is mowed along the roadside from the entrance gate to Vista hill, and every two years trees along the main park road are trimmed for tall vehicle clearance.

### *1.2.2. Shady Cove, Encinal, Pine Gulch and Orchard Glen picnic areas and the main park road from Shady Cove to the Interpretive Center (F.I1, F.I2, F.I3, F.I4, F.D3, F.E2)*

These picnic areas contain barbeques that will be treated for ignition prevention. There is also a restroom that will be treated as defensible space. The area around each barbeque would be completely cleared for a ten foot radius, then the woodland vegetation would be trimmed by hand out to a 30 foot radius to remove all dead material and live branches smaller than 3 inches in diameter below 8 feet, and to remove understory plants as necessary to break vertical continuity between ground covers, shrubs, trees and structures. The area around the restroom is woodland, which would be trimmed in the same way but for a radius of 100 feet rather than 30 feet. The main park road in this area is bordered by woodland and grassland with shrubs (along the dam). This vegetation would be subject to mowing/grazing and hand labor for a distance of 30 feet from either side of the road. The grasses would be treated annually and the woodland would be treated every 3 to 5 years. Past efforts in these areas have included grazing with goats near the picnic areas, mowing a 20-foot clearance around the Orchard Glen picnic area, roadside tree trimming every 2 to 5 years for large/tall vehicle clearance. Trimming 30 feet out from the edge of the road and from the barbeques would be new.

**Figure 4 Proposed Treatment Locations in Pearson-Arastradero Preserve**

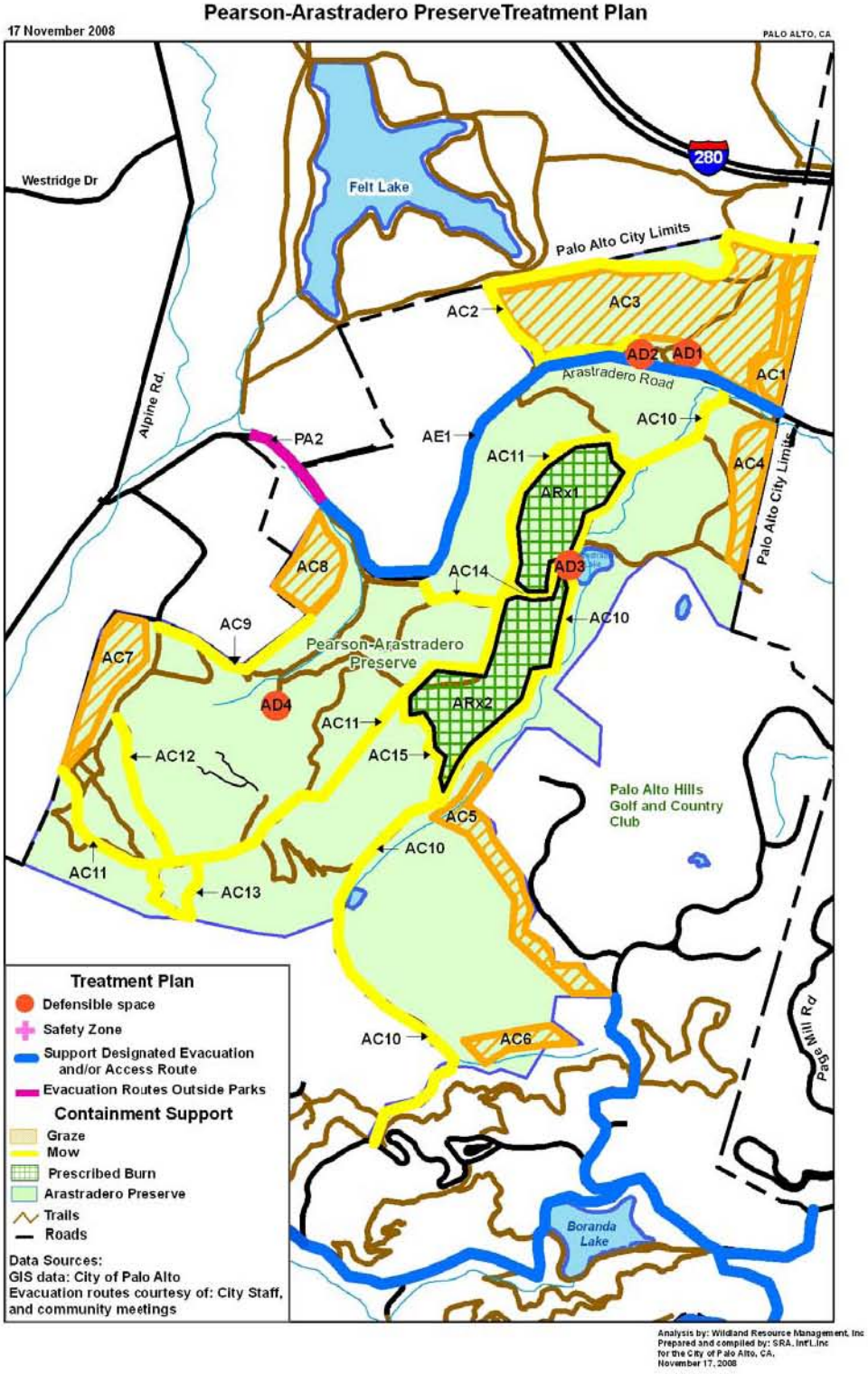
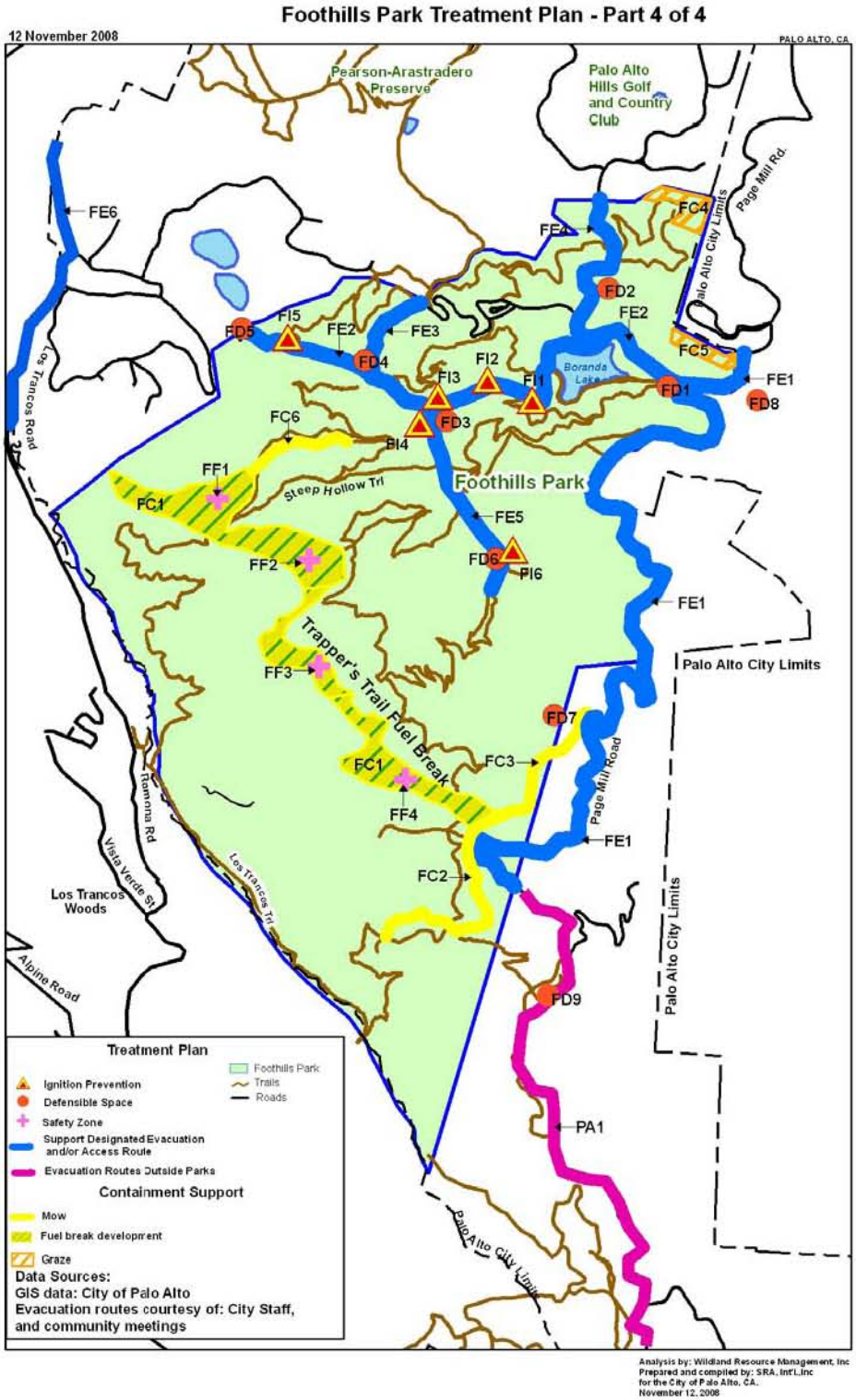


**Figure 5 Proposed Treatment Locations in Foothills Park**



### *1.2.3. Las Trampas Valley, including the main park road, the interpretive center, the Oak Grove group picnic area, the maintenance complex and a restroom associated with the picnic area, and the road from the interpretive center to the Hewlett property (F.E2, F.D4, F.I5, F.D5, F.E3)*

This area will be treated for evacuation, defensible space and ignition prevention. The main park road is bordered on one side by an irrigated meadow, and on the other by grassland and woodland. The treatments would occur in the grassland and woodland, and would include mowing, grazing and hand labor within 10 feet of the road edge to keep the grass at 4 inches or less in height, and to remove branches smaller than 3 inches in diameter within 8 feet of the ground, and remove understory plants as necessary to break vertical continuity between ground covers, shrubs, trees and structures. Currently in this area the grassland along the road is mowed in a 4-ft width annually, the parking between the Interpretive Center and the Oak Grove group picnic area is mowed/weed-whipped around the roadside boulders for aesthetics, there is occasional tree trimming (2-4 year cycle) to limb up for visual/patrol needs and vehicle clearance, and the trees in the parking areas are trimmed for the same reasons along with hazard tree prevention.

The Oak Grove group picnic area contains a barbeque. The area within 10 feet of the barbeque will be raked clean annually, and vegetation within 30 feet of the barbeque will be kept clean of dead debris, the trees will be limbed up 8 feet from the ground, and the understory plants will be removed as necessary to prevent spread of a fire from the ground into the canopy of the trees. Vegetation trimming would be done by hand, and would likely be necessary every three to five years. Currently the grasses in the barbeque area are mowed or weed-whipped, the leaves are raked annually around the large barbeque, and brush and tree limbs are cleared.

The interpretive center, the maintenance complex, and the restroom associated with the Oak Grove group picnic area will be treated as defensible space. These buildings are in grassland and woodland. Grass within 30 feet of these buildings will be mowed, grazed, or weed-whipped to keep the grasses at less than four inches in height. Woodland vegetation within 100 feet of these buildings will be mowed, grazed, or trimmed by hand to remove dead debris, to remove branches 3 inches in diameter or less up to 8 feet from the ground, and to remove understory plants that can spread fire from the ground into the canopy. This will be done annually, although the trimming may only be necessary every 3 to 5 years. Currently the vegetation is trimmed to provide defensible space immediately around the buildings, to about 30 feet; this would extend the treated area to 100 feet.

The one-way road that leads from the back of the interpretive center uphill to the Hewlett Property and the edge of Pearson-Arastradero Preserve is in grassland and woodland. Grass within 30 feet of the roadway edge will be mowed or weed-whipped to keep the grasses at less than four inches in height. Other vegetation will be mowed or trimmed by hand to remove dead debris, to remove branches 3 inches in diameter or less up 8 feet from the ground, and to remove understory plants that can spread fire from the ground into the tree canopy. The grasses will be treated annually, and the woodland may only need treatment every 3 to 5 years. Currently the roadsides are mowed annually with a flail mower, in a swath up to 7 feet wide.

### *1.2.4. Treatment areas in the northeast part of Foothills Park including an evacuation route from Boronda Lake to Alexis Drive, Fire Station 8, Boronda Water Tank, and two containment sites (F.E4, F.D2, F.D8, F.C4, F.C5)*

This area includes grassland, woodland and chaparral vegetation. There are also landscape trees around Boronda Water Tank. The evacuation route is in grassland and will be mowed, grazed or weed whipped annually to keep the grass height at 4 inches or less within 10 feet of the edge of the road. Currently the roadside form Fire Station 8 to Alexis Drive is mowed every 2 to 3 years in a swath up to 7 feet wide, and portions of the grassland are also disced annually. Roadside tree trimming also occurs every 2 to 5 years for large/tall vehicle clearance. Under the Fire Management Plan the mowed area would be increased, the discing would be removed, and tree trimming would increase to extend 30 feet from the edge of the road, rather than immediately above the road.

Fire Station 8 and the Boronda Water Tank will be treated as defensible space, which means the vegetation within 100 feet of the structure will be trimmed. Fire Station 8 is already kept clear of vegetation within 100 feet. Vegetation around the water tank that will be trimmed includes woodland, grassland, landscaping, and possibly chaparral. Grazing and hand labor will be used to keep grasses at 4 inches or less in height, to remove dead branches smaller than 3 inches in diameter within 8 feet of the ground, and to remove understory plants as necessary to break vertical continuity between ground covers, shrubs, trees and structures. If it is necessary to modify the chaparral, the chaparral may be mowed, shortened or, alternatively, plants can be selectively removed to create shrub islands that are less than 12 feet in diameter (or twice the height of the tallest shrub, whichever is smaller) and are at least eight feet apart (or twice the height of the tallest shrub, whichever is greater). Currently the vegetation around the water tank is not managed, so these activities will be new.

The containment treatments in this portion of the park (F.C4 and F.C5) are located where the park boundary is adjacent to homes, and include Bobcat Point. The vegetation type is grassland, woodland, and chaparral. The proposed treatment method is grazing with goats. One area (F.C5) is currently disced where there is grassland. Grazing with goats would be a new method in this area and grassland, woodland and chaparral would be newly grazed.

### *1.2.5. Wild Horse Valley (F.E5, F.I6, F.D6)*

Wild Horse Valley has three treatments, including a secondary evacuation route, defensible space around a pump station, and ignition prevention. The evacuation route is a dirt road that extends along Buckeye Creek and passes through woodland, grassland and coastal scrub. Because this is a secondary evacuation route, vegetation within 15 feet of the edge of the road will be trimmed along one side, and the other side will be left untreated because it is a creek bank. Treatment methods include mowing, grazing and hand labor. Grasses will be cut to 4 inches or less annually. Woodland will be trimmed so that branches smaller than 3 inches in diameter within 8 feet of the ground are removed. Understory plants will also be removed as necessary to break vertical continuity between ground covers, shrubs, trees and structures. Where it is not in the riparian zone, the coastal scrub will be mowed, or alternatively, plants can be selectively removed to create shrub islands that are less than 12 feet in diameter (or twice the height of the tallest shrub, whichever is smaller) and are at least eight feet apart (or twice the height of the tallest shrub, whichever is greater). Currently the Wild Horse Valley road is mowed in a 7-foot swath along the edge of the road, and about 5-7 acres of the valley floor are

mowed to control yellow star thistle and tall grasses. Roadside tree trimming is also done every 2 to 5 years for large/tall vehicle clearance.

The Towle Campground at the upper end of Wild Horse Valley contains barbeques that are a potential ignition source. The campground is in woodland. The area within 10 feet of the barbeques will be cleared and raked annually. The area within 30 feet of the barbeques will be trimmed as for defensible space, which includes removing branches smaller than 3 inches in diameter within 8 feet of the ground and removing understory plants as necessary to break vertical continuity between the ground and the tree canopy. Past treatments in this area have included grazing with goats, mowing/weed whipping of grasses near the barbeques, and some clearing of brush and tree limbs near the barbeques.

The Boronda Water Tank pump station is also located at the Towle Campground. It is in woodland. It will be treated as defensible space, which means that the woodland will be trimmed within 100 feet of the structure so that branches smaller than 3 inches in diameter within 8 feet of the ground will be removed, dead vegetation is removed, and understory plants that connect ground cover with the tree canopy, and thus can serve as ladder fuels, are removed. Currently the woodland in this area is not trimmed, and this work would be new.

#### *1.2.6. Trappers Trail, Pony Tracks, Valley View and Firefighter Safety Zones on Trappers Trail*

The treatments located along Trappers Ridge on the west side of the park include containment and firefighter safety zones, and have been previously described (see containment, above). The treatments will occur in grassland and chaparral and are limited to areas that are currently mowed annually except for small areas to the south that will be treated for the first time.

### 1.3. Treatments in Pearson-Arastradero Preserve

#### *1.3.1. Gateway Facility and portions of the preserve northeast of Arastradero Road (A.D1, A.D2, A.C1, A.C2, A.C3*

Treatments in this area include defensible space around the Gateway Facility and the restrooms, and containment treatments in the rest of this side of the Preserve. The vegetation is grassland, and the treatment methods include mowing or weed-whipping annually to maintain grass height at 4 inches or less within 100 feet of the Gateway Facility buildings, mowing a 10-ft swath around the Preserve boundary (or grazing the entire area), grazing the grassland inside the perimeter area, and discing a 10-ft wide fuel break along the border with Liddicoat Circle. Currently the vegetation is mowed around the Gateway Facility annually for a distance of 30 feet, and the entire perimeter is disced, including wide swaths adjacent to homes and adjacent to a eucalyptus wind break on the border with Stanford lands.

#### *1.3.2. Main part of the Preserve, southwest of Arastradero Road (A.C4, A.C5, A.C6, A.C7, A.C8, A.C9, A.C10, A.C11, A.C12, A.C13, A.C14, A.C15, A.Rx1, A.Rx2, A.D3, and A.D4)*

On the southwest side of Arastradero Road the treatments include containment, prescribed fire, and defensible space.

Containment in this portion of the Preserve is described in detail above, under *Containment*. This treatment will affect grassland, woodland, and the riparian corridor along Arastradero Creek where selective trimming will be done by hand.

Grazing will be used along the preserve boundary with Paseo del Roble (A.C4) rather than discing because this area contains serpentine soils. The area is currently disced; it cannot be mowed because the slope is too steep for the mowing equipment.

The defensible space treatment will be used around a pump station and a water tank; these treatments will affect grassland and woodland, and will be new. Willow riparian vegetation within 100 feet of the pump station will not be removed, but other vegetation will be.

Currently, discing is done between Gate B (on Arastradero Road about a quarter-mile west of the Preserve parking lot) along the ridgetop east paralleling the Meadow Lark Trail, from Gate C (John Marthens Lane) east towards the Corte Madera Water Tank, and from Gate C south following the perimeter and then east towards Arastradero Creek. This would no longer occur.

Trailside mowing and/or weed whipping is done along all trails in the Preserve annually, and the width varies from 1 to 4 feet. Under the Fire Management Plan this would be increased to 10 feet, and would be done annually.

Prescribed fire is proposed in two grassland locations in the middle of the Preserve that are currently mowed or grazed. The burns would occur in late spring or early fall with a resulting cover of not less than 20%, and would occur no more often than every 3 to 5 years. The intent is to promote the growth of native plant species. A fall burn is more closely aligned with the natural fire cycle in California, and several native plant species are likely adapted to such a regime. Treatment boundaries in these two locations are mowed grassland along trails and the road along Arastradero Creek. Additional firebreaks for these areas are not required; if additional "cut-off" places are to be installed, they can be mowed prior to the burn or implemented using Class A foam. A prescription or burn plan will be prepared prior to this treatment, which will address fuel reduction requirements, local weather conditions, and available resources for fire management. This treatment would be new.

## 1.4. Evacuation Routes

The treatment for evacuation routes is described above under *Evacuation.*

### *1.4.1. Arastradero Road (PA.2, AE.1)*

The vegetation along Arastradero Road from Page Mill Road to the city limit includes willow riparian, grassland, coastal scrub, woodland, and eucalyptus. The grassland would be mowed or weed-whipped within 10 feet of the edge of the pavement. Woodland and coastal scrub within 30 feet of the road edge would be trimmed by hand to remove branches less than 3 inches in diameter within 8 feet of the ground, remove dead debris, and trim or remove understory plants to prevent fire from extending up into the tree canopy via the understory. The willow riparian area along Arastradero Creek would be left untreated. Eucalyptus would either be trimmed and cleared of loose bark and debris, or would be entirely removed.

Currently the edge of the roadway is mowed (2-5 feet) annually for motorist and bicyclist sight clearance and safety.

### *1.4.2. Page Mill Road (PA.1)*

The vegetation along Page Mill Road is dominated by woodland, but also includes some grassland and chaparral. The woodland and chaparral within 30 feet of either side of the road would be trimmed by hand to remove branches less than 3 inches in diameter within 8 feet of the ground, and understory plants would be trimmed or removed to prevent spread of fire into the canopy. Dead vegetation and debris would also be removed. The chaparral could also be mowed or cut into islands at least eight feet apart. Grassland within 10 feet of the road would be kept at a height of 4 inches or less. Treatment methods could include hand labor, mowing, and grazing.

Currently approximately 3.5 to five miles of Page Mill Road is mowed 2 to 5 feet from the road edge, and PG&E trims vegetation to keep utility lines clear.

### *1.4.3. Skyline Boulevard (PA.4)*

The vegetation along the portions of Skyline Boulevard that are in the city limits includes grassland, woodland, and a small amount of chaparral. These areas would be treated as described for Page Mill Road, above. These treatments would be new.

### *1.4.4. Los Trancos Road*

Los Trancos Road is located along the jurisdictional boundaries between Portola Valley, Palo Alto, and Santa Clara County, and treatment along this corridor will be coordinated between the jurisdictions. Vegetation within 30 feet of the edge of the roadway will be treated using mowing, grazing and hand labor, as described under *Evacuation,* above. These treatments would be new.

## 2.0 Federal, State and Local Biological Regulations

### 2.1. Introduction

Biological resources in California are protected under federal and state laws. The laws that pertain to the biological resources found in Foothills Park and Pearson-Arastradero Preserve include the:

- U.S. Endangered Species Act (protecting species listed by the federal government as threatened or endangered);
- U.S. Clean Water Act (protecting water quality and wetland habitat).
- U.S. Migratory Bird Treaty Act (protecting most U.S. birds);
- U.S. Bald and Golden Eagle Protection Act (protecting these eagles);
- California Environmental Quality Act (mitigating the environmental effects of human-initiated development);
- California Endangered Species Act (protecting species listed by the state as rare, threatened, or endangered under Fish and Game Code 2050 et seq);

- California Department of Fish and Game Code (Sections 1600-1607 that protect stream bed, bank and channel; 3500-3516 that protect nesting birds and fully-protected birds; 4700 and 5050 that protect fully-protected mammals, reptiles and amphibians).

In addition, the City of Palo Alto has a tree preservation ordinance and municipal code that governs open space districts.

## 2.2. Federal

### *2.2.1. Endangered Species Act (ESA)*

The United States Endangered Species Act (ESA) is administered by the United States Fish and Wildlife Service (USFWS for all species but fish and NOAA Fisheries for fish species). The federal ESA provides protection for species included on the endangered species list (known as "listed species"). In particular, the federal act prohibits "take". "Take" is defined by the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect a federally listed, endangered species of wildlife, or to attempt to engage in any such conduct." Federal regulations also define take to include the incidental destruction of animals in the course of an otherwise lawful activity, such as habitat loss due to development. Under those rules the definition of take includes significant habitat modification or degradation that actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR Section 17.3).

Take may be allowed under a permit by either Section 7 or Section 10(a) of the ESA. The permit is issued under Section 7 if another federal agency funds or issues a permit for the project (U.S. Army Corps of Engineers for example). The permit is issued under Section 10(a) if there is no federal involvement in the project.

The federally listed species protected by the ESA that have been documented to occur in Foothills and Pearson/Arastradero Parks or adjacent areas are the California red-legged frog (*Rana aurora draytonii*), California tiger salamander *(Ambystoma californiense)*, steelhead (*Oncorhynchus mykiss irideus*), Bay checkerspot butterfly (*Euphydryas editha bayensis*), Marin western flax (*Hesperolinon congestum*), San Mateo thornmint (*Acanthomintha duttonii)*, and San Mateo woolly sunflower (*Eriophyllum latilobum*). The habitats of these species include creeks, ponds, wetlands and adjacent upland habitat, and serpentine soils. The governing agency is the U.S. Fish and Wildlife Service, except for steelhead, which is addressed by NOAA Fisheries.

### *2.2.2. Migratory Bird Treaty Act (MBTA)*

The Migratory Bird Treaty Act implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the Act provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not.

In short, under the MBTA it is illegal to remove vegetation containing nests that are in active use, since this could result in killing a bird or destroying an egg. This would also be a violation of CDFG code (see section 3.3.3, below).

### *2.2.3. Bald and Golden Eagle Protection Act*

Under the Bald and Golden Eagle Protection Act it is unlawful to import, export, take, sell, purchase, or barter any bald eagle or golden eagle, or their parts, products, nests, or eggs. "Take" includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing. Exceptions may be granted by the USFWS for scientific or exhibition use, and for cultural use by Native Americans. However, no permits may be issued for import, export, or commercial activities involving eagles.

### *2.2.4. Clean Water Act*

The Federal Clean Water Act (CWA) is the primary federal law regulating water quality. The implementation of the Clean Water Act is the responsibility of the U.S. Environmental Protection Agency. That agency depends on other agencies, such as the individual states and the U.S. Army Corps of Engineers (USACE), to assist in implementing the Act. The objective of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters". Section 401 and 404 apply to project activities that would impact waters of the U.S. (creeks, ponds, wetlands, etc). The California State Water Resources Control Board enforces section 401 of the Clean Water Act (see below) and the USACE enforces Section 404.

*Clean Water Act, Section 401:* Any applicant for a Federal permit to impact waters of the U.S. under Section 404 of the Clean Water Act, including Nationwide permits (NWP) where pre-construction notification is required, must also provide to the U.S. Army Corps of Engineers a certification from the State of California. The "401 Certification" is provided by the State Water Resources Control Board through the local Regional Water Quality Control Board.

The Regional Water Quality Control Board (RWQCB) recommends the application be made at the same time that any applications are provided to other agencies, such as the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, or NOAA Fisheries. Application is not final until completion of environmental review under the California Environmental Quality Act (i.e., CEQA certification). The application to the RWQCB is similar to the pre-construction notification that is required by the U.S. Army Corps of Engineers (see discussion of Section 404, below). It must include a description of the habitat that is being impacted, a description of how the impact is proposed to be minimized and proposed mitigation measures with goals, schedules, and performance standards. Mitigation must include a replacement of functions and values, and replacement of wetland at a minimum ratio of 2:1, or twice as many acres of wetlands provided as are removed. The RWQCB looks for mitigation that is on site and in-kind, with functions and values as good as or better than the water-based habitat that is being removed.

*Clean Water Act, Section 404:* As part of its mandate under the Clean Water Act, the EPA regulates the discharge of dredged or fill material into "Waters of the U.S." under Section 404 of the Act. "Waters of the U.S." include territorial seas, tidal waters, and non-tidal waters in addition to wetlands and drainages that support wetland vegetation, exhibit ponding or scouring, show obvious signs of channeling, or have discernible banks and high water marks. The EPA also regulates excavation and changes in drainage. The discharge of dredged or fill material into waters of the U.S. is prohibited under the Clean Water Act except when it is in compliance with Section 404 of the Act. Enforcement authority for Section 404 was given to the U.S. Army Corps of Engineers, which it accomplishes under its regulatory branch.

The Fire Management Plan does not require direct impacts in streams, but there are wetlands in Pearson-Arastradero Preserve in the area of treatments A.E.1, A.Rx.1, A.Rx2, A.C.3, and A.C.11. No state and federal permits will be necessary if recommended avoidance and protection measures are included. Creeks, ponds and wetlands are also considered a sensitive habitat under CEQA, and can support listed species.

## 2.3. State

### *2.3.1. California Environmental Quality Act (CEQA)*

CEQA (Public Resources Code Sections 21000 et. seq.) requires public agencies to review activities which may affect the quality of the environment so that consideration is given to prevent damage to the environment.

Under the CEQA Guidelines (Title 14 C.C.R. Sections 15000 et. seq.), Section 15307, actions taken by regulatory agencies for the protection of natural resources such as the Palo Alto Foothills Fire Management Plan are categorically exempt. However, if the project is located in a sensitive environment, an ordinarily insignificant project may actually have significant effects. Thus, under the Guidelines a project is not categorically exempt if it "may impact an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies." Pursuant to the Guidelines, any project contributing to significant cumulative impacts or that has a reasonable possibility of causing a significant effect on the environment due to unusual circumstances cannot be exempt. The state maintains a list of sensitive, or "special-status", biological resources, including those listed by the state or federal government or the California Native Plant Society as endangered, threatened, rare or of special concern due to declining populations. Projects that directly impact these resources may not qualify for a categorical exemption. For example, discing that could cause "take" of a burrowing owl (California Species of Concern) would not qualify for a categorical exemption under CEQA.

The CEQA Guidelines contain a checklist of questions to gauge whether a project will result in significant impacts. The response to these questions is included in section 6.0 of this document.

During CEQA analysis, the California Natural Diversity Database (CNDDB) is usually consulted. The CNDDB relies on information provided by the California Department of Fish and Game, the U.S. Fish and Wildlife Service, the California Native Plant Society, and the Audubon Society among others. Under CEQA, the lists kept by these and any other widely recognized organizations are considered when determining the impact of a project.

CEQA Guidelines Section 15380 defines endangered, threatened, and rare species for purposes of CEQA and clarifies that CEQA review extends to other species that are not formally listed under the state or federal Endangered Species Acts but that meet specified criteria. The state and federal governments keep lists of such "special-status" species which are reflected in the CNDDB. Many of these species are not listed under either Endangered Species Act but are currently tracked to determine if listing is necessary. Thus they are not specifically protected by the state and federal Endangered Species Acts. They are only protected through measures imposed as a result of CEQA review. The California Native Plant Society has a list of plants that are considered to be rare, threatened, or endangered in a portion or all of their range; these plants may not have been listed by the California Department of Fish and Game or the U.S. Fish and

Wildlife Service, but they are considered sensitive under CEQA. The California Department of Fish and Game is a trustee agency and is solicited for its comments during the CEQA process unless a project is exempt. The state also maintains a list of fully-protected species, as described in section 3.3.3, below.

Foothills Park and Pearson-Arastradero Preserve provide habitat for several Special-status species (see the discussion in section 4.0), however few of them have been confirmed present there (Table 3-1):

**Table 2-1 Potential Special-status Species of Foothills Park and Pearson-Arastradero Preserve**

| Animals | Plants |
|---|---|
| San Francisco dusky-footed woodrat* | Arcuate bush mallow* |
| Pallid bat | Choris' popcorn flower |
| Red bat | Crystal Springs lessingia |
| American badger | Dudley's lousewort |
| Ringtail | Fountain thistle |
| San Francisco garter snake | Fragrant fritillary |
| Western pond turtle | Franciscan onion |
| California red-legged frog | Kings Mountain manzanita |
| California tiger salamander | Marin western flax |
| Rainbow trout/steelhead* | San Francisco campion |
| White-tailed kite* | San Francisco collinsia |
| Northern harrier | San Mateo thornmint |
| Sharp-shinned hawk | Santa Clara red ribbons |
| Cooper's hawk* | Santa Cruz Mountains manzanita |
| Golden eagle | Western leatherwood* |
| Burrowing owl | White-flowered rein orchid |
| Long-eared owl | Wooly-headed lessingia |
| Loggerhead shrike* | |
| Yellow warbler | |
| Saltmarsh common yellowthroat | |
| Tri-colored blackbird | |

* confirmed present

### *2.3.2. California Endangered Species Act (CESA)*

CESA (Fish and Game Code 2050 et seq.) establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that State agencies shall not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy.

No state-listed plant species are known to occur in Pearson-Arastradero Preserve, Foothills Park, or the immediate vicinity.

### *2.3.3. California Fish and Game Code*

CDFG is authorized under the California Fish and Game Code, Sections 1600-1607 to develop mitigation measures and enter into Streambed Alteration Agreements with applicants who propose projects that would obstruct the flow of, or alter the bed, channel, or bank of a river or stream in which there is a fish or wildlife resource, including intermittent and ephemeral streams. No such activities are necessary under the Fire Management Plan.

Sections 3500-3516, 4700, 5050 and 5515 address Fully Protected species. Prior to the passage of CESA, the classification of Fully Protected was the State's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Subsequently, many Fully Protected species have been listed under the state and/or federal Endangered Species Acts. The only exceptions are golden eagle, white-tailed kite, trumpeter swan, northern elephant seal, and ringtail. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock. State Fully Protected species that may occur in Foothills Park and Pearson-Arastradero Preserve are the San Francisco garter snake, white-tailed kite, and ringtail.

Nesting birds, including raptors, are protected by the California Fish and Game Code section 3503, which reads, "It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto." In addition, under Fish and Game Code section 3503.5, "it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto". Passerines and non-passerine landbirds are further protected under the Federal Migratory Bird Treaty Act. As such, the CDFG typically recommends surveys for nesting birds that could potentially be directly (actual removal of trees/vegetation) or indirectly (noise disturbance) impacted by project-related activities. Disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by the CDFG. This code applies to work proposed under the Fire Management Plan.

### *2.3.4. State Water Resources Control Board/Regional Water Quality Control Board*

The State Water Resources Control Board is a five-member board that sets statewide policy related to water quality, coordinates and supports regional water quality control boards, and reviews petitions that contest regional board actions. There are nine regional water quality control boards statewide; the City of Palo Alto is under the San Francisco Bay Regional Water Quality Control Board.

Each regional board has nine board members and a staff. Each regional board sets water quality standards, waste discharge requirements for its region, determines compliance with those standards, and takes enforcement action. The regional board issues and enforces permits for discharge of treated water, landfills, stormwater runoff, filling of any surface waters or wetlands, dredging, agricultural activities and wastewater recycling. In Palo Alto, the San Francisco Bay Regional Water Quality Control Board would be concerned with stormwater runoff and activities that directly impact creeks, ponds or wetlands. Also see the discussion under federal Clean

Water Act, above. None of the activities associated with the Fire Management Plan are expected to require authorization from the Regional Water Quality Control Board.

## 2.4. City of Palo Alto

*Tree Preservation Ordinance (Municipal Code Title 8).* The City of Palo Alto tree preservation ordinance protects coast live oak (*Quercus agrifolia*), valley oak (*Quercus lobata*), redwood (*Sequoia sempervirens*), and designated heritage trees. Under the ordinance, coast live or valley oaks that are 11.5 inches in diameter (36 inches circumference), and redwoods that are 18 inches in diameter (57 inches circumference), measured at 54 inches above grade, are protected. Removal of a protected tree is prohibited except when the tree is dead, hazardous, is crowding another protected tree or constitutes a public nuisance. In some cases a protected tree can also be removed if it affects a single-family residence or a non-residential building. A permit is required to remove a protected tree, and replacement is normally required. The ordinance also prohibits pruning of more than 25 percent of the crown of a protected tree within one calendar year or unbalancing the tree.

Heritage trees are individual trees of any size or species that are specifically designated as a heritage tree by the city council. There are no Palo Alto-designated heritage trees in the Foothills Fire Management Plan Update area.

*Palo Alto Municipal Code Chapter 18.28 Special Purpose (PF, OS and AC) Districts*. The Pearson-Arastradero Preserve and Foothills Park are subject to the municipal code governing open space and public facility districts. The districts have the following purposes that apply to these parks (section 18.28.010):

> (a) Public Facilities District (PF)
>
> The PF public facilities district is designed to accommodate governmental, public utility, educational, and community service or recreational facilities.
>
> (b) Open Space District (OS)
>
> The purpose and intent of this district is to:
> (1) protect the public health, safety, and welfare;
> (2) protect and preserve open space land as a limited and valuable resource;
> (3) permit the reasonable use of open space land, while at the same time preserving and protecting its inherent open space characteristics to assure its continued availability for the following: as agricultural land, scenic land, recreation land, conservation or natural resource land; for the containment of urban sprawl and the structuring of urban development; and for the retention of land in its natural or near-natural state, and to protect life and property in the community from the hazards of fire, flood and seismic activity; and
> (4) coordinate with and carry out federal, state, regional, county, and city open space plans.

In the "Additional OS District Regulations", the "removal of trees shall be permitted only as provided in Title 8" (which is tree protection, as described above). No other provisions apply to the Fire Management Plan because it does not include development of structures. The Fire

Management Plan helps to meet several of the purposes of the regulations, including 1, 2, and 3 listed above.

## 3.0 Biological Setting

### 3.1. Vegetation Communities

The foothills of the City of Palo Alto are located on the eastern slope of the Santa Cruz Mountains (Figures 1, 2, and 3). The terrain transitions from low rolling foothills in Pearson-Arastradero Preserve to steep slopes in Foothills Park. Dry conditions in the summer and fall affect the type and location of vegetation found within the foothills. The area is drained by both intermittent and perennial streams, including Los Trancos Creek (perennial), Arastradero Creek (perennial), Buckeye Creek (intermittent), and an unnamed tributary to Los Trancos Creek (intermittent) (see more discussion about creeks under Creek/Riparian Forest below).

The Santa Cruz Mountains has two life zones, the Upper Sonoran and Transition, both of which are found within the foothills of the City of Palo Alto (Thomas, 1961). The Upper Sonoran is composed of chaparral, grassland and foothill woodland. The Transition is composed of coastal strand, coastal scrub, redwood forest, mixed evergreen forest, and grassland. The distribution of these communities is determined by the availability of water.

Foothills Park and Pearson-Arastradero Preserve contain several general plant communities/habitat types, which are described below: chaparral, coastal scrub, grassland, mixed evergreen forest, oak woodland, serpentine soils, creek/riparian forest, lake, and irrigated meadow. The following descriptions are based on the Flora of the Santa Cruz Mountains (Thomas 1961), Description of Terrestrial Natural Communities of California (Holland 1986), A Manual of California Vegetation ("MCV") (Sawyer and Keeler-Wolf 1995), and the Jepson Manual (Hickman, 1993). The community names are from the Flora of the Santa Cruz Mountains (with a translation to the MCV provided), and the plant names are from the Jepson Manual.

Pearson-Arastradero Preserve is dominated by grassland (native and non-native), but also contains oak woodland, coastal scrub, wetland and aquatic/riparian vegetation. Foothills Park is dominated by oak woodland and mixed evergreen forest, and also contains chaparral, coastal scrub and aquatic/riparian vegetation.

The woodland in Pearson-Arastradero Preserve and Foothills Park is dominated by coast live oak. As elevation increases, the oaks tend to give way to a mix of evergreens, including madrone, bay laurel, tan oak, and buckeye. For the purposes of this analysis, these two woodland types were combined into "woodland" because the impacts and protection measures are not well differentiated between the two types, and it is simpler to apply the protection measures without having to determine which woodland type is present.

**Chaparral** (MCV: Chamise series) Found primarily in Foothills Park, this vegetation community occupies steep, dry south-facing slopes. It is not usually uniform in growth and is found on rocky soils. Composed of broad-leaved sclerophyll[1] shrubs usually 5-14 ft tall. Dominant species is chamise (*Adenostoma fasciculatum*), but this type may also include

[1] Sclerophyll means the leaves are tough and grow close together along the stem.

manzanita (*Arctostaphylos spp.*), scrub oak (*Quercus berberidifolia*), California-lilac (*Ceanothus spp.)*, redberry (*Rhamnus crocea* ssp. *crocea*), coffeeberry (*Rhamnus californica* ssp. *californica*), and holly-leafed cherry (*Prunus ilicifolia* ssp. *ilicifolia*).

**Coastal Scrub** (MCV: Coyote brush series) Usually less than six feet tall and found in dense thickets on windy exposed sites with shallow, rocky soils, coastal scrub is found in both Pearson-Arastradero Preserve and Foothills Park. Characteristic species include: coyote brush (*Baccharis pilularis*), sagebrush (*Artemisia californica*), California-lilac (*Ceanothus thyrsiflorus*), California bee plant (*Scrophularia californica*), blackberry (*Rubus ursinus*), toyon (*Heteromeles arbutifolia*), poison oak (*Rhus diversiloba*).

**Grassland** (MCV: Foothill needlegrass series; California annual grassland series). Grasslands within Foothill Park and Pearson-Arastradero Preserve are mostly non-native species due to urban development and a long history of agriculture. However, stands of native grasses are present in Pearson-Arastradero Preserve, and the Preserve also contains areas of serpentine grassland (see discussion of serpentine, below). The native grasslands are dominated by perennial bunch grasses, primarily needlegrass (*Nasella pulchra, N. lepida*), but also including blue wild rye (*Elymus glaucus*).

California annual grasslands in the foothills in general are dominated by annual grasses and herbaceous plants as well as containing the perennial bunchgrasses mentioned above. The non-native species out-number native species. Characteristic species in annual grasslands include oatgrass, annual agoseris (*Agoseris heterophylla*), oat (*Avena fatua*), golden brodiaea (*Brodiaea lutea*), ripgut grass (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), barley (*Hordeum murinum* ssp. *leporinum*), foxtail barley (*H. jubatum*), California poppy (*Eschscholzia californica*), Ithuriel's spear (*Tritileia laxa*), soap plant (*Chlorogalum pomeridianum*), Italian ryegrass (*Lolium multiflorum*), needlegrass, California fescue (*Festuca californica*) and six-weeks fescue (*F. dertonensis*).

**Mixed Evergreen Forest** (MCV: various series within Mixed Live Oak Forests). This community lies adjacent to creek/riparian forests on drier sites. It is found in the upland and western portion of Foothills Park and southwestern portions of Pearson-Arastradero Preserve. This community has many different subordinate communities like oak-madrone, fir-tanbark, oak-buckeye, tanbark oak-madrone but these stands are intermittent and small in extent and area. It is dominated by broad-leafed trees, 30 – 90 feet tall.

The mixed evergreen forest in the foothills contains a mix of tree species including coast live oak, Pacific madrone (*Arbutus menziesii*), tan oak (*Lithocarpus densiflorus*), California buckeye (*Aesculus californica*), California bay laurel (*Umbellularia californica*) and black oak (*Quercus kelloggii*), with minor components of big leaf maple (*Acer macrophyllum*), coast redwood (*Sequoia sempervirens*) and Douglas-fir (*Pseudotsuga menziesii* var. *menziesii)*. The shrub layer is minimal but includes saplings, western sword fern (*Polystichum munitum*), California hazel (*Corylus cornuta* var. *californica*), poison oak, and broom species.

**Oak Woodland** (MCV: Coast live oak series). Oak woodland is a highly variable woodland that can be dominated by blue, coast live or interior live oaks. It consists mainly of dense woodlands with shrubby understories. Characteristic species include coast live oak (*Quercus agrifolia*), valley oak (*Q. lobata*), blue oak (*Q. douglasii*), black oak (*Q. kelloggii*), interior live

oak (*Q. wislizenii*), California buckeye, ceanothus species, California bay laurel, holly-leafed cherry, bitter cherry (*P. emarginata*), toyon, and tan oak (*Lithocarpus densiflorus*).

**Creeks/Riparian Forest** (MCV: Coast live oak series; Arroyo willow series). In the foothills area, this vegetation is found on Los Trancos Creek, Arastradero Creek, Buckeye Creek (a tributary to Los Trancos Creek), and an unnamed tributary to Los Trancos Creek in Pearson-Arastradero Preserve. In many places the vegetation along the creek is not markedly different from adjacent, upslope vegetation, and is dominated by coast live oak, coyote brush, or mixed evergreen forest. The riparian designation typically extends 50 feet from the top of the creek bank.

**Serpentine Soils**. The underlying geology and the soil types in the foothills are an important consideration with regard to special-status plant species. In this area, soils that come from serpentine bedrock are low in nutrients and have a high calcium: magnesium ratio. As a result, these soils support a high number of native plants that have adapted to grow in them. Non-native grasses that can out-compete native species elsewhere do not grow well in serpentine soils without fertilizer. Several special-status plants are now only found growing in serpentine soils.

Two areas of serpentine soils are mapped in Pearson-Arastradero Preserve, and none are mapped in Foothills Park. Several special-status plants known to occur in the region, either historically or currently are found on serpentine soils. The micro-habitat description for these plants is described in Table 1 in Appendix A, and more discussion of these species is provided in section 4.2.

**Lake** (Bulrush-Cattail series)**.** This habitat type occurs at Boronda Lake in Foothills Park and John Sobey Pond and Arastradero Lake in Pearson-Arastradero Preserve. It includes wetland vegetation such as broadleaf cattail (*Typha latifolia*), narrowleaf cattail (*T. angustifolia*) and tule or bulrush (*Scirpus* spp.).

Boronda Lake is the largest of the three water bodies. It is a perennial man-made lake with a well-developed margin of cattails and tules. It flows into Los Trancos Creek. Arastradero Lake is next largest. It is also man-made with a dam on Arastradero Creek and is perennial. It is surrounded by willow riparian vegetation, and has a margin of cattails and tules. John Sobey Pond lies between Boronda and Arastradero Lakes. It is a smaller man-made impoundment on Arastradero Creek, and is surrounded by willow riparian forest. It dries completely in low-rainfall years.

**Irrigated meadow** (No MCV designation)**.** Foothills Park contains a non-native grass, irrigated meadow in Las Trampas Valley. The meadow extends from the Pine Gulch and Orchard Glen picnic areas to the Oak Grove Group Picnic Area, and lies between the main park road and Buckeye Creek.

### 3.2. Special-status Species

The plant and animal special-status species historically known to occur in within a five-mile radius of Pearson-Arastradero Preserve and Foothills Park were researched through the California Natural Diversity Database (CNDDB). A table of special-status species considered in this analysis is included in Appendix A (Table 1). Some species that were considered are not expected to occur in the habitat that exists in the Park or Preserve, or the database records are

over fifty ears old. The special-status species of concern for this impacts analysis are described below, in alphabetical order.

**American badger** (*Taxidea taxus*, California Species of Special Concern). This is an uncommon species, but has a widespread range throughout the west. Badgers prefer to live in dry, open grasslands, fields, and pastures. They are found from high alpine meadows to sea level. Prey includes pocket gophers, ground squirrels, moles, woodrats, deer mice, and voles. Badger has been found to occur within 5 miles of the town center; the last observation was in 1981 near the Stanford Linear Accelerator Center. It could occur in grassland or oak savanna where there is friable soil. Suitable habitat occurs in Pearson-Arastradero Preserve.

**Bats**. The pallid bat (*Antrozous pallidus*, California Species of Special Concern) and red bat (*Lasiurus blossevillii*, California Species of Special Concern) are listed as state species of concern. All bat species are also protected under CDFG code.

The pallid bat prefers rocky outcrops, cliffs, and crevices with access to open habitats such as grassland or oak savanna for foraging. It is very sensitive to disturbance of roosting sites. Such sites are essential for metabolic economy, juvenile growth and as night roosts to consume prey. This species was observed in Woodside in 1960, according to the CNDDB. It is also known to occur to the north of Town in the Jasper Ridge Biological Preserve. Suitable habitat occurs in both the Preserve and the Park.

The red bat is a migratory species and is generally found in the Bay Area in the winter. It is a solitary roosting species that primarily uses trees as roost sites. Maternity roosts are colonial. The roost sites are often in edge habitats, adjacent to streams, fields or urban areas, and may be from 2 to 40 feet above ground. Red bats eat a variety of insects, mainly moths, crickets, beetles and cicadas. It forages over open areas, and requires a source of water (Zeiner et al., 1990). Suitable habitat for this species occurs in both the Preserve and the Park.

Some species that are otherwise not protected by the ESA or CESA and do not have a special CDFG or Fish and Game Code designation (e.g., fully protected) may still, under CEQA, be determined to be significantly impacted by a project. Considered nongame mammals, bats are protected by CDFG Code 4150, which reads "all mammals occurring naturally in California which are not game mammals, fully protected mammals, or fur-bearing mammals, are nongame mammals. Nongame mammals or parts thereof may not be taken or possessed except as provided in this code or in accordance with regulations adopted by the commission."

The CEQA planning process provides the main protection for bat roosts and maternity colonies. If a project were to destroy or disturb a roosting site for a bat maternity colony it could significantly impact the local and/or regional population of the species. Although loss of an individual bat would likely be considered an insignificant impact, loss of a roost site where multiple individuals are present would be considered significant, particularly for those listed as California species of special concern. This is because roost sites may be limited in availability and often have very specific habitat and/or microclimate conditions. When a roost site is lost, individuals may not be able to find an alternate roost in sufficient time for protection from the elements before expiring. Because the type of roost varies among species, the survey requirements also differ. A summary of habitat requirements is provided in Table 2 in Appendix A.

For the eleven bat species that are expected to occur in the area listed in Table 2., roost habitats include tree cavities, caves, buildings, leaves of large trees/shrubs, rock piles, tree bark, and mines. Most occur year round. Breeding occurs in the winter and young are generally born May to July. In some cases the roosts are obvious by sight or smell; in other cases an acoustic survey is necessary.

**Burrowing owl** (*Athene cunicularia*; California Species of Special Concern). Burrowing owl is a yearlong resident of open, dry grassland and desert habitats and also occurs in grass, herbaceous plant and open shrub stages of pinyon-juniper and ponderosa pine habitats. It eats mostly insects, but also small mammals, reptiles, birds, and carrion. It uses ground squirrel burrows for cover and nesting. Burrowing owl is known to occur at the Palo Alto Baylands and in the Stanford foothills near Felt Lake. Suitable habitat occurs in Pearson-Arastradero Preserve.

**California red-legged frog** (*Rana aurora draytonii*; Federally Threatened and California Species of Special Concern; CRLF hereafter). The California red-legged frog occurs in grassland, riparian woodland, oak woodland, and coniferous forest but requires quiet freshwater pools, slow-flowing streams, and freshwater marshes with heavily vegetated shores for breeding. These frogs typically stay near the shore hidden in vegetation rather than in open water. Red-legged frogs frequently occupy seasonal bodies of water, and in some areas these habitats may be critical for persistence. It is speculated that CRLF may lie dormant during dry periods of the year or during drought, utilizing animal burrows to estivate.

CRLF are thought to disperse widely during autumn, winter, and spring rains. Juveniles use the wet periods to expand outward from their pond of origin and adults may move between aquatic areas from summering habitat to breeding locations. Frogs disperse through many types of upland vegetation and use a broader range of habitats outside of the breeding season. California red-legged frogs have been observed to make long-distance movements that are straight-line, point to point migrations rather than using corridors for moving in between habitats. Dispersal distances are considered to be dependent on habitat availability and environmental conditions (USFWS 2008).

Other important microhabitat features include overhanging vegetation, such as willow boughs that contact the water, overhanging banks formed by tree-root masses and retreat sites at water levels that are close to relatively deep, still water. Adult CRLF are strongly associated with these microhabitats during surface activity (Jennings and Hayes, 1994).

CRLF are known to occur in Matadero Creek, Deer Creek, San Francisquito Creek, at Lawler Ranch, in Corte Madera Creek (at the end of Bear Gulch Road), and southeast of La Honda in privately owned ponds. They could also occur in Los Trancos Creek and Sausal Creek in Portola Valley.

A reconnaissance survey of John Sobey Pond and Arastradero Lake for CRLF was done in 1998 by experts Rich Seymour and Mike Westphal. They found that both ponds are inhabited by bullfrogs (a predator on red-legged frog), and deduced that CRLF is absent or occurs in very low numbers. John Sobey pond was found to more closely resemble pool and sag pond habitat found elsewhere in the coast range, whereas Arastradero lake was found to be atypical California habitat and a source for non-native predators and competitors of native amphibians. Their report (Seymour and Westphal, 1998), recommends modifications to Arastradero Lake to improve habitat quality, allowing John Sobey Pond to dry regularly to control the bullfrog population,

prohibiting the use of mosquitofish, and undertaking an eradication program to reduce the bullfrog population.

**California tiger salamander** (*Ambystoma californiense*, Federal Threatened, California Species of Special Concern; CTS hereafter). CTS was listed by the USFWS as federally Threatened in September 2004. CTS range from the Sierra Nevada crest (just west of it) to the outer coast range and from Sonoma and Yolo counties on the north to Santa Barbara County in the south. CTS require a mosaic of habitats consisting of seasonally filled pools located in or near grasslands or oak woodlands. Semi-permanent ponds, reservoirs, and portions of slow-moving, seasonal creeks may also be used. For most of the year, CTS live in the burrows of ground squirrels, gophers, and other rodents in open wooded or grassy areas. However, they may also use man-made structures such as underground utility boxes and drainage pipes. They do not emerge to breed every year. The only known population of CTS on the peninsula occurs on Stanford lands near Lagunita. It was also reported to occur on Albion Avenue in Woodside in 1962. Suitable habitat for CTS is present in Arastradero Preserve, but it has never been observed there.

**Long-eared Owl** (*Asio otus*; California Species of Special Concern). The long-eared owl frequents dense, riparian and live oak thickets near meadow edges, as well as nearby woodland and forest habitats. It eats mostly voles and other rodents, occasionally birds, and other vertebrates. It may be found in oak woodland, oak savanna, mixed evergreen forest, redwood forest, and creek-riparian habitats. It 1987 it was observed nesting in the Monte Bello Open Space Preserve, to the southwest of the Park and Preserve, which was the first confirmed breeding location in Santa Clara County. Suitable breeding habitat occurs in both Pearson-Arastradero Preserve and Foothills Park.

**Saltmarsh common yellowthroat** (*Geothlypis trichas sinuosa*; California Species of Special Concern). The saltmarsh common yellowthroat mostly breeds and winters in wet meadow, fresh emergent wetland, and saline emergent wetland habitats in areas around the south end of San Francisco bay. It eats insects, especially caterpillars and other larvae; also spiders and seeds. Breeding pairs were observed in the marsh at the south end of Searsville Lake in 1976 and 1985. The habitat at the lake includes dense freshwater marsh vegetation with willows and cattails as the dominant plant species. Breeding habitat is present at Arastradero Lake and Boronda Lake.

**Loggerhead shrike** (*Lanius ludovicianus*; California Species of Special Concern). The loggerhead shrike is a medium-sized songbird that breeds and forages in open areas with short vegetation, such as pastures and open woodlands. It eats insects, amphibians, small reptiles, small mammals, and birds. It uses its strong beak to capture its prey, and then impales the prey on a thorn or barbed wire in order to hold it while eating it. It is known to occur at Stanford, and is expected to occur in Pearson-Arastradero Preserve.

**Cooper's hawk** (*Accipiter coopersii*; California Department of Fish and Game Watch List). The Cooper's hawk is a medium-sized hawk that lives in forest habitats. It prefers dense canopied evergreen and deciduous forests or riparian zones. Its main prey item is birds. It is known to occur at Stanford, and is expected to occur in both Pearson-Arastradero Preserve and Foothills Park.

**Sharp-shinned hawk** (*Accipiter striatus*; California Department of Fish and Game Watch List). The sharp-shinned hawk prefers coniferous, mixed evergreen forests and riparian forest. It is a

winter resident of the Bay Area, and is not expected to breed here. It preys on birds. It is known to occur at Stanford, and suitable habitat is present in Pearson-Arastradero Preserve and Foothills Park.

**Raptors (birds of prey).** Birds of prey are also protected by California Fish and Game Code, as noted earlier. This includes any raptor, regardless of whether it is a special-status species. Raptors known to breed in the area include loggerhead shrike, white-tailed kite, northern harrier, sharp-shinned hawk, Cooper's hawk, red-shouldered hawk, red-tailed hawk, golden eagle, American kestrel, prairie falcon, barn owl, western screech-owl, great horned owl, northern pygmy-owl, and northern saw-whet owl (Sequoia Audubon Society, April 2006). The Park and Preserve contain suitable breeding habitat for raptors in mixed evergreen forest, oak woodland, grassland, aquatic and creek/riparian forest vegetation types.

**San Francisco dusky-footed woodrat** (*Neotoma fuscipes annectens*; California Species of Special Concern). The San Francisco dusky-footed woodrat (SFDW) is one of eleven subspecies of the dusky-footed woodrat that live throughout California and the arid west. The range of the San Francisco dusky-footed woodrat includes the coastal belt of San Francisco as far north as the Golden Gate, as far east as Walnut Creek in Contra Costa County and Niles Canyon in Alameda County, and south at least until the UC Santa Cruz campus (Hooper 1944). Although the dusky-footed woodrat is generally considered common throughout its range, their complex social structure makes them sensitive to disturbance (Santa Cruz Mountains Bioregional Council, 2004).

The SFDW, a nocturnal mammal, occurs in a variety of brushy and wooded areas that provide cover from aerial and ground predators. Suitable SFDW habitat within the Santa Cruz Mountains includes forests that contain Douglas-fir, manzanita, tan oak, coast redwood, and willow species (Bankie, 2005). They are typically not found within open habitats such as grassland, but will traverse through such habitat for mating or range expansion even at the expense of temporary vulnerability to predators.

The SFDW eats primarily woody plants, including leaves, flowers, nuts and berries. Specific food sources used throughout the Santa Cruz Mountains include coast live oak, coffeeberry, blackberry, gooseberry, poison oak, and honeysuckle. It is an opportunistic feeder, and has been observed to use non-native species as a primary food source, although these species are in the same genus as native plants known to be used by SFDW (TRA staff observation).

The SFDW builds stick structures (houses) for nesting that average five feet long and four feet in height. SFDWs are typically found living in colonies of 3 to 25 houses. These elaborate dwellings help protect the SFDW from seasonal temperature extremes and predators. Various chambers can be found within the houses, each serving a different purpose for its resident SFDW including food storage, nesting, and latrine. Other wildlife such as amphibians, reptiles and invertebrates also live in active SFDW houses without harm to or from SFDW. It is common for one SFDW to use several houses. However, some female SFDWs will occupy the same house for their entire lifespan, at which time one of her female offspring take over the house. Consequently, some SFDW houses are actively used for as long as 30 years (SCMBC, 2004). Male and female woodrats do not share nests; however, a female will share the nest with her litter for several months. A male woodrat territory typically overlaps 1 to 5 female woodrat territories but no other male territories. However, female territories will overlap with each other.

Territory size varies greatly but male territories are typically larger than female territories. Male territories range from 0.3 to 0.6 acres and female territories range from 0.1 to 0.5 acre. Both Pearson-Arastradero Preserve and Foothills Park contain SFDW in woodland, creek/riparian forest, coastal scrub and chaparral habitats.

**Ringtail** (*Bassariscus astutus*; California Fully Protected). Ringtails occur across the arid west usually at elevations from sea level to 1400 meters. They are solitary, nocturnal and secretive, and are known to occur in rocky areas in chaparral, oak woodland, riparian woodland, and conifer forests, with a home range up to 336 acres. Ringtail is similar to a raccoon in appearance, but smaller, and has a fox-like face and cat-like body. Its tail is generally longer than its body. They are excellent climbers. Ringtails eat small animals (rodents, birds, reptiles, and amphibians), carrion, and nuts and berries. Ringtails establish permanent dens in rock outcrops or tree hollows. Litter size ranges from two to four, and there is one litter per year. The CNDDB has no reported sightings of ringtail in the local area, but both the Park and Preserve contain suitable habitat for this species and are within its known range.

**San Francisco garter snake** (*Thamnophis sirtalis tetrataenia*; State and Federally Endangered and California Fully Protected). Historically, the San Francisco garter snake (SFGS) occurred in scattered wetland areas on the San Francisco Peninsula from approximately the San Francisco County line south along the eastern and western bases of the Santa Cruz Mountains, at least to the Upper Crystal Springs Reservoir, and along the coast south to Año Nuevo Point and Waddell Creek in Santa Cruz County (U.S. Fish and Wildlife Service 2005). The species currently appears to be limited to small areas within this historic range; primarily along the San Mateo County Coast and near the San Francisco International Airport.

SFGS is a highly aquatic species found in or near densely vegetated freshwater ponds with adjacent open hillsides where they can bask, feed, and find cover in rodent burrows. Temporary ponds and other seasonal freshwater bodies are also used. Emergent and bankside vegetation such as cattails (*Typha spp*.), bulrushes (*Scirpus spp*.) and rushes (*Juncus spp*. and *Eleocharis spp*.) are preferred and used for cover. The area between stream and pond habitats and grasslands or bank sides is used for basking, while nearby dense vegetation or water often provides escape cover. A critical component for San Francisco garter snake is the presence of suitable prey, including Pacific tree frog (*Pseudacris regilla*) and ranid frogs (California red-legged frog and/or bullfrog). The snakes breed during the spring and females deposit their eggs near the water during the summer. The males are thought to disperse to drier areas at this time. Throughout the fall, the adults may occupy burrows in adjacent grasslands while juveniles remain near the water. Although very little information is available regarding dispersal and movements through upland habitats, a percentage of young and sub-adults likely disperse and colonize new ponds.

Urbanization destroyed the majority of prime habitat for the snake, and continues to fragment remaining habitat and eliminate habitat linkage corridors. Illegal collection of the SFGS, CRLF population decline, and the introduction of the American bullfrog (*Rana catesbeiana*) have also led to its decline. Suitable habitat for this species is very limited in the area. An intergrade form occurs in Woodside just north of Searsville Lake. It is unknown if the intergrade is more closely related genetically to the common garter snake or to the SFGS. Habitat for SFGS is present at Boronda Lake in Foothills Park and along Arastradero Creek in Pearson-Arastradero Preserve, but the likelihood of occurrence is low.

**The Central California Coast steelhead** (*Oncorhynchus mykiss*, Federal Threatened, California Species of Special Concern). Steelhead is an anadromous fish that is federally listed as Threatened. Steelhead is native to coastal streams from Baja California to Alaska and parts of Asia. Adult steelhead migrate from the ocean into streams in the late fall, winter, or early spring seeking out deep pools within fast moving streams to rest prior to spawning. Steelhead spawn in shallow water gravel beds and the young typically spend the first one to two years of their lives as residents of their natal stream.

San Francisquito Creek is thought to support one of the most robust winter steelhead runs of any creek system flowing into San Francisco Bay, but information is not available to enumerate the size of the adult run or the number of juvenile fish rearing in the system. Within San Francisquito Creek, Los Trancos Creek, and Bear Creek, steelhead adult spawn, eggs incubate, juvenile steelhead rear year-round, and steelhead smolts outmigrate during the spring months. Young steelhead generally rear in the creeks for one to two summers. The most important spawning and rearing habitat for steelhead in the San Francisquito Creek system is in Los Trancos Creek, San Francisquito Creek (from Searsville Reservoir to Junipero Serra Boulevard), and Bear Creek; however, steelhead will rear in any part of the system that has water year-round (Alan Launer, Stanford University, pers. comm.).

Limiting factors for steelhead within the San Francisquito Creek Watershed include migration and movement barriers, sedimentation, low summer flows, and lack of instream shelter. Searsville Dam is a major barrier to upstream migration for steelhead, and cuts off approximately one-third of the upper watershed to steelhead access. Water diversion facilities are also partial barriers for steelhead migration and movement; however, most of these have been modified or are in the process of being modified through agreements with CDFG and NOAA Fisheries.

San Francisquito Creek has been designated as “impaired for sediment” by the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB, 2006). A 2006 study of watersheds in Santa Clara County found that in 25% of the watersheds the biggest limiting factor for steelhead was the lack of rearing habitat for juvenile steelhead (Jones and Stokes, 2006). Los Trancos Creek was among those creeks where lack of rearing habitat was found to be a limiting factor. This is the result of pool filling by fine sediment, which is likely at least partially influenced by bank instability in the upper watershed. In addition, the natural confined channel structure of Los Trancos Creek, and the lack of instream structure such as woody debris, likely result in steelhead young being flushed downstream during high flow events.

Steelhead may be found in Los Trancos Creek in Foothills Park and within city limits along the Los Trancos Road evacuation route.

**Western pond turtle** (*Actinemys marmorata*; California Species of Concern). Western pond turtle ranges in size from 3.5 to 7 inches and is the only freshwater turtle native to the San Francisco Bay Area. It occurs in ponds, small lakes, marshes, streams and irrigation ditches with abundant vegetation. It is also found in marshes, streams, rivers, reservoirs and occasionally brackish water. The Western pond turtle feeds on aquatic plants (such as pond lilies), beetles, aquatic invertebrates, fishes, frogs and carrion. It uses basking sites such as partially submerged logs, rocks, mats of floating vegetation or open mud banks, as well as underwater retreats to hide from predators and humans. Females deposit their eggs in nests in banks or in the case of foothill streams, in upland areas away from the stream. Nests have been observed in many soil types, from sandy to very hard, and have been found up to 400 meters (1300 feet) from the

water. Certain fish species, bullfrogs, garter snakes, wading birds and some mammals prey on hatchlings and juveniles. Western pond turtle is known to occur in low numbers in San Francisquito Creek and in higher numbers in ponds on Midpeninsula Regional Open Space District lands. There are no sightings of Western pond turtle in the Preserve or Park in the CNDDB, but suitable habitat exists in the creeks and ponds.

**Special-status serpentine plants**. As noted in the discussion of soils, above, serpentine has chemical properties that favor native plants. Because of this, non-native annuals are less likely to out-compete the native plants, and this has resulted in several plants becoming more or less confined to areas of serpentine. The following list describes special-status serpentine plants known to occur within 5 miles of the Park and Preserve. Most of these have a very limited distribution, and are not likely to occur in the Park or Preserve. Serpentine soils and habitat are present in Pearson-Arastradero Preserve and provide potential habitat for some of these species:

- Fountain thistle (Cirsium fontinale var. fontinale, Federal Endangered, State Endangered, CNPS 1B), found at the southern end of Crystal Springs Reservoir and in Edgewood Natural Preserve in moist areas in serpentine soil. The likelihood of occurrence in the Preserve is very low, due to habitat limitations. None of the mapped areas of serpentine contain seeps.
- Crystal Springs lessingia (Lessingia arachnoidea, CNPS 1B), occurs on grassy slopes in serpentine soil in coastal sage scrub, valley and foothill grassland, and cismontane woodland habitats. The closest known occurrence is at Edgewood Natural Preserve. This plant could occur in serpentine grassland in Pearson-Arastradero Preserve.
- Franciscan onion (Allium peninsulare var. franciscanum, CNPS 1B), was found and mapped on Jasper Ridge in 1968. Its microhabitat is clay soils, often on serpentine, on dry hillsides in woodland and grassland. The only other records in the CNDDB are in 1985 and 1902 on Matadero Creek and in Woodside. The likelihood of occurrence in Pearson-Arastradero Preserve is low, but cannot be entirely ruled out.
- Marin western flax (Hesperolinon congestum, Federal Threatened, State Threatened, CNPS 1B), is known to occur at Edgewood Natural Preserve in serpentine grassland with needlegrass, squirreltail, soap plant, blue dicks and buckwheat. It was also found in Woodside Glens (between I-280 and Canada Road) in serpentine grassland and at Stulsaft Park in Redwood City in serpentine grassland, growing with mariposa lily, clarkia, buckwheat, California poppy, tarplant and prickly lettuce. This plant is very rare and the likelihood of its occurrence in Pearson-Arastradero Preserve is extremely low, but suitable habitat is be present.
- San Mateo thornmint (Acanthomintha duttonii, Federal Endangered, State Endangered, CNPS 1B), occurs on serpentinite vertisol clays in relatively open areas. Formerly known to occur near the Menlo Country Club and Emerald Lake in Redwood City, this plant is now only known to occur in the Edgewood Natural Preserve area. The likelihood of this plant occurring in Pearson-Arastradero Preserve is extremely low due to its restricted range and habitat requirements.
- White-rayed pentachaeta (Pentachaeta bellidiflora, Federal Endangered, State Endangered, CNPS 1B), is only known from one location on the peninsula, in the triangle west of Edgewood Natural Preserve on lands owned by the San Francisco Water Department. It grows in open serpentine grassland. The likelihood of this plant occurring in Pearson-Arastradero Preserve is extremely low due to its restricted range and its habitat requirements.

- Fragrant fritillary (Fritillaria lileacea, CNPS 1B), grows at Edgewood Natural Preserve in serpentine grassland in association with needlegrass, soap plant, clarkia, morning glory, delphinium, shooting star, vetch, California poppy, peppergrass, rye grass and yarrow. The CNDDB summarizes the habitat for this species as valley and foothill grassland, coastal prairie, and grassland patches in coastal scrub, often on serpentine but various soils reported, usually clay. It is also known from near Farm Hill Boulevard. The CNDDB attributes a herbarium specimen from 1894 labeled as "hills about Stanford University" to Jasper Ridge, but notes that "other hills in the area may also support suitable habitat". The likelihood of this plant occurring in Pearson-Arastradero Preserve is low due to its rarity, but cannot be ruled out.
- White-flowered rein orchid (Piperia candida, CNPS 1B), is reported in the CNDDB as occurring in the Los Trancos Open Space Preserve (about 2.6 miles southeast of town limits) on serpentine soils in mixed evergreen forest and coniferous forest. The likelihood of this plant occurring in Pearson-Arastradero Preserve is nil, since all of the mapped serpentine is in grassland habitat.

**Other Special-status Plants**. There are also special-status plants in the area that are not confined to serpentine soils. These include the following:

- Arcuate bush mallow (Malacothamnus arcuatus, CNPS 1B), is a chaparral species that has historically been found in Jasper Ridge, along Los Trancos Creek, near La Honda, at Edgewood Natural Preserve, and in Arastradero Preserve. It grows in gravelly alluvium in chaparral in association with grasses and coyote brush. This species is known to be present in Pearson-Arastradero Preserve and there is a program underway to increase the population size through propagation. It has been planted in several locations in the Preserve and occurs near treatments A.C. 3, A.D. 2, A.C. 10, and ARx2.
- Choris' popcorn flower (Plagiobothrys chorisianus var. chorisianus, CNPS 1B), grows in grassland patches in chaparral and coastal scrub; its nearest observation to date is at Crystal Springs Reservoir, to the north. There it grows in the moist soil of a meadow surrounded by oaks and madrones. The likelihood this species occurs in the Park or Preserve is low due to its specific habitat requirements, but its presence cannot be ruled out.
- San Francisco campion (*Silene verecunda* ssp. *verecunda*, CNPS 1B), is reported to historically occur at Edgewood Natural Preserve in serpentine grassland. It is also found on mudstone or shale and in sandy soils in coastal scrub, grassland, and chaparral. The likelihood this species occurs in the Park or Preserve is low due to its specific habitat requirements, but its presence cannot be ruled out.
- Santa Clara red ribbons (*Clarkia concinna* ssp. *automixa*, CNPS List 4), is an annual plant that grows in woodland and chaparral. It has been observed near Stevens Creek reservoir in mixed evergreen forest similar to that in Foothills Park, along Page Mill Road, along Skyline Boulevard, and along Los Trancos Road. This species could be present in Foothills Park or along the evacuation routes.
- Western leatherwood (*Dirca occidentalis*, CNPS 1B), is a shrub that grows on cool, moist slopes in woodland and creek/riparian habitat. It is known to occur along Los Trancos Road, at Jasper Ridge, in Foothills Park, at Edgewood Natural Preserve, and in La Honda Creek Preserve. It grows in mixed evergreen forest dominated by madrone, black oak, coast live oak, poison oak, and bay laurel. It grows in association with coffeeberry, manzanita, bay laurel, buckeye, elderberry, tan oak, bitter cherry, ribes and toyon. This

species is known to occur in Foothills Park and along Los Trancos Creek, and suitable habitat is present in Pearson- Arastradero Preserve.

- San Francisco collinsia (*Collinsia multicolor*, CNPS 1B), is known to occur in Edgewood Natural Preserve, where it grows in mixed evergreen woodland in association with western leatherwood. Suitable habitat for this plant occurs in Foothills Park and Pearson-Arastradero Preserve as well as along the Page Mill Road, Skyline and Los Trancos Road evacuation routes, but its likelihood of occurrence is considered low.
- Kings Mountain Manzanita (*Arctostaphylos regismontana*, CNPS 1B), is known to grow in manzanita chaparral and Douglas-fir forest. It has been found along Kings Mountain Road, in the Teague Hill Open Space Preserve northwest of Tripp Gulch in Woodside, and near Sierra Morena in the El Corte Madera Open Space Preserve. Suitable habitat for this species occurs in Foothills Park and along Page Mill Road and Skyline Boulevard, but its likelihood of occurrence is low.
- Santa Cruz Mountains Manzanita (*Arctostaphylos andersonii*, CNPS 1B), grows in boradleaved upland forest, chaparral and north coast coniferous forest. It is known from Skyline Boulevard at the junction of Kings Mountain Road and Skyline, and to the north on Skyline. Suitable habitat is present in Foothills Park and along the evacuation routes on Page Mill Road and Skyline Boulevard.

**Plant communities of concern**. In addition to specific species, the CNDDB identifies plant communities that are of concern due to declining distribution. Those that pertain to the Foothills Fire Management Plan are serpentine bunchgrass, arroyo willow riparian and wetland. Serpentine bunchgrass is identified in the CNDDB as occurring at Edgewood Natural Preserve and Jasper Ridge, and it may also occur in Pearson-Arastradero Preserve. Arroyo willow riparian occurs along Los Trancos Creek and Arastradero Creek. Wetland occurs in Pearson-Arastradero Preserve and at Boronda Lake in Foothills Park.

In addition to these special-status species and plant communities, the Friends of Foothills Park has identified, through observation of trail maintenance activities, a list of native plants which are slow to regenerate along a trail once they are damaged or removed or which are unusual sights within the park. These are primarily perennial, low-growing plant species. They are listed in Table 3 in Appendix A.

### 3.3. Erosive Soils

The City of Palo Alto Foothills Fire Management Plan Update states that soils with a slope in excess of 15 to 30 percent represent significant hazards from either fire or treatment (2008). According to the soil survey for Santa Clara County (NRCS 1968), there are three soil types found within the City of Palo Alto Foothills that are a high erosion hazard (see table below). They are Maymen Rocky Fine Sandy Loam Eroded, Maymen Fine Sandy Loam Eroded, and Los Gatos-Maymen. These soils occur along the evacuation routes and in both the Park and the Preserve.

**Table 3-1 Soil Types in the Palo Alto Foothills Area**

| Soil Series | Soil Name | Location | Erosion Hazard |
|---|---|---|---|
| Los Gatos | Los Gatos-Maymen Soils (LkG3) (50-75% slope) | Foothills Park & Pearson-Arastradero Preserve | High |

| Soil Series | Soil Name | Location | Erosion Hazard |
|---|---|---|---|
| | Los Gatos Clay Loam (LgE) (15-30% slope) | Foothills Park & Pearson-Arastradero Preserve | Moderate |
| | Los Gatos Clay Loam, Eroded (LgE2) (15-30% slope) | Foothills Park & Pearson-Arastradero Preserve | Moderate |
| Los Osos | Los Osos Clay Loam (LoE) (15-30% slope) | Pearson-Arastradero Preserve | Moderate |
| Azule | Azule Silty Clay Loam (AvD2) (15-30% slope) | Pearson-Arastradero Preserve | Slight to Moderate |
| Cropley | Cropley Clay (CrC) (2-9% slope) | Foothills Park | Slight |
| Maymen | Maymen Rocky Fine Sandy Loam, Eroded (MfG2) (50 – 75% slope) | P.A. 1 treatment | High |
| | Maymen Fine Sandy Loam, Eroded (MeF2) (15 -50% slope) | P.A. 1 treatment | High (on sections with > 30% slope) |
| Madonna | Madonna Loam (MbE2) (5 – 30 % slope) | P.A. 1 treatment | Moderate |
| | Madonna Loam (MbE) (15 – 30% slope) | P.A. 1 treatment | moderate |

## 3.4. Invasive Plant Species

Invasive species are moved from one region of the world to another, usually by human activity. They have a competitive advantage due to a lack of predators and crowd out native vegetation and wildlife. In California roughly 3% of all plant species are invasive (Cal-IPC 2008). Though they are a small percentage of the overall number of plant species, these species occupy a large portion of the landscape. Public agencies are wary of invasive species because they can increase fire loads and help to create more frequent fires.

In the City of Palo Alto foothills, management of Italian thistle (*Caardus pycnocephalus I.)*, yellow star thistle (*Centaurea solstittialis*), and French broom (*Genista monospessulana*) is conducted at Foothills Park and Pearson-Arastradero Preserve. Yellow star thistle is managed in both parks while Italian thistle is managed only in Pearson-Arastradero and French broom is managed only in Foothills Park.

The California Invasive Plant Council (Cal-IPC) maintains an invasive plan inventory to track the status of invasive plants within California. As part of this inventory it ranks the threats individual plant species pose to California's native ecology. According to Cal-IPC, Italian thistle has a moderate ranking while yellow star thistle and French broom have a high ranking. These rankings demonstrate the level of invasiveness for each species. However, in terms of the City of Palo Alto Foothills Fire Management Plan Update and the effect of these species on fire, Italian thistle and French broom cause a greater ecological impact. Both of these species can cause an increase in fire frequency and movement of fire into the overstory in scrub, woodland and chaparral habitats (Cal-IPC 2006).

Cal-IPC has recommended mechanical and hand-treatment for Italian thistle, French broom and yellow star thistle. The recommended method for Italian thistle is to hand pull so that the root is severed at least four inches (10 cm) below the ground level and well before the seed is set (Cal-

IPC 2008b). In Pearson-Arastradero Preserve, from 2007 – 2008, 10 – 12 acres south-west of the parking lot along Portola Pastures and Meadowlark Trails were grazed by goats to control Italian thistle (Curt Dunn pers. comm.). Discing, mowing and prescribed burning can all be effective at controlling yellow star thistle. However, for each of these methods it depends on the timing of the treatment. For each method it is important to conduct the method at the beginning of seed production when roughly two to five percent of the seed heads have matured (Cal-IPC 2008c). In Foothills Park and Pearson-Arastradero Preserve, yellow star thistle is by and large the most invasive.

Yellow star thistle has been mowed in two locations in Foothill Park:

- five to seven acres in the Wildhorse Valley
- three acres around a flat area south of Fire-Station 8
- and in four locations in Pearson-Arastradero Preserve:
- four acres inside Gate-A near the concrete bridge
- six and a half acres near Gate-B along the Ohlone trail
- seven acres around Gate-C along Bowl Loop Trail
- 30 foot clearance around the Gateway buildings.

Cal-IPC recommends that removal of French broom be conducted by hand, a combination of cutting and pile burning, and through prescribed burning (Cal-IPC 2008a). However, the cutting must be done after the plant has gone to seed in July or August and five to eight centimeters above the soil surface. The Friends of the Foothills does hand pulling of French broom at small invasion locations throughout Foothills Park.

## 4.0 Impacts

This section describes the impacts of proposed treatments on vegetation communities, special-status species, exotic invasive species, and erosion, which can adversely impact habitats.

*Vegetation Communities*. The Foothills Fire Management Plan updates existing fire management practices in Pearson-Arastradero Preserve, Foothills Park, and along the evacuation routes on Page Mill Road, Arastradero Road, Los Trancos Road, and Skyline Boulevard. It will reduce the impacts of mowing on Trappers Trail in Foothills Park by reducing the area that is mowed annually, and allowing some of the habitat there to recover. It will replace discing in Pearson-Arastradero Preserve (except near Liddicoat Circle) and in Foothills Park with mowing and/or grazing, which will restore grassland habitat.

Overall, however, the Fire Management Plan will increase the area that is treated by about 135 acres. The impacts will mainly occur in grassland, including large areas in Pearson-Arastradero Preserve that will be grazed or subject to prescribed burn. It is estimated that, overall, about 65 more acres of grassland will be affected than under current activities. The new area of impacts to woodland and chaparral is mainly along the evacuation routes, where vegetation management will be expanded from the existing 10- foot zone to a 30-foot zone. Throughout the area of the fire plan, about 47 new acres of woodland and 13 new acres of chaparral will be affected. About one acre of riparian vegetation may be affected, primarily along Arastradero Creek but also along Los Trancos Creek, and about 9 new acres of coastal scrub will be affected. These estimates have been adjusted to take into account areas that will no longer be annually impacted by current activities.

The habitats that will be affected by the various treatments are listed in Table 3 in Appendix A. The table also includes the measures that will be necessary to protect biological resources at each treatment site. The measures are listed at the end of the table and in section 6.0, below.

In general, the fire management plan will result in fewer biological impacts than the current practices. Although the total area that is treated will increase, the methods to be used will foster restoration of native habitats. While grading, discing and brush mowing have been used in the past, the updated plan does not require grading or discing and reduces the amount of brush mowing. It uses hand labor and careful instructions in the amount of trimming that will occur. The vegetation management in the plan is intended to mimic the effects of more frequent, less intense fires which historically occurred in the area and which have been suppressed for many years. The more frequent, less intense fires typically cleared the undergrowth in the forest, reduced "ladder" fuels that could carry fire into the tree canopy where more intense damage could start, and opened areas to new plant growth. Grassland fires reduced thatch and fostered native plant diversity.

Several studies related to range management indicate that methods used to mimic historic fire patterns enhance native plant diversity. In DiTomaso et.al. (1999), prescribed burning of grassland in Sugarloaf Ridge State Park in Sonoma County resulted in a dramatic increase in total plant diversity and species richness, and significantly reduced the seedbank of the invasive non-native weed, yellow star-thistle. In a study in seven nature preserves in the Czech Republic, Dostalek and Frantik (2008) found that low-intensity goat grazing in dry grassland can help to keep the dry grassland in good condition and conserve its plant diversity. Dodson et.al. (2007) studied restoration treatments in ponderosa pine/Douglas-fir forests that included thinning, burning and a combination of thinning and burning. It was found that active restoration treatments in these forests may foster plant diversity by minimally impacting common species while significantly benefiting disturbance-dependent native species.

Grazing is one of the tools proposed in the fire management plan, and it could be used in all vegetation types except riparian forest. Overgrazing can adversely impact vegetation communities. The fire management plan includes best management practices that require a grazing management plan be prepared to insure proper stocking levels. A measure is also recommended that protects wetlands in Pearson-Arastradero Preserve from grazing (see BMP-13 and BIO-8 in section 6.0, below).

*Special-status Species*. Implementation of the fire management plan could impact several special-status species. Measures to avoid those impacts, which are also required to comply with California Fish and Game Code and the Migratory Bird Treaty Act, are described in Section 6.0. The special-status species that are known to occur in the Foothills Fire Management Plan area are Steelhead (Los Trancos Creek), San Francisco dusky-footed woodrat (throughout), white-tailed kite (breeding in Pearson-Arastradero), arcuate bush mallow (Pearson-Arastradero), and western leatherwood (Foothills Park and Los Trancos Creek). Suitable habitat for several others exists, as described in 4.0 above, but their presence has not been verified. The special-status species in each vegetation type are listed in Table 4 in Appendix A, and impacts are described below.

American badger and burrowing owl could occur in grasslands in Pearson-Arastradero Preserve. The Fire Management Plan Update removes discing in the grassland and will improve habitat for

these species. The area next to Liddicoat Circle that may continue to be disced has been disced annually for several years and does not provide burrow habitat for badger or burrowing owl.

Bats may roost in tree crevices and tree bark throughout the woodlands in the fire management plan area. A significant impact would occur if a maternal roost is removed or significantly disturbed by cutting down a tree that contains such a roost. Tree removal may occur under the fire management plan, including thinning stands along the evacuation routes and removing individual eucalyptus trees. A pre-removal survey for bat roosting activity is recommended (see measure BIO-4).

California red-legged frog, California tiger salamander, San Francisco garter snake, Western pond turtle, and steelhead are aquatic-dependent species. Of these, only steelhead is confirmed present in Los Trancos. The frog, salamander, and turtle also have an upland habitat component, as they use burrows near creeks and ponds for part of the year. The Foothills Fire Management Plan Update does not require work in streams or ponds. It does require trimming of riparian vegetation along Arastradero Creek and a small section of Los Trancos Creek. The prescription for riparian vegetation is to avoid it, or if necessary to trim it, to do so every 10 to 15 years. The fire plan reduces discing, and does not require work that would impact burrows. The plan would not significantly impact these species. In the event that discing is implemented in the future, measure BIO-5 is included for protection of these species.

Long-eared owl, saltmarsh common yellowthroat, loggerhead shrike, Cooper's hawk, sharp-shinned hawk, other raptors (birds of prey), and nesting birds could be adversely affected by vegetation trimming under the Foothills Fire Management Plan Update that occurs during the breeding season. Avoidance of active bird nests is recommended (see measure BIO-1) by avoiding work during the breeding season or conducting a pre-removal survey for active bird nests and avoiding those during the breeding season. This applies to all designations in all vegetation types. Vegetation management activities that foster plant diversity will benefit wildlife species, including birds, and it is expected that vegetation management under this fire plan will foster plant diversity.

San Francisco dusky-footed woodrat occurs in woodland, creek/riparian forest, coastal scrub, and chaparral habitat throughout the Foothills Fire Plan Update area. Because the SFDW houses look like a pile of woody debris, these are at risk of being removed during vegetation management activities. A pre-work survey and worker education program is recommended under measure BIO-3, and it would apply to all of the treatment designations except those in grassland. The houses should be avoided and left with a five-foot buffer.

Ringtail has a low likelihood of occurrence in the fire management plan area. Vegetation management will not remove dens or nest sites and is not expected to impact this species.

Special-status serpentine plants can occur where there are serpentine soils. Serpentine soils are mapped in Pearson-Arastradero Preserve in grassland habitat. These areas are proposed to be either left untreated or to be mowed/grazed. Pre-work surveys of these areas are recommended to avoid impacts to rare plants (see measure BIO-2).

Other Special-status Plants occur in woodland, chaparral, coastal scrub and riparian forest habitats in the fire management plan area. Western leatherwood is known to occur in Foothills Park and along Los Trancos Creek, where it has been damaged in the past by roadside trimming.

It is recommended that pre-work surveys be conducted during the bloom period of rare plants, and that any found be marked, mapped and avoided (see measure BIO-2.

Plant communities of concern in the fire management plan area include arroyo willow riparian and wetland. These communities could be affected by fire management plan activities in Pearson-Arastradero Preserve and along Los Trancos Creek where there is arroyo willow. Patches of wetland vegetation occur in the grassland areas of Pearson-Arastradero Preserve, and arroyo willow riparian is present along Arastradero Creek. The amount of vegetation that will be trimmed represents a minor amount of the riparian zone, and will not result in the permanent removal of riparian habitat. Adverse effects to arroyo willow riparian are not expected. Measures to protect wetland values from mowing and grazing are recommended (see measure BIO-8).

Friend of Foothills Plants of Concern (see Table 3 in Appendix A) are not rare, but are of local value in Foothills Park. These plants could be impacted by vegetation management activities under the fire management plan update. Mitigation to reduce the impacts to these species is recommended (see measure BIO-9).

*Erosion*. Maymen Rocky Fine Sandy Loam Eroded, and Maymen Fine Sandy Loam Eroded are located on approximately one and a half miles of the P.A. 1 treatment approximately 2 miles east of the Page Mill Road and Skyline Boulevard intersection. The P.A. 1 evacuation treatment, which passes through Monte Bello and Los Trancos Open Space Preserves, contains interspersed woodland and grassland and would be subject to vegetation trimming and no ground disturbance.

The Los Gatos-Maymen soils are the most extensive and are found in Foothills Park and Pearson-Arastradero Preserve. At Foothills Park the soil is found on evacuation, firefighter safety, containment, ignition and defensible space treatments (F.E. 1, F.E. 3, F.E. 5, F.F.1, F.F. 2, F.F. 3, F.F. 4, F.C. 1, F.C. 2, F.C. 3, F.C. 6, F.D. 4, F.D. 6, F.I. 1, F.I. 2, F.I. 3). At Pearson-Arastradero Preserve the soil is found on prescribed burn, containment, and defensible space treatments (ARx2, A.C. 5, A.C. 10, A.D. 3). These treatments are located in grassland, woodland, chaparral, and riparian/aquatic habitats.

The Fire Management Plan includes best management practices to prevent erosion, including those labeled as BMP-2, BMP-3, BMP-6, BMP-7 and BMP-8 in section 6.0 below. Mostly, however, the plan does not require soil disturbance, and leaves a protective vegetative cover over soils. The exception may be the 100-ft defensible space around structures. Significant impacts associated with erosive soils are not expected to result from implementation of the plan.

*Invasive Plant Species*. As described in section 4.0 above, invasive plants pose an existing management problem in Pearson-Arastradero Preserve and Foothills Park. The Foothills Fire Management Plan Update proposes the use of hand labor, mowing and grazing with goats. The goats, workers and vehicles can carry seed of invasive plants and either introduce new invasive species to the Park and Preserve, or foster the spread of those species already present. The fire management plan includes best management practices to guard against the spread of invasive plant species (see BMP-5 and BMP-15 under 6.0, below). Measures to prevent the spread of Sudden Oak Death are also recommended in BIO-10. The fire management plan provides the opportunity to remove invasive exotic species on a regular basis since it is a regular vegetation management program. The plan also recommends that areas infested with invasive species not be trimmed at seed set in order to reduce the amount of seed that is spread around by

management activities. Seed set for the invasive broom species known in the Park and Preserve is in the spring and summer, and trimming could occur in other seasons. However, yellow star thistle blooms between May and October, and would set seed during the time that it is necessary to mow the grasslands where it occurs. The plan provides for controlled burn as another method to control the worst infestation of yellow star thistle in Arastradero Preserve. The plan would neither improve nor exacerbate the effects the existing fire management methods have on yellow star thistle in Foothills Park. No significant impacts are expected as long as the best management practices incorporated into the plan and the additional measures for Sudden Oak Death are implemented.

## 5.0 Mitigation

The Palo Alto Foothills Fire Management Plan Update includes an extensive list of best management practices that are to be incorporated into the implementation of the Plan. These are listed in Section 5.1, below. These practices will prevent many biological impacts. Section 5.2 includes a list of additional measures and suggested modifications to the best management practices to ensure the Plan avoids significant biological impacts. The Best Management Practices that should be modified are listed below as BMP-4, BMP-5, BMP-13, and BMP-16.

### 5.1. Best Management Practices Included in the Palo Alto Foothills Fire Management Plan Update

The Plan lists best management practices under the heading of each treatment method (eg., hand labor, mechanical treatment, etc.). The following list combines all of the practices and assigns a number to each.

BMP-1: Provide or confirm adequate training, experience, and oversight to ensure that personnel are familiar with the treatment method operations and planning, site conditions, potential and identified sensitive resources, and the identification of specific environmental features or conditions that must be avoided.

BMP-2: Avoid treatment actions during conditions that may affect water or run-off including during storms, periods of precipitation, or immediately following severe weather. In addition, avoid scheduling any treatment actions during seasons with significant predicted precipitation. Cease operations or postpone planned operations including movement of vehicles or equipment during precipitation conditions that may combine with vehicle activity to cause damage to roads, trails, or adjacent land areas.

BMP-3: Avoid excessive foot or vehicle traffic on slopes, unimproved or non-designated trails, or outside of preexisting roads or access points.

BMP-4: Inspect areas for nesting birds to determine if activity should be postponed or adjusted by the establishment of a buffer area. This measure should be modified as described in measure BIO-1.

BMP-5: Clean all tools and equipment following actions and prior to movement into new environmental areas to prevent the spread of invasive or non-native plants.

BMP-6: Plan treatment actions and equipment selection to minimize damage or alterations to existing soils. Determine locations of potentially erosive soils prior to treatment. Restrict operations that may adversely affect sensitive soil systems such as serpentine soil areas, erosion prone soils, or riparian zones. Restriction may include using road-based operations only, and avoiding riparian set-backs established by regulatory agencies.

BMP-7: Maintain a buffer of 25-50 feet between operations and water bodies or designated riparian areas. Avoid crossing drainage channels, run-off areas, or dry streambeds. Install and manage run-off barriers for rainwater in all treatment and operating areas. Restrict mechanical removal of trees to areas further than 50 feet from drainage channels.

BMP-8: Restrict vehicle traffic to preexisting roads or pre-planned access points based on equipment size and operations. Limit transport and support equipment to existing roads. Limit heavy equipment use to slopes less than 30%. Install erosion control measures on all vehicle roads and traffic areas.

BMP-9: Maintain strict monitoring and control of fueling and maintenance operations. All maintenance actions that may produce spills should be executed in areas with secondary containment protection, away from any water bodies or drainage areas. Clean up of all spills should be done on-site, with materials ready for use. Inspection of equipment for new leaks and mechanical problems should be performed daily, prior to operations.

BMP-10: Plan operations around expected seeding conditions of targeted species (either prior to or sufficiently afterwards) to ensure efficiency of treatment action.

BMP-11: Cease actions during periods of high fire danger or during red flag conditions. Ensure that all mechanical equipment have approved spark arrestors and comply with California Public Resources Code (PRC) sections 4431, 4435, 4442, and 4437 to limit potential for ignition of incidental fires.

BMP-12: Maintain on-site fire suppression resources to include shovel, water pump, fire extinguisher, and two-way radio or communications for fire reporting.

BMP-13: One of the primary adverse impacts of grazing is over-grazing and the resulting exposure of bare ground. Over-grazing can increase the potential for soil erosion, water run-off and drainage, elimination of native plant species, and spread of non-native plants and weeds. Prepare a grazing management plan by a certified range specialist that specifies goals, stocking levels, grazing periods, installation of range improvements (such as water sources) to evenly distribute utilization of feed, and monitoring and performance criteria.

BMP-14: Develop a site-specific annual grazing plan that includes project-level plans for sticking, timing, and resource management goals.

BMP-15: Prior to introduction, all animals should be quarantined and fed weed-free forage to limit spread of invasive or unwanted plant species as well as prevent spread of livestock diseases.

BMP-16: Limit grazing to non-riparian areas.

BMP-17: Develop a smoke management plan describing desired outcomes and specific actions for onsite personnel including a test burn, continual evaluation of smoke dispersal, monitoring of wind patterns, and monitoring of potential visibility impacts to primary roads and highways.

BMP-18: Develop public safety plans to be executed throughout the prescribed burn cycle including press and information releases, signs and notifications, patrols on roads and access points, and development of a fire contingency plan.

BMP-19: Maintain a buffer between the prescribed burn area and water bodies or drainage into riparian zones. Buffers should be a minimum of 25 feet for 5% slopes, 75 feet for 5-10% slopes, and 250 feet for 10% or greater slopes. No prescribed fires should be ignited near streams or in riparian zones.

BMP-20: Plan the prescribed burn to minimize post-fire erosion into water bodies and drainages through natural barriers, proper construction of fire lines along contours, and proper erosion control barrier deployment. Minimize prescribed burning in areas with highly erodible soils.

BMP-21: Cultural and social sites and structures shall be excluded from burn area through planning, hand-lines, or other fire protection operations. On-site personnel will be briefed on locations and features of cultural or social sites to include incident command or response personnel. Avoid prescribed burns in areas with utility infrastructure, existing property or structures, or archeological sites.

BMP-22: Manage fuel moisture through pre-fire assessment and potential fuel modification. Prior to prescribed burn, remove ladder fuels into the tree canopy to increase safety and reduce torching.

BMP-23: Conduct prescribed burns only on designated burn days as authorized by BAAQMD.

BMP: 24: The application of herbicides for vegetation treatment should focus on the goal of applying the least amount of chemical required to achieve a desired outcome, consistent with the City of Palo Alto's Integrated Pest Management policy.

BMP-25: Herbicide is only applied per a prescription prepared by a Pesticide Control Advisor licensed in that county, and applied by a licensed Pesticide Control Applicator.

BMP-26: Develop public safety plans to be executed throughout the treatment cycle including press and information releases, signs and notifications, and fencing or area restrictions.

BMP-27: Develop a spill contingency plan and maintain strict monitoring and control of operations. Clean up of all spills should be done on-site, with materials ready for use.

BMP-28: Chemical treatments within habitat of California Red-legged Frog should be conducted according to U.S. District Court injunction and order covering 66 pesticides (Oct 2006) and subsequent EPA effects determinations.

BMP-29: Avoid treating areas adjacent to water bodies, riparian areas, and primary drainage access. Follow all herbicide labels and directions in determining applications near water

resources or riparian habitats. Limit aerial application to greater than 100 feet from water resources. Limit ground and hand application to greater than 50 feet.

BMP-30: Avoid treating areas used for livestock operations or intended as grazing areas.

## 5.2. Additional Biological Mitigation Measures or Modifications to BMPs

BIO-1: Vegetation removal in any vegetation type from February 15 to August 31 requires a survey for nesting birds by a qualified biologist[2] or by park staff trained to do so by a qualified biologist and avoiding removal of nests in active use. If raptor nests are detected, a buffer area will need to be established around the nest in consultation with the California Department of Fish and Game. The buffer may be 250 feet.

BIO-2: Vegetation removal in areas of serpentine soil, oak woodland, chaparral, coastal scrub and riparian forest habitats requires a survey for rare plant species by a qualified biologist/ botanist prior to vegetation removal. Known rare plant locations should be treated in a way that benefits the rare species. This may include limiting the area of treatment in order to provide a buffer around the plant(s), or may include selectively trimming competitive vegetation adjacent to the plant(s). Some species may benefit from disturbance; the specific actions to be taken should be determined in consultation with a botanist. The plant survey needs to occur during the bloom period. After surveys in the same locations over three separate years, subsequent surveys are not necessary in that area unless a newly listed plant species could occur in the habitat. This should be determined by consulting the California Department of Fish and Game.

BIO-3: Vegetation removal, including dead and downed debris, requires a survey for presence of San Francisco dusky-footed woodrat by a qualified biologist or by park staff trained to identify woodrat houses by a qualified biologist. If woodrat houses are found, disturbance should be avoided and a minimum five-foot buffer should be provided around the house. If, for public safety reasons, it is necessary to move the house, the process must be coordinated with the California Department of Fish and Game. It is recommended that workers receive instruction regarding woodrat houses prior to their start of work.

BIO-4: Prior to the removal of any tree that is 12 inches or more in diameter breast height, a survey for perennial bat roosts and, during the breeding season from February 15 to August 31, raptor nests shall be conducted by a qualified biologist or park staff trained by a qualified biologist to identify these resources is required. If present, removal cannot continue without CDFG guidance.

BIO-5: Discing within 500 feet of a lake, pond or creek, requires a biological survey to determine impacts to California red-legged frog, California tiger salamander, San Francisco garter snake and Western pond turtle and whether permits are required from the USFWS/CDFG.

BIO-6: Discing in grassland requires a pre-construction survey for American badger, California red-legged frog and burrowing owl by a qualified biologist.

BIO-7: Trimming of coast live oaks shall follow the City's Tree Ordinance (Title 8). Coast live oak or Valley oaks that are 11.5 inches in diameter or more measured at 54 inches above grade

[2] A "qualified biologist" is a person with demonstrated ability to identify special-status plant and/or animal species in the San Francisco Bay Area.

may not be removed without a permit, and may not be pruned such that more than 25 percent of the crown is removed or the tree is left unbalanced.

BIO-8: Avoid wetlands mapped in Pearson-Arastradero Preserve when weed-whipping or mowing. Modify the Fire Management Plan Best Management Practice that requires that a grazing plan be prepared to include protection of drainages and wetlands from the impacts of grazing animals.

BIO-9: For treatments in Foothills Park or on Page Mill Road along the Park border, a pre-work survey for stands of locally important plants (see Table 3 in Appendix A) should be conducted, and the plants avoided as long as it does not impair public safety. Field crews should be educated about the sensitivity of these plant species.

BIO-10: In addition to BMP-5, it is recommended that measures be taken to clean equipment, tires, and shoes to prevent the spread of Sudden Oak Death, and that any materials infected with the disease be disposed of in accordance with State or County Agricultural Commission guidelines. To reduce the possibility of spreading the disease, it is recommended that work not be done in wet or muddy conditions, and that infested areas be avoided to the extent feasible. Additional guidelines are available from the County Agricultural Commissioner.

## 6.0 Response to CEQA Checklist Biology Questions

**a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?**

With mitigation incorporated, the Foothills Fire Management Plan will not result in adverse impacts to any special-status species. The special-status species that are known to occur in the Foothills Fire Management Plan area are Steelhead, San Francisco dusky-footed woodrat, white-tailed kite, arcuate bush mallow, and western leatherwood. Suitable habitat for several others exists, but their presence has not been verified.

The mitigation measures that will prevent adverse effects to these species, primarily through avoidance, include the following:

**BIO-1**: Vegetation removal in any vegetation type from February 15 to August 31 requires a survey for nesting birds by a qualified biologist or by park staff trained to do so by a qualified biologist and avoiding removal of nests in active use. If raptor nests are detected, a buffer area will need to be established around the nest in consultation with the California Department of Fish and Game. The buffer may be 250 feet.

**BIO-2**: Vegetation removal in areas of serpentine soil, oak woodland, chaparral, coastal scrub and riparian forest habitats requires a survey for rare plant species by a qualified biologist/ botanist prior to vegetation removal. Known rare plant locations should be treated in a way that benefits the rare species. This may include limiting the area of treatment in order to provide a buffer around the plant(s), or may include selectively trimming competitive vegetation adjacent to the plant(s). Some species may benefit from disturbance; the specific actions to be taken should be determined in consultation with a botanist. The plant survey needs to occur during the

bloom period. After surveys in the same locations over three separate years, subsequent surveys are not necessary in that area unless there a newly listed plant species could occur in the habitat. This should be determined by consulting the California Department of Fish and Game.

**BIO-3**: Vegetation removal, including dead and downed debris, requires a survey for presence of San Francisco dusky-footed woodrat by a qualified biologist or by park staff trained to identify woodrat houses by a qualified biologist. If woodrat houses are found, disturbance should be avoided and a minimum five-foot buffer should be provided around the house. If, for public safety reasons, it is necessary to move the house, the process must be coordinated with the California Department of Fish and Game. It is recommended that workers receive instruction regarding woodrat houses prior to their start of work.

**BIO-4**: Prior to the removal of any tree that is 12 inches or more in diameter breast height, a survey for perennial bat roosts and, during the breeding season from February 15 to August 31, raptor nests shall be conducted by a qualified biologist or park staff trained by a qualified biologist to identify these resources is required. If present, removal cannot continue without CDFG guidance.

**BIO-5**: Discing within 500 feet of a lake, pond or creek, requires a biological survey to determine impacts to California red-legged frog, California tiger salamander, San Francisco garter snake and Western pond turtle and whether permits are required from the USFWS/CDFG.

**BIO-6**: Discing in grassland requires a pre-construction survey for American badger, California red-legged frog and burrowing owl by a qualified biologist.

**BIO-7**: Trimming of coast live oaks shall follow the City's Tree Ordinance (Title 8). Coast live oak or Valley oaks that are 11.5 inches in diameter or more measured at 54 inches above grade may not be removed without a permit, and may not be pruned such that more than 25 percent of the crown is removed or the tree is left unbalanced.

**BIO-8**: Avoid wetlands mapped in Pearson-Arastradero Preserve when weed-whipping or mowing. Modify the Fire Management Plan Best Management Practice that requires that a grazing plan be prepared to include protection of drainages and wetlands from the impacts of grazing animals.

**BIO-9**: For treatments in Foothills Park or on Page Mill Road along the Park border, a pre-work survey for stands of locally important plants (see Table 3 in Appendix A) should be conducted, and the plants avoided as long as it does not impair public safety. Field crews should be educated about the sensitivity of these plant species.

**BIO-10**: In addition to BMP-5, it is recommended that measures be taken to clean equipment, tires, and shoes to prevent the spread of Sudden Oak Death, and that any materials infected with the disease be disposed of in accordance with State or County Agricultural Commission guidelines. To reduce the possibility of spreading the disease, it is recommended that work not be done in wet or muddy conditions, and that infested areas be avoided to the extent feasible. Additional guidelines are available from the County Agricultural Commissioner.

**b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?**

No. The amount of vegetation that will be trimmed represents a minor amount of the riparian zone, and will not result in the permanent removal of riparian habitat. Adverse effects to arroyo willow riparian are not expected. Measures to protect wetland values from mowing and grazing are recommended (see measure BIO-8).

**c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

With mitigation, the Fire Management Plan will have no adverse effect on wetlands. Wetlands occur in Pearson-Arastradero Preserve and at Boronda Lake in Foothills Park. Implementation of the Foothills Fire Management Plan will not result in the removal or filling of wetlands, and will not affect their hydrology. Wetlands could be affected by the following treatments: A.E. 1 (Arastradero Road adjacent to the Preserve to be treated with mowing, grazing and hand labor), A.Rx. 1 and A.Rx.2 (prescribed fire in the middle of the Preserve), A.C.3 (grazing the grassland on the parking lot side of the Preserve), and A.C.11 (mowing Meadow Lark to Juan Bautista Trail). Measure BIO-8 is proposed to be included in the Fire Management Plan, which is to avoid mowing or weed-whipping wetlands, and to incorporate wetland protection measures in the grazing management plan required in the fire management plan.

**d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

The Foothills Fire Management Plan does not require activities in stream courses that would impede any fish passage. It does not require the construction of any structures that would block wildlife movement.

**e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

Activities proposed in the Foothills Fire Management Plan are subject to the City of Palo Alto's municipal code with regard to tree removal. Trimming or removal of coast live oak trees are subject to the requirements of Title 8, which include limits on trimming to less than 25 percent of the tree canopy and that the trimming not unbalance the tree. The Fire Management Plan may result in the removal or trimming of protected trees. Measure BIO-7 is included to require that trimming follow the tree preservation ordinance. With this measure included, the Fire Management Plan will comply with local ordinances protecting biological resources.

**f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

The Foothills Fire Management Plan is not within an area subject to a Habitat Conservation Plan or any similar approved planning document.

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**Persons Consulted**

Alan Launer, Campus Biologist, Stanford University.
Sherri Lubin, Acterra. Stewardship Director. (Acruate bush mallow locations.)
William Reed. Natural Resources Conservation Service. Santa Clara Soil Survey Project Leader. (Soil Survey data.)

# Appendix A. Tables

| **Table 1. Special-status Species Considered in the Biological Impact Assessment** | | | |
|---|---|---|---|
| **Species name** | **State/Federal Status** | **Habitat** | **Habitat Present/Absent** |
| **Invertebrates** | | | |
| Bay checkerspot butterfly (*Euphydryas editha bayensis*) | FT | A medium-sized butterfly whose larvae are dependent on dwarf plantain and owls clover. It is mostly found within serpentine grassland habitat. | Pearson-Arastradero - **HP** Habitat is present but the serpentine grassland areas are to small to support a population. Foothills – **A**. Habitat is not present. Highly Unlikely. The closest population is located in Edgewood County Park 6.3 air miles north (CNDDB 2008). |
| Leech's skyline diving beetle (*Hydroporus leechi*) | None, but considered special status by the CDFG | Aquatic scavenger found in still pools and ponds. | Pearson-Arastradero - **HP** Habitat is present at Arastradero Lake and John Sobey Pond. Foothills – **HP**. Habitat is present at Boranda Lake. Highly Unlikely. The closest population is located in Edgewood County Park 6.3 air miles north (CNDDB 2008). |
| Zayante band-winged grasshopper (*Trimerotropis infantilis*) | FE | Occurs in open sandy areas with sparse, low annual and perennial herbs on high ridges with sparse ponderosa pine. | Pearson-Arastradero - **A**. Habitat is not present. Foothills – **A**. Habitat is not present. Occurs only in the sandhills of Santa Cruz County greater than five miles from the site (CNDDB 2008). |
| **Amphibians** | | | |
| California red-legged frog (*Rana aurora draytonii*) | FT/CSSC | Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. | Pearson-Arastradero - **HP** Potential breeding habitat at Los Trancos Creek, and its tributaries, John Sobey Pond and Arastradero Creek Foothills – **HP**. Potential breeding habitat at Boronda Lake. Foraging habitat in riparian zones, grassland, and oak woodland above Los Trancos Creek and tributaries. Closest known occurrence is 1.35 air miles to the northeast at the confluence of Matadero and Deer creeks (CNDDB 2008). |
| California tiger salamander *(Ambystoma californiense)* | FT/CSSC | The California Tiger Salamander can grow to a length of about 8–10 inches (20–25 cm) and have black and have yellow or cream spots; larvae are greenish-grey in color. It depends on water for reproduction, | Pearson-Arastradero - **HP** Breeding habitat may occur in the "bowl" near the unnamed tributary to Los Trancos Creek. |

| **Table 1. Special-status Species Considered in the Biological Impact Assessment** | | | |
|---|---|---|---|
| **Species name** | **State/Federal Status** | **Habitat** | **Habitat Present/Absent** |
| | | therefore its habitat is limited to the vicinity of fishless vernal pools or similar water bodies. | Foraging habitat present at John Sobey Pond and Arastradero Lake<br>Foothills – **HP**<br>Foraging habitat present at Boronda Lake.<br>Not likely to occur. No known records after various surveys. Closest recorded population at Lake Lagunita 2.4 miles to the north of Pearson-Arastradero Reserve (CNDDB 2008). |
| **Birds** | | | |
| Golden Eagle<br>(*Aquila chrysaetos*) | CDFG – fully protected species | Uses rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, and cliffs and rock outcrops. Eats mostly rabbits and rodents; also takes other mammals, birds, reptiles, and some carrion. | Pearson-Arastradero - **HP**<br>May utilize habitat mosaic for foraging. No breeding habitat available.<br>Foothills – **HP**<br>May utilize habitat mosaic for foraging. No breeding habitat available. |
| Tricolored Blackbird<br>*(Agelaius tricolor)* | CSSC | Common locally throughout Central Valley and in coastal districts from Sonoma Co. south. Breeds near fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs. Feeds in grassland and cropland habitats. Feeds mostly on insects and spiders. | Pearson-Arastradero - **HP**<br>Breeding habitat available at Arastradero Lake. Foraging habitat occurs in the reserve grassland.<br>Foothills – **HP**<br>Breeding habitat available at Boronda Lake. Foraging habitat occurs in the reserve grassland.<br>Not likely to occur. The closest recorded observation is greater than 5 miles southeast at the base of Calero reservoir (CNDDB 2008). |
| Burrowing Owl<br>*(Athene cunicularia)* | CSSC | A yearlong resident of grassland habitats. Eats mostly insects; also small mammals, reptiles, birds, and carrion. Uses rodent or other burrow for roosting and nesting cover. | Pearson-Arastradero - **HP**<br>Breeding and foraging habitat is present.<br>Unlikely to occur. Closest siting is the Palo Alto Municipal Airport 5.4 miles northeast (CNDDB 2008).<br>Foothills – **A**. Habitat is not present on-site. Site is to steep and out of the elevation range for the species. |
| Marbled Murrelet<br>(*Brachyramphus marmoratus)* | FT | Breeds in coniferous forests near coasts, nesting on large horizontal branches high up in trees. Winters at sea. | Pearson-Arastradero - **A**. Habitat is not present.<br>Foothills – **A**. Habitat is not present. |

**Table 1. Special-status Species Considered in the Biological Impact Assessment**

| Species name | State/Federal Status | Habitat | Habitat Present/Absent |
|---|---|---|---|
| Northern Harrier (*Circus* cyaneus) | CSC | Mostly found in flat, or hummocky, open areas of tall, dense grasses, moist or dry shrubs, and edges for nesting, cover, and feeding. Frequents meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands; seldom found in wooded areas. Feeds mostly on voles and other small mammals, birds, frogs, small reptiles, crustaceans, insects, and, rarely on fish. Known to occur in the grasslands within the city limits. Breeds in open fields and meadows. | Pearson-Arastradero - **HP**<br>Foraging and breeding habitat present.<br>Foothills – **HP**<br>Foraging and breeding habitat present. |
| Yellow warbler (*Dendroica petechia)* | CSSC | Usually found in riparian deciduous habitats in summer: cottonwoods, willows, alders, and other small trees and shrubs typical of low, open-canopy riparian woodland. Also breeds in montane shrubbery in open conifer forests. In migration, visits woodland, forest, and shrub habitats. Mostly eats insects and spiders. | Pearson-Arastradero - **HP**<br>Foraging and breeding habitat available in the Arastradero Creek and unnamed tributary riparian corridors.<br>Foothills – **HP**<br>Foraging and breeding habitat available in the Buckeye Creek riparian corridor. |
| White-tailed Kite *(Elanus leucurus)* | CDFG – fully protected species | Uses herbaceous lowlands with variable tree growth and dense population of Voles. Substantial groves of dense, broad-leafed deciduous trees used for nesting and roosting. Preys mostly on voles and other small, diurnal mammals, occasionally on birds, insects, reptiles, and amphibians. Forages in undisturbed, open grasslands, meadows, farmlands and emergent wetlands. Known to occur throughout the town in all habitats mentioned here. | Pearson-Arastradero - **HP**<br>Foraging and breeding habitat present.<br>Foothills – **HP**<br>Foraging and breeding habitat present. |
| Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*) | CSSC | Resident of the San Francisco bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting. | Pearson-Arastradero - **HP**<br>Foraging and breeding habitat available at Arastradero Lake, John Sobey Pond and in the riparian corridors associated with Arastradero Creek.<br>Foothills – **HP**<br>Foraging and Breeding habitat available at Boronda Lake and in the riparian corridors of Buckeye Creek.<br>Closest known occurrence is 3.0 miles to the northwest at Searsville Lake (CNDDB 2008). |

**Table 1. Special-status Species Considered in the Biological Impact Assessment**

| Species name | State/Federal Status | Habitat | Habitat Present/Absent |
|---|---|---|---|
| Loggerhead Shrike *(Lanius ludovicianus)* | CSSC | A common resident and winter visitor in lowlands and foothills throughout California. Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Eats mostly large insects; also takes small birds, mammals, amphibians, reptiles, fish, carrion, and various other invertebrates. | Pearson-Arastradero - **HP**<br>Foraging and breeding habitat available on-site in the grasslands and oak woodland.<br>Foothills – **HP**<br>Foraging and breeding habitat available on-site in the grasslands, mixed evergreen forest and oak woodland savannah. |
| **Fish** | | | |
| Steelhead - Distinct Population Segment (*Oncorhynchus mykiss irideus*) | FT (CH) | The Central California Coast Distinct Population Segment extends from the Russian River in the north to Soquel Creek in the south. | Pearson-Arastradero – **A**. Habitat is not present.<br>Foothills – **A**. Habitat is not present.<br>* *Present in Los Trancos Creek along evacuation route F.E6* and the southern Foothills Park border. |
| **Reptiles** | | | |
| San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) | FE/SE | Vicinity of freshwater marshes, ponds, and slow moving streams. Prefers dense cover and water depths of at least one foot. Upland areas near water are important. | Pearson-Arastradero - **HP**<br>Habitat present on-site at Arastradero Lake, John Sobey Pond and Arastradero Creek.<br>Foothills – **HP**<br>Habitat present at Boronda Lake and Buckeye Creek. |
| Western pond turtle (*Actinemys marmorata*) | CSSC | An aquatic turtle of ponds, marshes, rivers, streams & irrigation ditches with aquatic vegetation. WPT's require basking sites with suitable (sandy banks or grassy open fields) upland habitat for egg-laying. | Pearson-Arastradero – **HP**<br>Habitat present on-site at Arastradero Lake, John Sobey Pond and Arastradero Creek.<br>Foothills – **HP**<br>Habitat present at Boronda Lake and Buckeye Creek.<br>Closest recorded population is 3.0 miles to the northwest at Searsvillle Lake (CNDDB 2008). |
| **Mammals** | | | |
| Pallid bat *(Antrozous pallidus*) | CSSC | Takes a wide variety of insects and arachnids, including beetles, grasshoppers, cicadas, moths, spiders, scorpions, and Jerusalem crickets. Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Very sensitive to disturbance of roosting sites. Such sites are essential for metabolic economy, juvenile | Pearson-Arastradero – **HP**<br>Foraging habitat is present in the grassland. No roosting habitat available.<br>Foothills – **HP**<br>Small rocky outcrops may provide roosting habitat. Foraging habitat |

**Table 1. Special-status Species Considered in the Biological Impact Assessment**

| Species name | State/Federal Status | Habitat | Habitat Present/Absent |
|---|---|---|---|
| | | growth and as night roosts to consume prey. | present in the grassland. |
| Ringtail (*Bassaricus astutus*) | CSSC | Uncommon and highly secretive. Nocturnal. Dens in rock outcrops and tree hollows. Eats small mammals, birds, reptiles, amphibians, carrion, and nuts and berries. Has a home range as large as 336 acres. | Pearson-Arastradero - **HP**<br>Den sites are available in oak woodland and riparian habitats. Foraging available in all habitats.<br>Foothills – **HP**<br>Den sites are available in oak woodland, mixed evergreen, and riparian habitats. Foraging available in all habitats. |
| Western red bat (Lasiurus blosevillii) | CSSC | Roosts primarily in trees, less often in shrubs in edge habitats adjacent to streams, fields, or urban areas. Preferred roost sites are protected from above, open below, and located above dark ground-cover. Such sites minimize water loss. | Pearson-Arastradero - **HP**<br>Roosting habitat available in oak woodland, riparian, and edge habitats. Foraging available in all habitats.<br>Foothills – **HP**. Roosting habitat available in oak woodland, mixed evergreen and riparian. Foraging available in all habitats. |
| American badger (*Taxidea taxus*) | CSSC | Most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Needs sufficient food source (mostly burrowing rodents) and open, uncultivated ground. | Pearson-Arastradero - **HP**<br>Foraging and burrow habitat available throughout the whole site.<br>Foothills – **HP**. Foraging and burrow habitat available throughout the whole site. |
| Hoary bat (*Lasiurus cinereus*) | None, but considered special status by the CDFG | Prefers open habitats or habitat mosaics with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees, feeds primarily on moths. Requires water. | Pearson-Arastradero – **HP**<br>Foraging habitat present throughout the site. Roosting habitat is available in riparian and oak woodland.<br>Foothills – **HP**<br>Foraging habitat available throughout the site. Roosting habitat available in riparian, oak woodland, and mixed evergreen. |
| Fringed myotis (*Myotis thysanodes*) | None, but considered special status by the CDFG | Occurs in a wide variety of habitats. Optimal habitats are pinyon-juniper, valley foothill hardwoods, and hardwood-conifer. Uses caves, mines, building or crevices for maternity colonies and roosts. | Pearson-Arastradero - **HP**<br>Roosting available in the structures on-site. Foraging available throughout the site.<br>Foothills – **HP**<br>Roosting available in the structures on-site. Foraging available throughout the site. |

| **Table 1. Special-status Species Considered in the Biological Impact Assessment** | | | |
|---|---|---|---|
| **Species name** | **State/Federal Status** | **Habitat** | **Habitat Present/Absent** |
| San Francisco dusky-footed woodrat<br>*(Neotoma fuscipes annectens)* | CSSC | Generalist herbivores, they consume a wide variety of nuts and fruits, fungi, foliage and some forbs. Dusky-footed woodrats are highly arboreal; evergreen or live oaks and other thick-leaved trees and shrubs are important habitat components for this species. Houses typically are placed on the ground against or straddling a log or exposed roots of a standing tree and are often located in dense brush. Houses also are placed in the crotches and cavities of trees and in hollow logs. Known to occur in scrubby and forested habitat throughout the town. | Pearson-Arastradero - **HP**<br>Habitat present in chaparral, mixed evergreen and oak woodland.<br>Foothills – **HP**<br>Habitat present in chaparral, mixed evergreen and oak woodland. |
| **Plants** | | | |
| San Mateo thorn-mint (*Acanthomintha duttonii)* | FE/SE, CNPS 1B | Annual herb found in serpentine areas of chaparral, valley and foothill grassland, coastal scrub. 50 – 300 meters. Blooms April-July. | Pearson-Arastradero - **HP**<br>Habitat is present at AC4 and AC7.<br>Highly Unlikely. The closest population is located in Edgewood County Park 6.3 air miles north (CNDDB 2008).<br>Foothills – **A**. Habitat is not present. |
| Franciscan onion (*Allium peninsulare* var. *franciscanum*) | CNPS 1B | Perennial bulbiferous herb found in valley and foothill grassland and cismontane woodland. Often in serpentine, clay, or volcanic soils. 100 – 300 meters. Blooms May-June. | Pearson-Arastradero - **HP**<br>Habitat present in grasslands.<br>Foothills – **HP**<br>Habitat is present in grasslands. |
| Slender silver moss<br>(*Anomobryum julaceum*) | CPNS 2 | Broadleaved upland forest, lower montane coniferous forest, North Coast coniferous forest/damp rock and soil on outcrops, usually roadcuts; 100 – 1000 meters. | Pearson-Arastradero – **A**. Habitat is not present.<br>Foothills – **A**. Habitat is not present. |
| Anderson's manzanita (*Arctostaphylos andersonii*) | CNPS 1B | Broadleaved upland forest, chaparral, north coast coniferous forest. Open sites, redwood forest. 180-800m. Blooms November-April. | Pearson-Arastradero - **HP**<br>Habitat present in chaparral.<br>Foothills – **HP**<br>Habitat present in chaparral.<br>Highly unlikely. Known from fewer than 15 occurrences in the Santa Cruz Mountains (CNDDB 2008). |
| Schreiber's manzanita (*Arctostaphylos glutinosa*) | CNPS 1B | Closed-cone coniferous forest, chaparral/diatomaceous shale; 170-685 meters. Blooms November – April. | Pearson-Arastradero - **HP**<br>Habitat present in chaparral.<br>Foothills – **HP**<br>Habitat present in chaparral.<br>Highly unlikely. Known from fewer than 10 occurrences in Santa Cruz |

**Table 1. Special-status Species Considered in the Biological Impact Assessment**

| Species name | State/Federal Status | Habitat | Habitat Present/Absent |
|---|---|---|---|
| | | | County (CNDDB 2008). |
| Kings mountain manzanita (*Archtostaphylos regismontana*) | CNPS 1B | Perennial evergreen shrub found on granite or sandstone outcrops in chaparral, coniferous and evergreen forests. 305 – 730 meters. Blooms March-April. | Pearson-Arastradero - **HP**<br>Habitat present in chaparral.<br>Foothills – **HP**<br>Habitat present in chaparral and mixed evergreen.<br>Highly unlikely. Closest known occurrence is greater than five miles from the site at Teague Hill Open Space Preserve at Summit Springs Road in Redwood City (CNDDB 2008). |
| Bonny Doon manzanita (*Archtostaphylos silvicola*) | CNPS 1B | Chaparral, closed-cone coniferous forest, lower montane coniferous forest/inland marine sands; 120-600 meters. Blooms February – March. | Pearson-Arastradero - **HP**<br>Habitat present in chaparral.<br>Foothills – **HP**<br>Habitat present in chaparral.<br>Highly unlikely. Known from fewer than 20 occurrences greater than five miles from the site in the Santa Cruz County (CNDDB 2008). |
| Alkali milk-vetch (*Astragalus tener var. tener*) | CNPS 1B | Playas, valley and foothill grassland (adobe clay), vernal pools/alkaline; 1-60 meters. Blooms March – June. Last collection 1959. | Pearson-Arastradero - **A**. Habitat is not present.<br>Foothills – **A**. Habitat is not present.<br>There are no alkaline or adobe clay soils present on site. |
| Santa Cruz Cypress (*Callitropsis abramsiana*) | FE/SE, CNPS 1B | Closed-cone coniferous forest, chaparral, lower montane coniferous forest/sandstone or granitic; 280-800 meters. | Pearson-Arastradero - **A**. Habitat is not present.<br>Foothills – **HP**<br>Habitat is present in chaparral.<br>Highly unlikely. Known from fewer than 20 occurrences greater than five miles from the site in Santa Cruz County (CNDDB 2008). |
| Santa Cruz mountain pussypaws (*Calyptridium parryi var. hesseae*) | CNPS 1B | Chaparral, cismontane woodland; 305 – 1115 meters. Blooms May – July. | Pearson-Arastradero - **A**<br>Habitat is not present.<br>Foothills – **HP**<br>Habitat is present in chaparral. |
| Congdon's tarplant (*Centromadia parryi ssp. congdonii*) | CNPS 1B | Valley and foothill grassland (alkaline); 1-230 meters. Blooms June – November. | Pearson-Arastradero - **A**. Habitat is not present.<br>Foothills – **A**. Habitat is not present on-site. |

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| Species name | State/Federal Status | Habitat | Habitat Present/Absent |
|---|---|---|---|
| Ben Lomond spineflower (*Chorizanthe pungens var. hatwegiana*) | FE, CNPS 1B | Lower montane coniferous forest (maritime pondersa pine sandhills); 90 – 610 meters. Blooms April – July. Known from sandhill parklands in the Santa Cruz Mtns. | Pearson-Arastradero - **A**. Habitat is not present.<br>Foothills – **A**. Habitat is not present. |
| Franciscan thistle (*Cirsium andrewsii*) | CNPS 1B | Occurs within coastal bluff scrub, broadleaved upland forest, and coastal scrub. Sometimes found on serpentine seeps. | Pearson-Arastradero - **A**. Habitat is not present.<br>Foothills – **A**. Habitat is not present. |
| Crystal Springs fountain thistle (*Cirsium fontinale var. fontinale*) | FE, SE, CNPS 1B | Chaparral (openings), valley and foothill grassland/serpentinite seeps; 90 – 175 meters. Blooms June – October. Known from four occurrences in the vicinity of Crystal Springs Reservoir. | Pearson-Arastradero – **HP**<br>Foothills – **A.** Habitat is not present. |
| San Francisco collinisia (*Collinisia multicolor*) | CNPS 1B | Moist shady woodland, associated with California buckeye, honeysuckle, ferns, coast live oak, poison oak. Known from Edgewood Natural Preserve. Blooms March-May. | Pearson-Arastradero - **A**. Habitat is not present.<br>Foothills – **A**. Habitat is not present. |
| Norris' beard moss (*Didymodon norrisii*) | CNPS 2 | Cismontane woodland, lower montane coniferous forest/intermittently mesic, rock; 600 – 1700 meters. | Pearson-Arastradero - **A**. Habitat is not present.<br>Foothills – **A**. Habitat is not present. |
| Western leatherwood (*Dirca occidentalis*) | CNPS 1B | Broad-leafed upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast forest, riparian forest and woodland. On brushy slopes, mesic sites; mostly in mixed evergreen & foothill woodland communities. 30-550m. | Pearson-Arastradero - **A**. Habitat is not present.<br>Foothills – **P**. Habitat is not present.<br>Found along Steep Hollow Trail |
| San Mateo wooly sunflower (*Eriophyllum latilobum*) | FE, SE, CNPS 1B | Cismontane woodland (serpentinite, often on roadcuts); 45 – 150 meters. Blooms May – June. | Pearson-Arastradero – **HP.**<br>Habitat is present at AC4 and AC7.<br>Highly unlikely. Known for only one occurrence (CNPS 2001).<br>Foothills – **A.** Habitat is not present. |
| Fragrant fritillary (*Fritillaria liliacea*) | CNPS 1B | Perennial bulbiferous herb found in coastal scrub, valley and foothill grassland, coastal prairie. Often on serpentine; various soils reported though usually clay, in grassland. 3-410m. Blooms February-April | Pearson-Arastradero – **A.** Habitat is not present.<br>Foothills – **A.** Habitat is not present. |
| Marin Western Flax (*Hesperolinon congestum*) | FT, ST, CNPS 1B | Annual herb found in chaparral, valley and foothill grassland. In serpentine barrens and in serpentine grassland and chaparral. 5-370 meters. Blooms April-July. | Pearson-Arastradero – **HP**<br>Habitat is present at AC4 and AC7.<br>Highly unlikely. Only fewer than 20 occurrences.<br>Highly Unlikely. The closest population is located in Edgewood |

**Table 1. Special-status Species Considered in the Biological Impact Assessment**

| Species name | State/Federal Status | Habitat | Habitat Present/Absent |
|---|---|---|---|
| | | | County Park 6.3 air miles north (CNDDB 2008).<br>Foothills – **A.** Habitat is not present. |
| Loma Prieta hoita (*Hoita strobilina*) | CNPS 1B | Chaparral, cismontane woodland, riparian woodland/usually serpentinite, mesic; 30 – 600 meters. Blooms May – October. | Pearson-Arastradero – **HP**<br>Habitat is present at AC4 and AC7.<br>Highly unlikely.<br>Highly unlikely. Closest known occurrence is greater than five miles to the south in the Santa Teresa Hills (CNDDB 2008).<br>Foothills – **A.** Habitat is not present. |
| Crystal Springs lessingia (*Lessingia arachnoidea*) | CNPS 1B | Annual herb found in coastal sage scrub, valley and foothill grassland, cismontane woodland. Grassy slopes on serpentine; sometimes on roadsides. 60-200m. Blooms July – October. | Pearson-Arastradero – **HP**<br>Habitat is present at AC4 and AC7.<br>Highly unlikely. Known from seven occurrences near Crystal Springs reservoir (CNDDB 2008).<br>Foothills – **A.** Habitat is not present. |
| Arcuate bush-mallow (*Malacothamnus arcuatus*) | CNPS 1B | Grows in gravelly alluvium in chaparral and grassland. Also occurs on serpentine. 15 – 355 meters. Blooms April – September. | Pearson-Arastradero – **P**<br>Six locations within the reserve.<br>Foothills – **HP**<br>Habitat present in chaparral and grassland. |
| Robust Monardella (*Monardella villosa ssp. globosa*) | CNPS 1B | Chaparral (openings), cismontane woodland, coastal scrub; 185 – 600 meters. Blooms June – July. | Pearson-Arastradero - **HP**<br>Habitat present in chaparral.<br>Foothills – **HP**<br>Habitat present in chaparral and mixed evergreen. |
| Kellman's bristle moss (*Orthotrichum kellmanii*) | CNPS 1B | Chaparral, cismontane woodland, sandstone, carbonate; 343 – 685 meters. | Pearson-Arastradero – **A.** No habitat is present. Reserve is to low in elevation.<br>Foothills – **HP**<br>Habitat present in chaparral and mixed evergreen. |
| Dudley's lousewort (*Pedicularis dudleyi*) | SR, CNPS 1B | Perennial herb found in maritime chaparral, cismontane woodland, and North Coast coniferous forest. 60 – 900 meters. Known from fewer than 15 locations. Occurs at Edgewood County Park. Blooms April-June. | Pearson-Arastradero - **HP**<br>Habitat is present in chaparral.<br>Foothills – **HP**<br>Habitat is present in chaparral.<br>Highly unlikely. Closest known occurrence 6.3 air miles to the north at Edgewood County Park (CNDDB 2008). |

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| Species name | State/Federal Status | Habitat | Habitat Present/Absent |
|---|---|---|---|
| White-rayed pentachaeta (*Pentachaeta bellidiflora*) | FE/SE | Occurs within valley and foothill grasslands on open, dry, and rocky slopes. Often found on soils derived from serpentine bedrock. 35-620m. | Pearson-Arastradero – **HP**<br>Habitat present in grassland.<br>Not likely to occur. Only occurrence is at Edgewood County Park 6.3 air miles to the north.<br>Foothills – **A.** Habitat is not present. |
| Monterey pine (*Pinus radiata*) | CNPS 1B | Closed cone coniferous forest, cismontane woodland; 25 – 185 meters. Found in only three locations along the central coast. | Pearson-Arastradero - **A**. Habitat is not present.<br>Foothills – **A**. Habitat is not present. |
| White-flowered rein orchid (*Piperia candida*) | CNPS 1B | Perennial herb found in broadleafed upland forest and coniferous forests, sometimes serpentine. 30 – 1310 meters. Blooms May-September. | Pearson-Arastradero - **HP**<br>Habitat present in riparian corridor.<br>Foothills – **HP**<br>Habitat present in mixed evergreen and riparian corridor.<br>Found in adjacent Los Trancos Open Space Preserve (CNDDB 2008). |
| San Francisco popcorn-flower (*Plagiobothrys diffuses*) | SE, CNPS 1B | Coastal prarie, valley and foothill grassland; mesic; 60 – 360 meters. Blooms March - June. | Pearson-Arastradero - **HP**<br>Habitat is present in grassland<br>Foothills – **HP**<br>Habitat is present in grassland.<br>Highly unlikely. The closest known occurrence is greater than 5 miles away in Santa Cruz County near Point Año Nuevo State Park (CNDDB 2008). |
| San Francisco campion (*Silene verecunda ssp. verecunda*) | CNPS 1B | Perennial herb found in sandy areas of coastal scrub, valley & foothill grassland, coastal bluff scrub, chaparral, and coastal prairie. 30 – 645 meters. Blooms March-August. | Pearson-Arastradero - **HP**<br>Habitat present in grassland and chaparral.<br>Foothills – **HP**<br>Habitat present in grassland and chaparral.<br>Not likely to occur. Only occurrence is at Edgewood County Park 6.3 air miles to the north (CNDDB 2008). |
| Santa Cruz microseris (*Stebbinsoseris decipiens*) | CNPS 1B | Broad-leaved upland forest, closed-cone coniferous forest, chaparral, coastal prarie, coastal scrub, valley and foothill grassland/open areas; sometimes serpentinite; 10 – 500 meters. Blooms April – May. | Pearson-Arastradero - **HP**<br>Habitat present in chaparral and grassland.<br>Foothills – **HP**<br>Habitat present in chaparral, mixed evergreen and grassland.<br>Highly unlikely. The closest known occurrence is greater than 5 miles |

| **Table 1. Special-status Species Considered in the Biological Impact Assessment** | | | |
|---|---|---|---|
| **Species name** | **State/Federal Status** | **Habitat** | **Habitat Present/Absent** |
| | | | away in Santa Cruz County near Franklin Point (CNDDB 2008). |
| **Communities** | | | |
| Northern maritime chaparral | None, but considered special status by the CDFG | Maritime chaparral contains plants adapted to areas with cool, foggy summers. Generally found on nutrient poor soils and occurs on windward uplands and coastal lowlands. *Arctostaphylos* and *Ceanothus* species characterize the habitat. | Pearson-Arastradero - **A**. Community is not present on-site.<br>Foothills – **A**. Community is not present on-site. |
| Valley needlegrass grassland | None, but considered special status by the CDFG | Dominated by the perennial, tussock forming purple needlegrass (*Nasella pulchra*). Usually on fine-textured (often clay) soils; moist or even waterlogged in winter, but very dry in summer | Pearson-Arastradero – **P**<br>Restored purple needlegrass grassland.<br>Foothills – **A**<br>Community is not present on-site. |

Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is, or may be present. The species may be present. Present [P] - the species is present. Critical Habitat [CH] - project footprint is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present.

Notes:
CNPS – California Native Plant Society (www.cnps.org)
List 1A: plants presumed extinct in California
List 1B: plants rare, threatened, or endangered in California and elsewhere
List 2: Plants rare, threatened, or endangered in California, but more common elsewhere
List 3: Plants about which we need more information – a review list
List 4: Plants of limited distribution – a watch list
Threat Ranks:
0.1 – seriously threatened in California (high degree/immediacy of threat)
0.2 – fairly threatened in California (moderate degree/immediacy of threat)
0.3 – not very threatened in California (low degree/immediacy of threats or no current threats known
CSSC – California Species of Concern
FE – Federal endangered (listed by the federal government as an endangered species)
FT – Federal threatened (listed by the federal government as a threatened species)
SE – State endangered (listed by the state of California as an endangered species)
ST – State threatened (listed by the state of California as a threatened species)
SR – State rare (listed by the state of California as a rare species)

References:

United States Fish and Wildlife Service: Sacramento http://www.fws.gov/sacramento/es/spp_list.htm. Viewed on October 27, 2008.

California Native Plant Society. Online Inventory of rare and endangered plants. http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi. Viewed on October 27 2008.

California Department of Fish and Game. Rare and endangered species lists. http://www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp. Viewed on October 27, 2008.

California Department of Fish and Game. California Natural Diversity Database. Rare plant, animal and communities. Report created on October 27, 2008.

National Marine Fisheries. Critical Habitat for endangered species. http://www.nmfs.noaa.gov/pr/species/criticalhabitat.htm. Viewed on October 27, 2008.

California Department of Fish and Game. Fully protected species list. http://www.dfg.ca.gov/wildlife/species/t_e_spp/fully_pro.html. Viewed on October 27, 2008.

**Table 2 Bat Species of Concern on the San Francisco Peninsula**

| **Bat Species** | **Habits/Habitat Requirements** |
|---|---|
| California myotis (*Myotis californicus*) | Roosts alone or in groups typically in trees cavities, caves, and buildings. Found over water, in forests, at edges of forests, and in open areas. Pups usually born in July. |
| Mexican free-tailed (*Tadarida brasiliensis*) | Colonial roosting typically in caves and building. Found in open areas, forests, over water and near buildings. A characteristic musty odor can be detected near their roosts. Pups born in the summer. |
| Western red (*Lasiurus blossevillii*) | Roosts alone typically in the leaves of large trees and shrubs. Found in forests, over water, in open areas, and in buildings. Pups born May-June. |
| Yuma (*Myotis yumanensis*) | Maternal roosts are colonial; males have solitary roosts. Uses buildings and caves for roosting. Found over water and near or in buildings. Pups born May-July. |
| Pallid (*Antrozous pallidus*) | Roosts in colonies in buildings and rock crevices, caves, mines, rock piles, and tree cavities. Tend to choose roosts where they can easily retreat into tight crevices when disturbed. Can be heard in the roost; roost has a faint skunk-like smell. Summer and winter roosting sites are the same, but the bats are more likely to roost singly or in pairs in the winter. Pups are born April-June. Found in or near buildings, rock crevices, mines, and tree cavities. Catches its prey on the ground or on leaves. Prey includes cicadas, katydids, scorpions, centipedes, beetles, grasshoppers, moths. |
| Big brown (*Eptesicus fuscus*) | Daytime roosts are in dark places, usually in buildings or trees. Night roosts include buildings. Females form maternity colonies, while males remain solitary. Females return to the same summer roost in March or April. Pups born in spring or early summer. Feeds on insects in meadows, over water, among trees, and in the urban environment. |
| Long-eared myotis (*Myotis evotis*) | Roosts both singly and in maternity colonies in abandoned buildings, hollow trees, niches under bark, caves, mines, cliff crevices. Forages around treetops and over water in forested areas. Pups born June-July. |
| Fringed myotis (*Myotis thysanodes*) | Females roost in colonies, males usually roost alone. Roost in caves, mines, rock crevices, buildings. Forages along streams and in forested areas. Pups born June-July. |
| Long-legged (*Myotis volans*) | In the summer, roosts in colonies in buildings, crack, crevices, and in loose and peeling tree bark. In the winter, roosts in caves and mines. Forages for insects over water, in forests, over open habitat and near cliffs. Pups born spring/summer. |
| Hoary (*Lasiurus cinereus*) | A solitary bat that roosts in the foliage of trees, usually 7-20 feet above the ground and leafed above but open below. Roost trees are usually at the edge of a clearing. Markings blend well with tree bark. Regularly makes a chattering sound during flight audible to human ears. Forages at treetop levels in open areas, over streams, and may also be attracted to insects at outdoor lights. Pups born May-July. |
| Silver-haired (*Lasionycteris noctivagans*) | Roosts singly or in small groups in wooded areas. Prefers hollows, cracks and crevices of trees. Sometimes found roosting in old woodpecker holes and beneath rocks. Roosts usually between 3 and 16 feet above the ground. Forages over ponds and streams, and above treetop level in woodland. Has been observed to fly the same pattern each night. Migratory; during migration they can be found in open sheds, garages and outbuildings, lumber piles. On hibernation grounds they hibernate in trees, buildings, rock crevices, caves. Pups born June-July. |

Williams et al. 2002 Beginner's Guide to Bats

| **Table 3 Non-listed Native Plants of Concern in Foothills Park** | | | |
|---|---|---|---|
| **Plant Name** | **Bloom Period** | **Comments about occurrences in the Park** | **Fire Plan Treatments of concern** |
| Rayless arnica<br>*Arnica discoidea* | May-July | Open slopes and edges of chaparral; Los Trancos Trail | F.E.1, F.F.1, F.F.2, F.F.3, F.F.4, F.D.7, F.D.9, F.C.3, F.C.4, F.C.6 |
| Crimson columbine<br>*Aquilegia formosa*<br>*A. eximia* | May-August | Mixed evergreen forest, brush covered slopes. Usually in damp, shady places along trails; Los Trancos Trail | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Maidenhair fern<br>*Adiantum jordanii* | na | Moist, shaded slopes in woodland. Not uncommon, but can be severely impacted. Fern Loop, Steep Hollow Trails | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Kellogg's or lax snapdragon<br>*Antirrhinum kelloggii* | March-May | Disturbed areas, especially burns, and chaparral | F.E.1, F.F.1, F.F.2, F.F.3, F.F.4, F.D.7, F.D.9, F.C.3, F.C.4, F.C.6 |
| Single-leaf onion<br>*Allium unifolium* | April-June | Moist clay or serpentine, grassy streambanks | none |
| Indian paintbrush<br>*Castilleja affinis* | March-May | Open slopes, borders of chaparral and wooded areas. Woodrat Trail. | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Wooly Indian paintbrush<br>*Castilleja foliolosa* | March-June | Edges of chaparral, on dry rocky slopes | F.E.1, F.F.1, F.F.2, F.F.3, F.F.4, F.D.7, F.D.9, F.C.3, F.C.4, F.C.6 |
| Venus thistle<br>*Cirsium occidentale venustum* | April-July | Disturbed places in grassland and woodland | F.E.1, F.E.2, F.E.3, F.E.4, F.E.6, F.D.1, F.D.2, F.D.3, F.D.4, F.D.5, F.D.6, F.D.8 F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.1, F.C.2, F.C.4, F.C.5, F.C.6, F.F.1, F.F.2, F.F.3, F.F.4 |
| California larkspur<br>*Delphinium californicum* | May-June | Grows in thickets and chaparral. Known along | F.E.1, F.F.1, F.F.2, F.F.3, F.F.4, F.D.7, |

| **Table 3 Non-listed Native Plants of Concern in Foothills Park** | | | |
|---|---|---|---|
| **Plant Name** | **Bloom Period** | **Comments about occurrences in the Park** | **Fire Plan Treatments of concern** |
| | | Los Trancos Trail | F.D.9, F.C.3, F.C.4, F.C.6 |
| Hooker's fairy bells *Disporum hookeri* | March-May | Shaded places in mixed forest and brush. Steep Hollow and Los Trancos Trails | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Red delphinium *Delphinium nudicaule* | March-June | Mixed evergreen forest, dense riparian woodland. Los Trancos Trail | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Bush poppy *Dendromecon rigida* | April-August (highly variable) | Chaparral. Trapper's Trail | F.E.1, F.F.1, F.F.2, F.F.3, F.F.4, F.D.7, F.D.9, F.C.3, F.C.4, F.C.6 |
| California fuschia *Epilobium canum* | August-October | Rocky soil in chaparral | F.E.1, F.F.1, F.F.2, F.F.3, F.F.4, F.D.7, F.D.9, F.C.3, F.C.4, F.C.6 |
| Checker lily *Fritillaria affinis* | February-May | Wooded slopes, oak scrub, grasslands | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Rosilla or sneezeweed *Helenium puberulum* | June-September | Creek beds and marshy meadows along streams and lakes. Panorama Trail | F.E.2, F.E.5 |
| Hill lotus *Lotus humistratus* | March-June | Grassland, chaparral | F.E.1, F.F.1, F.F.2, F.F.3, F.F.4, F.D.7, F.D.9, F.C.3, F.C.4, F.C.6 |
| California lotus *Lotus wrangelianus* | March-June | Chaparral, disturbed areas | F.E.1, F.F.1, F.F.2, F.F.3, F.F.4, F.D.7, F.D.9, F.C.3, F.C.4, F.C.6 |
| Coffee fern *Pellaea andromedifolia* | na | Dry, open or shaded habitats often in chaparral. Los Trancos Trail | F.E.1, F.F.1, F.F.2, F.F.3, F.F.4, F.D.7, F.D.9, F.C.3, F.C.4, F.C.6 |
| California polypody *Polypodium californicum* | na | Shaded canyons and streambanks | F.E.1, F.E.2 |

| **Table 3 Non-listed Native Plants of Concern in Foothills Park** | | | |
|---|---|---|---|
| **Plant Name** | **Bloom Period** | **Comments about occurrences in the Park** | **Fire Plan Treatments of concern** |
| Bird's-foot fern *Pellaea mucronata* | na | Dry, rocky outcrops. Los Trancos Trail | F.E.1, F.F.1, F.F.2, F.F.3, F.F.4, F.D.7, F.D.9, F.C.3, F.C.4, F.C.6 |
| Gold-back fern *Pityrogramma triangularis* | na | Shaded slopes in oak-madrone woodland, brushy slopes, moist banks | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Chaparral currant *Ribes malvaceum* | October-March | Shaded ravines and chaparral slopes. Bobcat Point | F.E.1, F.F.1, F.F.2, F.F.3, F.F.4, F.D.7, F.D.9, F.C.3, F.C.4, F.C.6 |
| California tea *Rupertia physodes* | April-June | Oak-madrone woods, shaded chaparral. Panorama Trail. | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Victor's gooseberry (*Ribes victoris*) | March-April | Canyon forests and chaparral. Costanoan Trail. | F.E.1, F.F.1, F.F.2, F.F.3, F.F.4, F.D.7, F.D.9, F.C.3, F.C.4, F.C.6 |
| Yerba buena *Satureja douglasii* | April-September | Shade in woodland | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Fat false solomon's seal *Smilacina racemosa* | March-May | Shade and rich soil in mixed evergreen forest | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Slim false solomon's seal *Smilacina stellata* | April-June | Wooded slopes in partial shade | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Dannie's skullcap *Scutellaria tuberosa* | March-July | Oak-madrone woods, borders of shrubby | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, |

| **Table 3 Non-listed Native Plants of Concern in Foothills Park** | | | |
|---|---|---|---|
| **Plant Name** | **Bloom Period** | **Comments about occurrences in the Park** | **Fire Plan Treatments of concern** |
| | | vegetation | F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Hartweg's taushcia *Tauschia hartwegii* | March-May | Occasional on wooded slopes. | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Kellogg's tauschia *Tauschia kelloggii* | April-June | Grassland, edges of chaparral | F.C.1, F.C.2, F.C.3, F.F.1, F.F.2, F.F.3. F.F.4, F.C.6 |
| Pacific starflower *Trientalis latifolia* | April-July | Shaded slopes, moist woods | F.E.1, F.E.2, F.E.3, F.E.6, F.D.1, F.D.3, F.D.4, F.D.5, F.D.6, F.D.9, F.I.1, F.I.2, F.I.3, F.I.4, F.I.6, F.C.6 |
| Western verbena *Verbena lasiostachys* | May-September | Dry ground of disturbed areas, creek bottoms, roadsides, edges of brushy vegetation | F.E.2, F.E.5 |

Source: Foothills Park Trails Management Plan 2001; TRA 2008; Munz and Keck 1968.

| **Table 4. Fire Plan Treatments, Habitats Affected, and Protective Measures** | | | | | | |
|---|---|---|---|---|---|---|
| **Designation** | **Project** | **Description** | **Acreage** | **Treatment Method** | **Habitat(s) Affected[1]** | **Protection Measure ID[2]** |
| ***Foothills Park Treatment Locations*** | | | | | | |
| **Evacuation Routes** | | | | | | |
| F.E1 | Page Mill Road | Within PA City from Arastradero to southern Pony Tracks | 9.54 acres | mowing, grazing, hand labor | Grassland Chaparral Woodland | 1, 2, 3, 4, 7, 9, 10 |
| F.E2 | Evacuation Route - Park Road | Entrance to Maintenance Yard Las Trampas Valley | 5.96 acres | mowing, grazing, hand labor | Woodland Irrigated Meadow | 1, 2, 3, 4, 5, 7, 9, 10 |
| F.E3 | Evacuation Route - Park North west | Interpretive Center to Hewlett property | 0.57 acres | mowing, grazing, hand labor | Grassland Woodland | 1, 2, 3, 4, 7, 9, 10 |
| F.E4 | Evacuation Route - Park North east | Boronda Lake to Alexis Drive | 1.21 acres | mowing, grazing, hand labor | Grassland | 1, 9 |
| F.E5 | Secondary Evac Route | Towle Campground to Las Trampas Valley | 0.97 acres | mowing, grazing, hand labor | Riparian (coyote brush) | 1, 2, 3, 4, 5, 9 |
| F.E6 | Los Trancos | Southwest corner of Arastradero Park | 6.07 acres | Hand labor | Woodland Riparian (Willow) (*western leatherwood) | 1, 2, 3, 4, 7, 10 |
| **Firefighter Safety Zone** | | | | | | |
| F.F1 | Firefighter Safety Zone 1 | Trappers Ridge & Los Trancos Trail | 0.72 acre | mow, graze | Grassland Chaparral Coastal Scrub | 1, 2, 3, 9 |
| F.F2 | Firefighter Safety Zone 2 | Trappers Ridge & Madron Fire Road | 0.72 acre | mow, graze | Grassland Chaparral Coastal Scrub | 1, 2, 3, 9 |
| F.F3 | Firefighter Safety Zone 3 | Trappers Ridge high point | 0.72 acre | mow, graze | Grassland Chaparral Coastal Scrub | 1, 2, 3, 9 |
| F.F4 | Firefighter Safety Zone 4 | Trapper Ridge south end | 0.72 acre | mow, graze | Grassland Chaparral Coastal Scrub | 1, 2, 3, 9 |
| **Defensible Space** | | | | | | |
| F.D.1 | Defensible Space | Entry Gate | 0.72 acre | hand labor | Grassland Woodland | 1, 2, 3,`4, 7, 9, 10 |

| **Table 4. Fire Plan Treatments, Habitats Affected, and Protective Measures** | | | | | | |
|---|---|---|---|---|---|---|
| **Designation** | **Project** | **Description** | **Acreage** | **Treatment Method** | **Habitat(s) Affected[1]** | **Protection Measure ID[2]** |
| ***Foothills Park Treatment Locations*** | | | | | | |
| F.D.2 | Defensible Space | Station 8 | 0.72 acre | hand labor | Grassland | 1 |
| F.D.3 | Defensible Space | Restrooms at Orchard Glen | < ½ acre | hand labor | Woodland | 1, 2, 3, 4, 7, 9, 10 |
| F.D.4 | Defensible Space | Interpretive Center | 0.11 acre | hand labor | Woodland Irrigated Meadow | 1, 3, 4, 7, 9, 10 |
| F.D.5 | Defensible Space | Maintenance Complex | 0.72 acre | hand labor | Woodland | 1, 3, 4, 7, 10 |
| F.D.6 | Defensible Space | Boronda Pump Station at Campground | 0.72 acre | hand labor | Woodland | 1, 2, 3, 4, 7, 9, 10 |
| F.D.7 | Defensible Space | Dahl Water Tank | < 1/2 acre | hand labor, grazing | Chaparral | 1, 2, 3, 9 |
| F.D.8 | Defensible Space | Boronda Tank | < 1/2 acre | hand labor, grazing | Grassland | 1 |
| F.D.9 | Defensible Space | Park Tank | < 1/2 acre | hand labor, grazing | Grassland Chaparral Woodland | 1, 2, 3, 4, 7, 9, 10 |
| **Ignition Prevention** | | | | | | |
| F.I.1 | Ignition Prevention | Shady Cove Picnic Area | < 1/4 ac | hand labor | Woodland | 1, 3, 4, 7, 10 |
| F.I.2 | Ignition Prevention | Encinal Picnic Area | < 1/4 ac | hand labor | Woodland | 1, 3, 4, 7, 10 |
| F.I.3 | Ignition Prevention | Pine Gulch Picnic Area | < 1/4 ac | hand labor | Woodland | 1, 3, 4, 7, 10 |
| F.I.4 | Ignition Prevention | Orchard Glen | < 1/4 ac | hand labor | Woodland | 1, 3, 4, 7, 10 |
| F.I.5 | Ignition Prevention | Oak Grove Group Picnic Area | < 1/4 ac | hand labor | Woodland | 1, 3, 4, 7, 10 |
| F.I.6 | Ignition Prevention | Towle Camp | < 1/4 ac | hand labor | Woodland | 1, 3, 4, 7, 10 |

| **Table 4. Fire Plan Treatments, Habitats Affected, and Protective Measures** | | | | | | |
|---|---|---|---|---|---|---|
| **Designation** | **Project** | **Description** | **Acreage** | **Treatment Method** | **Habitat(s) Affected[1]** | **Protection Measure ID[2]** |
| ***Foothills Park Treatment Locations*** | | | | | | |
| **Containment** | | | | | | |
| F.C1 | Containment | Trappers Trail | 72.51 acres | mowing, grazing | Grassland Coastal Scrub | 1, 2, 3, 9 |
| F.C2 | Containment | Pony Tracks south of Trappers Ridge | 1.37 acres | mow annually 10-ft on either size of road, use a brush hog (or grazing animals) to mow areas to the break in slope both under wooded canopy and in grasslands with cover of coyote brush greater than 30% | Grassland Coastal Scrub | 1, 2, 3, 9 |
| F.C3 | Containment | Pony Tracks north of Trappers Ridge | 1.13 acres | mowing, grazing | Chaparral | 1, 3, 9 |
| F.C4 | Containment | Bobcat point | 5.28 acres | graze with goats | Grassland Chaparral | 1, 2, 3 |
| F.C5 | Containment | North of entry Gate | 3.47 acres | graze with goats | Grassland | 1 |
| F.C6 | Containment | "Valley View Fire Trail" | 3.35 acres | mowing | Chaparral Woodland | 1, 2, 3, 4 |

| **Table 4. Fire Plan Treatments, Habitats Affected, and Protective Measures** | | | | | | |
|---|---|---|---|---|---|---|
| **Designation** | **Project** | **Description** | **Acreage** | **Treatment Method** | **Habitat** | **Measure** |
| ***Pearson Arastradero Treatment Locations*** | | | | | | |
| **Evacuation Route** | | | | | | |
| A.E1 | Evacuation Route | Arastradero Road | 2.32 acres | mowing, grazing, hand labor | Grassland Riparian (Willow) Eucalyptus Trees | 1, 8 |
| **Defensible Space** | | | | | | |
| A.D1 | Defensible Space | Gateway Building | 0.72 acre | hand labor, mowing | Grassland | 1 |
| A.D2 | Defensible Space | Restrooms | 0.72 acre | hand labor, mowing | Grassland | 1 |
| A.D3 | Defensible Space | Corte Madera Pump Station | 0.72 acre | hand labor, mowing | Woodland | 1, 2, 3, 4, 7, 10 |
| A.D4 | Defensible Space | Water Tank | 0.72 acre | hand labor, mowing | Woodland | 1, 2, 3, 4, 7, 10 |
| **Containment** | | | | | | |
| A.C1 | Containment | Property boundary adjacent to Liddicoat | 5.39 acres | grazing, mowing | Grassland | 1 |
| A.C2 | Containment | Property boundary adjacent to Stanford and Portola Pastures | | grazing, mowing | Grassland | 1 |
| A.C3 | Containment | Within Redtail Loop Trail, to entire eastern boundary of Preserve | 48.72 acres | grazing | Grassland | 1, 8 |
| A.C4 | Containment | Property boundary adjacent to Paso del Robles | 7.71 acres | grazing | Grassland (serpentine) | 1, 2 |
| A.C5 | Containment | Property boundary Laurel Glen - north | 11.22 acres | grazing | Woodland | 1, 2, 3, 4, 10 |

| **Table 4. Fire Plan Treatments, Habitats Affected, and Protective Measures** | | | | | | |
|---|---|---|---|---|---|---|
| **Designation** | **Project** | **Description** | **Acreage** | **Treatment Method** | **Habitat** | **Measure** |
| ***Pearson Arastradero Treatment Locations*** | | | | | | |
| A.C6 | Containment | Property boundary Laurel Glen - south | 4.05 acres | grazing | Grassland Woodland | 1, 2, 3, 4 |
| A.C7 | Containment | Property boundary west of Meadow Lark Trail | 9.71 acres | grazing, mowing | Woodland Coastal Scrub (serpentine) | 1, 2, 3, 4 |
| A.C8 | Containment | Property boundary adjacent to 1791 Arastradero Rd. | 8.08 acres | grazing (mowing is not possible) | Woodland | 1, 2, 3, 4 |
| A.C9 | Containment | Property boundary adjacent to John Marthens | 0.79 acres | mowing | Grassland Woodland Riparian Coastal Scrub | 1, 2, 3, 4, 5, 7, 10 |
| A.C10 | Containment | Arastradero Creek to Arastradero Road | 14.08 acres | mowing, hand labor near riparian zone | Grassland Woodland Riparian | 1, 2, 3, 4, 5, 7, 8, 10 |
| A.C11 | Containment | Meadow Lark to Juan Bautista Trail | 4.08 acres | mowing | Grassland | 1, 2 |
| A.C12 | Containment | Meadow Lark | 0.72 acres | mowing | Grassland | 1 |
| A.C13 | Containment | Bowl Loop | 0.64 acres | mowing | Grassland | 1 |
| A.C14 | Containment | Arastradero to extended split RX1 and RX2 | 0.84 acres | mowing | Grassland | 1, 8 |
| A.C15 | Containment | Acorn Trail | 0.56 acres | mowing | Grassland | 1, 8 |
| **Prescribed Burn – Containment** | | | | | | |
| A.Rx1 | Containment | Juan Bautista Prescribe fire north | 18.25 acres | Rx fire, grazing | Grassland | 1, 2, 8 |

| Table 4. Fire Plan Treatments, Habitats Affected, and Protective Measures | | | | | | |
|---|---|---|---|---|---|---|
| **Designation** | **Project** | **Description** | **Acreage** | **Treatment Method** | **Habitat** | **Measure** |
| ***Pearson Arastradero Treatment Locations*** | | | | | | |
| A.Rx2 | Containment | Acorn Trail Prescribed fire south | 24.45 acres | Rx fire, grazing | Grassland Woodland | 1, 2, 3, 4, 8 |
| ***Off-site Treatment Locations*** | | | | | | |
| PA.1 | Page Mill Road | From Foothill Park South to Skyline Blvd. | 16.50 acres | mowing, grazing, hand labor | Chaparral Woodland Grassland | 1, 2, 3, 4, 7, 10 |
| PA.2 | Arastradero Road | From Page Mill to Arastradero Pk, and from Arastradero Pk to Los Trancos | 0.21 acres | mowing, grazing, hand labor | Grassland Woodland | 1, 3, 4, 7, 10 |
| PA.3 (Same as FE.6) | Los Trancos | Within PA City roughly from Buck Meadows Dr. to Meadow Creek Ct. | 6.07 acres | hand labor | Riparian (Willow) Woodland (*western leatherwood) | 1, 2, 3, 4, 7, 10 |
| PA.4 | Skyline Blvd. | Skyline Blvd. | 10.89 acres | mowing, grazing, hand labor | Grassland Woodland | 1, 2, 3, 4, 7, 10 |

[1]See Table 5 for a list of special-status species by habitat type.

[2] **Recommended Measures to Avoid Significant Biological Impacts under CEQA**

1. Vegetation removal in any vegetation type from February 15 to August 31 requires a survey for nesting birds by a qualified biologist3 or by park staff trained to do so by a qualified biologist and avoiding removal of nests in active use. If raptor nests are detected, a buffer area will need to be established around the nest in consultation with the California Department of Fish and Game. The buffer may be 250 feet.
2. Vegetation removal in areas of serpentine soil, oak woodland, chaparral, coastal scrub and riparian forest habitats requires a survey for rare plant species by a qualified biologist/ botanist prior to vegetation removal. Known rare plant locations should be treated in a way that benefits the rare species. This may include limiting the area of treatment in order to provide a buffer around the plant(s), or may include selectively trimming competitive vegetation adjacent to the plant(s). Some species may benefit from disturbance; the specific actions to be taken should be determined in consultation with a botanist. The plant survey needs to occur during the bloom period. After surveys in the same locations over three separate years, subsequent surveys are not necessary in that area unless a newly listed plant species could occur in the habitat. This should be determined by consulting the California Department of Fish and Game.
3. Vegetation removal, including dead and downed debris, requires a survey for presence of San Francisco dusky-footed woodrat by a qualified biologist or by park staff trained to identify woodrat houses by a qualified biologist . If woodrat houses are found, disturbance should be avoided and a minimum five-foot buffer should be provided around the house. If, for public safety reasons, it is necessary to move the house, the process must be coordinated with the California Department of Fish and Game. It is recommended that workers receive instruction regarding woodrat houses prior to their start of work.

[3] A "qualified biologist" is a person with demonstrated ability to identify special-status plant and/or animal species in the San Francisco Bay Area.

4. Prior to the removal of any tree that is 12 inches or more in diameter breast height, a survey for perennial bat roosts and, during the breeding season from February 15 to August 31, raptor nests shall be conducted by a qualified biologist or park staff trained by a qualified biologist to identify these resources is required. If present, removal cannot continue without CDFG guidance.
5. Discing within 500 feet of a lake, pond or creek, requires a biological survey to determine impacts to California red-legged frog, California tiger salamander, San Francisco garter snake and Western pond turtle and whether permits are required from the USFWS/CDFG.
6. Discing in grassland requires a pre-construction survey for American badger, California red-legged frog, and burrowing owl by a qualified biologist.
7. Trimming of coast live oaks shall follow the City's Tree Ordinance (Title 8). Coast live oak or Valley oaks that are 11.5 inches in diameter or more measured at 54 inches above grade may not be removed without a permit, and may not be pruned such that more than 25 percent of the crown is removed or the tree is left unbalanced.
8. Avoid wetlands mapped in Pearson-Arastradero Preserve when weed-whipping or mowing. Modify the Fire Management Plan Best Management Practice that requires that a grazing plan be prepared to include protection of drainages and wetlands from the impacts of grazing animals.
9. For treatments in Foothills Park or on Page Mill Road along the Park border, a pre-work survey for stands of locally important plants (see Table 3 in Appendix A) should be conducted, and the plants avoided as long as it does not impair public safety. Field crews should be educated about the sensitivity of these plant species.
10. In addition to BMP-5, it is recommended that measures be taken to clean equipment, tires, and shoes to prevent the spread of Sudden Oak Death, and that any materials infected with the disease be disposed of in accordance with State or County Agricultural Commission guidelines. To reduce the possibility of spreading the disease, it is recommended that work not be done in wet or muddy conditions, and that infested areas be avoided to the extent feasible. Additional guidelines are available from the County Agricultural Commissioner.

| **Table 5. Special-status Species by Habitat Type and Treatment Location, with Protection Measures** | | |
|---|---|---|
| **Species by Habitat Type** | **Treatment Locations** | **Protection Measures** |
| Chaparral | | |
| San Francisco dusky-footed woodrat<br>Ringtail<br>Loggerhead shrike<br>Arcuate bush mallow (serpentine)<br>Kings Mountain manzanita<br>Marin western flax (serpentine)<br>San Francisco campion<br>San Mateo thornmint<br>Santa Cruz Mts manzanita<br>Nesting birds | Foothills Park<br><br>*F.E.1, F.F.1, F.F.2, F.F.3, F.F.4, F.D.7, F.D. 9, F.C. 3, F.C. 4, F.C. 6*<br><br>Pearson-Arastradero Preserve<br><br>*P.A. 1* | 1. Vegetation removal from February 15 to August 31 requires a survey for nesting birds and avoiding removal of nests in active use.<br>2. Vegetation removal in areas of serpentine soil requires a survey for rare plant species prior to vegetation removal. Known rare plant locations should be treated in a way that benefits the rare species. The plant survey needs to occur during the bloom period. After surveys in the same locations over three separate years, subsequent surveys are not necessary in that area unless there are newly listed plant species that could occur in the habitat.<br>3. Vegetation removal, including dead and downed debris, requires a survey for presence of San Francisco dusky-footed woodrat and coordination with CDFG as necessary. |
| Coastal Scrub | | |
| San Francisco dusky-footed woodrat<br>Bats (including pallid bat and red bat)<br>Crystal Springs lessingia (serpentine)<br>Fragrant fritillary (serpentine)<br>Franciscan onion (serpentine)<br>Kings Mountain manzanita<br>San Francisco campion<br>Wooly-headed lessingia<br>Nesting birds | Foothills Park<br><br>*F.F. 1, F.F. 2, F.F. 3, F.F. 4, F.C. 1, F.C. 2*<br><br>Pearson-Arastradero Preserve<br><br>*A.C. 7, A.C. 9* | 1. Vegetation removal from February 15 to August 31 requires a survey for nesting birds and avoiding removal of nests in active use.<br>2. Vegetation removal in areas of serpentine soil requires a survey for rare plant species prior to vegetation removal. Known rare plant locations should be treated in a way that benefits the rare species. The plant survey needs to occur during the bloom period. After surveys in the same locations over three separate years, subsequent surveys are not necessary in that area unless there are newly listed plant species that could occur in the habitat.<br>3. Vegetation removal, including dead and downed debris, requires a survey for presence of San Francisco dusky-footed woodrat and coordination with CDFG as necessary. |

| **Table 5. Special-status Species by Habitat Type and Treatment Location, with Protection Measures** | | |
|---|---|---|
| **Species by Habitat Type** | **Treatment Locations** | **Protection Measures** |
| Grassland | | |
| American badger<br>California red-legged frog (burrows used during part of life cycle)<br>California tiger salamander (burrows used)<br>Western pond turtle (burrows used)<br>White-tailed kite (forage, not nesting)<br>Northern harrier (forage, not nesting)<br>Golden eagle (forage, not nesting)<br>Burrowing owl<br>Long-eared owl (forage, not nesting)<br>Loggerhead shrike<br>Ground nesting birds (e.g. Meadowlark, killdeer)<br>Saltmarsh common yellowthroat (forage, not nesting)<br>Fountain thistle (serpentine)<br>Crystal Springs lessingia (serpentine)<br>Fragrant fritillary (serpentine)<br>Franciscan onion (serpentine)<br>Marin western flax (serpentine)<br>San Francisco campion<br>San Mateo thornmint<br>Wooly-headed lessingia (serpentine) | Foothills Park<br><br>*F.E. 1, F.E. 3, F.E. 4, F.F. 1, F.F. 2, F.F. 3, F.F. 4, F.D. 1, F.D. 2, F.D. 8, F.D. 9, F.C. 1, F.C. 2, F.C. 4, F.C. 5*<br><br>Pearson-Arastradero Preserve<br><br>*A.E. 1, A.D. 1, A.D. 2, A.C. 1, A.C. 2, A.C. 3, A.C. 4, A.C. 6, A.C. 9, A.C. 10, A.C. 11, A.C. 13, A.C. 14, A.C.15, ARx1, ARx2, P.A. 1, P.A. 2, P.A. 4* | 1. Vegetation removal from February 15 to August 31 requires a survey for nesting birds and avoiding removal of nests in active use.<br>2. Vegetation removal in areas of serpentine soil requires a survey for rare plant species prior to vegetation removal. Known rare plant locations should be treated in a way that benefits the rare species. The plant survey needs to occur during the bloom period. After surveys in the same locations over three separate years, subsequent surveys are not necessary in that area unless there are newly listed plant species that could occur in the habitat.<br>4. Discing within 500 feet of a lake, pond or creek, requires a biological survey to determine impacts to California red-legged frog, California tiger salamander, San Francisco garter snake and Western pond turtle and whether permits are required from the USFWS/CDFG.<br>5. Discing in grassland requires a pre-construction survey for American badger, California red-legged frog, and burrowing owl by a qualified biologist. |
| Woodland | | |
| San Francisco dusky-footed woodrat<br>Bats (including pallid bat and red bat)<br>American badger<br>Ringtail<br>California red-legged frog (aquatic and upland) | Foothills Park<br><br>*F.E. 1, F.E 2, F.E. 3, F.E. 6, F.D. 1,F.D. 3, F.D. 4, F.D. 5, F.D. 6, F.D. 9, F.I. 1, F.I. 2, F.I. 3, F.I. 4, F.I. 6,* | 1. Vegetation removal from February 15 to August 31 requires a survey for nesting birds and avoiding removal of nests in active use.<br>2. Vegetation removal in areas of serpentine soil (in any habitat type), or in woodland, chaparral and riparian forest habitats requires a survey for rare plant species prior to vegetation |

| **Table 5. Special-status Species by Habitat Type and Treatment Location, with Protection Measures** | | |
|---|---|---|
| **Species by Habitat Type** | **Treatment Locations** | **Protection Measures** |
| California tiger salamander<br>White-tailed kite (nesting)<br>Golden eagle (nesting)<br>Loggerhead shrike<br>Long-eared owl (nesting)<br>Yellow warbler (nesting)<br>Crystal Springs lessingia (serpentine)<br>Dudley's lousewort<br>Franciscan onion<br>Kings Mountain manzanita<br>Santa Clara red ribbons<br>San Francisco collinsia<br>Santa Cruz Manzanita<br>Western leatherwood<br>Wooly-headed lessingia<br>Nesting birds | *F.C. 6*<br><br><u>Pearson-Arastradero Preserve</u><br><br>*A.D. 3, A.D. 4, A.C. 5, A.C. 6, A.C. 7, A.C. 8, A.C. 9, A.C. 10*<br>*ARx2, P.A. 1, P.A. 2, P.A. 3, P.A. 4* | removal. Known rare plant locations should be treated in a way that benefits the rare species. The plant survey needs to occur during the bloom period. After surveys in the same locations over three separate years, subsequent surveys are not necessary in that area unless there are newly listed plant species that could occur in the habitat.<br>3. Vegetation removal, including dead and downed debris, requires a survey for presence of San Francisco dusky-footed woodrat and coordination with CDFG if it is necessary to move the woodrat house.<br>4. Prior to the removal of any tree that is 12 inches or more in diameter breast height, a survey for perennial bat roosts and raptor nests by a qualified biologist is required. If present, removal cannot continue without CDFG guidance. |
| Riparian Forest/Aquatic | | |
| San Francisco dusky-footed woodrat<br>Ringtail<br>Bats<br>Western pond turtle<br>California red-legged frog<br>California tiger salamander<br>Rainbow trout/steelhead<br>Saltmarsh Common yellowthroat<br>San Francisco garter snake<br>Northern harrier<br>White-tailed kite<br>Arcuate bush mallow (serpentine)<br>Western leatherwood<br>Nesting birds | <u>Foothills Park</u><br><br>*F.E. 4, F.E. 5, F.E. 6*<br><br><u>Pearson-Arastradero Preserve</u><br><br>*A.E. 1, A.C. 9, A.C. 10, ARx2, P.A. 3* | 1. Vegetation removal from February 15 to August 31 requires a survey for nesting birds and avoiding removal of nests in active use.<br>2. Vegetation removal in areas of serpentine soil (in any habitat type), or in woodland, chaparral and riparian forest habitats requires a survey for rare plant species prior to vegetation removal. Known rare plant locations should be treated in a way that benefits the rare species. The plant survey needs to occur during the bloom period. After surveys in the same locations over three separate years, subsequent surveys are not necessary in that area unless there are newly listed plant species that could occur in the habitat.<br>3. Vegetation removal, including dead and downed debris, requires a survey for presence of San Francisco dusky-footed woodrat and coordination with CDFG if it is necessary to move the |

| **Table 5. Special-status Species by Habitat Type and Treatment Location, with Protection Measures** | | |
|---|---|---|
| **Species by Habitat Type** | **Treatment Locations** | **Protection Measures** |
| | | woodrat house.<br>4. Prior to the removal of any tree that is 12 inches or more in diameter breast height, a survey for perennial bat roosts and, during the breeding season from February 15 to August 31, raptor nests shall be conducted by a qualified biologist is required. If present, removal cannot continue without CDFG guidance. |

| **Table 6. Change in Area Impacted under the Fire Management Plan** | | | | | | |
|---|---|---|---|---|---|---|
| **Current Treatment** | **Approximate Acreage** | **Treatment Location** | **Fireplan Treatment** | **Acreage** | **Change in treatment** | **Habitat Type** |
| **Foothill Park** | | | | | | |
| Disking annually; mowing 5 ft on both sides of road; 10ft annually | 3.18 acres | F.E. 1 | Mowing, grazing, hand labor for 30 ft on both sides; 60 ft total | 9.54 acres | 6.36 acres | Grassland Chaparral Woodland |
| Mow 7 ft on both sides of the road; total 14 ft | 2.32 acres | F.E. 2 | Mowing, grazing, hand labor for 30 ft on both sides; 60 ft total | 5.96 acres | 3.64 acres | Woodland Irrigated Meadow |
| Mow 7 ft on both sides of the road; total 14 ft | 0.41 acres | F.E. 3 | Mowing, grazing, hand labor for 30 ft on both sides; 60 ft total | .57 acres | .16 acres | Grassland Woodland |
| Mow 7 ft on both sides of the road; total 14 ft; Disking annually | 0.84 acres | F.E. 4 | Mowing, grazing, hand labor for 30 ft on both sides; 60 ft total | 1.20 acres | .36 acres | Grassland Aquatic |
| Mow 7 ft on both sides of the road; total 14 ft; mowing of valley for yellow star thistle control | 0.91 acres | F.E. 5 | Mowing, grazing, hand labor for 15 ft on both sides; 30 ft total | 0.97 acres | 0.06 acre | Riparian (coyote brush) |
| No work | -- | F.E.6 | Mowing, hand labor near riparian zone; 30 ft on both sides; 60 ft total | 6.07 acres | 6.07 acres | Woodland Riparian (Willow) (*western leatherwood) |
| No work | -- | F.D.1 | Hand labor | 0.72 acre | 0.72 acre | Grassland Woodland |
| 100 ft clearance around Fire Station 8 | 0.72 acre | F.D. 2 | Hand labor; 100 ft clearance | 0.72 acre | 0 acre | Grassland |
| 20 foot clearance | 0.01 acre | F.D. 3 | Hand labor; 100 ft clearance | 0.72 acre | 0.71 acre | Woodland |
| No work | -- | F.D. 4 | Hand labor | 0.11 acre | 0.11 acre | Woodland Irrigated Meadow |
| 20 foot clearance | 0.01 acre | F.D. 5 | Hand labor; 100 ft clearance | 0.72 acre | 0.71 acre | Woodland |
| No work | -- | F.D. 6 | hand labor | 0.72 acre | 0.72 acre | Woodland |
| No work | -- | F.D. 7 | hand labor, grazing | 0.72 acre | 0.72 acre | Chaparral |

| **Table 6. Change in Area Impacted under the Fire Management Plan** | | | | | | |
|---|---|---|---|---|---|---|
| **Current Treatment** | **Approximate Acreage** | **Treatment Location** | **Fireplan Treatment** | **Acreage** | **Change in treatment** | **Habitat Type** |
| No work | -- | F.D. 8 | hand labor, grazing | 0.72 acre | 0.72 acre | Grassland |
| No work | -- | F.D. 9 | hand labor, grazing | 0.72 acre | 0.72 acre | Grassland Chaparral Woodland |
| 300 foot firebreak on Trappers Ridge; mowing annually; brush mowing every 2-4 years | 72.51 acres | F.C. 1 | Mowing, grazing, 10-30 ft along Trappers Ridge annually, 300 ft every 3 years | 72.51 acres | 0 acre | Grassland Coastal Scrub |
| mowing annually; brush mowing every 2-4 years | 1.37 acres | F.C. 2 | Mow annually 10-ft on either size of road, use a brush hog (or grazing animals) to mow areas to the break in slope both under wooded canopy and in grasslands with cover of coyote brush greater than 30% | 1.37 acres | 0 acre | Grassland Coastal Scrub |
| mowing annually; brush mowing every 2-4 years | 1.13 acres | F.C. 3 | Mowing, grazing for 10 ft on both sides of the trial, 20 ft total | 1.13 acres | 0 acre | Chaparral |
| No work | --- | F.C. 4 | graze with goats | 5.28 acres | 5.28 acres | Grassland Chaparral |
| Disking of half of the route | 1.74 acres | F.C. 5 | Graze with goats | 3.47 acres | 1.73 acres | Grassland |
| Mowing annually, 2-4 year brush and tree trimming | 3.35 acres | F.C. 6 | Mowing for 10 ft on both sides of the trail, 20 ft total | 3.35 acres | 0 acre | Chaparral Woodland |
| Mowing annually | 0.72 acre | F.F. 1 | mow, graze | 0.72 acre | 0 acre | Grassland Chaparral Coastal Scrub |
| Mowing annually | 0.72 acre | F.F. 2 | mow, graze | 0.72 acre | 0 acre | Grassland Chaparral |

| **Table 6. Change in Area Impacted under the Fire Management Plan** | | | | | | |
|---|---|---|---|---|---|---|
| **Current Treatment** | **Approximate Acreage** | **Treatment Location** | **Fireplan Treatment** | **Acreage** | **Change in treatment** | **Habitat Type** |
| | | | | | | Coastal Scrub |
| Mowing annually | 0.72 acre | F.F. 3 | mow, graze | 0.72 acre | 0 acre | Grassland Chaparral Coastal Scrub |
| Mowing annually | 0.72 acre | F.F. 4 | mow, graze | 0.72 acre | 0 acre | Grassland Chaparral Coastal Scrub |
| Weed whipping annually | < 1/4 ac | F.I. 1 | hand labor | < 1/4 ac | 0 acre | Woodland |
| Weed whipping annually | < 1/4 ac | F.I. 2 | hand labor | < 1/4 ac | 0 acre | Woodland |
| Weed whipping annually | < 1/4 ac | F.I. 3 | hand labor | < 1/4 ac | 0 acre | Woodland |
| Weed whipping annually | < 1/4 ac | F.I. 4 | hand labor | < 1/4 ac | 0 acre | Woodland |
| Weed whipping annually | < 1/4 ac | F.I. 5 | hand labor | < 1/4 ac | 0 acre | Irrigated Meadow |
| Weed whipping annually | < 1/4 ac | F.I. 6 | hand labor | < 1/4 ac | 0 acre | Woodland |
| **Pearson-Arastradeo Preserve** | | | | | | |
| No work | -- | A.C. 1 | grazing, mowing | 5.39 acres | 5.39 acres | Grassland |
| Disking annually | 2.47 acres | A.C. 2 | Grazing, mowing for 10 ft on both sides of the trail, 20 ft total | 2.47 acres | 0 acre | Grassland |
| No work | -- | A.C. 3 | grazing | 48.72 acres | 48.72 acres | Grassland |
| Disking annually | 5.00 acres | A.C. 4 | Grazing | 7.71 acres | 2.71 acres | Grassland |
| No work | -- | A.C. 5 | grazing | 11.22 acres | 11.22 acres | Woodland |
| No work | -- | A.C. 6 | grazing | 4.05 acres | 4.05 acres | Grassland Woodland |
| No work | -- | A.C. 7 | grazing, mowing | 9.71 acres | 9.71 acres | Woodland Coastal Scrub |
| No work | -- | A.C. 8 | grazing (mowing is not possible) | 8.08 acres | 8.08 acres | Woodland |
| Disking annually | 0.79 acres | A.C. 9 | Mowing for 10 ft on both | 0.79 acres | 0 acre | Grassland Woodland |

| Table 6. Change in Area Impacted under the Fire Management Plan | | | | | | |
|---|---|---|---|---|---|---|
| **Current Treatment** | **Approximate Acreage** | **Treatment Location** | **Fireplan Treatment** | **Acreage** | **Change in treatment** | **Habitat Type** |
| | | | sides of the trail, 20 ft total | | | Riparian Coastal Scrub |
| Mowing annually, 2-10 year brush mowing | 7.04 acres | A.C. 10 | Mowing, hand labor near riparian zone; 10 ft on both sides of the trail, 20 ft total | 14.08 acres | 7.04 acres | Grassland Woodland Riparian |
| Mowing or weed whipping annually; 4 ft; 8 ft total | 1.63 acres | A.C. 11 | Mowing for 10 ft on both sides of the trail, 20 ft total | 4.08 acres | 3.45 acres | Grassland |
| Mowing or weed whipping annually; 4 ft; 8 ft total | 0.29 acres | A.C. 12 | Mowing for 10 ft on both sides of the trail, 20 ft total | 0.72 acres | 0.43 acre | Grassland |
| Mowing or weed whipping annually; 4 ft; 8 ft total | 0.25 acres | A.C. 13 | Mowing for 10 ft on both sides of the trail, 20 ft total | 0.64 acres | 0.39 acre | Grassland |
| Mowing or weed whipping annually; 4 ft; 8 ft total | 0.34 acres | A.C. 14 | Mowing for 10 ft on both sides of the trail, 20 ft total | 0.84 acres | 0.50 acre | Grassland |
| Mowing or weed whipping annually; 4 ft; 8 ft total | 0.22 acres | A.C. 15 | Mowing for 10 ft on both sides of the trail, 20 ft total | 0.56 acres | 0.34 acre | Grassland |
| Mowing annually; 5 ft, 10 ft total | 0.73 acres | A.E. 1 | Mowing, grazing, hand labor for 30 ft on both sides of the road; 60 ft total | 4.36 acres | 3.63 acres | Grassland Riparian (Willow) Eucalyptus Trees |
| Mowing; 30 feet clearance | .02 acres | A.D. 1 | Hand labor, mowing for 100 ft clearance | 0.72 acre | 0.70 acre | Grassland |
| Mowing; 30 feet clearance | .02 acres | A.D. 2 | Hand labor, mowing for 100 ft clearance | 0.72 acre | 0.70 acre | Grassland |
| No work | -- | A.D. 3 | hand labor, mowing, 100ft clearance | 0.72 acre | 0.72 acre | Woodland |
| No work | -- | A.D. 4 | hand labor, | 0.72 acre | 0.72 acre | Woodland |

| **Table 6. Change in Area Impacted under the Fire Management Plan** | | | | | | |
|---|---|---|---|---|---|---|
| **Current Treatment** | **Approximate Acreage** | **Treatment Location** | **Fireplan Treatment** | **Acreage** | **Change in treatment** | **Habitat Type** |
| | | | mowing, 100ft clearance | | | |
| No work | -- | A.Rx1 | Rx fire, grazing | 18.25 acres | 18.25 acres | Grassland |
| No work | -- | A.Rx2 | Rx fire, grazing | 24.45 acres | 24.45 acres | Grassland Woodland |
| No work | -- | P.A. 1 | mowing, grazing, hand labor | 16.50 acres | 16.50 acres | Chaparral Woodland Grassland |
| Mowing annually; 5 ft, 10 ft total | 0.22 acres | P.A. 2 | mowing, grazing, hand labor for 30 ft both sides of the road, 60 ft total | 0.22 acres | 0 acres | Grassland Woodland |
| Mowing annually; 5 ft, 10 ft total | 1.82 acres | P.A. 3 | hand labor for 30 ft both sides of the road, 60 ft total | 6.07 acres | 4.25 acres | Riparian (Willow) Woodland (*western leatherwood) |
| No work | -- | P.A. 4 | mowing, grazing, hand labor | 10.89 acres | 10.89 acres | Grassland Woodland |

240 West Charleston Road
Palo Alto, CA 94306
650-493-3468

March 2, 2009

The City of Palo Alto
Planning Department
250 Hamilton Avenue
Palo Alto, CA 94301

Attention: Kenneth Dueker, City Manager's Office: Clare Campbell, Planning Dept., Kellly Morariu, City of Palo Alto.

Re Comments on Mitigated Negative Declaration
Foothills Fire Management Plan

Dear Kenneth Dueker,

The Mitigated Negative Declaration for the Fire Management Plan is not complete, correct, or adequate.

Completeness: The plan does not recognize that Foothills and Arastradero Parks are nature preserves. If saving the parks from fire means losing large areas of the parks as nature preserves, we have spent a lot of money we don't have and damaged the nature we were trying to save.

That is what this plan does not recognize. For example, clearing 300 feet on each side of Trappers Trail for a mile and a half means that is not a natural area but rather one that has been managed. The area is huge and looks unnatural. We lose native plants that can't tolerate mowing or grazing. The plants that remain are different with some gone forever, some with no lower branches, some smaller than they normally would be. The habitat that remains has been changed for birds, animals, and other plants. Also mechanical equipment has brought in purple star thistle, dittrichia, and plumless thistle (Carduus acanthoides).These are invasive plants we have found in the park only near roads.

Correctness: It is clear when you know the area that some of the proposals in the fire plan really won't work and should not be carried out anyway. For example, Bobcat Point is not a good place to schedule for containment clearing by grazing and browsing, The point has a very steep slope with interesting and unusual chaparral plants and some trees growing on it. We should protect those plants and avoid erosion. In the park there is no place for mechanical equipment to drive in. Goats would have to walk the trails to get in. Goats try to eat everything. here is no place nearby to get water for the goats or to park the goat herder's trailer. That area should be left alone.

Adequacy: It is often not clear in all the writing about the fire reduction proposals why they are needed, What do they accomplish exactly? Evacuation routes and clearing

around barbecues are understandable, but area treatment of 300-ft-wide areas is not so simple. Are we saving the park from incoming fires or saving the houses outside the park from fires starting in the park? For example, the treatment of 72.51 acres on Trappers Ridge appears to be intended to save the part of the park on the other side of the Ridge. Do we really need 600 feet of clearing to do that? Is the cost both in dollars and plant loss worth what we are saving?

Also it would be helpful to know more about how the decisions about the significance of various factors were made. In other words, why are those important check marks where they are? We have five references only. They were 1-the planner, 2-the Comp Plan, 3-Title18 Zoning Ordinance, 4-The Foothills Fire Management Plan by Wildland Resource Management, and 5-Biological Impact Assessment by TRA Environmental Sciences. Most of those check marks are 1 and 4. The actual work plan appears to have come from number 4. Additional sources on the fire management need ought to be found and used. There ought to be more on-the-ground knowledge behind those decisions.

The following are our specific comments: Many of the impacts are significant rather than no impact or mitigated impacts. I am using the letters in the Draft EIR (A-Q).

A. Aesthetics (pg21): Sections a, b, and c and the Comp Plan d should be considered significant impacts. Certainly any area that has been treated in the park is no longer a natural area but rather a managed area once it has been mowed, grazed, cut , burned, and cleared. It does not look like a natural area. That is what we look for in a nature preserve. That is what has been impacted. This applies to the 330 acres in Foothills an Arastradero Parks that are proposed as fuel management areas (pg 6 of the Draft Mitigated Declaration). Also as is pointed out in the discussion, the Comp Plan has designated Arastradero and Page Mill Roads as scenic routes and Skyline is a State Scenic Highway. They also would be aesthetically hurt by being treated for 30 feet on both sides of the pavement edge because they are evacuation routes.

C. Air Quality (pg24): I note in the discussion that "Prescribed fires may be executed on non-burn days as necessitated by logistic concerns". This deserves a check mark under more than no impact.

D. Biological Resources (pg24): Mitigation methods should protect locally important plants in all areas, not just those covered in BIO-10 for plants on Page Mill Road. For example, Bobcat Point has a number of locally special plants. Also it is a special area because it is chaparral growing at an unusually low elevation. And the chaparral contains an unusual diversity of chaparral plants. There are other areas in the Parks that have special plants . Can we consider these situations special and class them under D a?

Also, ordinary plants have an importance that should be recognized. Our wildflowers and plants like yerba buena, maidenhair fern, sticky monkey, Indian warrior, madrone, manzanita, ceanothus and many others all deserve protection even though they are common enough to not be considered special. They are wonderful parts of a nature preserve and deserve protection. As do the many plants that are not very interesting but do important jobs as benign occupiers of space. These plants should also be considered special under D a.

Section D e should be considered potentially significant because this fire management plan conflicts with the city council established role for Foothills Park and presumably also Arastradero as a nature preserve or natural area.

E. Cultural Resources (pg 28): Under E a is the nature preserve a local cultural resource? It is certainly recognized by the City Council. And taking 330 acres for fire management is a major loss. It is a significant issue.

Under E e: Is the Interpretive Center a historic resource eligible for listing somewhere?
Under E f: Is the fire plan eliminating areas important in the history of the Indian era in the park?

F. Geology (Pg29) Section F b is checked as potentially significant. This implies that section F c should be checked because the eroded material would probable wind up as silt somewhere.

Mitigation Geology F-8 would limit grazing on the Bobcat slope. (Sticking in Geology-9 looks like a typo of stocking). Mitigation Geology-7 would limit use of heavy equipment on Trappers Trail where there are slopes over 40%.

G. Hazards and Hazardous Materials (Pg 32) H i might be a place to mention the locked gates on the evacuation route through the Arillaga property. They are being worked on. A better plan is needed than relying on someone having a key to open the gates when there is a fire emergency.

H, Hydrogeology and Water Quality (Pg 33) H k "Result in stream bank instability?" Should be checked Potentially Significant. Removing the Shrubs along the creek side of the WildHorse Valley Road has been suggested. Doing so would definitely decrease stream bank stability as the road is close to the creek and the shrubs are supporting the creek bank.

I. Land Use Planning (Pg 35) Use of land for fire management conflicts with the city land use plan that designates the area a nature preserve –I b, d.

The plan also does divide existing plant communities–I a.

And the fire management plan would ignore previous efforts to protect native plants and strengthen biodiversity by removing invasive plants-1 c.

K. Noise (Pg 37) A potential significant temporary increase in noise from use of mechanical equipment and removal of tree branches should be considered significant. One of the things we look for in a nature preserve is freedom from that kind of noise.- K d.

L. Population and Housing (Pg38)
The proper question for this category is not asked. We should determine what decrease in animal and plant population would result from fire treatment activities. People are concerned and should be concerned about the effect of their activities on the environment. Treatment will damage the nature preserves. Treatment in areas in Foothills Park where invasive plants have been removed will damage native plants that

have been encouraged. Treatment tends to bring in new seeds and encourage growth from invasive plants like yellow and purple starthistle, Italian thistle, and even Dittrichia graveolens.

M. Public Services (Pg 39) M d The two parks would suffer severe adverse physical impacts to their the nature preserve function because of the mowing, grazing, mechanical clearing, cutting of trees and such in 330 acres of Foothills and Arastradero Parks.

N. Recreation (Pg 39) N a The project would cause substantial physical deterioration of the two parks. We would have not a natural area in 330 acres of the parks but rather a managed area of less interest. Note that the discussion of this section says that enhancing fire safety in the parks would not generate new users.

O. Transportation and Traffic (Pg 40) Q a The plan does add new trips to the parks in order to carry out the additional mowing, grading, cutting and mechanical control of the fire load in various areas. Q d The plan will increase traffic hazards by adding new traffic to old narrow roads, O e Inadequate emergency access will continue to exist to Los Trancos Road until a better evacuation method than a person or person with keys to unlock the gates to the Arilliga property is agreed upon. The iron Chambers fence is also an emergency access problem.

P. Utilities and Service Systems(Pg 42) P c Additional drainage control will be necessary in areas where plants are removed that acted to limit erosion. P d The plan addresses fire fuel management needs but does not address water supply needs for fire fighting. This is a significant isssue.

Q. Mandatory Findings of Significance (Pg 43) Q a The project does have the potential to threaten to eliminate a plant or animal community and to reduce the number or range of an endangered plant or animal community. Dirca (leatherwood) has already been impacted by trail clearing. It is a CNPS rare or endangered species found in Foothills Park. Q b This project when all its aspects are considered will have a cumulative effect. There also have been past projects that involved clearing such as Trappers Trail which add to the park's problems. Q c The loss of trees and other plants in the interest of fire prevention may affect people by adding to global warming issues. The loss of habitat for plants and animals means a less rich environment for people as well.

Conclusions:

1. The problem with this proposal is that it does not respect the purpose of Foothills Park and also Arastradero. The plaque dated June 18, 1965 from the city council on the top of Vista Hill says 'It is our purpose in establishing this park to conserve the natural features and scenic values within its boundaries; to protect and maintain the ecology of the area; to provide for the use and enjoyment of the resources found here, consistent with their preservation; to emphasize beauty, simplicity and serenity and to provide opportunities for the interpretation of natural history and our local heritage."

This means protect what you have rather than manipulate it into something unnatural. .We should not make the park the default fire mitigation area for the surrounding

houses. We should not artificially change the natural habitat where animals and other plants are growing . We should not try to force something to grow in an area that it is not suited for.

The proposed plan presents the idea that the mowing, burning, grazing, cutting tree limbs and such is going to ecological ly improve the park if done carefully. It should also point out that those same processes can destroy good plants as well. We have purple star thistle in Foothills Park along Trappers Trail and Pony Track Roads, near the end of Wildhorse Road, and in the burn area at the end of that road. It is obvious that it was brought into the park by vehicles. In the same way, we have found Dittrichia graveolens in the Interpretive Center parking area, along a section of Trappers Trail, and in the burn area at the end of Wildhorse Road. Mowing and goats kill good plants as well as bad ones. Ceanothus and Bush Poppy don't recover when they are cut down, for example. In the past the CCC crews removed some Dirca and a lot of currants forever in their efforts to clear trails. Also we have learned that removing one kind of invasive plant can lead to erosion or to the establishment of another invasive in the place that was cleared.

We were told on February 24, 2009 at the Park and Recreation meeting that the state has just passed a law requiring that all evacuation routes be cleared 30 feet from the pavement edge. We know that Page Mill, Arastradero, Los Trancos, Skyline, and the road in Foothills Park are considered evacuation routes to get fire fighters in to areas where they are needed and to get people out. Are all roads between 280 and Skyline considered evacuation routes ? How is this decision made?

A logical fire mitigation plan would involve conforming to this law once we know more precisely what it requires, continuing to clear around important buildings like the Interpretive Center, Entry Hut, and Maintenance Shops, and Arastradero's structures and taking precautions near barbecues and other places where fire is allowed in the park. Beyond that, don't clear unless the purpose and need for that additional clearing is defined and supervised by a fire mitigation expert. Leave Bobcat Point alone. Reevaluate the need for Trappers Trail Clearing. Property owners should maintain their own property areas. The day may come where we won't have barbecues in the park and when building houses in the wildlands is not allowed at all.

Jean Olmsted
240 West Charleston, Palo Alto, CA 94306
650-493-3468
jwo@svpal.org

**Acterra Foothill Fire Management Plan Update - Draft Mitigated Negative Declaration Comments**

**Authored by Shani Kleinhaus, Ecological Consultant, Acterra Volunteer, Claire Elliott, Acting Director, Acterra Stewardship, and William Mutch, Chief Steward, Arastradero Preserve**

**March 11, 2009**

## PROJECT DESCRIPTION

### 7. COMPREHENSIVE PLAN DESIGNATION

Foothill Park may be designated a Public Park, but its spirit and purpose are NOT of an urban park "whose character is essentially urban" as stated in the Draft Mitigated Negative Declaration, but as stated in Palo Alto City's Comprehensive Plan Policy L-1, Goal N-1its purpose is that of an "Open Space System that Protects and Conserves Palo Alto's Natural Resources and Natural Setting", with a focus on recreation and education in nature. Palo Alto Policy N-1 states that public open spaces areas should be managed to meet habitat protection goals, public safety concerns, and low impact recreation needs. Program N-3 elaborates that ecological values must be protected to realize the full benefits of open space. Any plan that has the potential to affect ecosystems and biodiversity in natural open space must be scrutinized in this spirit, especially in Pearson-Arastradero, where the proposed Fire Management Plan Update would **directly impact one THIRD of the preserve area**. **In our opinion, a fire management / fuel reduction plan in natural open space should be a subset of a comprehensive conservation plan, and not the driving force that must be mitigated against.**

**Palo Alto is currently preparing a conservation plan for the baylands. We think that the Palo Alto Foothill Open Space merits the same protection as the baylands, and recommend that the fire management plan be put on hold until a comprehensive multidisciplinary Open Space/Conservation Management Plan is prepared.**

### 9. PROJECT DESCRIPTION

**Identification of potential treatment areas** (page 7): The proposed Plan prioritizes access and aims to provide safe evacuation. While this is indeed the ultimate priority along evacuation routes, a better management options along internal park habitat and recreation trails should be a part of a larger conservation plan that may include fuel reduction as a subset of its goals, and may use less intensive treatments.

9-1 Hand Labor: The Mitigated Negative Declaration states that hand labor is slow and expensive, but moving slowly can be an asset in habitat restoration and conservation. Hand labor allows us to proceed slowly giving us a chance to stop if we are causing damage. Rather than finding we have taken the life of wildlife, especially a rare species (badger, for instance), we can proceed slowly and carefully, giving ourselves time to find such things along the way.

9-2 Mechanical Treatments. Discing: We agree with the Mitigated Negative Declaration that discing as a treatment method has several disadvantages, including creating "an excellent establishment for weedy species, which may be serious fire hazards" also "Surface erosion can be significant in areas prone to this process." However, it appears to still be listed as a proposed treatment, and a mitigation measure related to discing (BIO-6) is in the Mitigated Negative Declaration. We do not see proposed disced areas in Figures 6 and 7, Proposed Treatment Areas. **We recommend that the documents explicitly prohibit discing**.

9-6 Herbicide Application: Describes hand and road-side application from a vehicle. We are glad that you are not considering aerial application. However, BIO-19, Hazards10 included mitigation for potential aerial application, **we think aerial application should be prohibited**.

**DISCUSSION OF IMPACTS**

**A. AESTHETICS**

This plan has potential significant impacts on aesthetics and natural visual resources. Some of these impacts are not addressed by the Mitigated Negative Declaration.

A.a. **Substantially degrade the existing visual characters or quality of the site and its surroundings**

In both Foothill Park and Pearson-Arastradero preserve, the experience of a visitor combines wide scenic views with the aesthetic value and enjoyment of walking through natural low branches and hanging tree canopies, and observing small plants and animals along the trails (indeed, some of the restoration and education effort at Pearson-Arastradero focus on small scale natural value). Mowing and/or removing lower tree branches along nature trails (MeadowLark, Acorn, Juan Batista de Anza, Bowl Loop) can substantially and negatively affect these resources. Clearing vegetation from 72 acres along Trappers Fire Road in Foothill Park would also have a substantial visual impact that is not consistent with the parks natural atmosphere. **We believe either an Environmental Impact Report should be prepared due to the significance of the aesthetic impact, or mitigation measures for these impacts should be developed and implemented.**

**D. BIOLOGICAL RESOURCES**

D.a, b, c) The Draft Mitigated Negative Declaration identifies "Potentially Significant" impacts to biological resources "Unless Mitigation Incorporated". This should already raise a red flag when the area in question is valued primarily for its biological resources, and includes a nature preserve. TRA Environmental Sciences prepared an Environmental Impact Assessment that lists 19 biological mitigation measures. In essence, these measures point to the difficulty of maintaining a healthy ecosystem while implementing large scale vegetation removal by mechanical methods, prescribed burning, grazing or field crews.

The TRA assessment points out that some of the methods (grazing, burning, and mowing) have been shown, in some ecosystems, to enhance habitat value and diversity. The Environmental Impact Assessment suggests that the proposed update to the plan may in fact ameliorate conditions for native vegetation as it replaces some fuel removal practices (grading, discing) with other practices (prescribed burns, grazing). This is based on the assumption that prescribed burns and/or grazing is an appropriate alternative to low intensity fires that may have occurred in this

area in the past, and that these applications can help native plant species compete against non-native grasses. While evidence exists to support this general assumption, **application area, intensity, schedule and frequency** are of paramount importance and vary among habitats and ecosystems, and since the primary goal is that of removing fuel, not that of conservation, their effectiveness in restoring or even maintaining habitat is questionable. We **recommend the city prepare a comprehensive, multidisciplinary ecological conservation plan that incorporates fuel reduction for fire management** rather than mitigates threats to the biological environment.

D.e)"Conflict with any applicable Conservation Plan, Natural Community Plan, or other approved local, regional or state habitat conservation plan." There is no conflict only because there is no plan. **There needs to be a comprehensive, multidisciplinary conservation plan for the foothills.**

**SPECIFIC MITIGATION MEASURES**

**BIO-9** includes a modification to the Fire Management Plan Best Practice that requires that a grazing plan to incorporate protection of drainage and wetlands from the impact of grazing animals. **We would add protection of hillside habitats, taking into consideration aspect and slope, to the proposed grazing plan, as well as consideration of grazing timing, intensity and duration.**

**BIO-19, Hazards10** States "limit areal applications of herbicides to greater than 100 feet from water resources." **We would absolutely prohibit areal applications of herbicides over foothill park and the Pearson-Arastradero preserve.**

**Geology-1** requires a study that identifies all potential erosive soils and the development of an erosion control plan. **We recommend this study should include the mapping and inventory of native plants on serpentine soils that harbor rare species or have the potential to be restored to native vegetation.**

**BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7** require biological surveys prior to implementation of various treatments at various locations. **BIO-9** requires mapping, **BIO-9, Geology-8, and Geology-9** require the preparation of grazing plans, Geology-10 requires the development of a prescribed burn erosion control plan, and **Geology-1** requires a study that identifies all potential erosive soils and the development of an erosion control plan.

These mitigations are more like meta-mitigations, they all call for additional information that would be necessary to mitigate the impacts of the plan. We recommend the City develop maps of sensitive habitats and species that would create the basis for an open space/conservation management plan.

These measures should focus our attention on the need for a multidisciplinary approach that would consider all the challenges and opportunities involved in human management of natural landscapes. These challenges and opportunities include enhancement to natural assets and biodiversity, recreation, erosion control, slope stabilization, and downstream effects of upland activities, fire management and more.

**I. LAND USE PLANNING**

**b,c,f)** We think that the fire plan conflicts with the management of Palo Alto's natural areas and may adversely impact nature conservation and enhancement as well as recreation and nature education. Palo Alto should take a comprehensive, multidisciplinary approach to the management of its open space.

Contemporary conservation biology focuses on habitat conservation and enhancement as well as minimization of fragmentation. A sound conservation plan would protect not only special status species, but also habitat that would support biodiverse ecological communities. In concert with fuel reduction programs, it would remove accumulated matter in some areas, yet maintain some brush piles and dead trees for habitat conservation and enhancement. The focus of the plan would be multi-dimensional, with a larger scope that fire management.

Arastradero Road Homeowners
6 Arastradero Rd
Portola Valley, CA, 94028



**City of Palo Alto**
**Planning Department**
**Attention: Kelly Morariu**
**250 Hamilton Avenue**
**Palo Alto, CA 94301**

**Re: Fire-breaks**

**Dear Mr. Morariu**

**We are property owners adjacent to the Arastradero Preserve along a common boundary designated as AC-7 and AC-9 in the Foothills Fire Protection Plan. Over the past years, the common boundary between our residences and the Arastradero Preserve has been marked by a disked fire break provided by the City of Palo Alto within the City's property. The Foothills Fire Protection Plan, now in the public comment period, proposes to replace the disked firebreak with mowing. We wish to go on record as opposing such a change and respectfully submit the following factual basis for our opposition.**

1. **The disked firebreak in the reaches designated AC-7 and AC-9 is now well established easily renewed annually and shows no prevalence of weed growth. In particular, the growth of fire-prone Coyote Bush is inhibited by the disking. The firebreak area is stable and does not produce excessive runoff. With the success of each disking that carries over to the next year, there is no need for more than one disking per year. In other words, an effective fire prevention technique is in place.**

2. **We do not want to risk a loss, such as the Arastradero preserve fire in 1985, where personal property loss occurred for those unfortunate residents on the Los Altos border of the preserve. There was no disked firebreak at the time; and Palo Alto should not wish to expose itself to such liability, either.**

3. **A retreat to mowing, now that disking has been established, may not produce the nil consequences of a Negative Declaration. As stated in the Report (p.16-Neg.Dec) disking is considered to be a proven and effective firebreak. Mowing, by comparison, may harbor low smoldering fire sources from mower sparks, lightning or man's activity that can be brought to full flame by freshened wind. Mowing may well have to be repeated since no growth constraint is involved. In fact on our neighboring properties, mowing as much as three times a year is sometimes necessary. Clearly, a second mowing cycle when required will entail costs that, in total, exceed that of annual disking.**

**Our appeal in favor of disking is specific in intent and location so that the success of past years in avoiding a fire threat can be perpetuated. Any other outcome can not meet the prescribed conditions of a Negative Declaration. We respectfully request that Disking be designated as the preferred means of maintaining the existing firebreak adjacent to our properties on the AC-7 and AC-9 reaches of the City's Hillside Fire Protection Plan.**

**Signed Petitioners:**

Robert M. Bass
ROBERT M. DAVIS
PAUL O. REIMER
John W. Dohner
KATHERINE BAZAK
Jamie S. Patton

# CEQA Comments Received via City Website and E-mail

(in chronological order)

Foothills Fire Management Plan - Public Comment Period 2/10/09 thru 3/11/09

03/08/2009 13:38:42 - Receipt No. 62CF563B07859208DEpOrP2E1F9D

Thank you for submitting a comment for the Foothills Fire Management Plan - Public Comment Period 2/10/09 thru 3/11/09. This is a copy for your records.

**Comment**

| | |
|---|---|
| Name | Peter Neal |
| Email to: | pneal1@mindspring.com |
| Organization | |
| Address | 3880 El Centro |
| City, State, Zip | Palo Alto, CA 94306 |
| Primary Phone | 650-494-6808 |
| Additional Information | One of the stated goals of the fire plan and mitigation plan is to =?utf-8?Q?=E2=80=9Cenhance_?= natural resource ecosystem =?utf-8?Q?health.=E2=80=9D_?= Instead, in an attempt to fire-proof the foothills, it appears that many of the proposed procedures have the potential to seriously harm the ecosystem health. Turning natural wildland into managed acreage is not an enhancement. It is altering nature. For example, how can clearing 72 acres of Trappers Ridge Trail masquerade as helping the ecosystem? Or how about brushing 30 feet on each side of Page Mill Road? Aside from the aesthetic issues and potential for soil erosion, these kinds of actions will most likely result in the loss of locally important native plants and wildlife habitat. Managing more than 300 acres in Foothills and Arastradero is too much. I also feel that many of check mark ratings in the impact analysis are subjective and arbitrary. For example, I strongly disagree that the proposed plan will |

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| | have no impact on the visual character of the area. I certainly do not want to see a huge barren firebreak when I am on Trappers Ridge. I support fire prevention--monitoring picnic fires and observing red flag days--and clearing around important structures (but bathrooms?) and maintaining evacuation routes. But we need to keep some perspective about altering our precious wildlands and acknowledge the value of those dwindling natural areas. |

Receipt Number 62CF563B07859208DEpOrP2E1F9D

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Foothills Fire Management Plan - Public Comment Period 2/10/09 thru 3/11/09

03/10/2009 12:14:01 - Receipt No. 45E4C08E079211C2E2RtHmk24421

Thank you for submitting a comment for the Foothills Fire Management Plan - Public Comment Period 2/10/09 thru 3/11/09. This is a copy for your records.

Comment

Name Ann Teegardin

Email to: citizenann@sbcglobal.net

Organization

Address

City, State, Zip , CA

Primary Phone

Additional Information I regularly enjoy the areas under consideration here and want them to remain as natural as possible. Methods of fire management that include disking, grazing or mowing all alter the natural state drastically and cause great harm to natural, native, plants. The resultant weedy plants are increased fodder for fires. Please investigate ways of encouraging native plants that naturally do not burn readily and do not result in quantities of flammable debris. These areas are a treasure to be preserved in the most ecologically sound way possible. Please do look into this further and find alternative methods. Thank you.

Receipt Number 45E4C08E079211C2E2RtHmk24421

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Foothills Fire Management Plan - Public Comment Period 2/10/09 thru 3/11/09

03/10/2009 15:27:50 - Receipt No. 4CCB7E610792124FE8OXPLID4F48

Thank you for submitting a comment for the Foothills Fire Management Plan - Public Comment Period 2/10/09 thru 3/11/09. This is a copy for your records.

**Comment**

| | |
|---|---|
| Name | Thomas Harder |
| Email to: | tcharder@juno.com |
| Organization | |
| Address | 1028 Loma Verde Avenue |
| City, State, Zip | Palo Alto, CA 94303-4031 |
| Primary Phone | 650-494-7598 |
| Additional Information | Public Safety/ Fire Management should support the Nature Preserve of Foothills Park, not ruin it. I question the |

| | |
|---|---|
| | compromises made by increased mowing for islands for PAFD, the grazing of goats, the use of herbicides and other such activities cited as needed for support of fire management. Please preserve the nature preserve in Foothills Park. |

Receipt Number 4CCB7E610792124FE8OXPLID4F48

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-----Original Message-----
From: jwo@svpal.org [mailto:jwo@svpal.org]
Sent: Tuesday, March 10, 2009 3:04 PM
To: Council, City
Subject: Foothills Fire Management Plan

March 10, 2009

Dear Council Members:

When the Mitigated Negative Declaration for the Foothills Fire Management Plan reaches you, we hope the plan does not make its way through the process without any realization that the fire management plan could do more damage to our nature preserves, Foothills and Arastradero Parks, that the fires the plan attempts to mitigate.

Mowing, disking, grazing by goats, cutting chaparral, removing 8 feet of lower tree branches, and such would leave us at best with unnatural gardened areas and at worst with weed patches, eroded areas, or dump areas. The treated area would cover 330 acres in the two parks and there would be clearing 30 feet from the pavement edges along evacuation routes like Page Mill, Arastradero, Los Trancos, Sklyline,and the main road in Foothills park. Clearing would cost $700,000 for 5 years according to the plan estimate, probably more in reality. And the money would have to come from grants since there is no room for the project in the regular city budget.

We need a practical plan that clears around our buildings and limits treatment areas. The parks should not be made the default mitigation area for the houses outside the park as appears to be proposed.

Thank you.

Jean Olmsted
240 West Charleston Road
Palo Alto, CA 94306
jwo@svpal.org

Foothills Fire Management Plan - Public Comment Period 2/10/09 thru 3/11/09

03/11/2009 11:15:35 - Receipt No. 43BC54DF079851AFB1Jjnk17315D

Thank you for submitting a comment for the Foothills Fire Management Plan - Public Comment Period 2/10/09 thru 3/11/09. This is a copy for your records.

**Comment**

| | |
|---|---|
| Name | Connie Bowencamp |
| Email to: | ruth3539@comcast.net |
| Organization | |
| Address | 201 Ada Avenue #18 |
| City, State, Zip | Mountain View, CA 94043 |
| Primary Phone | 650-814-9212 |
| Additional Information | I am not a resident of Palo Alto but I do enjoy the Arastradero open area and have been a guest at Foothills Park. The proposed Foothill Fire Management Plan calls for 300 feet of cleared space along several trails by disking, removing chapparel, grazing by goats, and removing trees as I understand it. It would appear to me that these methods will make this a treated area rather than a natural area which is used by many birds and animals. I would be sorry to see this happen in a City that has a goal to maintain a healthy environment. |

Receipt Number 43BC54DF079851AFB1Jjnk17315D

Foothills Fire Management Plan - Public Comment Period 2/10/09 thru 3/11/09

03/11/2009 17:09:19 - Receipt No. 9D16FC4A0798529AF2yHOX2B19DA

Thank you for submitting a comment for the Foothills Fire Management Plan - Public Comment Period 2/10/09 thru 3/11/09. This is a copy for your records.

**Comment**

| | |
|---|---|
| Name | Claire Elliott |
| Email to: | clairee@acterra.org |
| Organization | Acterra |
| Address | 3921 East Bayshore Rd. |
| City, State, Zip | Palo Alto, CA 94306 |
| Primary Phone | 650-962-9876 ext. 311 |
| Additional Information | Acterra Foothill Fire Management Plan Update - Draft Mitigated Negative Declaration Comments Authored by Shani Kleinhaus, Ecological Consultant, Acterra Volunteer, Claire Elliott, Acting Director, Acterra Stewardship, and William Mutch, Chief Steward, Arastradero Preserve March 11, 2009 PROJECT DESCRIPTION 7. COMPREHENSIVE PLAN DESIGNATION Foothill Park may be designated a Public Park, but its spirit and purpose are NOT of an urban park =?utf-8?Q?=E2=80=9Cwhose_?= character is essentially =?utf-8?Q?urban=E2=80=9D_?= as stated in the Draft Mitigated Negative Declaration, but as stated in Palo Alto =?utf-8?Q?City=E2=80=99s_?= Comprehensive Plan Policy L-1, Goal N-1its purpose is that of an =?utf-8?Q?=E2=80=9COpen_?= Space System that Protects and Conserves Palo =?utf-8?Q?Alto=E2=80=99s_?= Natural Resources and Natural =?utf-8?Q?Setting=E2=80=9D,_?= with a focus on recreation and education in nature. Palo Alto Policy N-1 states that public open spaces areas should be managed to |

meet habitat protection goals, public safety concerns, and low impact recreation needs. Program N-3 elaborates that ecological values must be protected to realize the full benefits of open space. Any plan that has the potential to affect ecosystems and biodiversity in natural open space must be scrutinized in this spirit, especially in Pearson-Arastradero, where the proposed Fire Management Plan Update would directly impact one THIRD of the preserve area. In our opinion, a fire management / fuel reduction plan in natural open space should be a subset of a comprehensive conservation plan, and not the driving force that must be mitigated against. Palo Alto is currently preparing a conservation plan for the baylands. We think that the Palo Alto Foothill Open Space merits the same protection as the baylands, and recommend that the fire management plan be put on hold until a comprehensive multidisciplinary Open Space/Conservation Management Plan is prepared. 9. PROJECT DESCRIPTION Identification of potential treatment areas (page 7): The proposed Plan prioritizes access and aims to provide safe evacuation. While this is indeed the ultimate priority along evacuation routes, a better management options along internal park habitat and recreation trails should be a part of a larger conservation plan that may include fuel reduction as a subset of its goals, and may use less intensive treatments. 9-1 Hand Labor: The Mitigated Negative Declaration states that hand labor is slow and expensive, but moving slowly can be an asset in habitat restoration and conservation. Hand labor allows us to proceed slowly giving us a chance to stop if we are causing damage. Rather than finding we have taken the life of wildlife, especially a rare species (badger, for instance), we can proceed slowly and carefully, giving ourselves time to find such things along the way. 9-2 Mechanical Treatments. Discing: We agree with the Mitigated Negative Declaration that discing as a treatment method has several disadvantages, including creating =?utf-8?Q?=E2=80=9Can_?= excellent establishment for weedy species, which may be serious fire =?utf-8?Q?hazards=E2=80=9D_?= also =?utf-8?Q?=E2=80=9CSurface_?= erosion can be significant in areas prone to this =?utf-8?Q?process.=E2=80=9D_?= However, it appears to still be listed as a proposed treatment, and a mitigation measure related to discing (BIO-6) is in the Mitigated Negative Declaration. We do not see proposed disced areas in Figures 6 and 7. Proposed

Treatment Areas. We recommend that the documents explicitly prohibit discing. 9-6 Herbicide Application: Describes hand and road-side application from a vehicle. We are glad that you are not considering aerial application. However, BIO-19, Hazards10 included mitigation for potential aerial application, we think aerial application should be prohibited. DISCUSSION OF IMPACTS A. AESTHETICS This plan has potential significant impacts on aesthetics and natural visual resources. Some of these impacts are not addressed by the Mitigated Negative Declaration. A.a. Substantially degrade the existing visual characters or quality of the site and its surroundings In both Foothill Park and Pearson-Arastradero preserve, the experience of a visitor combines wide scenic views with the aesthetic value and enjoyment of walking through natural low branches and hanging tree canopies, and observing small plants and animals along the trails (indeed, some of the restoration and education effort at Pearson-Arastradero focus on small scale natural value). Mowing and/or removing lower tree branches along nature trails (MeadowLark, Acorn, Juan Batista de Anza, Bowl Loop) can substantially and negatively affect these resources. Clearing vegetation from 72 acres along Trappers Fire Road in Foothill Park would also have a substantial visual impact that is not consistent with the parks natural atmosphere. We believe either an Environmental Impact Report should be prepared due to the significance of the aesthetic impact, or mitigation measures for these impacts should be developed and implemented. D. BIOLOGICAL RESOURCES D.a, b, c) The Draft Mitigated Negative Declaration identifies =?utf-8?Q?=E2=80=9CPotentially_?= =?utf-8?Q?Significant=E2=80=9D_?= impacts to biological resources =?utf-8?Q?=E2=80=9CUnless_?= Mitigation =?utf-8?Q?Incorporated=E2=80=9D._?= This should already raise a red flag when the area in question is valued primarily for its biological resources, and includes a nature preserve. TRA Environmental Sciences prepared an Environmental Impact Assessment that lists 19 biological mitigation measures. In essence, these measures point to the difficulty of maintaining a healthy ecosystem while implementing large scale vegetation removal by mechanical methods, prescribed burning, grazing or field crews. The TRA assessment points out that some of the methods (grazing, burning, and mowing) have been shown, in some ecosystems, to enhance habitat value and diversity. The

Environmental Impact Assessment suggests that the proposed update to the plan may in fact ameliorate conditions for native vegetation as it replaces some fuel removal practices (grading, discing) with other practices (prescribed burns, grazing). This is based on the assumption that prescribed burns and/or grazing is an appropriate alternative to low intensity fires that may have occurred in this area in the past, and that these applications can help native plant species compete against non-native grasses. While evidence exists to support this general assumption, application area, intensity, schedule and frequency are of paramount importance and vary among habitats and ecosystems, and since the primary goal is that of removing fuel, not that of conservation, their effectiveness in restoring or even maintaining habitat is questionable. We recommend the city prepare a comprehensive, multidisciplinary ecological conservation plan that incorporates fuel reduction for fire management rather than mitigates threats to the biological environment. =?utf-8?Q?D.e)=E2=80=9CConflict_?= with any applicable Conservation Plan, Natural Community Plan, or other approved local, regional or state habitat conservation =?utf-8?Q?plan.=E2=80=9D_?= There is no conflict only because there is no plan. There needs to be a comprehensive, multidisciplinary conservation plan for the foothills. SPECIFIC MITIGATION MEASURES BIO-9 includes a modification to the Fire Management Plan Best Practice that requires that a grazing plan to incorporate protection of drainage and wetlands from the impact of grazing animals. We would add protection of hillside habitats, taking into consideration aspect and slope, to the proposed grazing plan, as well as consideration of grazing timing, intensity and duration. BIO-19, Hazards10 States =?utf-8?Q?=E2=80=9Climit_?= areal applications of herbicides to greater than 100 feet from water =?utf-8?Q?resources.=E2=80=9D_?= We would absolutely prohibit areal applications of herbicides over foothill park and the Pearson-Arastradero preserve. Geology-1 requires a study that identifies all potential erosive soils and the development of an erosion control plan. We recommend this study should include the mapping and inventory of native plants on serpentine soils that harbor rare species or have the potential to be restored to native vegetation. BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7 require biological surveys prior to implementation of various treatments at

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| | various locations. BIO-9 requires mapping, BIO-9, Geology-8, and Geology-9 require the preparation of grazing plans, Geology-10 requires the development of a prescribed burn erosion control plan, and Geology-1 requires a study that identifies all potential erosive soils and the development of an erosion control plan. These mitigations are more like meta-mitigations, they all call for additional information that would be necessary to mitigate the impacts of the plan. We recommend the City develop maps of sensitive habitats and species that would create the basis for an open space/conservation management plan. These measures should focus our attention on the need for a multidisciplinary approach that would consider all the challenges and opportunities involved in human management of natural landscapes. These challenges and opportunities include enhancement to natural assets and biodiversity, recreation, erosion control, slope stabilization, and downstream effects of upland activities, fire management and more. I. LAND USE PLANNING b,c,f) We think that the fire plan conflicts with the management of Palo =?utf-8?Q?Alto=E2=80=99s_?= natural areas and may adversely impact nature conservation and enhancement as well as recreation and nature education. Palo Alto should take a comprehensive, multidisciplinary approach to the management of its open space. Contemporary conservation biology focuses on habitat conservation and enhancement as well as minimization of fragmentation. A sound conservation plan would protect not only special status species, but also habitat that would support biodiverse ecological communities. In concert with fuel reduction programs, it would remove accumulated matter in some areas, yet maintain some brush piles and dead trees for habitat conservation and enhancement. The focus of the plan would be multi-dimensional, with a larger scope that fire management. |

Receipt Number 9D16FC4A0798529AF2yHOX2B19DA

**NOTE: THE ABOVE COMMENT IS A DUPLICATE OF A LETTER SUBMITTED MARCH 11**

END

"Comments from Stu Farwell" (Los Altos Hills Co. Fire Dist.): RECEIVED VIA CAROL RICE / FEB. 23, 2009

The apparatus that responds from this station is a Type III Engine Company. This is an apparatus that is primarily designed to respond to wildland fires instead of structure fires. This is similar to the types of companies used by major wildland agencies.

The station provides an initial attack capability to an area that involves about 25 square miles of urban-wildland interface area. There are approximately 150 dwellings in the area, but that is not the primary risk. The fire history of this specific area is relatively free of major events in the past decades. The last reported major fire in the vicinity of the upper foothills was in 1912. Significant fires in the lower foothills (primarily light fuels) occurred in 1985, 1992, 2000 and 2007.

However, that one factor creates an impact upon existing fuel loads. The lack of major fires in the past has resulted in fuel densities that may be ready to support a wide area fire. It has been estimated that the medium and high density fuels are about three times their normal density.

The secondary response units into this area are deployed from the "El Monte" fire station of Los Altos Hills County Fire District (LAHCFD)~~Santa Clara County Fire~~ located to the north and the Palo Alto Stations #2 and #5. The ~~County~~ (LAHCFD) Fire Station is equipped with Type I and Type III~~V~~ engines. Currently there is no direct link to this station in the dispatching of equipment. Depending upon who reports an emergency in the area the call could go directly to the City of Palo Alto or it could be routed through the Santa Clara County Communication Center and Palo Alto would then be notified.

The standard response into this area varies upon the level of dispatch. On medium or high dispatch days the Palo Alto Fire Department responds Engine 8 to reports of wildland fires and supports it with another Type III (3 personnel) that is cross staffed by the truck company from Station #6 on the Stanford Campus, one Type I from Station #2 (3 personnel), 2 Type IV cross-staffed patrol units from Stations #2 and #6 (6 personnel), one Paramedic ambulance from Station #2 (2 personnel) and one Battalion Chief from Station #6.

Furthermore, the dispatch system provides a brush unit from the (LAHCFD)~~Santa Clara County~~ El Monte Fire Station in Los Altos Hills at Foothill Community College (4 personnel from 1000-1900 hours) and can respond an additional 4 Type I's (12 personnel) and 3 Type III~~V~~ Brush units (9 personnel). Lastly, the system has the depth to provide additional resources from other mutual aid entities in the same area (e.g. Cal Fire Ranger Unit resources located in Cupertino and San Martin). These include additional Type III units (3 or more), air assets, hand crew resources, bulldozers and command staff to complete an overhead requirement in the event of a major fire. Other Type 1, Type III and Type IV resources may be made available through the Santa Clara County Mutual Aid System.

The City of Palo Alto does currently not have an adopted Standards of Cover document, but operates with an informal response goal of 5 to 6 minutes for attendance of at least 90% of its calls for service. The department also provides paramedic (advanced life support – ALS) response to the basic built out portion of the city within 8 minutes for at least 90% of those types of calls (these response goal benchmarks are exclusive of the foothills area). Station 8 has not normally been considered an ALS resource. In the past 2 years a priority has been established to staff Engine 8 with an ALS resource whenever possible.

The staffing for the station is provided in the overtime budget. Last year the amount set aside to provide coverage was $200,000.

240 W. Charleston Rd.
Palo Alto, CA 94306
650-493-3468



March 9, 2009

The City of Palo Alto
Planning Department
250 Hamilton Ave.
Palo Alto, CA 94301

Attention: Kenneth Dueker, City Manager's Office
Re: Comments on Mitigated Negative Declaration, Foothills Fire Management Plan

Dear Kenneth Dueker:

The following comments are intended to supplement those submitted by my wife, Jean Olmsted, in a separate letter. My comments are confined to proposed fire-management treatments along evacuation routes and containment areas in the Fire Management Plan for Foothills Park. These places are where the proposed treatments most significantly affect the ecology of the Park.

**Evacuation routes.**

F.E1 Page Mill Road. Only part of this route adjoins Foothills Park. Does the 9.54 acres indicated for this area include only ~~to~~ Foothills Park land, or does it include both sides of the road along the entire length indicated on Figure 6 of the Fire Management Plan Update? In any case, the negative impacts of the treatment on the aesthetic and ecological values along this corridor are substantial. One of the few positive results would be the removal of French, Scotch, and Spanish brooms. Treatment would likely be costly and difficult.

F.E2 Park Road. Treatment of the 5.96 acres along this major road in the Park would seriously impact aesthetic and ecological values within the Park and would likely compromise some of the invasive-plant work done by Park volunteers along parts of this corridor. Optimal treatments for fire safety often conflict with rather than supplement or augment the treatments for restoration of native plants.

F.E3 Park Northwest. Problems related to treatment of this 0.57- acre area are similar to those along other roads in the Park..

F.E4 Park Northeast. Potential conflicts of values along this 1.21-acre route are significant, owing to the presence of some native forbs, notably including the rare dwarf owl's clover, *Tryphysaria pusilla,* near the Panorama Trail crossing.

F.E5 Towle Campground. In the past, work along this route through Wildhorse Valley, including the sediment-catchment basin near Towle Camp, Chiefly by Park and Utilities staff, has resulted in the introduction of undesirable exotic invasive plants, notably stinkwort (*Dittrichia graveolens*), milk thistle (*Silybum marianum*), Italian thistle (*Carduus pycnocephalus*), yellow starthistle (*Centaurea solstitialis*), purple starthistle (*Centaurea calcitrapa*), and poison hemlock (*Conium maculatum*). Seeds probably were introduced on the wheels and undercarriage of vehicles and other equipment. The problem was further exacerbated by untimely mowing that resulted in the growth of very short yellow starthistle plants having an unusual abundance of seed-producing flower heads.

F.E6 Southwest corner of. On figure 6 of the Fire Management Plan Update, none of this route is adjacent to Foothills Park. Why is the 6.07-acre area included in mitigation area charged to Foothills Park?

**Containment areas.**

F.C1 Trappers Trail. This 72.51-acre area along the crest of Trappers Ridge constitutes the most serious impact on the native vegetation of the Park of all the treatment areas. It is also an area cleared many times in the past, presumably to contain wildfires in the park to one side of the ridge. Although the proposed width of the cleared zone is 600 feet (300 feet on each side of the road), it is actually variable, depending on the local topography and is less than 100 feet wide above the junction with the Madrone fire trail (see figure

6) Incidentally, why is the Madrone fire trail not included as a containment area? Maintenance of the Trappers Ridge fuel break in recent years has involved considerable widening but also abandonment of earlier cleared areas some distance from the ridge top. Not all plants other than forbs and grasses were cleared. Scrub oaks, coast live oaks, and madrones, were spared, although the lower branches of these trees were removed.

The result of all this clearing has been the permanent(?) removal of some chaparral taxa, notably bush poppy (*Dendromecon rigida*) and *Ceanothus* (both *C. cuneatus* var. *cuneatus* and *C. oliganthus* var. *sorediatus*) and the proliferation of yellow and purple starthistles as well as the introduction of stinkwort (*Dittrichia graveolens*) and plumeless thistle (*Carduus acanthoides*). On a more positive note, the rare and interesting forb, divaricate Phacelia (*P. divaricata*), manages somehow to survive all the clearing and may be found blooming at all times of the year. Is all this costly treatment really necessary? The visual and ecological impacts are an overwhelming alteration of what is supposed to be a nature preserve.

F.C2 South of Pony Tracks Road and F.C3 North of Pony Tracks Road. Many of the comments above for Trappers Trail apply also to these much smaller areas.

F.C4 Bobcat Point. I could say, this one really got my goat. The use of goats to maintain a drastically altered and ecologically inappropriate plant community is really too much. The map (figure 6) is erroneous in this area, and the proposed treated area, if it includes a 300-foot-wide zone along the Park boundary, is at least double the 5.28-acre area indicated. Apparently this is an attempt to protect residences just outside the Park boundary. This would be accomplished by changing an unusual and interesting mixed chaparral and woodland plant community to a grassland containing islands of trees and shrubs. The remaining plants might not include rare and interesting plants now present, such as chaparral currant (*Ribes malvaceum*), previously nearly extirpated by over-zealous and under-supervised trail maintenance, oso berry (*Oemlaria cerasiformis*), and red-flowering currant (*Ribes sanguineum*, very unusual in such an environment). Although there is much chaparral elsewhere in the Park, the plant assemblage here is almost unique in that it represents this type of vegetation on a north-facing slope at a relatively low altitude for chaparral in the region.

On another note, the treatment proposed here would involve the logistically difficult and costly use of goats in an area where denudation by the goats would result in accelerated erosion on slopes that locally exceed 50 percent. In short, don't do it!

F.C5 North of entry gate. The situation here both differs from and resembles that at Bobcat Point. This 3.47-acre area constitutes a real woodland (no chaparral, just trees and some shrubs as understory) but, like Bobcat Point, it is on a north-facing slope adjacent to residences just outside the Park boundary. Elsewhere in the Fire Management Plan Update, the type of vegetation here is assigned a fairly low burning potential. In this situation, however, where there are houses nearby, it is deemed necessary to eliminate understory shrubs more than 18 inches tall. and to eliminate the lower branches of the trees. Again, the Park apparently is the default mitigation area for places outside the park.

F.C6 Valley View Fire Trail. I understand that the top of this ridge is to be maintained as a fire road rather than as a minor fuel break. Even as a fire road, care should be taken to prevent introduction of yellow starthistle seeds by vehicles. Oaks along the edge of the fire road should be protected; two of these oaks are unusual hybrids of scrub and valley oaks and should not be removed or damaged by any maintenance operations.

Franklin H. Olmsted

February 24, 2009 Draft Notes for Park and Recreation Commission Meeting

Jean Olmsted: I and my husband and a lot of other volunteers spend a lot of time in Foothills Park removing invasive plants. We know less about Arastradero. This fire plan scares me. We need your help.

Why? Because the things you do to prevent fires, things like mowing and disking and grazing and cutting tree limbs and so forth are things that can destroy a nature preserve. If lucky, you might wind up with a garden, but that is not natural. Using the plans figures, this fire prevention scheme if followed will cost for five years $700,000 (which Palo Alto's city budget does not have) and treat 330 acres in the two parks. It is a huge project that probably would cost a lot more than is estimated. And our precious parks will be damaged. This plan does not recognize that the purpose of the parks is to save natural areas.

I have been learning about some fire fighting history. The Indians managed well with lots of small fires that helped them keep grassy areas that they wanted. I remember Smokey the Bear and the era where we tried to stop all wildland fires and were pretty successful. But then the fires we did have were huge, impossible to stop, and even killed firefighters. So now we concentrate our wildland fire fighting on saving the homes of people who build in wildland areas. Perhaps that is what we should be doing here.

As for this plan, it is difficult to understand why certain areas were chosen for treatment. And some of the ideas do not fit with the on-the-ground situation. My husband is going to tell you about one sample of that kind of problem. The plan and the Mitigated Negative Declaration somehow surfaced for public view together on February 10. I was surprised that the sources used in the EIR were so limited. The specific fire mitigation proposals must have come from reference #4 (The Plan) and more on the ground experience would have helped.

The easiest way to get a grip on what is proposed is to look at the tables. I found pages 8-11 of the Draft Mitigated Negative Declaration helpful because those tables include for identified purposes the place, area, and treatment method for Foothills Park. I could not find the same summary information for Arastradero. The Arastradero tables are in the Plan starting with pg 47 but they are interspersed with Foothills Park and other information. The cost estimates are in The Plan starting on page 67.

And here are a few if my odds and ends. I am wondering whether it is necessary to define a Foothills Park restrooms as defensible space. It is concrete. Might be cheaper not to clear and then fix it after a fire with the money saved. Clearing perimeter space in Arastradero 300 feet from park boundaries in designated places sounds pretty drastic. And what about clearing 30 Feet on both sides of the pavement edge of evacuation routes? That means Page Mill, Arastradero, Los Trancos, Skyline, and I think the main road inside Foothills Park. A lot of these are private property whose owners might not agree.

Just remember, it makes no sense to save the parks from fire if you have destroyed them by saving them. Consider a reduced plan where you define evacuation routes and encourage everyone to prepare their own property.

***DRAFT***

**MINUTES**
**PARKS & RECREATION COMMISSION**
**February 24, 2009**
**City Hall**
**250 Hamilton Ave**

**Commissioners Present:** Deirdre Crommie, Joel Davidson, Sunny Dykwel, Carl King, Paul Losch, Pat Markevitch, Daria Walsh,

**Commissioners Absent:**

**Others Present:** Council Liaison Espinosa

**Staff Present:** Greg Betts, Catherine Bourquin, Lester Hodgins, Rob de Geus, Donald Piana

**I. ROLL CALL CONDUCTED BY:** Catherine Bourquin

**II. AGENDA CHANGES, REQUESTS, and DELETIONS:** Item 3, Presentation by PABAC will not be presented tonight. Staff de Geus and Commissioner Crommie will provide a short update on this topic. Item 5 will not be an Action item but the Commissioners comments will be taken and submitted with the staff report that will go to Council from Kenneth Dueker, City Managers office.

**II. ORAL COMMUNICATIONS**: Kevin Coleman, spoke on the lack of gym space in Palo Alto. He would like to see attention put on the short and long term impacts of this problem.

**IV. BUSINESS:**

1. **Approval of Draft Minutes of January 26, 2008 regular meeting** – The Draft Minutes of the January 26, 2009 regular meeting were unanimously approved as written. **Approved 7:0**

2. **Welcome new City Council Liaison Sid Espinosa -** Council Member Espinosa was welcomed as our new City Council Liaison for the Parks and Recreation Commission.

3. **Informational presentation from Palo Alto Bicycle Advisory Committee (PABAC)** – Staff de Geus informed the commission that Richard Swent who was to speak tonight had back surgery and was unable to make it to tonight's meeting. Staff de Geus spoke

with Mr. Swent and shared with the Commission some of the points of interest that PABAC is involved with. Among other interests PABAC has been involved in improving bicycle access to the Baylands. They have been working with VTA on the concept of a Highway 101 underpass/overpass to the Baylands in South Palo Alto. Commissioner Crommie also advised the Commission that PABAC is also interested in the existing Adobe Creek underpass and expanding the open hours of the underpass for pedestrians and bicyclists. PABAC will be invited to the March 24th regular meeting.

4. **Discussion with Anne Cribbs on the Senior Games** – Anne Cribbs came to the Commission to provide an update on the 2009 National Summer Senior Games. The count down has started and there is only approximately 150 days left until the games commence. The official dates for the senior games are August 1 – 15, 2009. The expectation is 12,500 athletes will participate in the games. There are 4000 volunteers needed to put this event on. Anne Cribbs provided a demonstration on using the Senior Games website to register volunteer Commissioner Chair Markevitch as the first to sign up. The website to register for these volunteer opportunities is www.2009seniorgames.org. The Commissioners were given time to ask questions following the presentation. Commissioner Davidson challenged the Commission to come up with a total of 250 volunteers. A motion was made by Commissioner Davidson and seconded by Commissioner Crommie.

***Motion: To have the Parks and Recreation Commission cooperate together to achieve a 250 volunteer quota for the 2009 National Summer Senior Games.***
***Approved 7:0***

5. **Approval of a Recommendation to City Council for the Adoption of a "Foothills Fire Management Plan"** – Staff de Geus reminded the commission of the item change at the beginning of the meeting referring to the staff memo he provided correcting the title of the item. The Commission was asked for a recommendation to City Council but instead they are only being asked tonight to provide comments, and notations of errors or omissions on the draft plan. Staff will capture all the Commissioners comments in the minutes and the minutes will be attached to the Staff report that goes to Council in April.

Kelly Morariu, Interim Deputy City Manager, provided the Commission with a brief update on the purpose of the Foothills Fire Management Plan. She stated that the plan came about from a discussion with the City Council during the 2008 city budget process. The fire safety in the foothills and the staffing of fire station 8 were discussed and a request from City Council was made to the City Manager's Office to have a fire management plan created for the foothills area in Palo Alto. The key players for this plan were introduced, Carol Rice and Cheryl Miller consultants of Wildland Resource Management, Ken Drueker, Police Department on special assignment for the City Managers Office, Lester Hodgins, Supervisor Open Space and Greg Betts, Interim

Director of Community Services. A PowerPoint presentation was provided by the Wildland Resource Management consultants focusing on the information in the Wildland Fire Risk Assessment and mitigation draft that was provided to the Commission and Public.

The Fire Management Plan Update addresses the following key items:

- Fire hazard assessment
- Regional evacuation routes
- Review of municipal ordinances
- Staffing of Station 8
- Wildland Fire Management Recommendations and Mitigations
- Updates to Pearson-Arastradero Trails Master Plan and Foothills Trail Maintenance Plan
- CEQA documentation
- Implementation plan and potential funding

Oral communications followed the presentation:

Jean Olmsted, 240 West Charleston, Palo Alto – Mrs. Olmstead who is a volunteer at Foothills Park removing evasive plants spoke on how she feels that the plan is designed to prevent fires but will destroy the nature preserve. The plan calls to treat 330 acres "but we will be lucky if we are left with a garden" she said. The prevention treatments need to be reconsidered so the natural areas are not destroyed.

Franklin Olmsted, 240 West Charleston, Palo Alto – Mr. Olmsted provided the Commission and Public with some handouts of a map and a list of plants that are in an area that is on the treatment plan for the Fire Management Plan. His concern of the area is that the area is very steep and in the area of the chaparral are very rare species. The treatment suggested in the plan would wipe out these rare species and change the unique ecology that only occurs in this particular area of the park. He would like to see something else be done in that area of the park.

Interim Deputy City Manager Morariu reported that the staff report that will be going to Council will have the Foothills Park and Arastradero Preserve specifically mentioned in the report and the comments and concerns from the Parks and Recreation Commission will be included.

**Commissioners Questions and Comments:**

**Commissioner Davidson** – Commissioner Davidson was concerned with the draft mitigated negative declaration.

1. Under BIO–1, what is meant by "the legal consequences of take of protected species or habitat"?
   Answer by Consultant Rice: She said that it was a Fish and Game technical jargon that they use.
2. Why do chemical herbicide treatments and not biological treatments get more attention in the report?
   Answer by Consultant Rice: The concern is on the eucalyptus stumps and the sprouting, they felt that herbicides would be a more affective treatment. Commissioner Davidson would like to see an emphasis put on biological treatments in the report.
3. The words "Not anticipated" come up a lot in the report. Would like to see more of a reason why it is not anticipated.
4. The area around Los Trancos has a lot of eucalyptus trees, neighbors in that area would like to know how to have them removed. Is this part of our jurisdiction and how does the City intend to assist with eucalyptus removal? Is the report going to address this problem?
   Answer by Consultant Rice: The treatments prescribed are within the Palo Alto property lines. There will be collaboration with other jurisdictions that are impacted by potential fire hazard areas.
5. Why does noise in that area not reflect a problem in the mitigation report?
   Answer by Consultant Rice: There is a threshold requirement, and the anticipated level of noise from machinery was not determined to reach that threshold.

**Commissioner Dykwel** –

1. Make sure the report addresses the ingress and egress routes for the neighbors that would be impacted if there was a fire. She wanted to ensure that communication was implemented with all concerned residents.
2. That an emphasis is placed on the community for regional cooperation for evacuations.
3. Ensure that the plan does not have any adverse impacts on the natural environment of the nature preserves.
   Answer: Consultant Rice referenced the Draft Mitigation Declaration and noted the BIO's section references any concerns with plant species, wildlife, etc.

**Commissioner Walsh** – Commissioner Walsh thanked everyone involved in the report and to the residents that came forward today with their comments.

1. How will the Public's and the Commission's comments be incorporated into the plan? And what is the date to have them in by?
   Answer by Consultant Rice: It is her understanding that the comments, suggestions will be sent in a list form asking the consultants to modify the plan

and include them before the final adoption by Council in April. All comments should be received by March 11, 2009.

2. The question relates to the mowing of the sides of the small trails. If you have to mow every year, wouldn't it make sense to just make the mowed fire breaks accessible to the public as trails?
   Answer: Staff Betts replied by given a little history on how trails were developed. In Pearson Arastradero Preserve, the trail system is 10 miles that can be safely patrolled by staffed rangers, and in Foothills Park there are 15 miles of trails that can be safely patrolled by staffed rangers.

**Commissioner Losch** –

1. If we did nothing on a scale of 1 – 10, 10 being the highest risk, where do these two parks fall, if we maintain the status quo?
   Answer by Consultant Rice: The State looks at the building codes and the park preserves are in the 75% of that code. The containment area is the most concern. By accepting this plan the approximate percentile that you will be improving would be about 50% in relation to the original 75%.
2. If there is an incident, are we reducing the degree of havoc?
   Answer by Consultant Rice: We would be reducing it dramatically. Commissioner Losch wanted to emphasize that if we show that there will be a dramatic decrease by using the treatments in the plan, there will be those who will argue the necessity of keeping Fire Station 8 open.
3. This is a $700,000 project, how much does it cost to raise $700,000?
   Answer by Deputy City Manager Morariu: She said it will depend on the structure; it will be a multi-pronged plan and we will be partnering with regional stakeholders. The regional areas will have their own fire plans in place in order to make the process easier to apply for grants.

**Commissioner Crommie** –

1. Where would the fire most likely start from?
   Answer by Consultant Rice: We targeted the ignition source in our report, BBQ's were focused on, road side fires were main concern. She added most fires are human caused.
2. Commissioner Crommie would like to see the BBQ's removed from residents homes that impact the areas closes to the fence line then to have the wildlife habitat be impacted by mowing or grazing.
   Answer by Consultant Rice: Residents are supposed to be doing there own fire management program. The fire department regulates this and does home site inspections.
3. Commissioner Crommie questioned the error in prioritization.
   Answer by Consultant Rice: She replied that life, property and resources are used universally to prioritize a fire plan.

4. Commissioner Crommie expressed her concern over *sudden oak death*; she wanted to double check that the processes for the treatments would not increase the chance of contamination.
   Answer: Consultant Rice suggested a vehicle and equipment washing machine be included in the grant proposal to prevent seed spreading and any contamination of diseases.

**Commissioner King -**

1. How does it get implemented by the actual fire department?
   Answer by Officer Ken Dueker: It doesn't involve just the Fire Department; it involves the Police, Fire and Open Space and Parks departments. This is a multi-faceted problem. The plan is technical and isn't a reference document for the fire department to rely on. We're hoping to spawn interagency cooperation, so we can solve the gaps that have been identified in this Fire Management Plan.
2. Commissioner King shared his concern that he did not see the metrics for how the City will determine how best to use limited resources to implement the plan. For example the plan provided an example of grazing vs. mowing but it was not clear what numerical analysis will be used to determine which of the recommendations will be implemented. Commissioner King also asked about how the environmental costs get factored into the decision making process?
   Answer by Consultant Rice and Miller: During the implementation process there will be an implementation team who will investigate the options that have been highlighted in the Draft Mitigated Negative Declaration. Once there has been a determination, the recommendations and actions have to be followed. There are some dollars associated with this because of the monitoring costs that are involved.

   Interim Deputy City Manager Morariu informed the commission that following the close of comments to the Foothill Fire Management Plan staff in planning will walk through with the concerned parties who submitted comments. Often times the plan will change slightly. Any changes and recommendations will be incorporated. We will probably sit down with the Olmsteds and look into their concerns.

**Commissioner Markevitch -** Commissioner Chair Markevitch had suggested at a previous meeting that the BBQ's at Foothill Park be changed to propane. She did not see it in the report.

1. Commissioner Markevitch would like to see converting the BBQ's to propane be considered as an option for Foothill Park. This would eliminate the potential fire hazard from hot coals and the chance of them blowing out.

**Council Liaison Espinosa** –

1. Council Liaison Espinosa inquired if the report would be coming back to the Commission to flush out items such as the cost benefits vs. environmental impacts.
   Answer by Interim Deputy City Manager Morariu: She responded that it would not, unless directed by Council to. Once the implementation of the plan was underway, there will be a lot of dialogue occurring and she could see engaging the Commission in this process. We are still working on how that strategy is going to work.
2. He added that he was impressed on how much outreach has been done. He also wanted to recommend that when it comes before the Council it is presented with how we've been doing outreach, what will be different and what we will be doing. The process in which the plan was developed doesn't need to be the main focus. Station 8 – the "big elephant in the room", will probably be a big part of the discussion, so being prepared for that discussion will be helpful.

   Interim Deputy City Manager Morariu responded by agreeing and her feeling was that the plan was the starting point and the focus on the implementation will require a lot of discussion.

**6**. **Agenda setting – Review suggested topics for consideration at future meetings** – The Commission engaged in a discussion on topics for future meetings. Staff de Geus suggested that the Commission first reaffirm the existing priorities. Then, once the priorities are reaffirmed, concentrate on the additional items that were suggested and see where they fit in with the priorities. The Commission can then have two or more Commissioners choose topics of interest that they will work on and bring to the Commission when the item is ready for a meaningful and productive discussion.

After some discussion on the existing priorities a motion was made by Commissioner King and seconded by Commissioner Losch:

a. Playing Areas –
   A. Develop a field allocation policy necessary to meet the recreation and non-recreation demands of our residents at a fair and reason cost.
   B. Engage in a CSD Strategic Planning process
   1. Analysis of existing conditions and capacity of CSD programs, services and facilities.
   2. Analysis of community perspective on CSD programs, services and facility needs for the future, and
   3. Development of specific strategies and actions to best meet these needs within realistic budget constraints.

b. Open Space
   1. Provide citizens and staff clear statements and guidelines on balancing recreational uses with habitat preservation in Open Space.

c. Culture of Fitness
   1. Encourage the citizens and employees of Palo Alto to embrace a healthier lifestyle through increased physical activity.

d. Partnership
   1. Identify and compile a comprehensive list of all partnerships pertaining to the Parks & Recreation Department with an eye towards forging new ones.

e. Palo Alto as a Magnet
   1. Understand Palo Alto's role and cost structure with regards to providing Parks and Recreation services to residents and non-residents.

***Motion: To have the following changes reflected in the Commissioners 2009 Priorities.***

***1. Remove from Playing Areas "B." Engage in a CSD Strategic Planning process***

***2. Change the title "a. Playing Areas" to "a. Reserved recreational facilities".***

***3. Move "e. Palo Alto as a Magnet" under "a. Playing Areas" as "B"***

***4. Make "Engage CSD strategic planning process as priority "e".***

***Approved 7:0***

Items to be included as potential agenda items on the work plan were identified as follows:

- Overview of Open Space and Parks Division operations – Opportunity to introduce Rangers and CIP project coordinator.
- Access to Baylands – move to March meeting
- Informational presentation on update of CIP funding/projects
- Greer Park renovation – CIP project
- The policy on the terms of office for the Commission – Commissioners King and Davidson.
- Creek/Urban trails – Commissioners Dykwel and Crommie
- Public Art in Parks – Chair Markevitch will be meeting with the Chair of the Art Commission to discuss how art is placed in parks.
- Parks and Recreation Commission and PAUSD liaison – Commissioner Losch and Walsh will work on formalizing a plan and then meet with Chair Markevitch.
- Revisiting recreational opportunities for dog owners – Commissioners Walsh and Losch
- Middle School Athletic program and policy – Commissioners Walsh and Markevitch
- Community Garden opportunities – Commissioners Davidson and Crommie
- Open Space Vision statement – Commissioners Walsh and Crommie
- JCC/Cubberley Gym transition – Informational

## V. COMMENTS AND ANNOUNCEMENTS

1. Adopt-A-Park list – Traditionally whoever got the information to Catherine first had their pick of parks. Return your forms to Catherine.
2. CPRS conference is next week March 3rd – 8th.

3. Staff de Geus informed the Commission that he received a letter from a concerned user of the impact that will take place during the Greer Park renovation. Staff is working on responding.
4. Commissioner Davidson remarked on the documentation that the Commission receives is sometimes unreadable.
5. Commissioner Davidson announced that staff Minka Van der Zwaag is working on Earth Day. He would like to have a heads up when programs are coming up. Staff de Geus said he would send out the work schedule for Earth Day.
6. Commissioner Davidson formally apologized to the Commission for his remarks on the Commission's work load at last months meeting.
7. Commissioner Crommie would like to have a laser light pointer available for presentations.

## VI. TENTATIVE AGENDA FOR MARCH 24, 2009 REGULAR MEETING:

1. A public meeting for Seale and Greer Park will be on Wednesday, March 11th. Commissioners will receive notification to follow the Brown Act laws.

March 24, 2009 Tentative Agenda

- PABAC presentation
- Lytton Plaza Project review and recommendation to Council to adopt a Park Improvement Ordinance for the Project Plan.
- Presentation on Recreational Aquatic Program with staff Annie Bunten

## VII. ADJOURNMENT

Adjourned at 11:02pm